TC 3-21.220 (NAVAIR AS-400TC-TRN-010)

STATIC LINE PARACHUTING TECHNIQUES AND TRAINING

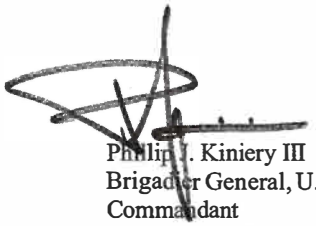
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HEADQUARTERS, DEPARTMENT OF THE ARMY

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.



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STATIC LINE PARACHUTING TECHNIQUES AND TRAINING

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Preface

TC 3-21.220 provides all Department of Defense airborne personnel with techniques and training guidelines to maintain an airborne force. This training circular contains basic and advanced training and techniques for static line parachute training. It is designed to standardize procedures for initial qualification and training of personnel in their duties and responsibilities in airborne training operations.

The principal audience for TC 3-21.220 is the airborne commander, 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 recommended 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 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. (See FM 6-27/MCTP 11-10C.)

TC 3-21.220 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. For definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

The use of a trade name or brand name does not constitute endorsement of the product.

TC 3-21.220 applies to the Active Army, Army National Guard/Army National Guard of the United States, United States Army Reserve, Department of the Navy, Department of the Air Force, and the United States Marine Corps, unless otherwise stated.

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PART ONE

BASIC TECHNIQUES

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

Chapter 1

Standards and Purpose

The Airborne Training is conducted at the Maneuver Center of Excellence, Fort Benning Ga, and provides the Department of Defense (DOD) with trained paratroopers.

1-1. 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.

1-2. 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 can jump 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.

1-3. Volunteers must meet the prerequisites listed in the U.S. Army Training Requirements and Resources System website.

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Chapter 2

Personal Equipment

This chapter discusses parachute types, parachute donning, and headgear used in Basic Airborne Refresher (BAR) Training.

PERSONAL PARACHUTES

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 (ATPS) 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 (USLM). They can support 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 are limited to operation in winds of 13 knots at the surface. The T-11 main canopy is a non-steerable canopy. The MC-6 main canopy is a semi-steerable canopy.

T-11 Parachute System and Characteristics

2-2. The T-11 (NSN: 1670-01-535-2233), parachute component parts and characteristics of each part can be found in TM 10-1670-326-23&P/T.O. 14D1-2-473-2.

MC-6 Main Canopy

2-3. The MC-6 parachute component parts and characteristics can be found in TM 10-1670-327-23&P/T.O. 14D1-2-472-2/NAVSEA SS400-A1-MMO-010.

2-4. The T-11 reserve parachute component parts and characteristics can be found in TM 10-1670-326-23&P/T.O. 14D1-2-473-2 or TM 10-1670-327-23&P/T.O. 14D1-2-472-2/NAVSEA SS400-A1-MMO-010.

T-11 Reserve Parachute Inserts

2-5. The T-11 reserve inserts are used as a mitigating safety factor for jumpmasters and number (No.) 1 jumpers. The use of T-11 reserve inserts (see figure 2-1 on page 4) with the T-11 reserve parachute are mandatory for all primary jumpmasters (PJMs), assistant jumpmasters (AJMs), and the No. 1 jumper assisting in pushing a door bundle. Jumpmasters conducting over-the-ramp operations 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.

2-6. All jumpers that have the T-11 reserve parachute inserts 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-11 reserve inserts will not be removed during this inspection. Adjustments to the T-11 reserve ripcord or inserts are not made near an open troop door or ramp.



Figure 2-1. T-11 reserve inserts

T-11 RESERVE SINGLE PIN PARACHUTE

2-7. The T-11 reserve single pin parachute (see TM 10-1670-347-23&P/TO 14D1-2-474-2/TM 110834A-10&P/NAVAIR 13-1670-347-2) 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 single pin 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. Component parts and characteristics can be found in TM-10-1670-347-23&P.

CARE OF THE PARACHUTE BEFORE AND AFTER JUMPING

2-8. Troop parachute assemblies and reserves may be issued in recovery bags to aid handling and prevent damage or unintentional opening. Until removed for fitting by jumpers, parachutes and reserves should remain in the recovery bags and protected from moisture during storage to prevent mildew. Recovery 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, see TM 10-1670-326-23&P/T.O. 14D1-2-473-2 for the T-11 series parachute, and TM 10-1670-327-23&P/T.O. 14D1-2-472-2/NAVSEA SS400-A1-MMO-010 for the MC-6 series parachute.)

2-9. 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 recovery bag using the tactical recovery method or by executing a series of figure-eight folds with the arms. (See figure 2-2.)

2-10. The specific actions for the figure-eight fold are as follows:

- Remove all air items.
  - Place harness in the recovery bag with the smooth side up, leaving the waistband out.
  - Place the released riser or risers underneath the harness.
- Move to the apex of the canopy, grasp the drogue parachute and 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.

- Fold the canopy and suspension lines into a series of figure eights using both arms, but 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.
- Place the T-11 reserve/single pin parachute in the front storage pocket when using the universal parachutist recovery bag (UPRB).

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.

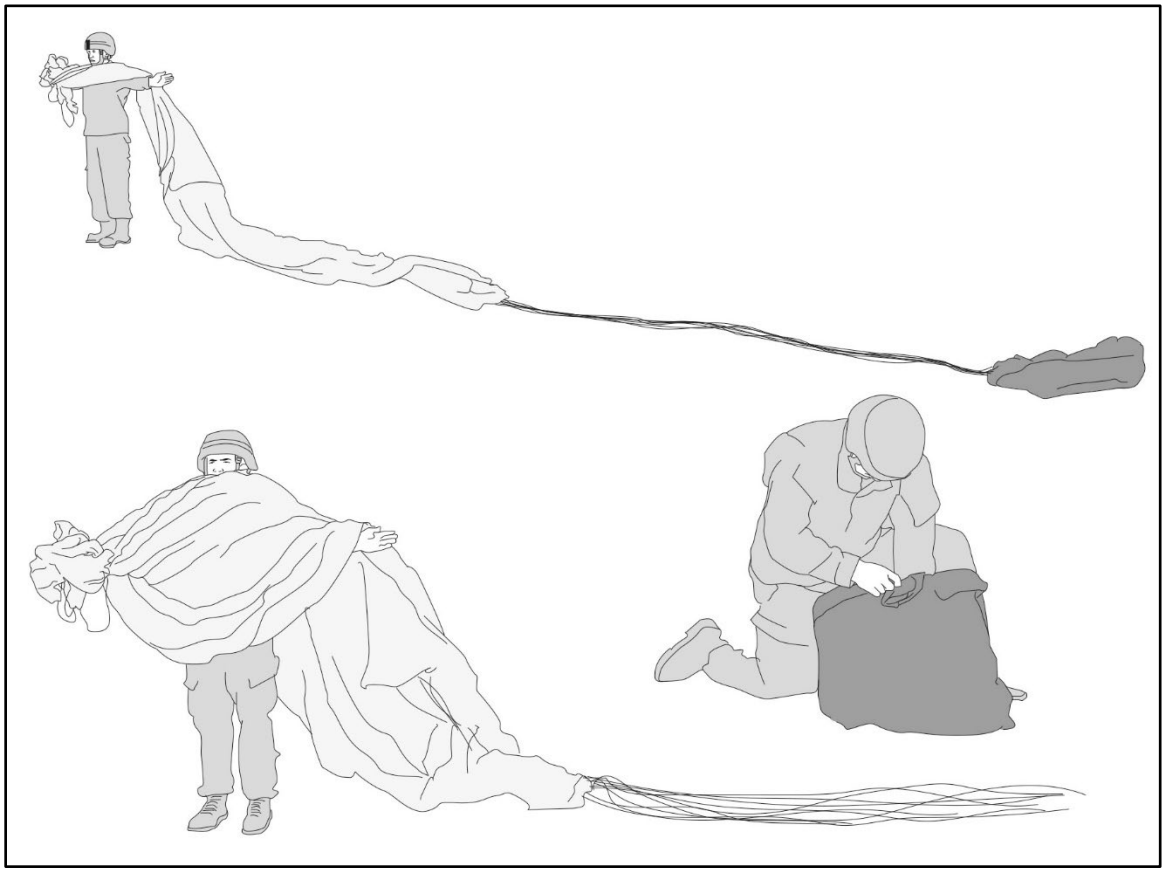


Figure 2-2. Executing figure-eight folds with arms

SHAKEOUT PROCEDURES

2-11. The parachute must be prepared for repacking once the airborne mission has been accomplished. The procedure is called chute shakeout. Suspend 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, see TM 10-1670-326-23&P/T.O. 14D1-2-473-2 for the T-11 series parachute, and TM 10-1670-327-23&P for the MC-6 series parachute.)

DONNING PARACHUTES

2-12. Two personnel are required when donning parachutes. Using the buddy system to don properly and adjust the troop parachute harness provides an additional safety check, prevents delays during jumpmaster personnel inspection (JMPI), and provides minimum discomfort to the jumper while aboard the aircraft and when receiving the opening shock of the parachute. 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. Two personnel are required when donning the parachute. One assumes the jumper role, the other as the buddy to assist in rigging. This reduces the possibility of rigging deficiencies and ensures proper fit of the parachute.

T-11 AND MC-6 HARNESS

2-13. When donning the T-11 or MC-6 parachutes, jumpers must complete the following steps:

- Step 1—inspect the parachute assembly for visible defects in accordance with TM 10-1670-326-23&P/T.O. 14D1-2-473-2 and TM 10-1670-327-23&P/T.O. 14D1-2-472-2/NAVSEA SS400-A1-MMO-010.
- Step 2—placing the parachute on the ground and ensuring the harness assembly is up and the risers are facing away, including—
  - 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 and there are two sizing locations:
  - The diagonal backstraps.
  - The left and right main lift webs.
- The main parachute harness requires pre-adjustment prior to fitting.
- Adjusting the harness:
  - The diagonal backstraps provide two of the nine points of adjustment on the parachute harness.
  - There are five sizing channels numbered one through five to adjust for the placement of the canopy release assemblies and position of the pack tray.
  - Unsnap the directional snap fastener on the diagonal backstrap retainer and pull it free from the sizing channel.
  - Select the appropriate size and routing the diagonal backstrap retainer takes through the appropriate sizing channel, then through the appropriate diagonal backstrap keep.
  - The jumper secures the directional snap fasteners.

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

Jumpers who are outside of the 5-to-95 height percentile may require an adjustment. For example, a jumper's diagonal backstrap may require a larger sizing channel adjustment of 3 to achieve the proper placement of the canopy release assemblies in the pocket of the shoulder.

- Step 3—jumpers complete donning preparation by arranging the T-11 main, T-11 reserve/T-11 reserve single pin, and UPRB by—
  - Letting out the excess webbing from all points of adjustment (leg straps, horizontal backstraps, and the chest strap).
  - Positioning the UPRB (recovery bag) and reserve parachute where it is easily accessible to the jumper while donning the parachute harness.

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 is 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 is fully extended with slack removed.

The main lift webs provide the capability to increase their length to accommodate jumpers at the 5-to-95 height percentile and permit essential items to be worn under the parachute harness.

- Step 4—don the main parachute harness and then 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 backstraps resting on the jumper's shoulders and holds 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, ensuring that the tabbed ending points towards the chest strap friction adapter.
- Step 6—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 UPRB.
  - Secure the leg straps with the UPRB.
  - UPRB: 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 7—adjust the parachute to the individual jumper and both jumpers perform step 7, 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 backstrap by simultaneously pulling up both sides of the horizontal backstraps where they emerge from the main lift web.

- Step 8—continue adjusting parachute to the individual jumper; both jumpers perform step 8, which includes the following actions:
  - The No. 1 jumper remains standing erect, releases the D-rings and applies pressure to the horizontal backstrap 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 backstrap 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 9—the next jumper dons a parachute:
  - The No. 1 and No. 2 jumpers 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 with all excess webbing stowed in webbing retainers.

Note. After donning the T-11 harness, the pack tray's top edge should be aligned 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/T-11 RESERVE SINGLE PIN DONNING

2-14. Jumpers attach the reserve parachute The No. 2 jumper S-folds by cradling the parachute in their left arm with the connector snaps up and the ripcord handle in the palm of their left hand.

Note. If jumpers are part of the jumpmaster team or pushing a door bundle, jumpers must have the T-11 reserve marked with yellow pressure sensitive tape on the top carrying handle. If any other jumper has a T-11 reserve marked for jumpmaster, that reserve must not be used, and another must be obtained from control and issue. If jumpers are using the T-11 reserve single pin, no yellow pressure sensitive tape marks the top carrying handle.

2-15. The jumpers perform the following steps when donning the T-11 reserve/T-11 reserve single pin parachute:

- Step 1: No. 1 and No. 2 jumpers take the following actions:
  - No. 1 jumpers cradle the reserve parachute in the crook of their left arm with the ripcord handle in the palm of the left hand.
  - No. 2 jumpers remove all twists from the waistband and hand the free running end to No. 1 jumpers, being careful not to reintroduce a twist in the waistband.
- Step 2: Jumpers Nos. 1 and 2 perform step 2 by taking the following actions:
  - No. 1 jumpers pass the waistband through the waistband retainers on the rear of the reserve parachute from right to left.
  - They attach the right connector snap to the right D-ring on the harness, the left connector snap to the left D-ring and ensure that the waistband is below the D-rings.
  - No. 2 jumpers attach the waistband to the waistband adjuster panel (WAP) and grasp the running end of the jumpers' waistbands in their right hand, placing the left hand on the end of the reserve for leverage.
  - Jumpers pull the slack from the waistband and secure it to the WAP, forming a quick release.
- Step 3: The Nos. 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 and are now ready to jump; however, before jumping from an aircraft, they receive a detailed safety inspection from a jumpmaster.

Note. When moving with the parachute harness on, jumpers keep their hand on the ripcord handle at all times to prevent accidental activation of the reserve parachute.

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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 exiting properly, checking the body position, and counting. The duration of the 6,000 count corresponds to the approximate time it takes the main parachute to deploy fully when used by a jumper exiting an aircraft flying 125 knots per hour.

3-2. The following must be trained as an automatic action as jumpers exit the aircraft:

- Jumpers start the 6,000 count at ONE THOUSAND, snap their feet and knees together, then lock knees to the rear, lowering their head and placing their chin firmly against their chest.
- At the same time, jumpers rotate their elbows firmly into their sides, both hands over the end of the reserve parachute with fingers naturally spread.
- They then bend 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.
- Jumpers keep 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 jumpers at the end of the 6,000 count, they must activate the reserve parachute for a total malfunction.

POINT 2. CHECK CANOPY AND GAIN CANOPY CONTROLS AND IMMEDIATELY COMPARE YOUR RATE OF DESCENT

3-3. The second point of performance is to check the canopy and gain canopy control and immediately compare your rate of descent. When the jumper finishes the 6,000 count, the jumper feels the parachute open, checks the canopy for malfunctions or damage, and controls the parachute. There are two types of malfunctions. A total malfunction is the complete failure of the airdrop system to function as designed (see AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1). A partial malfunction is the failure of an airdrop system to function properly to the point that the load or parachutist is subject to damage or injury (see AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1).

3-4. Jumpers throw their heads 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, they reach up to the elbow-locked position and secure 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 must compare their rate of descent with that of nearby jumpers.

RATE OF DESCENT

3-7. If jumpers' suspension lines are twisted and the descent is the same as other jumpers, they untwist the suspension lines by reaching up and grasping a set of risers with each hand, thumbs down, and knuckles to the rear. Jumpers pull the risers apart and begin a vigorous bicycling motion. When the last twist comes out, jumpers check the canopy and gain 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. (See chapter 4 for more information on activation of the T-11 reserve/single pin parachute.)

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

POINT 3. ALWAYS KEEP A SHARP LOOKOUT, CONSTANTLY COMPARING 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:

- The three rules of the air 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 drop zone (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 a slip 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 risers.

- Slips are executed with the following actions:
  - When slipping, the jumper looks in the direction that the slip is being made.
  - The jumper makes a sharp initial pull using the slip assist loops or slip assist tabs to spill air from the canopy effectively and lets up slowly to prevent spinning or oscillations.
  - 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.
  - A one-riser slip (left or right front, left or right rear) is made by pulling down one to 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 points 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 higher jumpers are drifting toward a fellow jumper. Higher jumpers look and immediately slip away in the opposite direction of lower jumpers using a one riser diagonal slip:

- If higher jumpers are drifting over a jumper's canopy and believe they will land on top of the lower jumper's canopy, before making contact with the canopy, higher jumpers:
  - Begin a vigorous running motion in the direction of the slip.
  - Attempt to stay on their feet, until they are off the lower jumper's canopy.
- Continue to slip away until a minimum of 25-feet separation has been achieved.
- If higher jumpers land on the lower jumper's canopy and cannot run off:
  - It is vital higher jumpers maintain momentum.
  - This should allow higher jumpers to remain on their feet and attempt to get off the closest edge of the canopy that their momentum allows.
- If higher jumpers 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 themselves, using the hand-over-hand method until they are free from the lower jumper's canopy.
- Once higher jumpers are falling free, the jumpers create a clear and unobstructed path, then activate their reserve parachute using the pull drop method.
- Higher jumpers keep their feet and knees together and are prepared to execute a parachute landing fall (PLF).

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.

3-16. (Actions of the lower jumper) if the lower jumper finds another jumper on top of their canopy—

- If there is damage to the canopy or a jumper is 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 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 PLF.

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

- If jumpers use the T-11 parachute and become entangled, the higher jumpers climb down to the lower jumpers 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 jumpers fall through a vent or become entangled in the bridle line, jumpers should stay where they are 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, continuing to observe both canopies and take one of the following actions:
  - If one canopy collapses, neither jumper activates their reserve parachute as one T-11 parachute can safely deliver two combat-equipped jumpers to the ground.
  - If both canopies collapse, both jumpers immediately turn away from each other to create a clear path and activate their reserve parachutes using the pull drop method.
  - Both jumpers discuss which PLF to execute.
  - Both jumpers conduct the same PLF.
  - Neither jumper executes a front 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 leapfrogging continues 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 execute a slip away from each other when facing another jumper.) When there is enough distance, the jumper takes one of the actions:

- The jumper slips vigorously using a one-riser slip to maintain a lateral distance of at least 25 feet between the parachutes.
- When jumpers are 250 feet or less above the ground, they must exercise care to avoid stealing air from another parachute, because a deflated canopy is not 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 jumpers when hitting the ground. (See figure 3-1.) Preparation includes the following:

- When jumpers commit to the final approach, they should plan to do all slipping approximately 200 feet above ground level (AGL).
- At 200 feet AGL, jumpers slip 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, jumpers take the following actions:

- Keep a sharp lookout during descent for other jumpers.
- Lower all equipment at 200 feet AGL while facing directly into the wind.
- Regain canopy control with both hands once the equipment is released.

3-23. Jumpers take the following actions:

- Jumpers look below at approximately 200 feet AGL, to ensure there are no fellow jumpers before lowering their equipment.
- They slip into the wind at approximately 200 feet AGL and do the following:

- 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 pull 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 pull 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 pull them deep into their chest.
- If the wind is blowing from the rear, jumpers must reach up with both hands and grasp a rear slip assist loop or slip assist tab and pull one to three full-arm lengths of the one riser deep into their chest.

3-24. There are three different types of PLFs that can be performed, depending on whether they are executed from the front, rear, and the side:

- The two types of front PLFs are right front and left front:
  - The right front PLF is used if the direction of (wind) drift is to the front and slightly to the right.
  - The left front PLF 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.
- The two types of rear PLFs are right rear and left rear:
  - The right rear PLF is used if the direction of (wind) drift is to the front and slightly to the right.
  - The left rear PLF 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.
- The two types of side PLFs are right side and left side:
  - The right side PLF is used if the direction of (wind) drift is directly to the right.
  - The left side PLF is used if the direction of drift is directly to the left.
- After jumpers have slipped into the wind, they assume 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.

OBSTACLES

3-25. Jumpers slip to avoid obstacles. They take the following emergency procedures if obstacles (trees, water, or high-tension wires) cannot be avoided.

TREE LANDING

3-26. When using the T-11, (see figure 3-2) jumpers take the following actions:

- They immediately slip away, using a one-riser slip when beginning to drift towards a tree.
- If jumpers cannot slip away and have lowered the equipment, they look below to ensure there are no fellow jumpers below and jettison the equipment, making a mental note of where it lands to be recovered at a later time.
- If jumpers have not lowered the equipment, they keep the equipment on them for extra protection while passing through the trees.
- They assume a good landing attitude at approximately 200 feet AGL.
- They keep 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.
- They are prepared to execute a PLF if passing through the trees.
- If jumpers are hung up in the trees and do not feel they can safely lower themselves to the ground, they stay where they are 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.

3-27. 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 ripcord 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 ripcord assembly and applies inward pressure.
- Grasps the ripcord handle with the opposite hand and pulls and drops it.
- Controls the activation of the reserve parachute toward the ground with both hands, 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/T-11 reserve single pin parachute suspension lines because of the slippery coating applied to the suspension lines. When in doubt, stay where you are and wait for assistance.

WATER LANDING

3-28. As soon as jumpers realize they are going to land in water, they take the following actions:

- Immediately try to slip away immediately if drifting towards a body of water.
- Look down to ensure there are no fellow jumpers below them if unable to slip away, and then lower and jettison their equipment, making a mental note of where it lands.
- Jettison the helmet, again 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 themselves 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.
- Assume a landing attitude by keeping feet and knees together, knees slightly bent, and place hands on the leg strap ejector snaps prior to entering the water.
- Activate both ejector snaps for the leg straps, arch their back, throw their arms above their head, and slide out of the parachute harness when the balls of the jumpers' feet make contact with the water.
- Swim upwind or upstream away from the canopy.
- Locate a seam and follow it to the skirt of the canopy if the canopy comes down on top of the jumpers.
- Prepare to execute a PLF if the water is shallow (2 feet or less in depth).

Water Landing Without a Life Preserver

3-29. Jumpers do the following (in addition to the actions under a water landing, see figure 3-3:

- Look below themselves to ensure there are no follow jumpers and lower and jettison their equipment, making a mental note of where it lands.
- Jettison their helmet, again making a mental note of where it lands.
- Activate the quick release in their waistband, disconnect the left connector snap, and rotate the reserve parachute to the right.
- Seat themselves 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.
- Assume a landing attitude prior to entering the water by keeping their feet and knees together, knees slightly bent and place their hands on the ejector snaps for the leg straps.
- Activate both ejector snaps for the leg straps, arch their backs, and throw their arms above their head and slide out of the parachute harness when the balls of their feet make contact with the water.
- Swim upwind or upstream away from the canopy.
- Locate a seam and follow it to the skirt of the canopy if the canopy comes down on top of jumpers.
- Prepare to execute a PLF if the water is shallow (2 feet or less in depth).

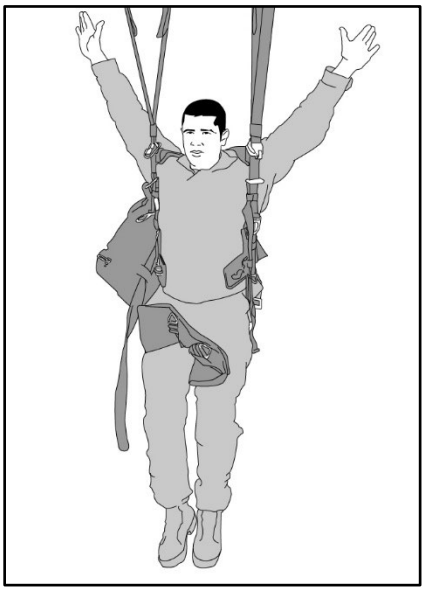


Figure 3-3. Landing without a life preserver

Water Landing With a Life Preserver

3-30. When wearing a T-11 parachute harness and jumping with a life preserver (see figure 3-4 on page 20), 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 looks below to ensure there are no fellow jumpers below, lowers their equipment, and jettisons their equipment.
- The jumper 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.
- The jumper removes the harness and any remaining equipment.

Note. For more information on life preservers, see chapter 12.



Figure 3-4. Landing with a life preserver

HIGH-TENSION WIRE LANDING

3-31. Jumpers do the following if unable to avoid high tension lines when landing (see figure 3-5):

- If jumpers are drifting towards wires, they immediately try to slip away.
- If jumpers cannot slip away, they look below to ensure there are no fellow jumpers below and jettison their equipment, making a mental note of where it lands.
- Jumpers must ensure they maintain their helmet.
- Jumpers assume a landing attitude by keeping feet and knees together and exaggerating the bend in their knees. Jumpers keep eyes open, chin on chest, and their back arched.
- Jumpers place the palms of their hands high on the inside of the front set of risers.
- When jumpers make contact with the wires, they begin a hard rocking motion and attempt to pass through the wires.
- Jumpers prepare to do a PLF in the event they pass through the wires.
- If jumpers are hung up in the wires, they do not attempt to lower themselves to the ground; jumpers stay where they are and wait for assistance.

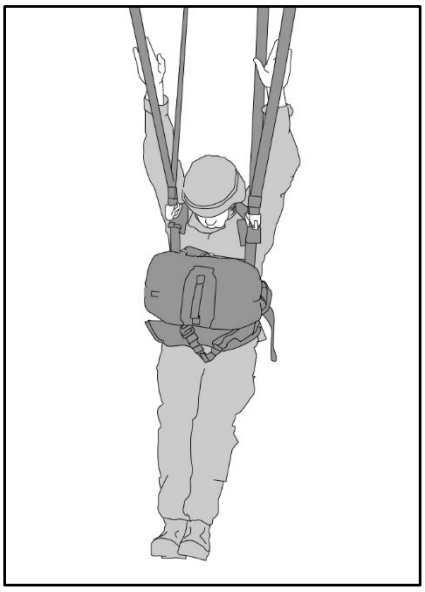


Figure 3-5. Wire landing attitude

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 because an electrical circuit can be completed and death can occur.

POINT 5. LAND

3-32. 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.

3-33. The three basic PLFs are:

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

3-34. The direction of the wind drift dictates the type of fall the jumper makes. 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.

FRONT PARACHUTE LANDING FALL

3-35. The two types of front PLFs are right front PLF and left front PLF:

- 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 hit the ground, the jumper:
  - Places their chin on their chest, tenses the neck muscles, and presses their elbows against the chest.

  - The jumper pushes 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 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 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 PLF.
- The jumper rotates to the left when executing the right front PLF.

REAR PARACHUTE LANDING FALL

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:
  - Places their chin on their chest, tense their neck muscles, and press their elbows against the chest.
  - The jumper pushes 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 bends 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 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, jumpers maintain 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 PLF.
- 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.

SIDE PARACHUTE LANDING FALL

3-37. 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 like 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 pushes their right knee into the left knee, exposing their second and third points of contact (calf, thigh) in the direction of drift.
- The jumper rotates 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 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 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 PLF.

LAND

3-38. Never attempt to make a stand-up landing. Remain on the ground and activate both canopy release assemblies using the hand assist method. The hand assist method consists of the jumper taking the following actions:

- With the thumb and index finger of one hand, the jumper pulls out and down on the safety clip.
- Forms a fist with the thumb exposed and then inserts the thumb into the cable loop.
- Turns the head in the opposite direction.
- With the other hand assisting, 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.

3-39. Once both canopy release assemblies are activated, the jumper places the weapon into operation and removes the parachute harness.

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

3-40. The first point of performance for the MC-6 is to properly exit, check the body position, and count which 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 MC-6's 4,000 count corresponds to the approximate time it takes the main parachute to deploy fully 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 4,000 count for the MC-6 at ONE THOUSAND, snaps feet and knees together, then locks the knees to the rear, lowers the head, and places the chin firmly against the chest.
- At the same time, the jumper rotates the elbows firmly into the sides, both hands over the end of the reserve parachute with fingers naturally spread.
- The jumper then bends the body forward at the waist to look over the reserve to see the toes of the boots while continuing to count, TWO THOUSAND, THREE THOUSAND, FOUR THOUSAND, at normal cadence (jumpers keep 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 4,000 count, the jumper must activate the reserve parachute for a total malfunction.

POINT 2. CHECK CANOPY AND GAIN CANOPY CONTROL AND IMMEDIATELY COMPARE YOUR RATE OF DESCENT

3-41. The second point of performance is to check the canopy and gain canopy control. When the jumper finishes the 4,000 count, the jumper feels the parachute open, checks the canopy for malfunctions or damage, and controls the parachute.

3-42. 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

3-43. 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.

3-44. 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

3-45. 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.

3-46. If the jumper's main canopy rate of descent is too fast (when compared to nearby jumpers), they activate the reserve parachute. (See chapter 6 for more information on activation of the T-11 reserve/single pin parachute.)

3-47. When other jumpers are not close enough to compare rates of descent, the jumper activates the reserve parachute.

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

3-48. The third point of performance is for the jumper:

- To always keep a sharp lookout and constantly compare the rate of descent.
- To avoid other jumpers during descent which is essential for successful airborne operations.
- A successful jump consists of many of the following actions, including the following three rules of the air:
  - Always look before turning.
  - Always turn in the opposite direction to avoid collisions.
  - The lower jumper always has the right of way.

CAUTION

Avoid fellow jumpers all the way to the ground and maintain a 50-foot separation and at the end of the third point of performance, release 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.

3-49. Depending on the wind conditions and their skill, the jumper can steer the parachute to a selected point of impact (PI) on the DZ to avoid other jumpers in the air, avoid obstacles on the ground, or 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

3-50. When the three drive vents are located directly opposite the wind, the thrust of the drive vents are 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.

3-51. 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

3-52. 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.

3-53. 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, jumpers must check around themselves to prevent collisions with other jumpers.

CANOPY MANIPULATION

3-54. 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.

Turning

3-55. This is accomplished by pulling down 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

3-56. Pulling both toggles at the same time reduces forward speed. This is called braking. There are six control input positions that affect the performance of the canopy. Proper application of the braking techniques reduces landing impact.

Holding Into the Wind

3-57. This 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

3-58. 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

3-59. 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.

3-60. 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, allowing the canopy to achieve a maximum forward speed of 10 knots.

3-61. The quarter brake position is attained when the jumper has the toggles between eye level and shoulder level and it reduces the forward drive of the canopy. The jumper uses this to maneuver the canopy while in flight and when preparing to land, given prevailing wind conditions on the DZ. The quarter brake position should be utilized during high wind conditions.

3-62. The half brake position is reached when the jumper has the toggles at chest level, also reducing the forward drive of the canopy. The jumper uses this to maneuver the canopy while in flight and when preparing to land, given prevailing wind conditions at the DZ. 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 minimizes the possibility of injury to the jumper's hands, wrists, and arms when executing a PLF. The jumper executes a PLF from this body position and must keep their hands and arms inside the area of their body frame.

3-63. The three-quarter brake position is attained when the jumper has the toggles between chest level and above their waistline. This 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 DZ. 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 executes 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.

3-64. The full brake position is reached when the jumper has the toggles at waist level. This 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 DZ. 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. Jumpers execute a PLF from this body position and must keep their hands and arms inside the area of their body frame.

3-65. The reverse flight position is attained when the jumper pulls the toggles below their waistline, and takes the following actions:

- Jumpers must hold their elbows tightly into their sides with the heel of their wrists resting along the front of their thighs.
- Jumpers must maintain this body position minimizing the possibility of injury to the jumper's hands, wrists, and arms when executing a PLF.

- Jumpers must keep their hands and arms inside the area of their body frame while executing a PLF from this body position.

3-66. When the toggles are pulled below waist level, the canopy briefly becomes unstable. The jumper feels the sensation of rocking back and forth as though balancing on a ball. This is a specific design and performance characteristic of this canopy allowing an experienced jumper to land on a desired point in a rough, unimproved DZ.

3-67. 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 causes a surge in forward speed and descent rate causing the jumper to impact on the ground with increased force.

3-68. 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. 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

3-69. 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.

3-70. 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 of the extended gore, 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

3-71. Guiding or turning the MC-6 parachute using riser slips is accomplished by the jumper manipulating the risers. The MC-6 utilizes the standard four-riser system: two risers each from both shoulders of the jumper. A turn or slip in the 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.

3-72. 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 turns left or right depending on the distance the steering line is pulled down.
- At approximately 100 feet AGL, 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 causes the canopy to remain in a turn and does 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 reduces forward speed, then increases the jumper's rate of descent in less than 2 seconds.

MANEUVERING WITH A TANGLED CONTROL LINE

3-73. The jumper uses the same procedure as with a broken control line if the control line becomes tangled in a suspension line.

3-74. 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

3-75. 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 the entanglement lasts until the jumpers contact the ground.

3-76. 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.

3-77. 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.
- Activates their reserve immediately using the pull drop method.

STEALING AIR

3-78. 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.

3-79. 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 collapse partially and the jumper to drop past the lower canopy. This leapfrogging action continues unless corrective action is taken by the jumper.

3-80. To move away from the area, the jumper turns in the opposite direction, providing at least a 50-foot distance between the parachutes. (Jumpers turn away from each other when facing another jumper.)

3-81. When 250 feet or less AGL, jumpers must exercise care to avoid stealing air from another parachute, because a deflated canopy is not 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

3-82. The fourth point of performance is preparing to land. A proper landing attitude is necessary to lessen the risk of injury to jumpers when they hit the ground. Preparation includes the following:

- When jumpers commit to the final approach, they should plan to do all turning at approximately 250 feet AGL, so the final approach is smooth and the landing soft.
- At 250 feet AGL, jumpers turn with the MC-6 directly into the wind.
- The location where they turn over the landing area is based on the wind speed above the landing area.
- After turning into the wind on final approach, jumpers take 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.

  - Keep a sharp lookout during descent for other jumpers.
  - Turn into the wind prior to lowering equipment.
  - 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.
  - Use the free hand to lower their combat equipment (CE) while maintaining both toggles in front of the face.
  - Regain canopy control immediately with both hands and continue to keep a sharp lookout for other jumpers once jumpers have lowered their CE.

MC-6 PARACHUTE KEY POINTS

3-83. 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 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.
- Transfers control of one toggle to the opposite hand at approximately 200 feet AGL so that one hand is controlling both toggles.
- Lowers CE with a free hand.
- Regains canopy control immediately 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

3-84. 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.
  - 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.
- The jumper rotates their hands in front of their face with elbows high when the balls of their feet make contact with the trees.
- The jumper 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.

3-85. 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 ripcord 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 ripcord assembly and applies inward pressure.
- Grasps the ripcord handle with the opposite hand, pulls, and drops the handle.
- Controls the activation of the reserve parachute toward the ground with both hands, 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/T-11 reserve single pin parachute suspension lines because of the slippery coating applied to the suspension lines. When in doubt, stay where you are and wait for assistance.

WATER LANDING

3-86. As soon as jumpers realize they are going to land in water, they take the following actions:

- Immediately try to turn away if drifting towards a body of water.
- If jumpers cannot turn away, they look below to ensure there are no fellow jumpers underneath, and lower and jettison their equipment, making a mental note of where it lands.
- Jettison the helmet, again 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 themselves 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, jumpers assume a landing attitude by keeping feet and knees together, knees slightly bent, and place hands on the leg strap ejector snaps.
- When the balls of the feet make contact with the water, jumpers—
  - Activate both leg strap ejector snaps.

    - Arch their backs, throw arms above the head, and slide out of the parachute harness.
- Swim upwind or upstream away from the canopy.
- Are prepared to execute a PLF if the water is shallow (2 feet or less in depth).

Without a Life Preserver

3-87. Jumpers do 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 3-3 on page 19):

- Look below to ensure there are no fellow jumpers and lower and jettison their equipment, making a mental note of where it lands.
- Jettison their helmet, again 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 themselves 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, jumpers assume a landing attitude by keeping feet and knees together, knees slightly bent and hands on the ejector snaps for the leg straps.
- When the balls of the feet make contact with the water, jumpers—
    - Activate both leg strap ejector snaps.
    - Arch their backs, throw arms above the head, and slide out of the parachute harness.
- Swim upwind or upstream away from the canopy.
- If the canopy comes down on top of jumpers, they locate a seam and follow it to the skirt of the canopy.
- Are prepared to execute a PLF if the water is shallow (2 feet or less in depth).

With a Life Preserver

3-88. When wearing an MC-6 parachute harness and jumping with a life preserver (see figure 3-4 on page 20), jumpers do the following in addition to the actions mentioned for a water landing:

- While still in the air, they activate the life preserver prior to assuming a landing attitude.
- If the life preserver fails to inflate, they inflate the life preserver manually by blowing air into the inflation valve hose.
- Look below to ensure there are no fellow jumpers, lower their equipment, and jettison their equipment.
- Assume a landing attitude and prepare to do a PLF in the event the water is shallow.
- Once in the water, they activate both canopy release assemblies using procedures previously described for recovering from the drag:
    - The hand-to-shoulder method.
    - The hand-to-assist method.

Note. See chapter 12 for more information on life preservers.

HIGH-TENSION WIRE LANDING

3-89. Jumpers do the following if unable to avoid high tension lines when landing (see figure 3-5 on page 21):

- If they drift towards wires, they immediately try to turn away.
- If they cannot turn away, they look below to ensure there are no fellow jumpers and jettison the equipment, making a mental note of where it lands.
- Ensure that they maintain their helmet.
- Assume a landing attitude by keeping feet and knees together and exaggerating the bend in the knees, keeping eyes open, chins on chest, and their backs arched.
- Place the palms of hands high on the inside of the front set of risers.

- When jumpers make contact with the wires, they begin a hard rocking motion and attempt to pass through the wires.
- Prepare to do a PLF in the event they pass through the wires.
- If jumpers are hung up in the wires, they do not attempt to lower themselves to the ground but stay where they are and wait for assistance.

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

3-90. 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.

3-91. The three basic PLFs are:

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

3-92. The direction of the wind drift dictates the type of fall the jumper makes. 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.

FRONT PARACHUTE LANDING FALL

3-93. The two types of front PLFs are right front PLF and left front PLF. They are used as described:

- 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 pushes 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 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 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 PARACHUTE LANDING FALL

3-94. 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 their 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 the 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.

SIDE PARACHUTE LANDING FALL

3-95. 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 the chin firmly to the chest and tenses the 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 pushes their right knee into the left knee, exposing the second and third points of contact (calf, thigh) in the direction of the drift.
- The jumper rotates 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 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 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.

LAND

3-96. 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.

3-97. Once both canopy release assemblies have been activated, the jumper places their weapon into operation and removes the parachute harness.

Chapter 4

Reserve 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-11 RESERVE/SINGLE PIN ACTIVATION (PULL DROP METHOD)

4-1. When conducting an airborne operation, a jumper must count to 6,000 with a T-11 ATPS (4,000 with a MC-6) series parachute and immediately activate the T-11 reserve/single pin parachute if no opening shock is felt using the pull drop method. Jumpers conduct a good check of the main parachute canopy during the second point of performance, looking for any damage or irregularities. They also constantly compare the rate of descent throughout the entire jump. If at any time they cannot compare the rate of descent, or feel they are falling faster than fellow jumpers, they immediately activate the reserve parachute using the pull drop method.

4-2. 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.

4-3. To activate the T-11 reserve/single pin parachute using the pull drop method, the jumper—

- Maintains a good, tight body position.
- Keeps their feet and knees together.
- Grasps the ripcord handle with either hand.
- Throws their head back and to the rear.
- Pulls the ripcord handle and drops it to the ground; the reserve parachute activates.
- Ensures neither hand is in front of the reserve parachute as it deploys.

4-4. When descending with only the T-11 reserve/single pin parachute inflated, jumpers control directional movement by slipping. When using the T-11 reserve/single pin, the proper landing attitude is obtained by reaching up and grasping one riser in the opposite direction of drift; at approximately 200 feet AGL, slip into the wind, and prepare to land. Upon landing, jumpers make a quick recovery and collapse the canopy. In strong winds, if a quick recovery is impossible, jumpers grasp one suspension line from either suspension line group and pull the suspension line toward themselves until the canopy collapses.

PARACHUTE MALFUNCTIONS AND INCIDENTS

4-5. A malfunction is 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 deploy properly.
- USLM breaking.
- Parachute panel or gore blowout.

4-6. An incident is any action or event that prevented the successful completion of a planned airdrop operation. (See AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 for more clarification.) Some examples of incidents include, but are not limited to—

- Entanglements resulting in reserve parachute deployment.
- Misrouted static line that resulted in a towed jumper (cutaway or retrieved).

4-7. 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

4-8. A total malfunction is the complete failure of the airdrop system to function as designed (see AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1). 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.

4-9. 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 ripcord handle with both hands. Accidental activation of the reserve while being towed could be fatal.

4-10. 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 6,000 count with T-11 ATPS or the 4,000 count with MC-6 series parachute, the jumper feels an excessive opening shock, and the jumper may be towed. If jumpers are being towed by their USLM and are unconscious, they are retrieved back inside the aircraft. If they are conscious, the following actions occur:

- The jumper maintains a good, tight body position with both hands covering the ripcord handle.
- An attempt is made to retrieve the jumper inside the aircraft.
- As the jumper nears the paratroop door, do not reach for retrieval personnel, and continue to protect the ripcord handle.
- If the jumper cannot be retrieved, the USLM is cut.
- Once jumpers feel themselves falling free from the aircraft, they immediately start—
  - A 6,000 count with the T-11 ATPS.
  - A 4,000 count with MC-6 series parachute.
  - If no opening shock is felt, they activate the reserve parachute using the pull drop method.

4-11. If the jumper is being towed by an item of equipment, regardless of whether the jumper is conscious or unconscious, that item of equipment is cut or jogged free, and the main canopy deploys.

CAUTION

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

PARTIAL MALFUNCTIONS

4-12. 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).

4-13. 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.

4-14. 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 becomes stuck or hung, prior to reaching its full terminal position. If the main canopy has a hung slider, the canopy does not fully inflate, and the jumper's rate of descent increases. If a hung slider occurs, immediately activate the reserve parachute using the pull drop method.

4-15. 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 reduces the lifting surface and increases the rate of descent. If a sleeve corner vent entanglement occurs, the jumper should immediately activate the reserve parachute utilizing the pull drop method.

4-16. A blown section or holes in the canopy malfunction occurs when the excessive strain placed on the canopy during inflation is too great and a panel or gore rips or tears, resulting in a hole(s). 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 continue with the five points of performance while constantly comparing the rate of descent with other jumpers.

4-17. 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.

4-18. 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, a hung slider, and debris restricting full canopy opening. This type of malfunction provides limited or no lift capability to the jumper and fails to slow the jumper sufficiently to a normal rate of descent. The jumper must immediately activate the reserve parachute using the pull drop method.

4-19. 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.

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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 safely exit the C-130, C-17, and the C-27J aircraft. 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 parachutes are suspended in the air at any one given time and on one given pass over the DZ. 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 is aborted. An improperly routed USLM can cause death or serious injury.

CAUTION

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

5-1. The ADEPT for training options is 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 exits their paratroop door.
- ADEPT option 2—during a single pass, one stick of jumpers exits from the PJM's door, followed by a stick of jumpers from the AJM's door.
- Mass exit—this exit procedure is used only when jumping the T-11 ATPS. During this type of exit, jumpers exit from both doors at the same time with 1-second intervals between jumpers and a ½-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 ALTERNATE DOOR EXIT PROCEDURES OPTION 1 EXITING PROCEDURES

5-2. During a single pass over the DZ, only one stick of jumpers on one side of the aircraft jumps. After issuing the jump command of STAND UP (see chapter 10 for jumpmaster PWAC), only the jumpers for that pass stand up. The following jumper actions then occur:

- On a C-130 series aircraft:
  - The jumpers sitting in the forward outboard portion may stand up on their seats if required, allowing 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 rise 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 CE.
- The first three jumpers should be positioned one behind the other, with the rest of the stick staggered inboard and outboard.
- When the command HOOK UP is given, the jumpers detach the 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 form a bight (four in the hand, two below) and do not touch the double sewn portion of the USLM.
  - The first three jumpers extend their static line arms to obtain the proper distance between jumpers and all others hold their (static line) elbow high.
- The nonstatic-line hand protects the ripcord handle and the jumper's feet are staggered with the outboard foot forward.
- When the command 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 traces 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 then stows 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 checks the last jumper's USLM.
- On the command CHECK EQUIPMENT, each jumper does the following:
  - Traces the rim of the helmet.
  - Traces the chinstrap.
  - Touches and visually inspects the chest strap, both left and right leg straps.
  - Touches and visually inspects to ensure the hook-pile tape lowering line (HPTLL) is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping CE.
- After the jumpmaster completes the door checks, 1-minute, 30-second time warnings (jumpers relay announcements), and gives the command of STANDBY—
  - The jumpmaster escorts the No. 1 jumper into door position.
  - The jumpmaster is positioned close enough to the lead edge of the paratroop door to control the flow of jumpers.
  - The jumpmaster is positioned far enough back as to not impede the jumpers' movement to the paratroop door.

Note. On a C-17, the jumpmaster does not issue the command of STANDBY until the amber light is on.

- No. 1 jumpers hand their USLM to the safety and should be positioned about 2 feet from the center of the jump platform, keeping their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close 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 jumpmaster can control the No. 1 jumper by grasping one of the jumper's diagonal backstraps or according to the unit's 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 from the jump platform, immediately snapping into a good, tight body position.

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

- As each jumper begins to move, they 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, establishing 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, jumpers take one more step, make eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper immediately returns the static line hand to the end of the reserve parachute, without swimming the USLM.
- The jumper 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 executes 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 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 jumpmaster in the inactive door performs outside air safety checks and then observes the actions in the active door, since (under this option) they do not have any jumpers exiting that door.

Note. United States Marine Corps (USMC) and United States Navy (USN) utilize one door; the other door remains closed and unmanned. Therefore, only one jumpmaster and one safety are needed.

5-4. Subsequent passes alternate from door to door until all jumpers have exited. AJMs are the last jumpers on their side of the aircraft, and PJMs are the last jumpers to exit the aircraft.

WARNING

To maximize dispersion and minimize simultaneous exits, jumpmasters must control the flow of jumpers, ensuring a 1-second interval between jumpers at their paratrooper door.

CAUTION

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

Jumpers grasp their USLs approximately 6 inches from the point of attachment, generally below the double sewn portion, with their corresponding static line elbow perpendicular to shoulder level 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 are 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 DZ, only one stick of jumpers on one side of the aircraft jumps. After issuing the jump command PORT SIDE PERSONNEL STAND UP or STARBOARD SIDE PERSONNEL STAND UP (see chapter 10 for jumpmaster PWAC) the following jumper actions occur:

- Only the jumpers for that pass 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), causing 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.
  - Secure the excess webbing in the webbing retainer when jumping CE.
- When the command of HOOK UP is given, the jumpers—
  - Detach the 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.
  - Form a bight (four in the hand, two below); jumpers do not touch the double-sewn portion of the USLM.
  - The first three jumpers extend their static line arms to obtain the proper distance between jumpers, and all others hold their static line elbow high.
- The nonstatic-line hand protects the ripcord handle, and the jumper's feet are 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—
  - Traces the rim of the helmet.
  - Traces the chinstrap.
  - Touches and visually inspects the chest strap, and both left and right leg straps.

  - Touches and visually inspects to ensure the HPTLL is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping CE.
- After the jumpmaster completes the door checks, 1-minute, 30-second time warnings (jumpers relay announcements), and gives the command of STANDBY, the jumpmaster escorts the No. 1 jumper into door position. The jumpmaster is 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.
- No. 1 jumpers—
  - Hand their USLM to the safety and should be positioned about 2 feet from the center of the jump platform.
  - Keep their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close 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 jumpmaster can control the No. 1 jumper by grasping one of the jumper's diagonal backstraps 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 from the jump platform, immediately snapping into a good, tight body position.
- As each jumper begins to move—
  - They utilize a controlled movement technique (slow deliberate walk), and 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, establishing 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, jumpers take one more step, make eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper immediately returns the static line hand to the end of the reserve parachute, without swimming the USLM.
- The jumper 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 executes 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 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 jumpmaster in the inactive door performs outside air safety checks and then observes the actions in the active door, since (under this option) there are not any jumpers exiting this door.

5-7. Subsequent passes alternate from door to door until all jumpers have exited. AJMs are the last jumpers on their side of the aircraft, and PJMs are the last jumpers to exit the aircraft.

WARNING

To maximize dispersion and minimize simultaneous exits, jumpmasters must control the flow of jumpers ensuring a 1-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 grasp their USLs approximately 6 inches from the point of attachment, which is generally below the double sewn portion, with their corresponding static line elbow perpendicular to shoulder level to reduce misrouted static lines.

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

5-8. During a single pass over the DZ, one stick of jumpers exits from the PJM's paratroop door, followed by a stick of jumpers from the AJM's paratroop door. After issuing the jump command of STAND UP (see chapter 11 for jumpmaster PWAC) only the jumpers for that pass stand up and the following jumper actions occur:

- On a C-130 series aircraft:
  - The jumpers sitting in the forward outboard portion may stand up on their seats if required 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 rise 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 CE.
- 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 detach the USL snap hook from the top carrying handle of the reserve parachute.
  - They hook up to the appropriate anchor line cable with the opening gate towards the skin of the aircraft.
  - Jumpers form a bight (four in the hand, two below) but do not touch the double-sewn portion of the USLM.
  - The first three jumpers extend their static line arms to obtain the proper distance between jumpers, and all others hold their static line elbow high.
- The nonstatic-line hand protects the ripcord handle and the jumper's feet are 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—
  - Traces the rim of the helmet.
  - Traces the chinstrap.
  - Touches and visually inspects the chest strap, and both left and right leg straps.
  - Touches and visually inspects to ensure the HPTLL is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping CE.
- After the jumpmaster completes the door checks, 1-minute, 30-second time warnings (jumpers relay announcements), and gives the command of STANDBY:
  - The jumpmaster escorts the No. 1 jumper into door position.
  - The jumpmaster is 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 jumpmaster does not issue the command of STANDBY until the amber light is on.

- The No. 1 jumper—
  - Hands the USLM to the safety and should be positioned about 2 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 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 jumpmaster can control the No. 1 jumper by grasping one of the jumper's diagonal backstraps 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 from the jump platform, immediately snapping into a good, tight body position.

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

- As jumpers begin to move, they use 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, establishing 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, jumpers take one more step, make eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper immediately returns the static line hand to the end of the reserve parachute, without swimming the USLM.
- The jumper 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 executes 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. AJMs observe the actions in the PJMs door. When AJMs spot the last three jumpers in the vicinity of the paratroop door of the PJMs stick, they face the jumpers and issue the jump command of STANDBY. When AJMs see 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 verbally and physically issues the command GO to the No. 1 jumper. All jumpers follow the exiting procedures as explained in paragraph 5-8.

5-11. When the last jumper exits from the AJMs side of the aircraft (last pass), AJMs give their USLM to the safety, check the jump caution lights, and if they are green, exit. PJMs, seeing AJMs exit, pass their USLM to the safety, check the jump caution lights, and if they are green, exit.

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 DZ, one stick of jumpers exits from the PJM's paratroop door, followed by a stick of jumpers from the AJM's paratroop door. After issuing the jump command PORT SIDE AND STARBOARD SIDE PERSONNEL STAND UP (see chapter 11 for jumpmaster PWAC) the following jumper actions occur:

- Only the jumpers for that pass stand up and 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.
  - Secure the excess webbing in the webbing retainer when jumping CE.
- When the command of HOOK UP is given—
  - The jumpers detach the USL snap hook from the top carrying handle of the reserve parachute.
  - The jumpers hook up to the anchor line cable with the opening gate towards the skin of the aircraft.
  - Jumpers form a bight (four in the hand, two below).
  - Jumpers do not touch the USLM's double-sewn portion.
  - The first three jumpers extend their static line arms to obtain the proper distance between jumpers while all others hold their static line elbow high.

CAUTION

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

- The nonstatic-line hand protects the ripcord handle and the jumper's feet are 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 traces 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 then stows 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 checks the last jumper's USLM.
- On the command of CHECK EQUIPMENT, each jumper—
  - Traces the rim of the helmet.
  - Traces the chinstrap.
  - Touches and visually inspects the chest strap, both left and right leg straps.
  - Touches and visually inspects to ensure the HPTLL is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping CE.
- After the jumpmaster completes the door checks, 1-minute, 30-second time warnings (jumpers relay announcements), and gives the command of STANDBY:
  - The jumpmaster escorts the No. 1 jumper into door position.

  - The jumpmaster is positioned close enough to the lead edge of the paratroop door to control the flow of jumpers.
  - The jumpmaster is positioned far enough back as to not impede the jumpers' movement to the paratroop door.
- No. 1 jumpers—
  - Hand the USLM to the safety and should be positioned about 2 feet from the center of the jump platform.
  - Jumpers keep their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close 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 jumpmaster can control the No. 1 jumper by grasping one of the jumper's diagonal backstraps 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 from the jump platform, immediately snapping into a good, tight body position.
- As each jumper begins to move—
  - They utilize a controlled movement technique (slow deliberate walk), and 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, establishing 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, jumpers take one more step, make 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. Jumpmasters and safeties may also experience turbulent air in the immediate workspace around the paratroop door.

- The jumper immediately returns the static line hand to the end of the reserve parachute, without swimming the USLM.
- The jumper 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 executes a left or right face (90-degree turn) to the open paratroop door only when the safety has positive control of the USLM.
- Jumpers use the controlled movement technique onto the jump platform, focusing on the horizon.
- They push 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. AJMs observe the actions in the PJM's door. When AJM's spot the last three jumpers in the vicinity of the paratroop door of the PJM's stick, AJM's face their jumpers and issue the jump command of STANDBY. When the AJM sees the last jumper clear the jump platform in the PJM's door, the AJM turns and rechecks the jump caution lights. (The PJM is now observing the actions in the AJM's paratroop door.)

5-15. If the jump caution lights are still green, the AJM verbally and physically issues the command GO to the No. 1 jumper. All jumpers exiting follow the procedures as outlined in paragraph 5-13.

5-16. When the last jumper exits from the AJM's 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. PJMs, seeing AJMs exit, pass their USLM to the safety, check the jump caution lights, and if they are green, exit.

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

To maximize dispersion and minimize simultaneous exits, jumpmasters must control the flow of jumpers ensuring a 1-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 grasp their USLs approximately 6 inches from the point of attachment, which is 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 exit from both doors at the same time. The PJM issues the command of GO, and then the AJM turns and commands the jumper GO to create a staggered effect. On the command of GO:

- Both jumpmasters give a physical and oral command of, GO.
- The AJM observes the PJMs No. 1 jumper exit the paratroop door, waits 1/2 second, then issues the physical and oral command of GO to the AJM's No. 1 jumper.
- Each paratroop door has a 1-second interval between jumpers and a 1/2-second interval between paratroop doors.

5-19. Only the jumpers for that pass (if applicable) 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 rise 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 CE.
- 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—
  - Detach the 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.
  - Form a bight (four in the hand, two below) and do not touch the double-sewn portion of the USLM.
  - The first three jumpers extend their static line arms to obtain the proper distance between jumpers, and all others hold their static line elbow high.
- The nonstatic-line hand protects the ripcord handle and the jumper's feet are 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—
- Traces the rim of the helmet.
- Traces the chinstrap.
- Touches and visually inspects the chest strap, both left and right leg straps.
- Touches and visually inspects to ensure the HPTLL is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping CE.
- After the jumpmaster completes the door checks, 1-minute, 30-second time warnings (jumpers relay announcements), and gives the command of STANDBY—
  - The jumpmaster escorts the No. 1 jumper into door position.
  - The jumpmaster is positioned close enough to the lead edge of the paratroop door to control the flow of jumpers.
  - The jumpmaster is positioned far enough back so as to not impede the jumpers' movement to the paratroop door.

Note. On a C-17, the jumpmaster does not issue the command of STANDBY until the amber light is on.

- No. 1 jumpers—
  - Hand their USLM to the safety and should be positioned about 2 feet from the center of the jump platform.
  - Keep their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close 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 jumpmaster can control the No. 1 jumper by grasping one of the jumper's diagonal backstraps 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 from the jump platform, immediately snapping into a good, tight body position.

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

- As jumpers begin 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.
  - 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, establishing 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, jumpers take one more step, make eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper immediately returns the static line hand to the end of the reserve parachute, without swimming the USLM.
- The jumper 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 executes 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 from the aircraft, immediately snapping into a good, tight body position.
- Both jumpmasters ensure they are positioned to best control the flow of jumpers without impeding the paratroop door or the safeties controlling USLMs.
- When the last jumpers exit from their 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.
  - PJMs look over their lead shoulder (toward the pilot compartment) to observe the AJM's paratroop door, ensuring the aircraft is clear of jumpers and wait until AJMs exit the aircraft.
- Once AJMs have exited, PJMs hand off their USLM to the safety check the jump caution light to ensure it is green and exit the aircraft.

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

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

WARNINGS

Only one series of parachute is suspended in the air at any one given time and on one given pass over the DZ. 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 but 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 is aborted. An improperly routed USLM can cause death or serious injury.

CAUTION

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

Chapter 6
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 do 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 with no ammunition chambered when jumping.

JUMPER'S LOAD

6-1. It is a leader's responsibility to ensure their personnel are highly proficient in the proper rigging of individual items of CE and that they maintain their equipment's serviceability. The airborne commander is responsible to ensure that all unit and individual equipment involved are approved for airborne operations in compliance with this training circular.

6-2. Any test involving a new item of equipment or a procedure that causes a change to the normal use of an item of equipment is 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 operations, the U.S. Army Jumpmaster School and U.S. Army Advanced Airborne School evaluates any changes to jumpmaster procedures based on the test equipment. However, the U.S. Army Infantry School (USAIS) is the final approval for all changes to equipment and procedures for static line operations. Equipment authorized for airborne operations can be found in TB 43-0001-80, in addition to safety confirmations or safety of use messages.

LOAD DISTRIBUTION

6-3. 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.

LOAD CONSIDERATIONS

6-4. 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:

- The individual jumper's body weight.
- Weight of the parachute system.
- Weight of any equipment attached to the jumper.
- Experience level of the individual jumper.
- The unit jumper progression program.

6-5. Commanders should use all the equipment methods of entry available to them (container delivery system [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 PJM of their responsibility to ensure that all jumpers can safely and effectively exit from an aircraft.

PROTECTIVE GEAR

6-6. Helmets must be fitted properly to ensure they stay on the jumper's head during deployment of their parachute and during PLFs. USN and USMC personnel use helmets approved according to their respective regulations and approved equipment lists.

6-7. The ACH is a modular helmet system that provides ballistic, fragmentation, and impact protection. (See figure 6-1.) This system is compatible with the current night-vision devices (NVDs), communications packages, and chemical defense equipment. The outer rim of the ACH's helmet shell 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 are taped with pressure-sensitive adhesive cloth. The ACH has the following characteristics:

- The helmet system provides 9-millimeter (mm) and fragmentation protection within a spectrum of environments:
  - Cold down to -40 degrees Fahrenheit.
  - Hot up to 140 degrees Fahrenheit.
  - Salt water; freshwater; petroleum, oils, lubricants; and so forth.
- 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 6-1. Advanced combat helmet

HELMET ASSEMBLY

6-8. The ACH has a unique, fully adjustable pad suspension system. The only authorized suspension pads are those issued or purchased through official USA supply systems. All suspension pads are secured to the helmet shell by hook disks. There are two sizes of suspension pads: size 6, which are 3/4-inches, and size 8, which are 1/4-inch thick. All seven suspension pads are the same size, do not mix and match suspension pad sizes or manufacturers. Serviceable suspension pads are free of any rips or tears that expose the foam padding inside the shell. All seven pads are worn with the helmet. (See figure 6-2.)

6-9. 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 is positioned at the front of the helmet shell and one at the rear. The front trapezoid pad is 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 1/2-inch past the outer rim for maximum protection. (See figure 6-3.)

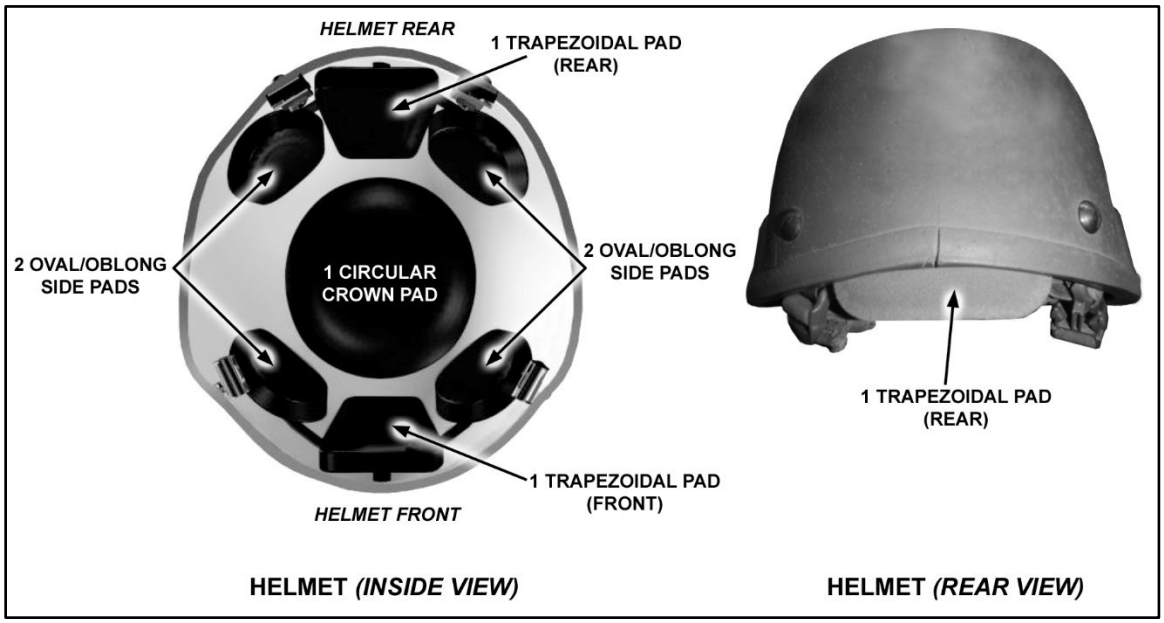


Figure 6-2. Advanced combat helmet pads



Figure 6-3. Advanced combat helmet rear trapezoidal pad

Notes. If hot spot or discomfort is 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 (see 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.

6-10. Adjust the chinstrap to optimize fit and comfort by following these steps:

- Step 1—before donning the ACH, loosen all adjustable straps (two in front, two in back, one on the nape of neck (see figure 6-4).

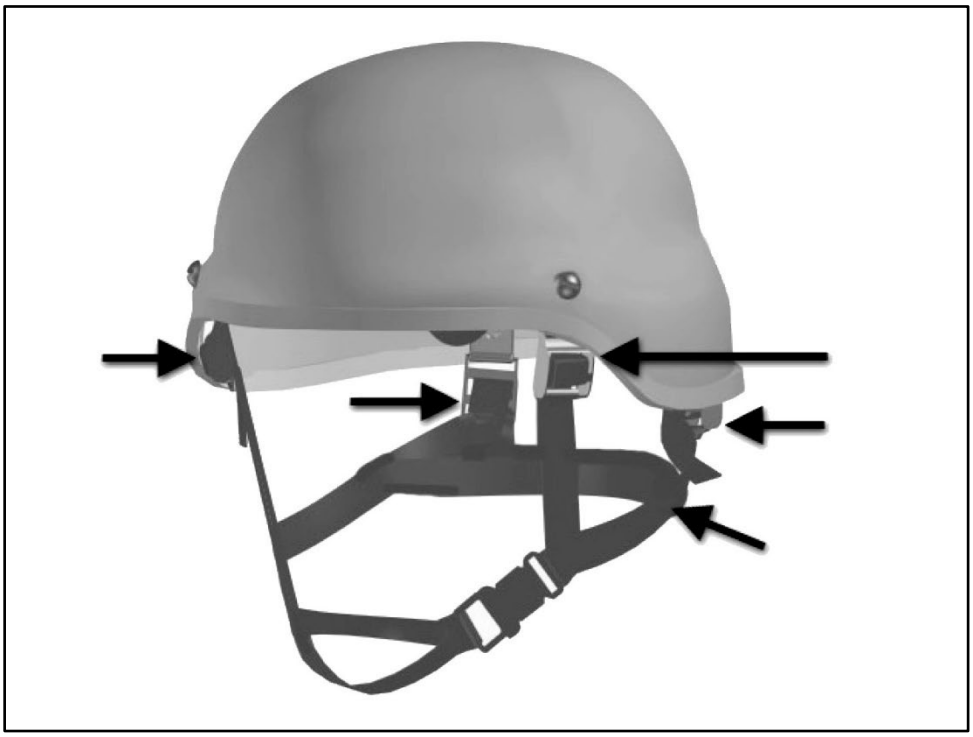


Figure 6-4. Advanced combat helmet adjustable straps

- 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 6-5).

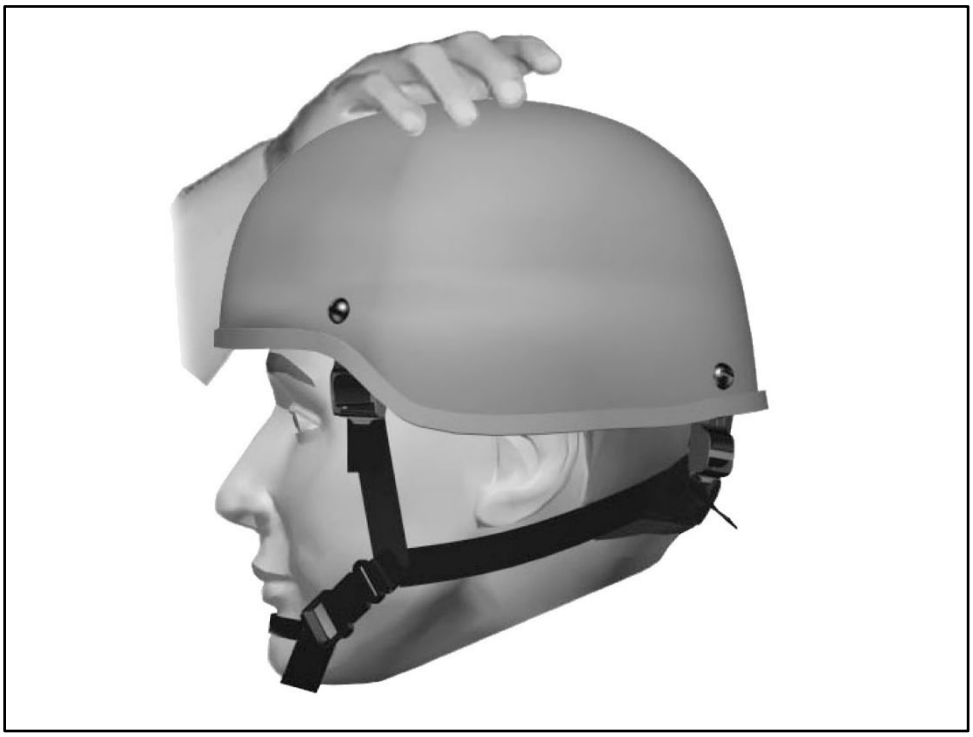


Figure 6-5. Advanced combat helmet held in place for initial adjustments

- Step 3—partially tighten the two adjustable backstraps one side at a time (see figure 6-6).

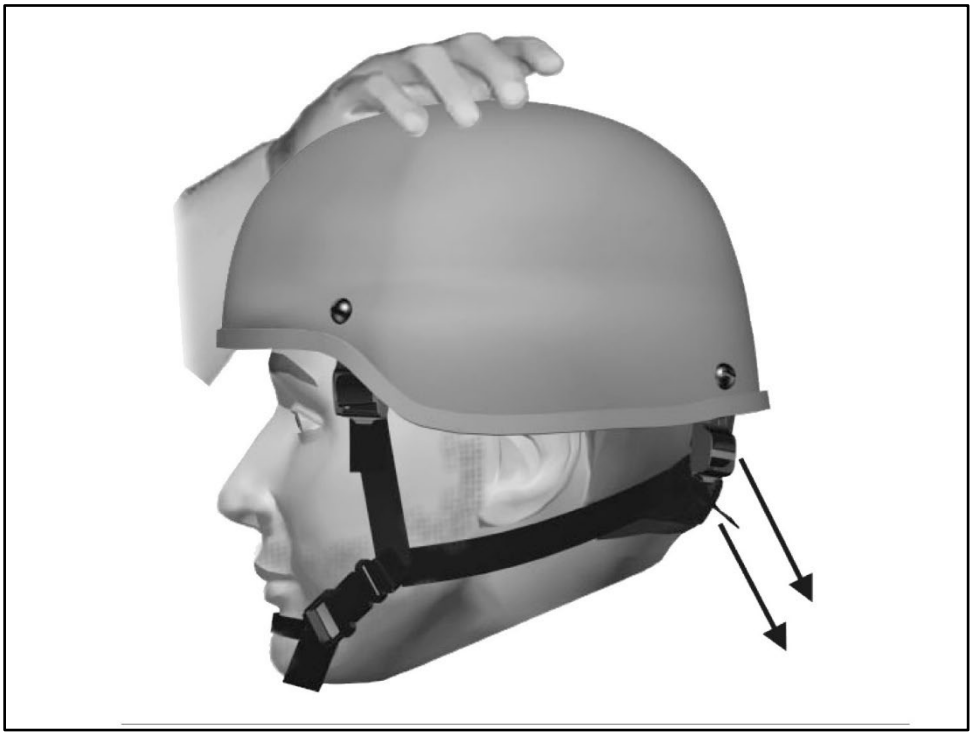


Figure 6-6. Advanced combat helmet backstrap adjustment

- Step 4—partially tighten the two front adjustable straps one side at a time (see figure 6-7).



Figure 6-7. Advanced combat helmet two front straps adjustment

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—fully tighten the front and back adjustable straps with both hands (see figure 6-8).

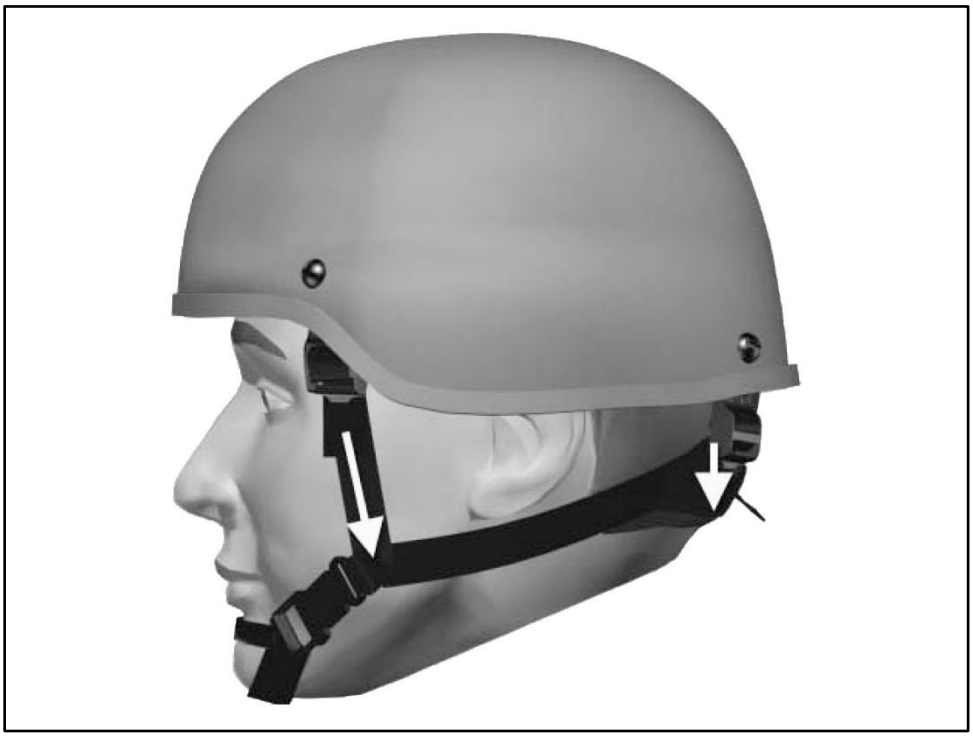


Figure 6-8. Advanced combat helmet front and back adjustable straps

- Step 6—position the nape pad up and down, according to personal comfort (see figure 6-9).



Figure 6-9. Advanced combat helmet position nape pad

MODIFIED CHINSTRAP ASSEMBLIES

6-11. Ballistic mounting screws, securing screws and nuts, and conical nuts must be inspected to ensure they are not rusted, cracked, or corroded. Mounting hardware does 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 does not protrude past the securing screw or nut or conical nut.

6-12. 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 (HPT). Ballistic nape pads are not authorized for airborne operations.

6-13. All mounting hardware utilized to secure a base plate or head harness to an ACH must be flush mounted on the inside of the helmet shell. Replacement hardware for the night-vision goggle (NVG)/enhanced NVG base plate (NSN: 5340-01-509-1467) that allow the traditional style base plate to be safe for operations is available. This hardware is only 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 6-10.) The mount and swing arm assembly for the NVG/enhanced NVG is not jumped attached to the head harness.

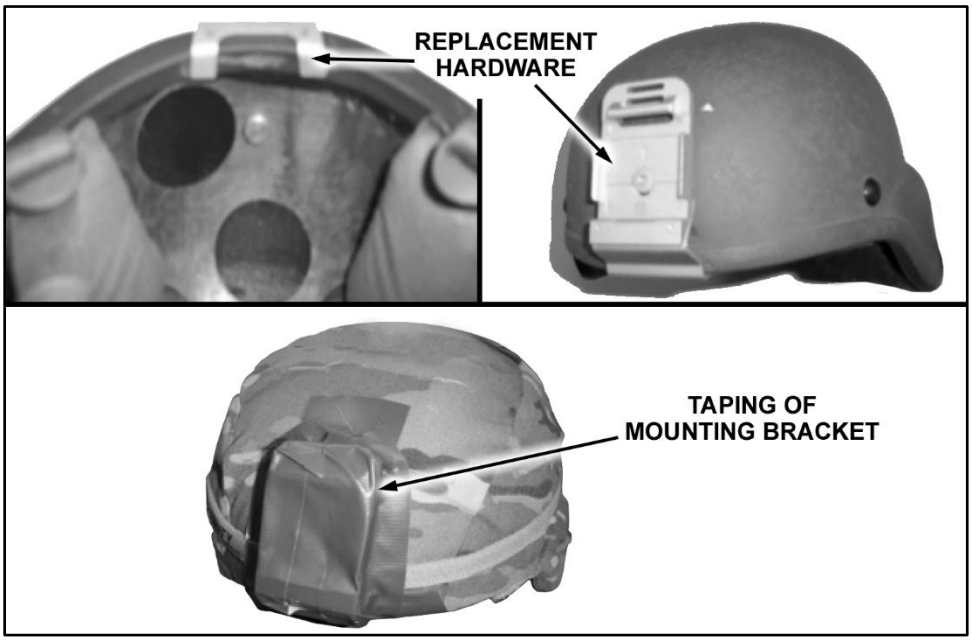


Figure 6-10. Replacement hardware and taping the mounting bracket

WARNING

Do not over-tighten the mounting screw on the front bracket. It may break.

UNIVERSAL SHROUD

6-14. 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 6-11):

- 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 because of wear and tear.
- When jumping, the tie down ring attached to the universal shroud is not used for any item of equipment as it may break.
- The mount and swing arm assembly for the NVGs/enhanced NVG is not jumped attached to the head harness.

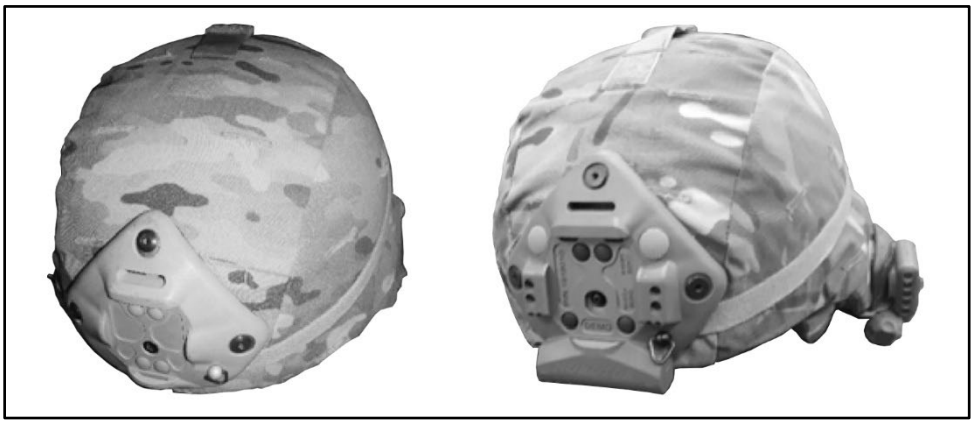


Figure 6-11. Universal shroud

WARNING

Individuals are not authorized to drill holes in their helmets.

HIGH CUT BALLISTIC AND NON-BALLISTIC HELMET

6-15. This series of helmets were tested and approved for static line and military free fall (also called MFF) airborne operations using only the manufacturer's components. (see figures 6-12 and 6-13 on page 60).

6-16. It is highly recommended that this helmet is ordered with the one-hole option for NVG/enhanced night-vision device (ENVD) shrouds and wiring harnesses. The standard shroud that comes on the helmet does not have a wiring harness, nor does it have a one-hole option, it is a three-hole shroud, and no one is authorized to drill into any ballistic helmet. Units are responsible for ensuring the appropriate shroud or wiring harness is properly installed for the type of ENVD that are fielded. Helmets manufactured with a one-hole option for NVG/ENVDs offer the unit the most flexibility in utilizing the variety of available NVG/ENVDs.

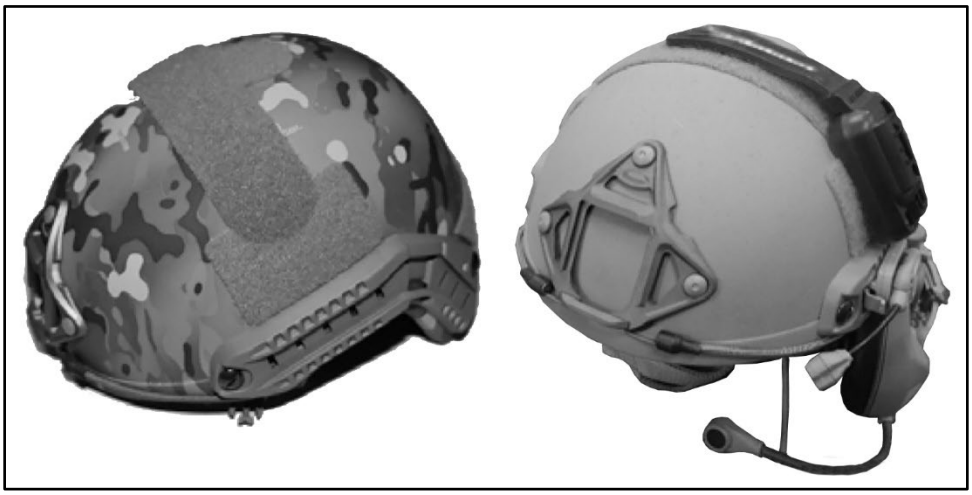


Figure 6-12. High-cut ballistic helmet

6-17. A minimum of three main impact pads are utilized, not including the two used to support the integrated fit band with liner. (See figure 6-13.) To fit properly and wear the helmet, the following steps must be done to achieve the best fit:

- Loosen the helmet liner chinstrap:
  - The suspension pad system rests against the jumper's head.
  - Ensure the front outer rim of the helmet shell rests 1/2 inch to 1 inch from the jumper's eyebrow line.
- Tighten the front adjustable straps to a comfortable fit.
- Tighten the integrated fit band with liner to a comfortable fit.
- Tighten the rear adjustable straps to a comfortable fit.



Figure 6-13. Impact pads and liner

6-18. Serviceability and inspection criteria are as follows:

- Exterior of the helmet shell:
  - Outer rim is free of sharp and protruding edges.
  - Helmet shell is free of cracks and gouges.
  - All accessories are properly secured to the helmet shell with the proper hardware.
  - The NVD mount is secured properly by the one-hole or three-hole option; units are not authorized to drill into the helmet shell.
- Interior of the helmet shell:
  - Suspension pad system.
  - Impact pad system—when utilizing the impact pads there are 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.
  - Ensure the dial is present and operational.
  - Secure the 360-degree impact liner to the helmet shell by hook-pile disks 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.

6-19. Adapters with Peltor headsets and the Ops Core Rail Attached Communications (RAC) system:

- The FAST HC helmet with the Accessory Rail Connector (ARC) rail system can be outfitted with—
  - Adapters.
  - ComTac II or III Peltor headsets.
- This combination in conjunction with the proper wear of the tactical assault panel or like item allows the jumper to quickly get communications up when they reach the DZ.

6-20. Installation of Peltor headset (not authorized with the integrated head protection system (IHPS):

- Secure the adapters to the Peltor headset.
- Route one of the earpieces underneath the fit band on one side of the helmet and again on the opposite side, ensuring the cable connecting the two earpieces is inside the helmet and does not become a snag hazard.
- Secure both adapters to the ARC rail system to the position that best fits the jumper.
- Secure a retainer band to the ARC rail on the side or sides that have push-to-talk (PTT) adapter cable; the recommended retainer band is the two-inch heavy duty retainer band.
- S-fold the PTT adapter cable and stow it in the retainer band as seen in figure 6-14 on page 62 and note that the cable is folded so the entire cable can be pulled out of the retainer band.

6-21. Installation of RAC headset (not authorized with the integrated head protection system [IHPS]):

- Secure RAC headset to each side of the ARC rail, ensuring the cable connecting the two earpieces is affixed to the rear HPT provided on the helmet
- Secure a retainer band to the side of the connecting cable that has the PTT adapter cable; the recommended retainer band is the type-1 retainer band.
- S-fold the PTT cable and secure in the retainer band as seen in figure 6-14 on page 62.

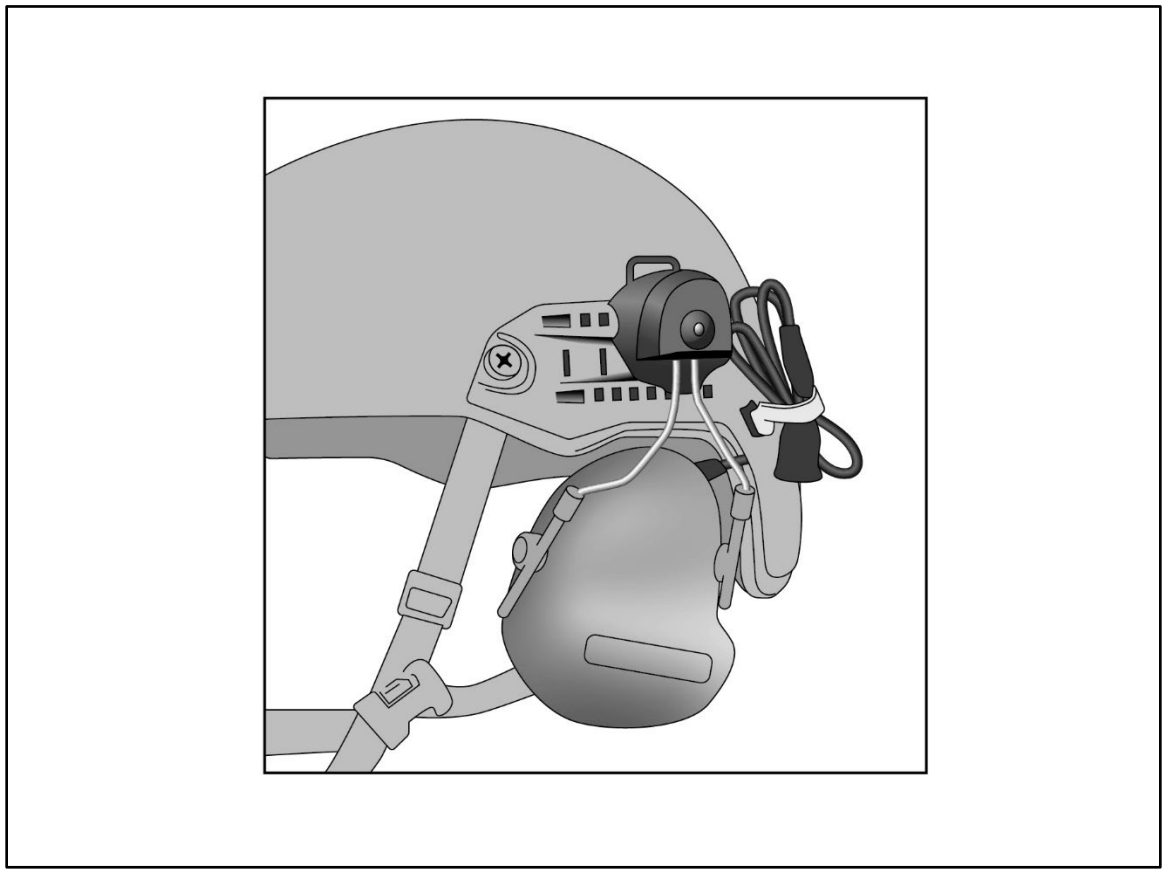


Figure 6-14 Securing the push-to-talk cable

6-22. Jump configuration:

- Ensure the PTT radio adapter is properly secured.
- At the 20-minute time warning the Peltor/RAC headset must be turned on (jumpers ensure the batteries have sufficient life prior to the airborne operation) and—
  - In the down position resting tightly against the jumper's ears.
  - The adapters/RAC adapters have two positions, and this requires the jumper to place the adapters in position by pressing into the adapters until they click into position.
- The microphone should be stowed against the earpiece or positioned in front of the jumper.

6-23. Infrared (IR) strobes:

- To secure the IR strobe directly to the helmet shell, tape down all four sides of the IR strobe, above and below the switch while ensuring the switch and the IR filter is exposed.
- To secure the IR strobe to the helmet cover—
  - Utilize HPT to secure it directly to the helmet cover.
  - Place an additional piece of HPT over the top of the IR strobe (covering the switch but better securing the IR strobe).
- Secure a small lanyard to the IR strobe and the helmet cover.

6-24. The IHPS is a modular helmet system designed to provide increased head, neck, face, and eye protection to the wearer against ballistic projectiles, fragments, blunt impact, and flame threats at a weight lighter than currently fielded systems (see figure 6-15). The complete IHPS consists of a ballistic protective shell, a padded suspension system, a retention system, a ballistic appliqué, a maxillofacial protection system comprised of a mandible and visor and hearing protection

6-25. Airborne static-line operations with the complete IHPS, including the maxillofacial protection system and visor intact, is permissible for only trained, qualified rough terrain jumpers. In these types of operations,

if and when the IHPS complete system is worn with the visor in the down position on the aircraft prior to exiting the aircraft, airflow in and around the head could be restricted leading to breathing difficulty and an increase in the potential for heat injury.

6-26. This series of helmets was tested and approved for static line and military freefall airborne operation using only the manufacturer's base configuration components (such as the chinstrap retention system and the suspension pad system). There are no authorized deviations from the manufacturer's base configuration components.



Figure 6-15. Integrated head protection system helmet

6-27. The IHPS must have its approved suspension pad system for use. The authorized suspension pad system is constructed of an eight-pad system (see figure 6-16 on page 64), which consists of three trapezoid pads, four oval pads, and one crown pad and must be placed correctly as follows:

Note. It is not authorized to replace the suspension pad system with the ACH or enhanced combat helmet suspension pad systems.

- The black trapezoid pad labeled Front must be placed in the front of the helmet flush with the outer end of the helmet shell.
- The two trapezoid pads labeled Rear must be placed in the rear of the helmet shell 1/8-inch to 1/4-inch below the chinstrap buckle depending on helmet size.
- The two oval pads labeled Side must be placed horizontally along the side of the helmet near the crown pad.
- The remaining two oval pads must be placed vertically in the helmet where the chinstrap is attached (see figure 6-16 on page 64).

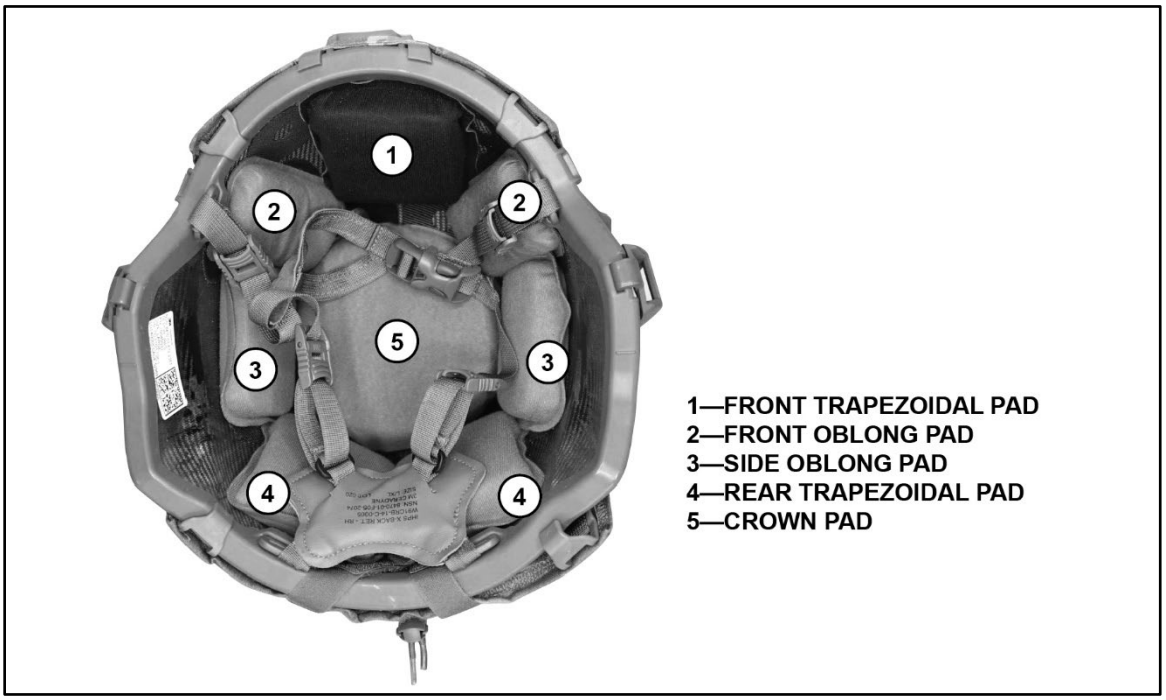


Figure 6-16. Eight-pad system

Proper Fitting and Wear of the Integrated Head Protection System

6-28. The helmet should not be so loose to where it moves when the jumper moves their head from side to side in a rapid motion. Sit so low that it interferes with the proper wear of eyewear, or so high that the crown pad does not make contact with the top of the head.

Night-Vision Goggle Mounts

6-29. The NVG mount that is issued with the IHPS is the recommended NVG mount to be used.

6-30. If the jumper is to replace the NVG mount with another NVG bracket, it must conform to the shape of the helmet and be properly tightened down. Any sharp or protruding edges should be taped.

Note. When exchanging the NVG mount with the shroud, the shroud does not conform to the shape of the helmet and must be taped.

Rail Assembly

6-31. When the rail assembly is present on the helmet, it does not need to be taped. However, the adaptors must be removed from the rail assembly prior to any airborne operations.

Note. The following NSN items are useful and should be ordered for each unit's safety kit:

8415-01-671-9734 (PAD SET, HELMET [SUSPENSION SMALL])

8415-01-671-9671 (PAD SET, HELMET [SUSPENSION MEDIUM/LARGE]).

UNIVERSAL PARACHUTIST RECOVERY BAG

6-32. 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 a replacement system for the aviator kit bags (also called AKBs)

and MC-4 kit bags currently used to support parachute recovery operations. The UPRB has approximately 8,000 cubic inches of storage space. The main storage compartment can hold 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/single pin 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 include:

- Material—7.25 nylon cloth (water and abrasion resistant).
- Color—Foliage green (F-504).
- Weight—3 pounds.
- Size—30 inches x 29 inches.

6-33. 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 universal parachutist kit bag 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.

6-34. The UPRB components consist of the following (see figures 6-17 and 6-18 on page 66):

- 1. Universal parachutist kit bag.
- 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.

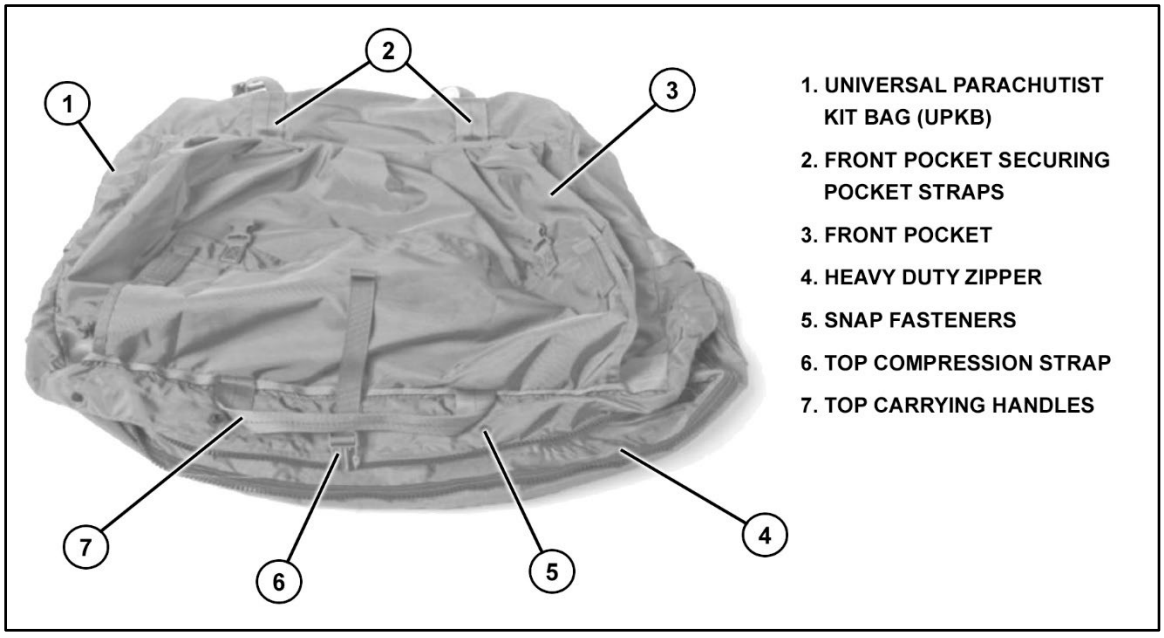


Figure 6-17. Universal parachutist recovery bag

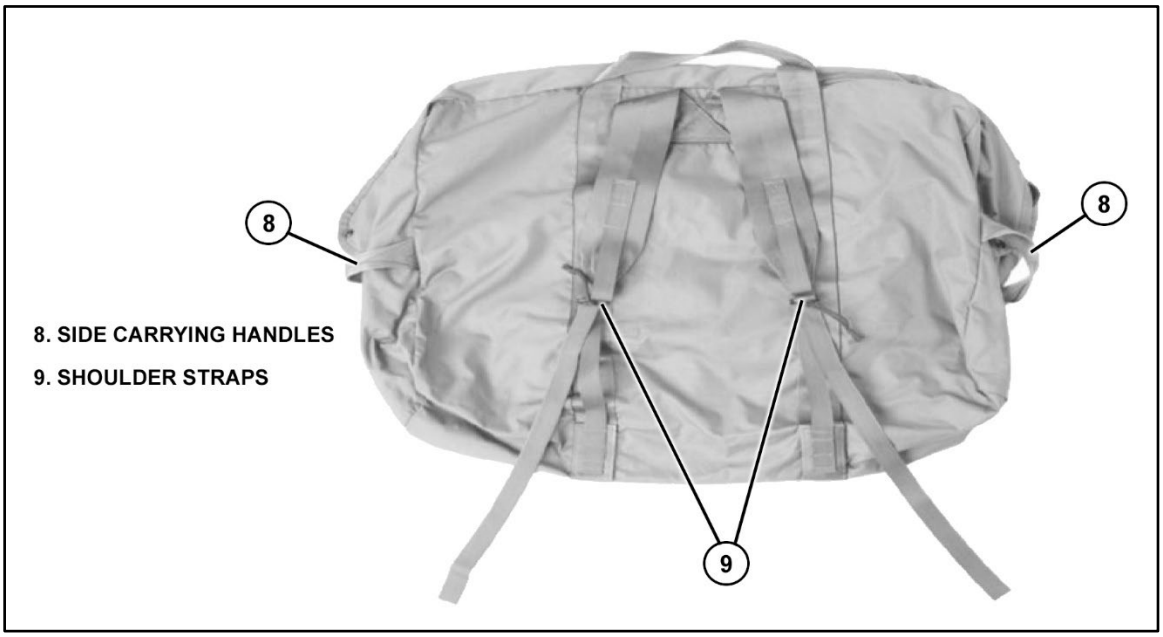


Figure 6-18. Universal parachutist recovery bag handles

6-35. To fold the UPRB properly—

- Place it on a flat surface.
- Invert the UPRB so that the smooth side is out and 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 and repeat on the opposite side.
- 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.
- Ensure the smooth side is up and starting from either side, fold one quarter approximately 4 to 6 inches towards the center (see figure 6-19).
- Repeat for the opposite side and fold one quarter (approximately 4 to 6 inches) towards the center.

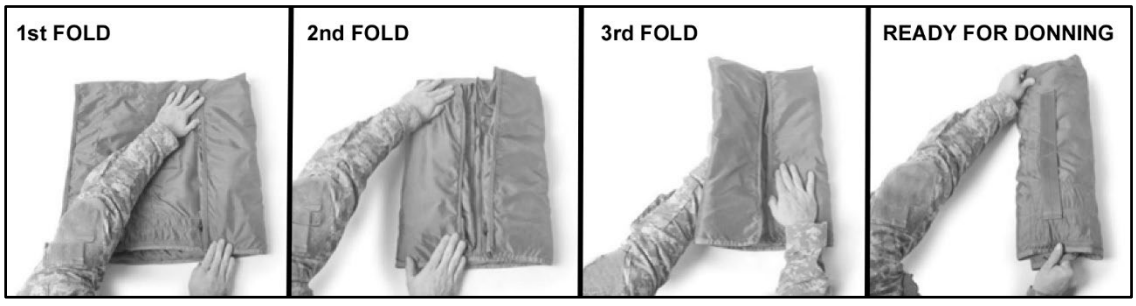


Figure 6-19. Universal parachutist recovery bag folds

- 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 6-19 on page 66).
- Ensure the sides of the UPRB remain dressed as the UPRB continues to be folded and once complete, turn the UPRB over, it is ready for donning.

6-36. 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 6-20.)



Figure 6-20. Proper wear of the universal parachutist recovery bag

M50 Joint Service General Purpose Mask

6-37. 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.

6-38. The M50 JSGPM has two methods of delivery: rigged exposed by the jumper or placed in the modular airborne weapons case (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 6-21.)



Figure 6-21. Properly routed and secured leg strap

6-39. Donning the M50 JSGPM:

- Route the waist strap of the carrier around the jumper's waist before donning the parachute harness.
- Place the carrier in the jumper's front groin area with the quick-opening flap to the right.
- Don the T-11 ATPS.
- Place UPRB 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/single pin parachute to the D-rings, ensuring the mask carrier rests below the reserve parachute.
- Ensure the kidney pad rests above the mask carrier, not on top of the mask carrier, when the all-purpose lightweight individual carrying equipment (ALICE) pack or modular lightweight load-carrying equipment (MOLLE) is attached.

6-40. 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 6-22).
- Continue to rig the MAWC according to procedures outlined in this chapter.



Figure 6-22. Placement of the M50 inside the modular airborne weapons case

IMPROVED OUTER TACTICAL VEST

6-41. 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 remove the vest instantly in emergency situations.

6-42. 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 the 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 the ALICE pack or MOLLE. (See figure 6-23.)

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.

6-43. 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's chin or back of the head.



Figure 6-23. Improved outer tactical vest worn under the T-11 parachute harness

WAISTBAND EXTENSION STRAP AND WAISTBAND ADJUSTER PANEL EXTENSION STRAP

6-44. If the free running end of the waistband is less than four inches in length, jumpers require a waistband extension strap (WES) or waistband adjuster panel extension strap (WAPES). When jumping body armor or load bearing vests, for example, most jumpers require a WES/WAPES. This should be considered when planning for and requesting air items:

- Both the nylon type 8 WES, locally manufactured, TM 10-1670-299-20&P/T.O. 14D1-2-470-2/NAVAIR 13-1-41, page 0053 00-6; and the nylon type 7/10 webbing strap, (WAPES) (NSN: 1670-01-677-9460) are authorized for use.
- To properly secure the nylon type 7/10 WAPES (NSN: 1670-01-677-9460), route the T-11 waistband through the metal adjuster on the WAPES:
  - Route the free running end of the WAPES through the metal adjuster on the WAP of the T-11 pack tray.
  - The two- or three-finger quick release is then incorporated as normal into the T-11 waistband only, not the WAPES.
  - Take the free running end of the WAPES, ensuring it is routed once through both metal bars on the WAP.
  - Then route it back over the metal bar closet to the pack tray and under the forward metal bar, forming a "dead man's release," and roll it hand under hand back against itself.
  - Use a retainer band to secure the rolled excess. (See figure 6-24 on page 70.)

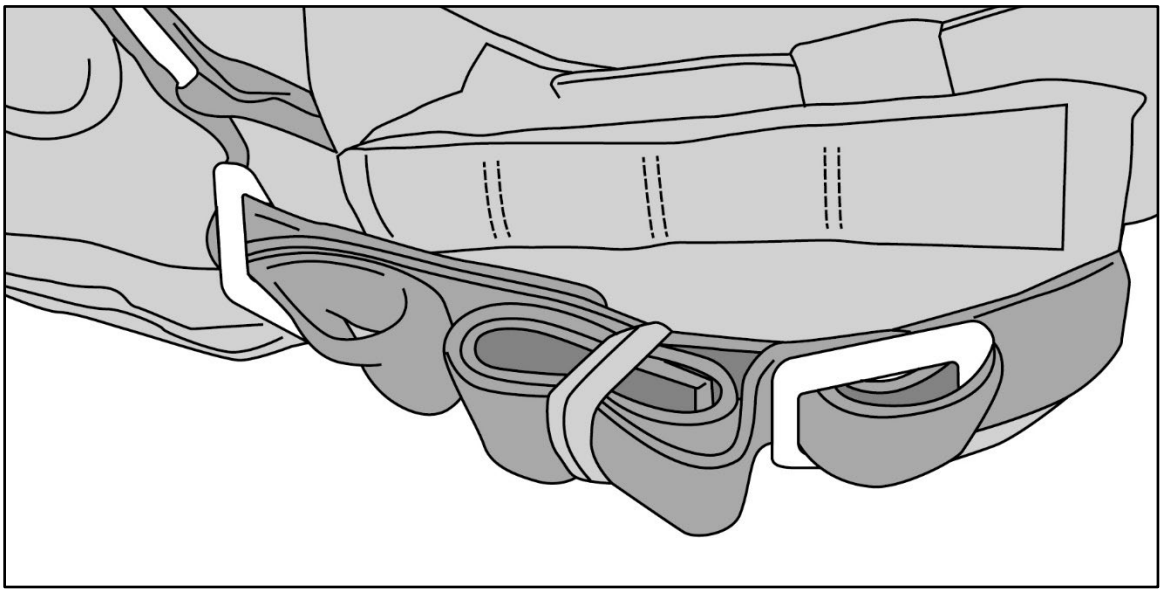


Figure 6-24. Improved outer tactical vest and type 7/10 waistband adjuster panel extension strap

6-45. Some jumpers may require a waistband extension when jumping with the IOTV. This should be considered when planning for required air items. To secure the waistband extension properly, the nylon type 8 WES can be locally manufactured by riggers. Riggers remove the existing waistband and metal adjuster on the WAP from a T-11 pack tray and secure them together in accordance with the instructions in TM 10-1670-299-20&P, page 0053 00-6. To properly route the type 8 WES, secure the waistband on the T-11 through the metal adjuster on the WAPES. Route the free running end of the WES through the metal adjuster on the WAP of the T-11 pack tray. The two- or three-finger quick release is then incorporated as normal into the T-11 waistband only, not the WES. Take the free running end of the WES, ensuring it is routed through both metal bars of the WAP and then roll it hand under hand and secure it to the WAP using a retainer band. The type 8 WES does not require a ‘dead man’s release.’ (See figure 6-25.)

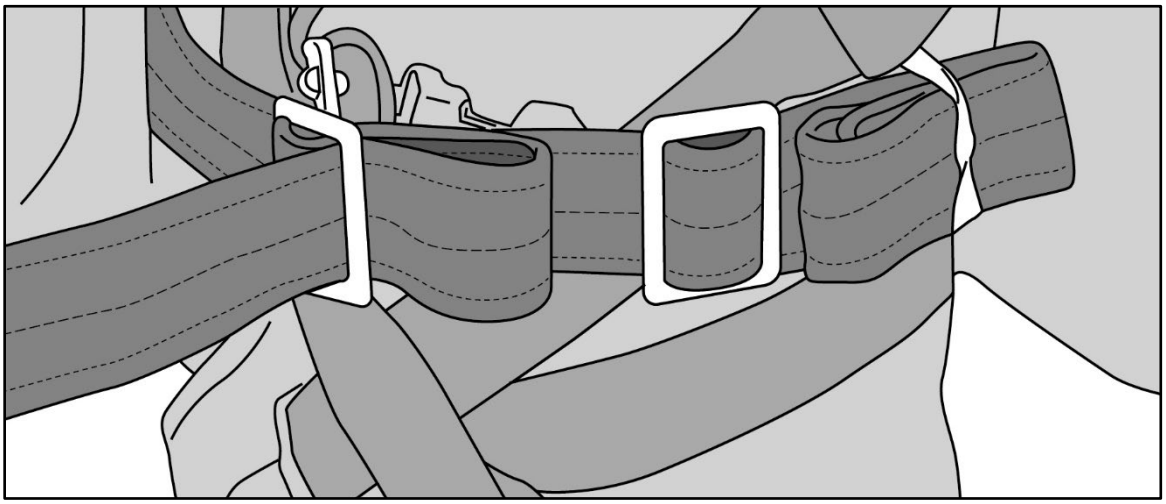


Figure 6-25. Improved outer tactical vest and type 8 waistband extension strap

JUMPMASTER PERSONNEL INSPECTION SEQUENCE FOR THE WAISTBAND EXTENSION

6-46. 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 tracing the waistband extension until making contact with the metal adjuster ensuring the waistband extension is not twisted, cut, or frayed, and is not misrouted.

6-47. The jumpmaster ensures the waistband extension is threaded back through both sides of the metal adjuster, ensuring a positive locking action. The jumpmaster 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 WAP. With the right hand, the jumpmaster traces the WAP back to where it is sewn into the pack tray to ensure that it is not twisted, cut, or frayed. While tracing the WAP, the jumpmaster ensures that the waistband is not misrouted behind the horizontal backstrap and that it is properly secured to the pack tray by a single box X stitch with at least 50 percent of the stitching present. The jumpmaster returns to the normal JMPI sequence.

TACTICAL ASSAULT PANEL

6-48. The tactical assault panel (NSN: 8465-01-580-0689) has been fielded to replace the current MOLLE fighting load carrier. Jumpmasters ensure the tactical assault panel 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 tactical assault panel system is worn, the items of equipment on the side of the tactical assault panel system are not resting in front of the horizontal backstrap. To wear the tactical assault panel properly for airborne operations the jumper must—

- Attach the load carrying harness portion of the tactical assault panel to the ammunition pouch portion.
- Don the tactical assault panel 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 equipment or pouch attached to the front of the tactical assault panel system that interferes with the reserve parachute lying parallel to the jumper's body must be removed.

- Remove enough slack from the horizontal backstraps of the tactical assault panel system so it rests either—
  - High on the jumper's chest.
  - 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.

6-49. Proper rigging of the tactical assault panel and parachute harness includes:

- Ensuring the waistband is not routed through any item of equipment attached to the tactical assault panel system.
- Ensuring the horizontal backstrap is not routed in front of or over the top of any item attached to the tactical assault panel system:
  - This prevents the jumper from properly reacting to an emergency landing.
  - This impedes the jumper from getting out of the parachute harness once they have landed.
- Reducing all slack in the horizontal backstrap following the rule stated above.
- Tightening the horizontal backstrap so that it is snug against the jumper's body.

TACTICAL ASSAULT PANEL WITH NETT WARRIOR SYSTEM OR A SIMILAR PLATFORM

6-50. A rules-based approach is necessary for this type of system because of the various types of load-bearing vests authorized for use:

- Nothing on the tactical assault panel is attached to the parachute harness.
- The reserve parachute must rest parallel to the jumper's torso.
- Four inches of the quick release in the waistband must be exposed from the metal adjuster to ensure the jumper can properly activate the quick release.
- Handheld radios—4-to-6 inches of the quick release in the waistband must be exposed from the metal adjuster to ensure the jumper can properly activate the quick release.
- Antennas can be secured to the radio; however, it cannot extend above the bottom of the canopy release assembly.
- Adapter cables and accessories—all adapter cables, except for the headset, can be connected prior to donning the parachute harness:
  - All excess cable is stowed and secured so it does not interfere with the jumper properly exiting the aircraft or becomes a hazard throughout their descent.
  - Each type of tactical assault panel has different capabilities for stowing/securing cables.
  - Jumpmasters must use their best judgement when evaluating the jumper's tactical assault panel configuration.
- Once the jumper has completed JMPI, the headset adapter cable can be connected to the PTT device to allow leaders to communicate enroute to the DZ (see figure 6-26).
- Key leaders must disconnect the headset adapter cable and re-secure it to their helmet at the 20-minute time warning
- The attachment panel for the radio with end user device—this system requires an attachment panel to be attached to the tactical assault panel, so the end user device is accessible to the jumper when rigged in the parachute harness (see figure 6-26). See the jump configuration in figure 6-27.

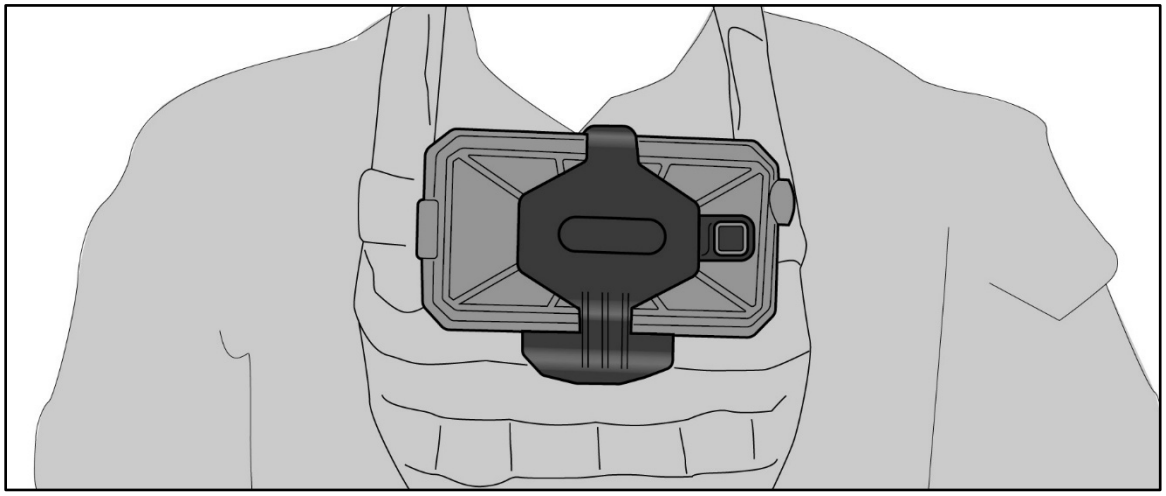


Figure 6-26. End user device attachment panel

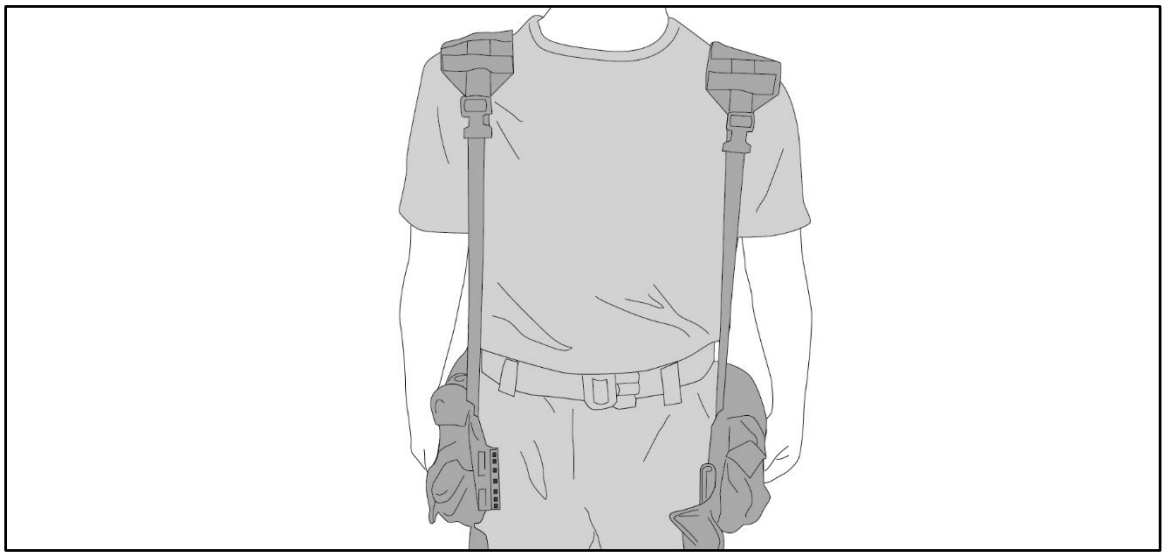


Figure 6-27. Jump configuration

ADVANCED TACTICAL ASSAULT PANEL

6-51. The advanced tactical assault panel (A-TAP) is an individual load-bearing system designed to provide static line parachutists the ability to rig their fighting load under their parachute harness and below their waistline. The intent is to remove the Soldier's fighting load from behind the reserve parachute thereby providing better access to the reserve ripcord handle. The A-TAP design is also intended to provide parachutists immediate access to their fighting load upon landing:

- When donning the A-TAP for airborne operations it must be placed into jump configuration as such:
  - The two front quick-release buckles, connecting the suspenders to the panels, must be released and the webbing extended so that the A-TAP sits below the waistline.
  - The center attachment buckle must be undone.
- Using the buddy system, jumpers don their T-11 ATPS over the A-TAP and when properly worn—
  - The A-TAP is positioned just below the bottom of the pack tray.
  - No portion of the parachute harness (waistband, horizontal back strap, for example) rests on any major accessory item of the A-TAP (ammunition pouches or canteens, for example).
  - The A-TAP does not cover any points of contacts and is not buckled in front (see figure 6-28 on page 74 with the A-TAP under T-11 parachute harness).



Figure 6-28. Advanced tactical assault panel under T-11 parachute harness

SOLDIER PLATE CARRIER SYSTEM

6-52. 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 body armor system. It is intended to increase mobility and maneuverability by lighting the Soldier's load when operating on foot in mountainous terrain or at high altitude.

6-53. 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

6-54. The harness, single-point release (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.

6-55. 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 6-29.)

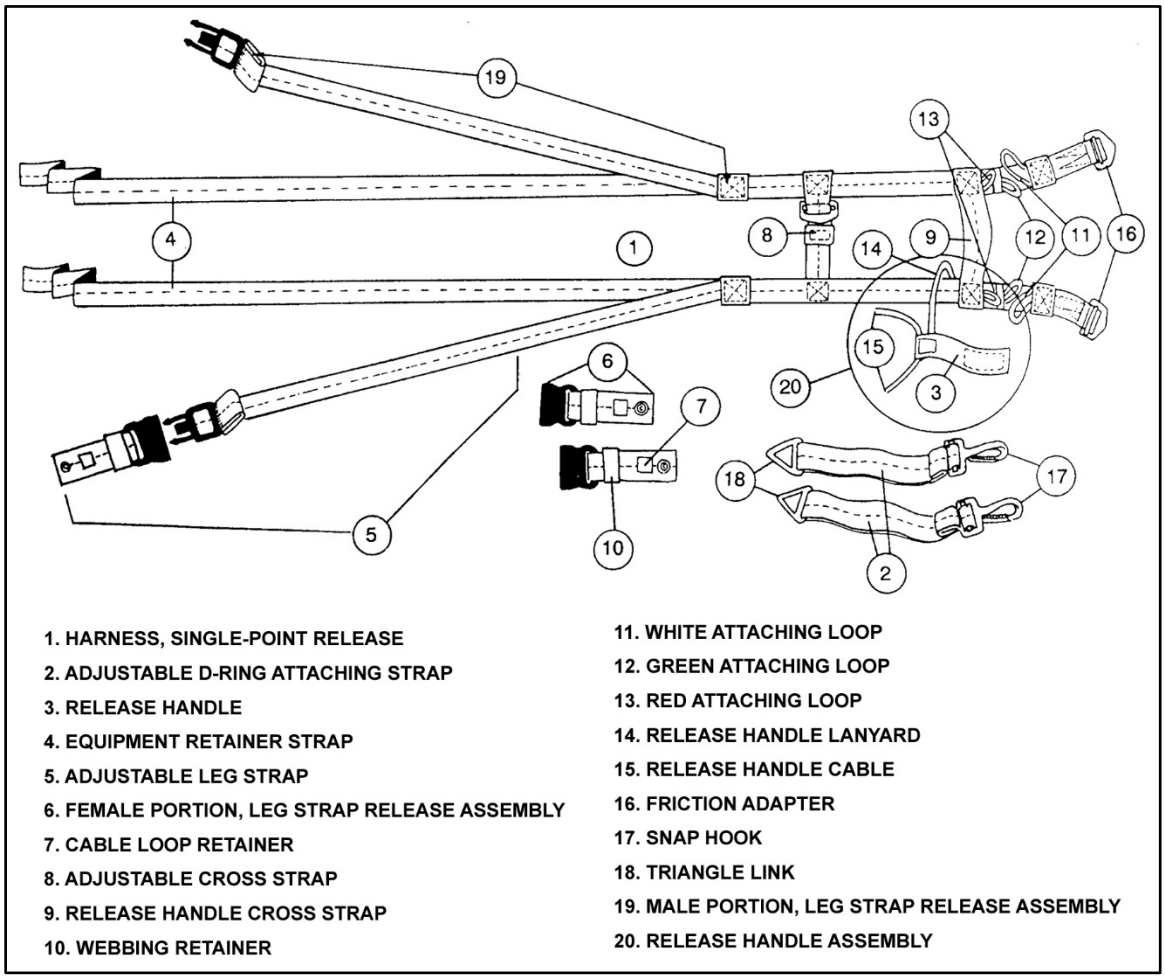


Figure 6-29. Harness, single-point release

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 is routed through this retainer band when placing the jumper into jumper configuration. This mitigates tripping or snag hazards that exist with the adjustable leg strap.

6-56. Inspection criteria include the following:

- All components are present.
- Plastic components cannot be cracked or broken.
- All webbing, straps, and type I, 9/16-inch 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.
  - All opening gates must have proper spring tension and full range of motion.
- The release handle cable cannot be kinked, frayed, or corroded.
- All webbing retainers must be—
  - Present and have sufficient elasticity.
  - Replaced with a retainer band, if necessary.
- HPT must be present and have sufficient adhesion.

6-57. Assembly of the HSPR includes—

- Laying 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.
- Placing 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.
  - Ensure the three component parts are facing skyward.
- Routing the release handle assembly from bottom to top through both piles of the release handle cross strap:
  - Ensure there are no twists in the release handle lanyard.
  - Secure the release handle lanyard in place utilizing the HPT.
- Routing—
  - 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.
- Routing the release handle cable through the red attaching loop and into the cable loop retainer:
  - Route the white attaching loop from bottom to top through the triangle link.
  - Route the green attaching loop from bottom to top through the white attaching loop.
  - Route 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.
- Routing 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.
  - Remove all twists from the equipment retainer straps.
  - The HSPR is now ready to accommodate a jumpable pack.

INTEGRATED HARNESS SINGLE POINT RELEASE

6-58. The Parachute Harness MOLLE 4K HSPR-M Air Item (NSN: 1670-01-682-5119), is an H-type design. It is constructed of nylon webbing with friction adapters to secure it around the load and has two adjustable equipment ring attaching straps to attach the load to the parachute harness. This harness is only authorized to be utilized with the MOLLE 4000 Rucksack.

6-59. To stabilize the pack 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 left and right leg. 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 6-30.)

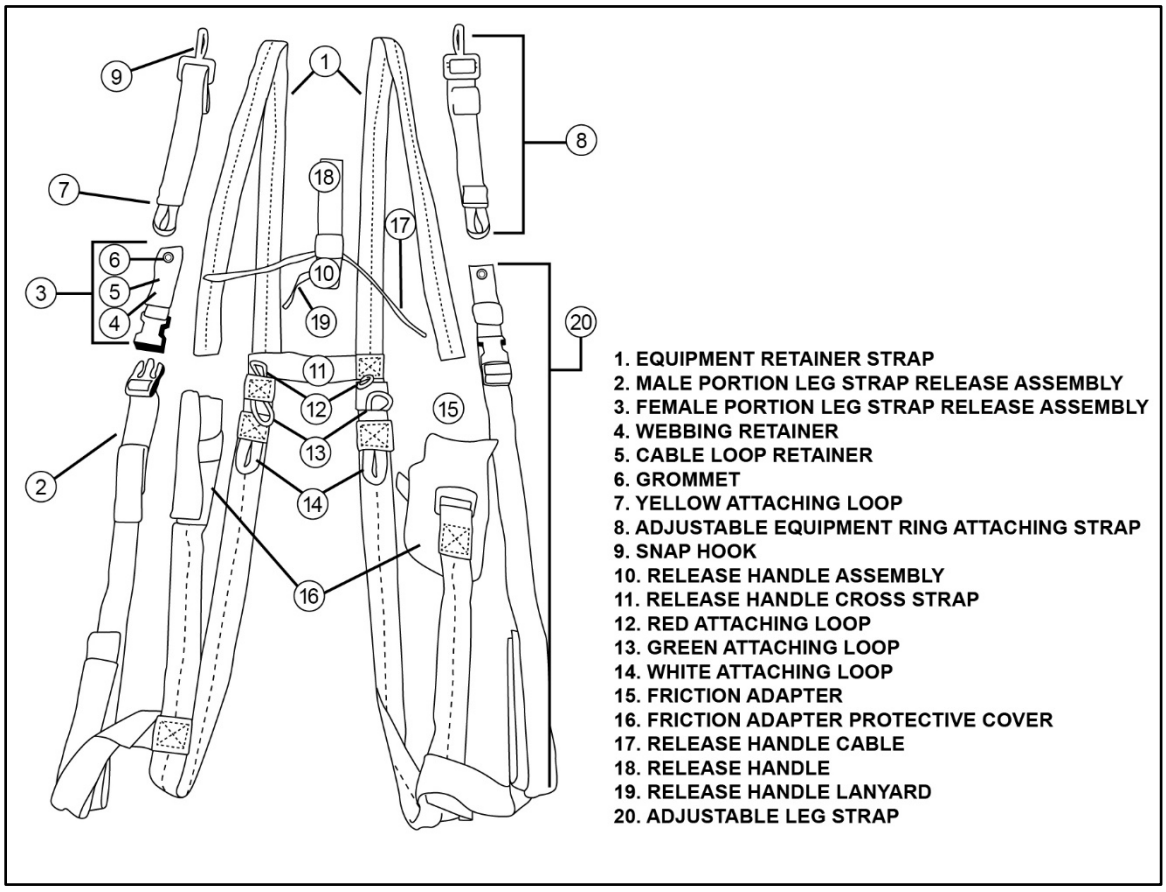


Figure 6-30. Integrated harness, single-point release

Note. When any jumper is using the integrated harness, single-point release (IHSPR) and the MAWC, it is recommended that a type-64 retainer band be secured to the MAWC on the vertical nylon equipment hanger just below the lower tie down strap stow pocket. The male portion leg strap release assembly is routed through this retainer band when placing the jumper into jump configuration. This mitigates tripping or snag hazards that exist with the adjustable strap.

INSPECTION CRITERIA

6-60. All components are present:

- Plastic components cannot be cracked or broken.
- All webbing, straps, and nylon are free of cuts, tears, excessive frays, or 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.
- Release handle cable cannot be kinked, frayed, or corroded.
- All webbing retainers must be present and have sufficient elasticity; replace them with retainer band, if necessary.
- HPT must be present and possess sufficient adhesion.

INSTALLING THE INTEGRATED HARNESS, SINGLE-POINT RELEASE ONTO THE MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT 4000 (GROUND CONFIGURATION)

- Remove the frame and adjustable shoulder carrying straps from the pack body.
- Open the air item stowage pocket and route the equipment retainer straps with the friction adapters, friction adapter protective covers, and male portion leg strap release assemblies though—
  - The air item stowage pocket pass through slots.
  - The air item routing channels on the rear (see figure 6-31).

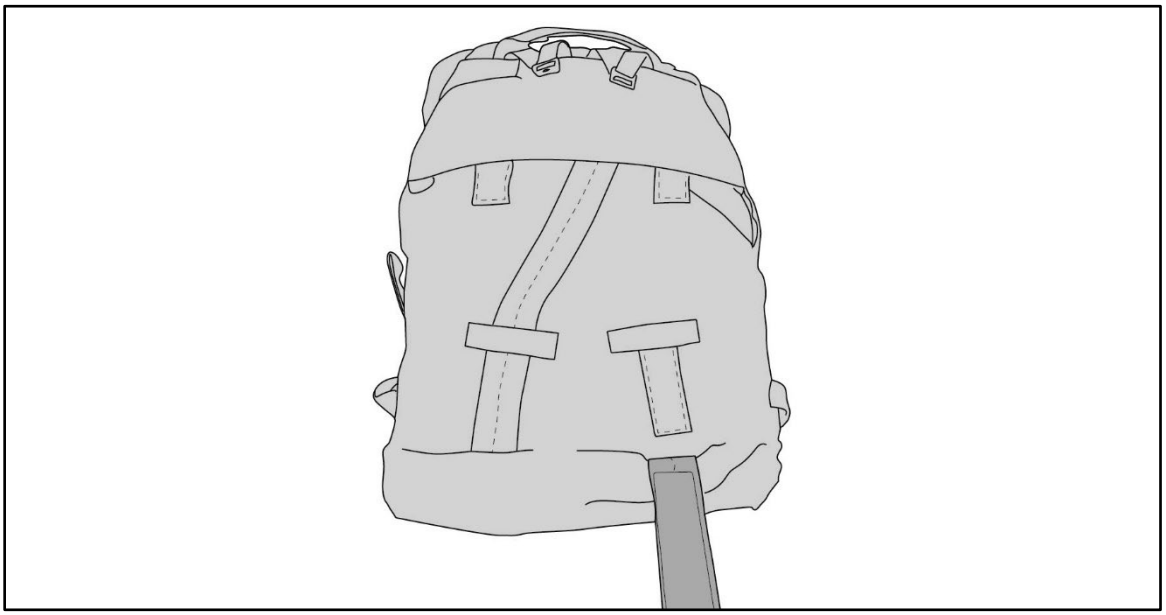


Figure 6-31. Air item stowage pocket pass through slots

- Secure the equipment retainer straps to the pack body with the HPT:
  - Cross the equipment retainer straps forming an X configuration.
  - Route the male portion leg strap release assemblies through their appropriate adjustable leg strap routing channels and secure them inside of the adjustable leg strap stowage pocket (see figure 6-32).

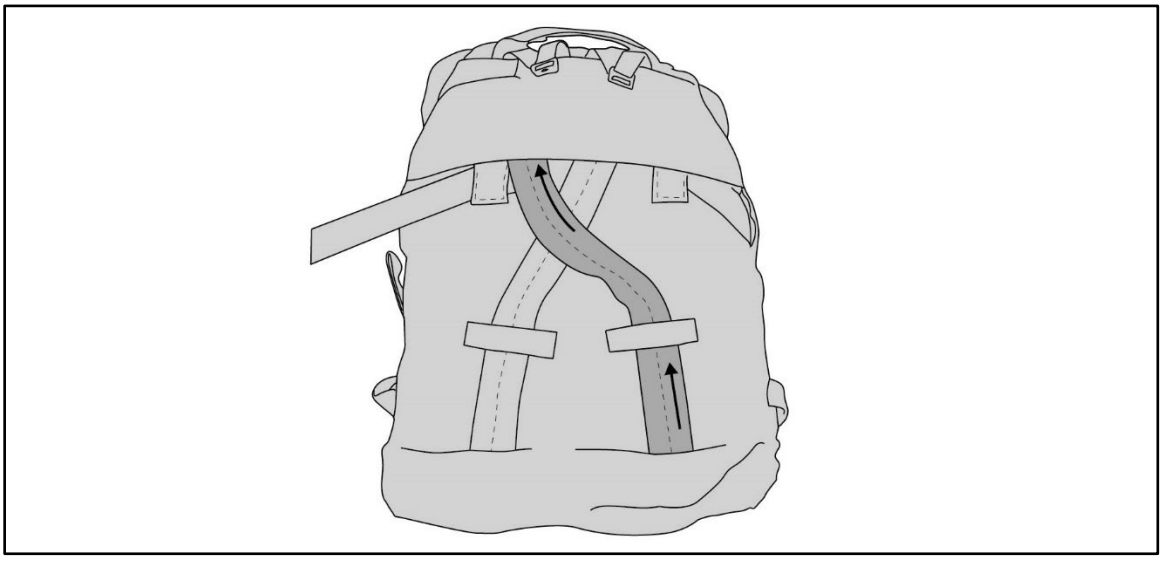


Figure 6-32. Routing equipment retainer straps

- Route the equipment retainer straps with friction adapters and friction adapter protective covers through the—
  - U-shaped channels in the back pad.
  - V-shaped load lifters.
  - Carrying handle.
  - Friction adapter stowage pockets (see figure 6-33).

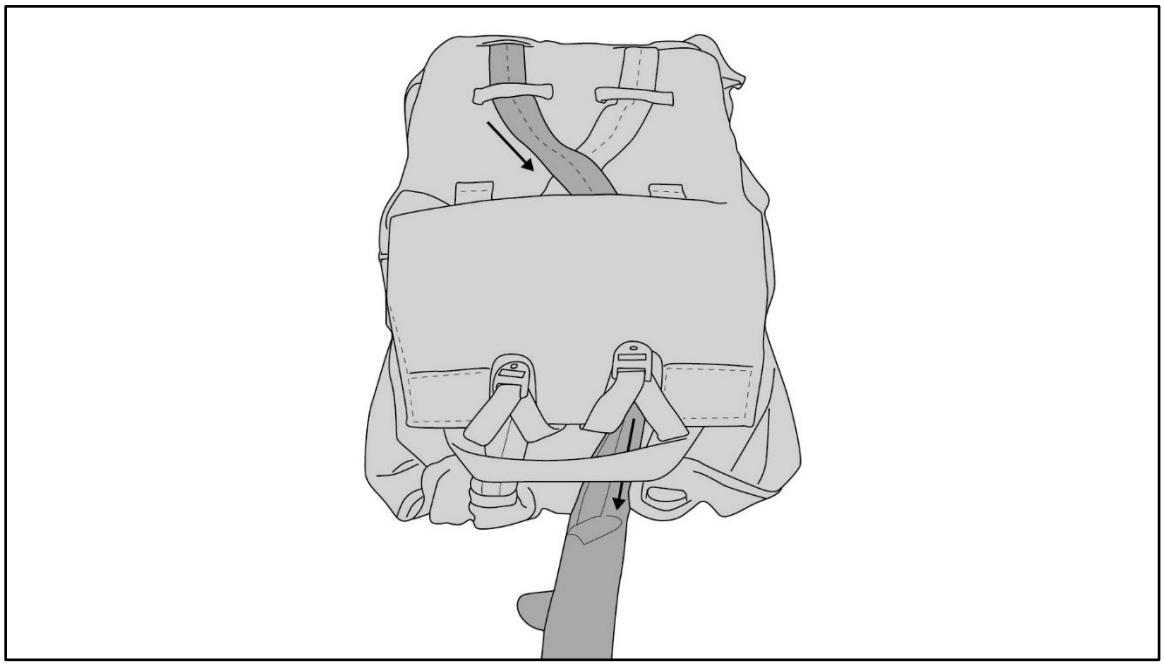


Figure 6-33. Routing equipment retainer straps (continued)

- Ensure that you route them under the first horizontal nylon equipment hanger located at the top of the friction adapter stowage pocket.
- Secure them inside of the friction adapter stowage pocket by securing the snap fastener. (See figure 6-34.)

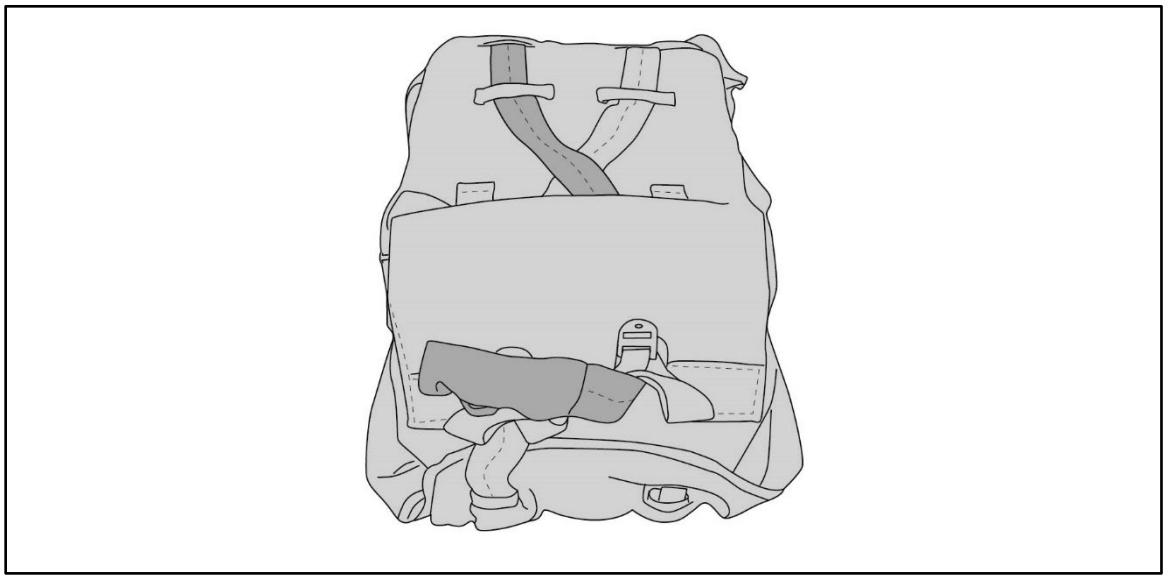


Figure 6-34. Friction adapter stowage pocket and horizontal nylon equipment hanger

- Reinstall the frame and adjustable shoulder carrying straps back onto the pack body.

6-61. Assemble the IHSPR and MOLLE 4000 for jump operations (jump configuration):

- Route the release handle and release handle cable:
  - Between the two piles release handle cross strap.
  - Secure the hook-pile tabs, ensuring a full twist is not incorporated in the release handle lanyard.
- Place the yellow attaching loop of the adjustable equipment ring attaching strap on top of the white attaching loop with the opening gate of the snap hook facing towards the frame of the MOLLE 4000.
- Route the white attaching loop from bottom to top through the yellow attaching loop.
- Route the green attaching loop from bottom to top through the white attaching loop.
- Route the red attaching loop from bottom to top through the green attaching loop and through the grommet on the female portion leg strap release assembly.
- Route the release handle cable through the red attaching loop, ensuring that the cable loop retainer on the female portion leg strap release assemble is facing up.
- Route the release handle cable through the red attaching loop and then through the cable loop retainer and repeat this procedure for the other adjustable equipment ring attaching strap.
- Remove the friction adapters and friction adapter protective covers from the friction adapter stowage pockets:
  - Route the equipment retainer straps through the air item routing channels located in the air item storage pocket (see figure 6-35).
  - Route the equipment retainer straps through at least one of the air item routing channels located on the front of the pack body.
  - Both equipment retainer straps must be routed through the same air item routing channels (see figure 6-36).

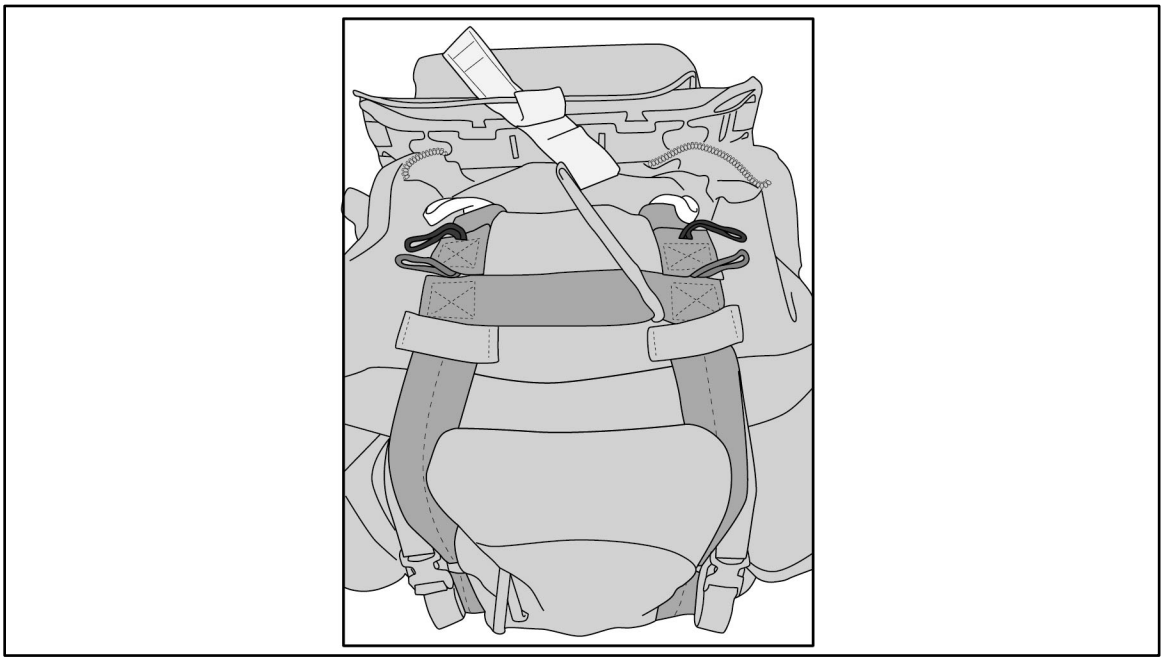


Figure 6-35. Routing equipment retainer straps top

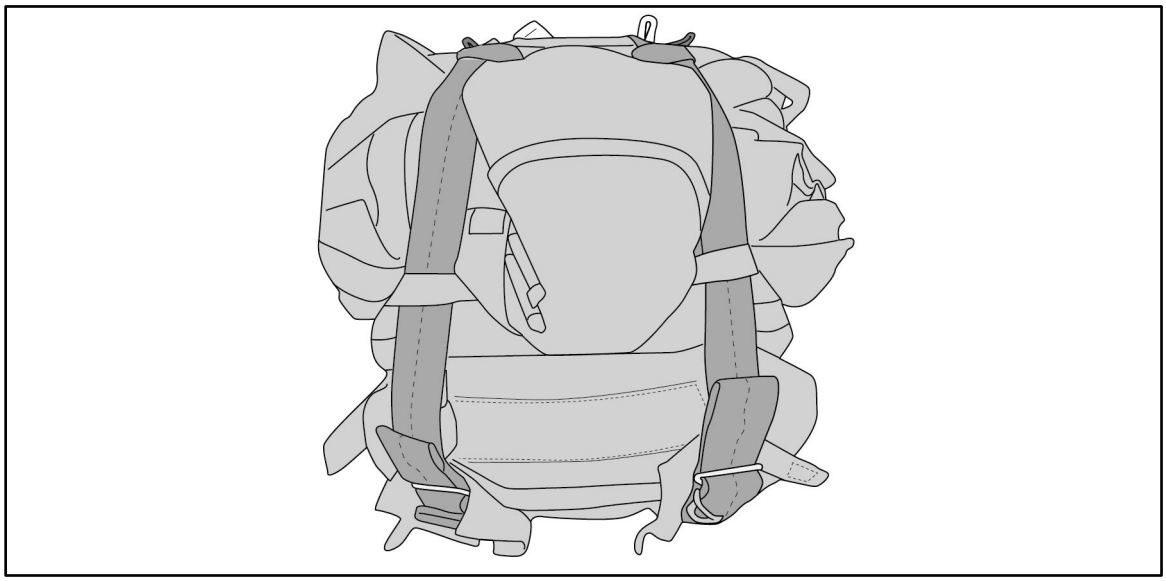


Figure 6-36. Routing equipment retainer straps front

- Secure the equipment retainer straps to its appropriate friction adapters, create a two-finger quick release and tighten.
- S-fold or accordion fold, never roll the free running ends of the equipment retainer straps and secure it with one turn of masking tape or two turns of retainer bands; one or the other (never both, and there is no preferred method).
- Secure the HPT of the friction adapter protective covers, ensuring the quick release and S-folds are not protruding outside the friction adapter protective covers (see figure 6-37).

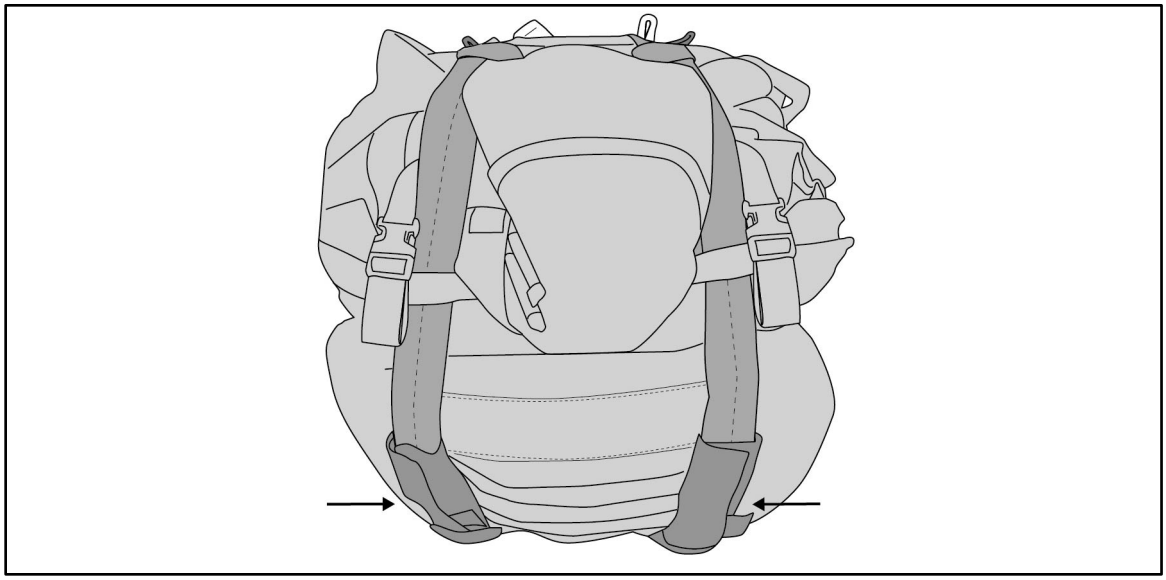


Figure 6-37. Closing of friction adapter protective covers

- Rotate the MOLLE 4k up and route the adjustable shoulder carrying straps through the carrying handle and then re-secure it back to the pack body (see figure 6-38 on page 82):
  - Remove all slack from the adjustable shoulder carrying straps and S-fold or accordion fold.
  - Never roll the free running ends and secure it with one turn of masking tape or two turns of retainer bands (one or the other, never both) or in its webbing retainer if present and serviceable.

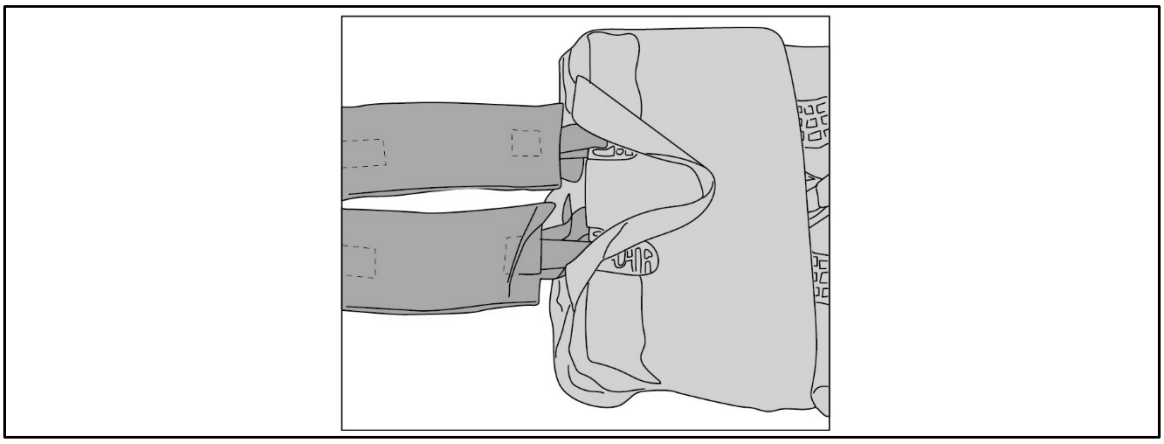


Figure 6-38. Routing shoulder straps through carrying handle

- Remove the male portion leg strap release assemblies from the adjustable leg strap stowage pockets:
  - Route the male portion leg strap release assemblies along the side of the MOLLE 4000 and secure them to the female portion leg strap release assemblies and remove all slack.
  - S-fold or roll the free running ends of the adjustable leg straps and secure it in the webbing retainer on the female portion leg strap release assembly.
- Attach the HPTLL and route the looped end HPTLL under the X formed by the equipment retainer straps from top to bottom or bottom to top, but never from side to side.
- Route the HPTLL over the left adjustable shoulder carrying strap.
- Girth hitch two sets of girth-hitched retainer bands to the vertical nylon equipment hangers on the side of the MOLLE 4000 pack approximately 4 to 6 inches apart.
- Secure the HPTLL to the left side of the MOLLE 4000 pack by routing the ejector snap and the remainder of the HPTLL through the two girth hitched retainer bands from bottom to top (see figure 6-39).

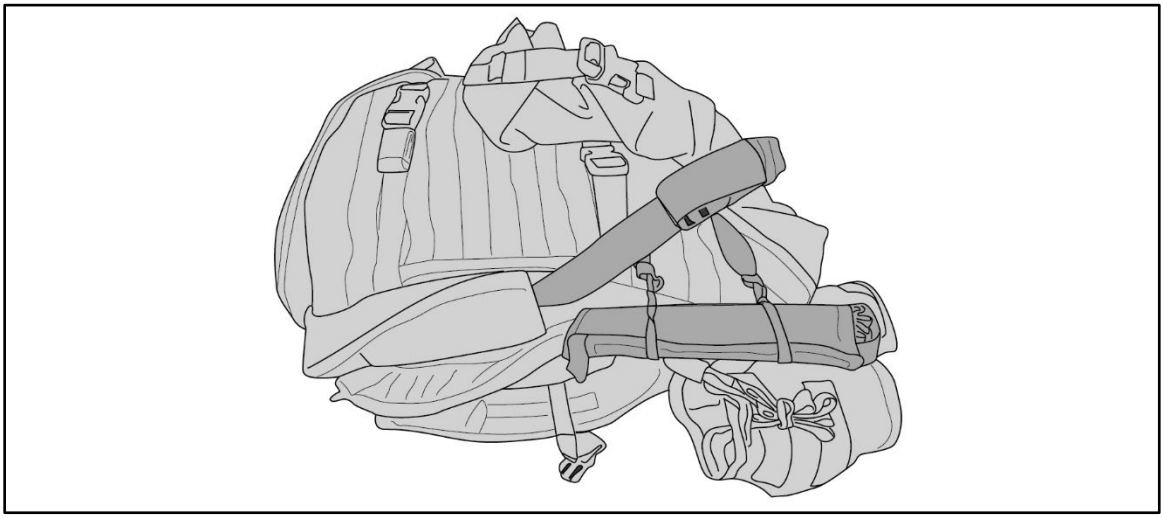


Figure 6-39. Attachment of hook-pile tape lowering line to MOLLE 4000

HOOK-PILE TAPE LOWERING LINE

6-62. The HPTLL (see figure 6-40) 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 (1-inch wide) with two retainer flaps sewn on. The retainer flaps have HPT sewn to the edges. The 2-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 (1-by-8 inches) attached. The HPTLL must be stowed as follows:

- S-fold the lowering line neatly on top of the web inside the retainer:
  - Ensure 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 the 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 6-41 on page 84).

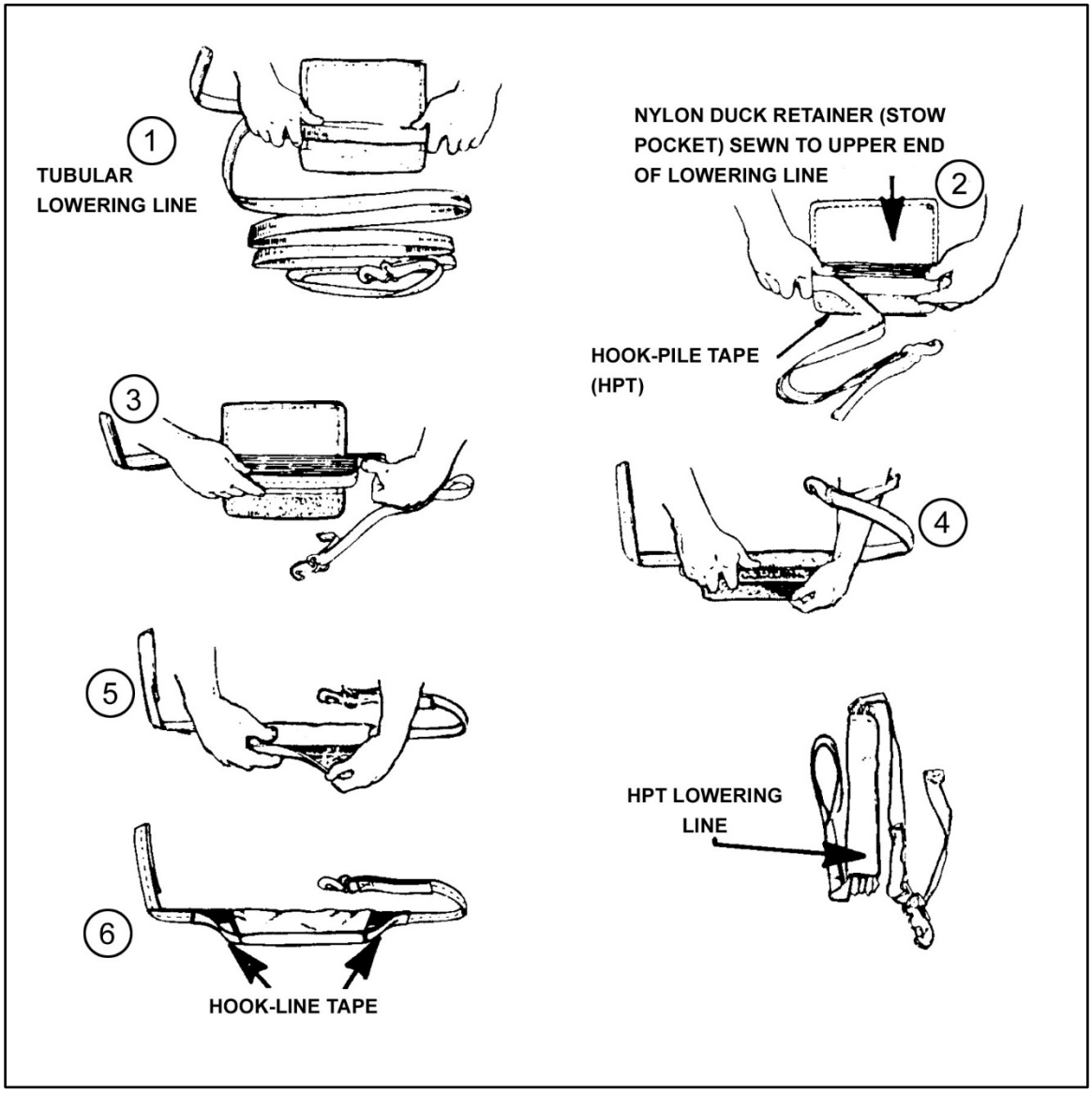


Figure 6-40. Hook-pile tape lowering line instructions

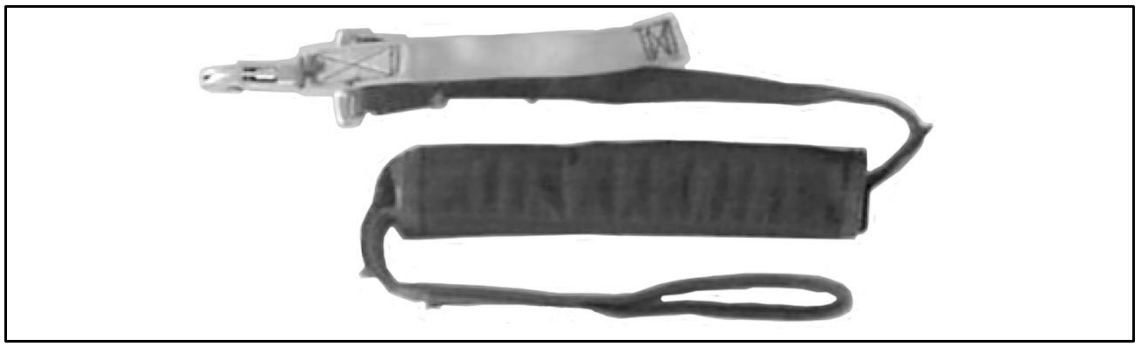


Figure 6-41. Hook-pile tape lowering line

6-63. The modified HPTLL (NSN: 1670-01-067-6838) is used when the antitank 84-mm unguided, antiarmor jump pack (AT4JP) or Stinger missile jump pack (SMJP) 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 1/2-inch high characters on the outside of retainer fabric using a stencil brush and blue parachute marking ink: AT4JP modified.
- Stencil a 1/8-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 6-42.)

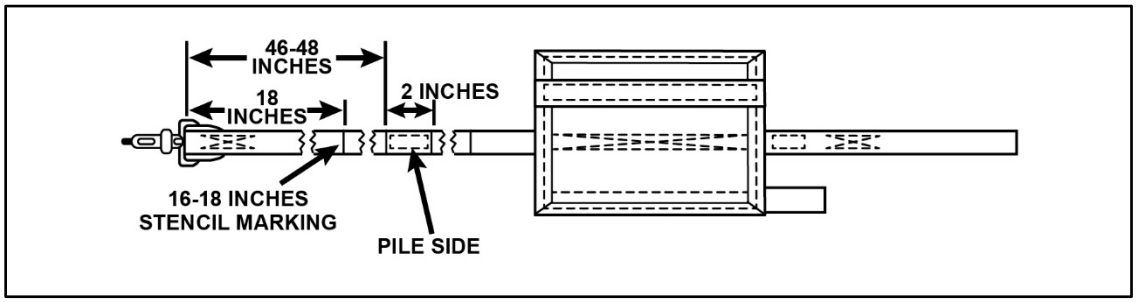


Figure 6-42. Modified hook-pile tape lowering line

- HPTLL inspection criteria includes:
  - 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, cannot be cracked or bent, and all opening gates must have proper spring tension and full range of motion.
- Ejector snap:
  - The 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 8/100ths of an inch (the approximate thickness of a quarter).
- The yellow safety lanyard must be present and properly secured to the activating lever.
- HPT 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.
  - Ensure 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

6-64. There are three different versions of jumpable packs commonly found throughout the force: Generation I, II, and III, and there are two different rigging procedures for them. The Generation II 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 is secured with masking tape or retainer bands. The MOLLE is not jumped with its outer accessory pouches.

6-65. Only a center outer accessory pouch or E-tool carrier is 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 remains tightly secured to it.

RIGGING PROCEDURES FOR THE MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT II LARGE RUCKSACK

6-66. 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:

- Route the equipment retainer straps through the uppermost holes in the top of the frame.
- Route the equipment retainer straps from outside to inside under the shoulder carrying straps.
- Route the equipment retainer straps towards the center, crossing them in an X configuration (see figure 6-43).

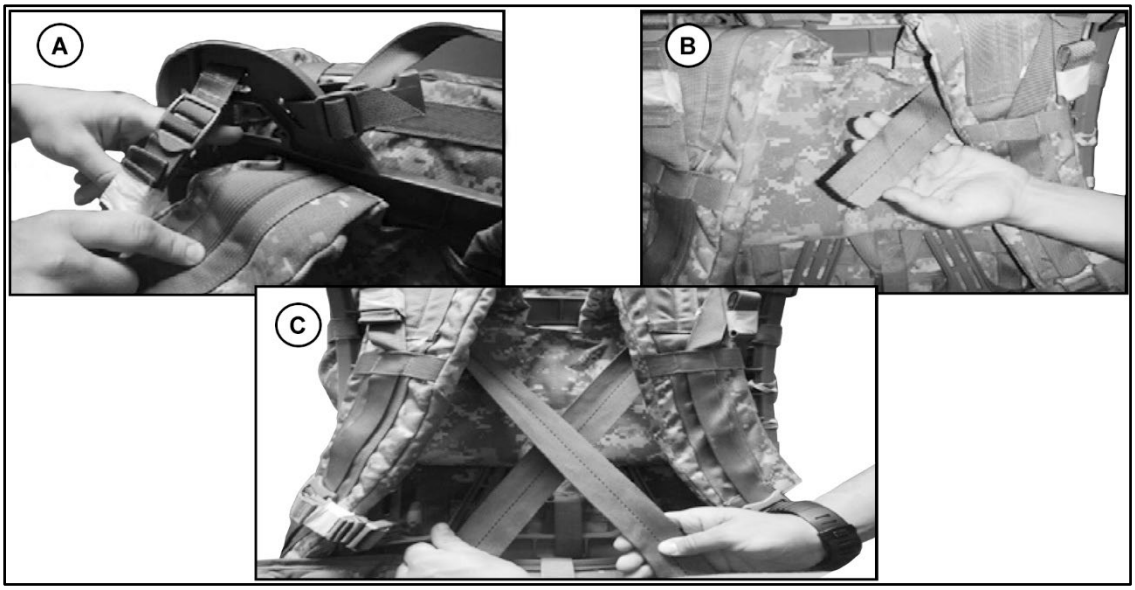


Figure 6-43. Routing equipment retainer straps

- Route the friction adapters through oval slots at the base of the MOLLE frame (see figure 6-44).

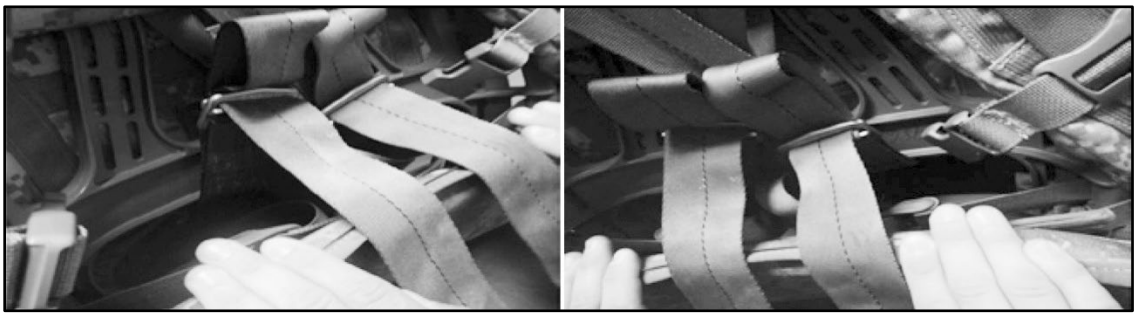


Figure 6-44. Friction adapter routing using Generation II MOLLE

- Continue rigging the HSPR to the MOLLE as previously described.
- Reduce and stow the excess webbing of the shoulder carrying straps.
- Attach the HPTLL (see figure 6-45 on page 86).



Figure 6-45. Attachment of the hook-pile tape lowering line to the Generation II MOLLE

- Once positioned, 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 ensures that the HSPR does not slide off either side of the MOLLE.
  - This pouch must be filled with nonfragile items (see figure 6-46).

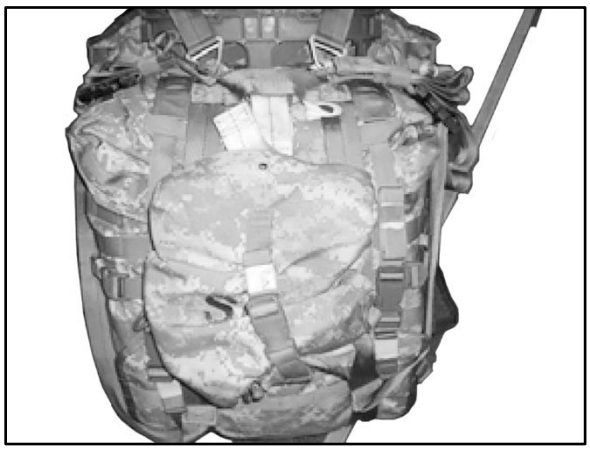


Figure 6-46. Position of outer accessory pouch on the Generation II MOLLE

6-67. Attach the MOLLE to the parachute harness:

- Attach the snap hooks of the adjustable D-ring 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.
  - Face the opening gate 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 MAWC's attachment loop, from front to rear, as worn by the jumper.
  - Attach the ejector snap to the triangle link with the opening gate facing the jumper.

6-68. After JMPI has been conducted, the jumpmaster routes 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 HSPR.
  - The right adjustable leg strap is not 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 HSPR, not the integrated HSPR.
- 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

6-69. The ALICE pack (NSN: 8465-001-6481) is available in medium and large sizes. 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.

6-70. Any items of equipment that may fall out or come free must be tied down with 1/4-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 nonfragile items of equipment. The lower securing straps are secured by routing them through the V-notch, one complete turn around 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.
- The M240B machine gun tripod (M192 lightweight ground mount [LWGM]) separate from the spare barrel bag.
- A M240B machine gun spare barrel bag without tripod.
- A bedroll or half-improvised litter.
- Two M3 multirole antiarmor/antipersonnel weapon system (MAAWS) rounds in the short twin tubes.
- Aiming stakes with case.

6-71. Rigging procedures for the ALICE pack with a frame include the following:

- 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:
  - The center outer accessory pouch is 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.
  - 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 6-47 on page 88).



Figure 6-47. Harness, single-point release under the 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.
  - Route it 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.
  - Ensure 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, ensuring the quick release is not secured in the S-folded portion.
- Remove all slack in the shoulder carrying straps and the excess webbing is then 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.
  - Routing 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 6-48 and 6-49).



Figure 6-48. Routed over shoulder carrying straps



Figure 6-49. Placement of retainer band

6-72. 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 6-50.)



Figure 6-50. ALICE pack with harness, single-point release

6-73. 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 the jumper.

6-74. After JMPI has been conducted, the jumpmaster routes the adjustable leg straps as follows:

- Right paratroop door:
  - The left adjustable leg strap is 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 HSPR.
  - The right adjustable leg strap is not 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 HSPR.
- 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.

6-75. Rigging procedures for the ALICE pack without a frame include the following:

- 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 routing the equipment retainer straps around the remainder of the load:
  - Secure the equipment retainer straps in the friction adapters and rig the ALICE pack as before.
  - Ensure that a quick release is placed in the equipment retainer straps.
- To attach the HPTLL—
  - Route the looped end of the 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 is 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 the male portion 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.

MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT ASSAULT PACK

6-76. The modular lightweight load-carrying equipment 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.

6-77. Rigging procedures for the MAP include:

- Laying out a properly assembled HSPR with the opening gates of the snap hooks facing skyward and removing all twists from the equipment retainer straps.
- Placing the MAP on top of the HSPR, convenience pouch facing down with the bottom of the MAP facing towards the friction adapters.
- Routing the equipment retainer straps under the top carrying handle staying toward the inside of the shoulder carrying straps and then crossing them at the back of the MAP forming an X configuration.
- Routing the friction adapters under the waist strap at the bottom of the MAP:
  - The waist strap must be secured together and tightened.
  - The waist strap must have all excess webbing stowed.
- Securing the equipment retainer straps to their appropriate friction adapters and forming quick releases.
- Before tightening the HSPR, adjust it so that the release handle cross strap is directly above the bottom of the convenience pouch, making the following steps easier to accomplish.
- Tightening the HSPR and forming 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).
  - There is no preferred method.
- Reducing the excess of both shoulder carrying straps:
  - S-fold the excess.
  - Secure with masking tape or retainer bands.
- Securing 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.
  - Routing the entire HPTLL through the looped end HPTLL, forming a girth hitch.
- Routing the HPTLL over the left shoulder carrying strap:
  - 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.
- Securing the sternum strap in front of the quick releases to hold the shoulder carrying straps in place (see figure 6-51).



Figure 6-51. Sternum strap secured on the modular lightweight load-carrying equipment assault pack

- 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 6-52 on page 92).
  - Then secure the buckles of the compression straps, ensuring that the HSPR does not shift along the surface of the MAP.



Figure 6-52. Routing of compression straps over release handle cross strap

- Cut two pieces of 1/4-inch cotton webbing that are approximately 12-inches long:
  - Girth hitch the 1/4-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 1/4-inch cotton webbing in a single or double loop bowknot around the HSPR just below the single box X stitch (see figure 6-53).



Figure 6-53. Securing harness, single-point release with 1/4-inch cotton webbing to the modular lightweight load-carrying equipment assault pack

- 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:
  - 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 MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT RUCKSACK

6-78. The medium modular lightweight load-carrying equipment (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 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:

- Route equipment retainer straps through the carrying handle located at the top of the M-MOLLE and then behind the shoulder carrying straps (see figure 6-54).

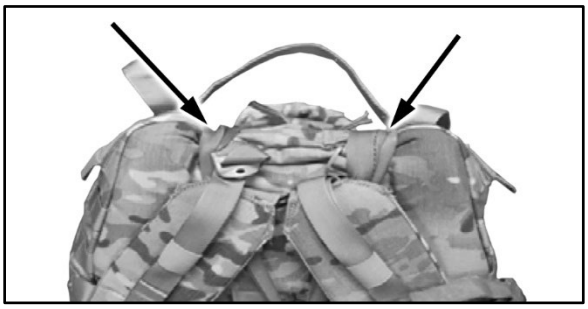


Figure 6-54. Routing of equipment retainer straps using M-MOLLE

- Route the friction adapters through oval slots at the base of the MOLLE frame (see figure 6-55).
- Continue rigging the HSPR to the MOLLE as previously described.
- Reduce and stow the excess webbing of the shoulder carrying straps.
- Attach the HPTLL as described.

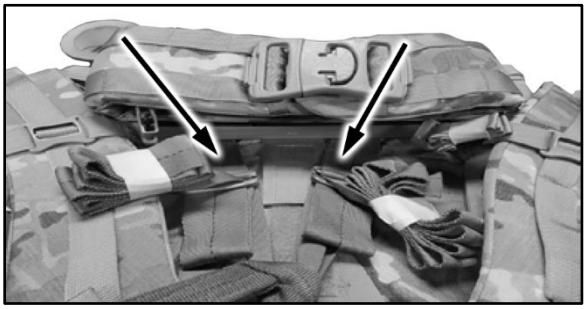


Figure 6-55. Routing of friction adapters using M-MOLLE

M7 AND M9 AID BAGS, AND SURGEON'S PACK

6-79. 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 makes the following steps easier to accomplish.
- Tighten the HSPR and form 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).
  - There is no preferred method.
- Reduce the excess of both shoulder carrying straps, then S-fold the excess and secure with masking tape or retainer bands.

- 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.
  - Routing 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 6-56).



Figure 6-56. 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 1/4-inch cotton webbing through the nylon equipment hangers above the box X 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 6-57).
  - Secure the buckles of the compression straps, ensuring that the HSPR does not shift along the surface of the M7 or the M9.



Figure 6-57. 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 is attached to the jumper in the same manner as the ALICE pack and the MOLLE (see figure 6-58).



Figure 6-58. Securing harness, single-point release with 1/4-inch cotton webbing to the M7

6-80. 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 remain the same. (See figure 6-59.)

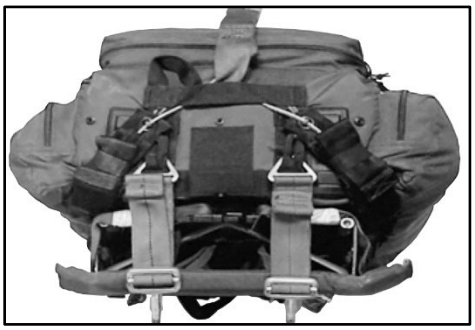


Figure 6-59. Surgeon's pack

RAPID ACCESS TRAUMA SYSTEM CERTIFIED AID BAGS

6-81. The rapid access trauma system certified aid bag (RATS CAB) medical aid bag (NSN: 8465-01-617-7237) is rigged and jumped using its integrated HSPR and the HPTLL. The RATS CAB offers the medic or medical officer the capability to jump their medical aid bag in addition to sustainment items. (See figure 6-60.)



Figure 6-60. Rapid access trauma system certified aid bag

6-82. 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 are secured on the front of the pack body just below the air item stowage pocket and underneath the external sustainment pouch. (See figures 6-61 and 6-62.)



Figure 6-61. Securing the waistband/external sustainment pouch



Figure 6-62. Assembled integrated harness, single-point release using the adjustable D-ring attaching straps

6-83. Rigging procedures for the RATS CAB are as follows:

- When assembling the integrated HSPR, utilize the standard adjustable D-ring attaching straps from the HSPR (see figure 6-63).
- Remove all slack from the shoulder carrying straps, S-fold the free running ends, and secure them with a 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 1/4-inch cotton webbing on the two nylon straps sewn to the left side of the pack body.
  - The 1/4-inch cotton webbing serves as a point of attachment for the retainer bands (type 1 general purpose), reducing the likelihood of the retainer band breaking (see figure 6-64).
  - 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 6-63. Assembled integrated harness, single-point release



Figure 6-64. Utilize 1/4-inch cotton webbing as the point of attachment

J51 WARHAMMER AND G1 LITTLE BROTHER PACKS

6-84. The J51 Warhammer has a base configuration of 8 pounds, 8 ounces and has a volume of 2,050 cubic inches. Incorporated into the J51 Warhammer's load bay is the G1 Little Brother with a base configuration of 4 pounds and has a volume of 1,800 cubic inches. The J51 Warhammer is designed to encase the medical aid bag inside the pack. The J51 Warhammer was tested and approved with the G1 Little Brother rigged inside the pack; however, other aid bags are authorized to be delivered to the DZ inside the J51 Warhammer. The J51 Warhammer is rigged using the HSPR and HPTLL. Prior to rigging, all excess webbing is secured with masking tape, retainer bands, or webbing retainers.

6-85. J51 Warhammer Rigging Procedures:

- Secure an E-tool carrier with E-tool inside to the nylon equipment hangers on the front of the pack body or other pouch to serve as a center outer accessory pouch.
- If using an E-tool, ensure the E-tool is tied off to a nylon equipment hanger using type II or type III nylon cord (see figure 6-65 on page 98).

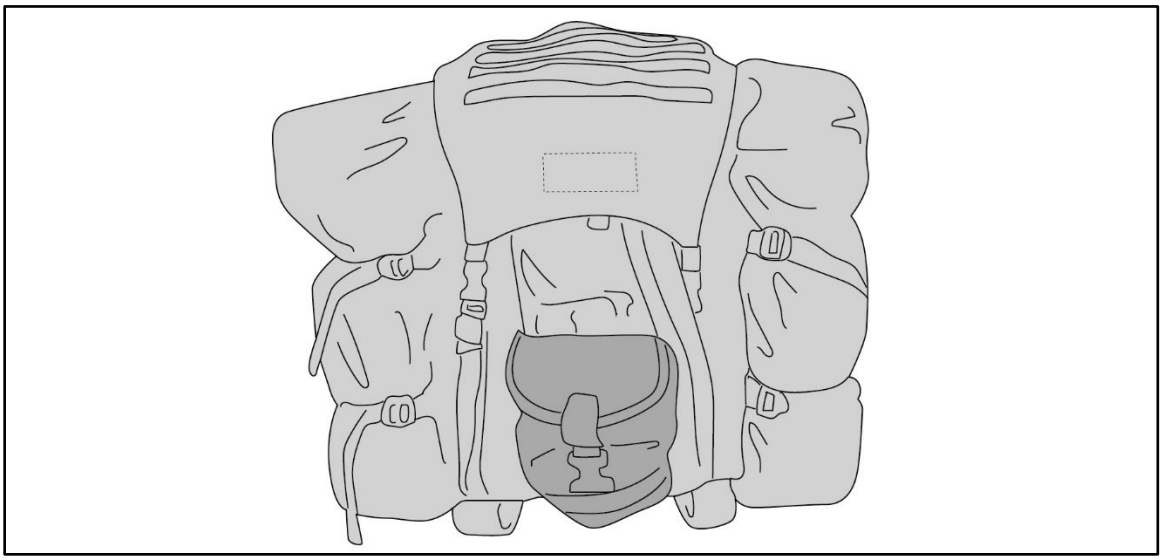


Figure 6-65. E-tool carrier serving as center outer accessory pouch

- Remove all slack from both shoulder carrying straps and S-fold the free running ends and secure them with masking tape or retainer bands.
- Secure together all slide fasteners on every zipper with 1/4-inch cotton webbing.
- Place a properly assembled HSPR over the center accessory pouch:
  - Route the equipment retainer straps underneath the top closing flap of the pack body.
  - Route the equipment retainer straps under the carrying handle.
  - Form the X configuration on the rear of the pack body (see figure 6-67).
- Route the friction adapters—
  - Over the pack frame (which is the same as the ALICE pack).
  - Underneath the kidney pad and secure a two to three finger quick release into each equipment retainer strap (see figure 6-66).

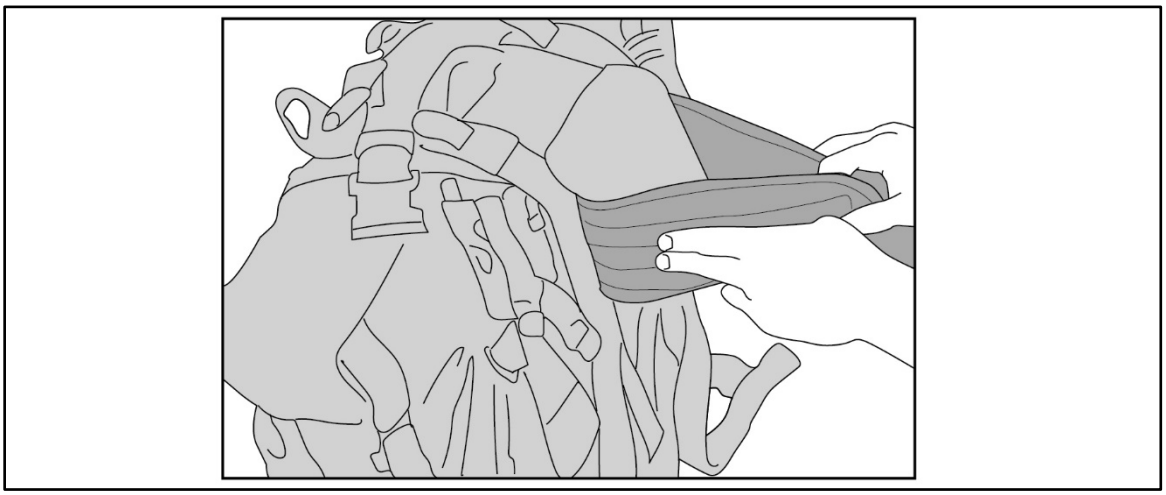


Figure 6-66. Placement of friction adapters

- S-fold the free running ends of each equipment retainer strap and secure them with masking tape or a retainer band.
- Girth hitch the looped end HPTLL from north to south or south to north under the X configuration of the equipment retainer straps.
- Tighten the girth hitch against the X configuration.

- Secure a sufficient length of 1/4-inch cotton webbing to the pack body (see figure 6-67):
  - Then girth hitch a type-64 retainer band to each loop of 1/4-inch cotton webbing.
  - This reduces the potential of the retainer band breaking.

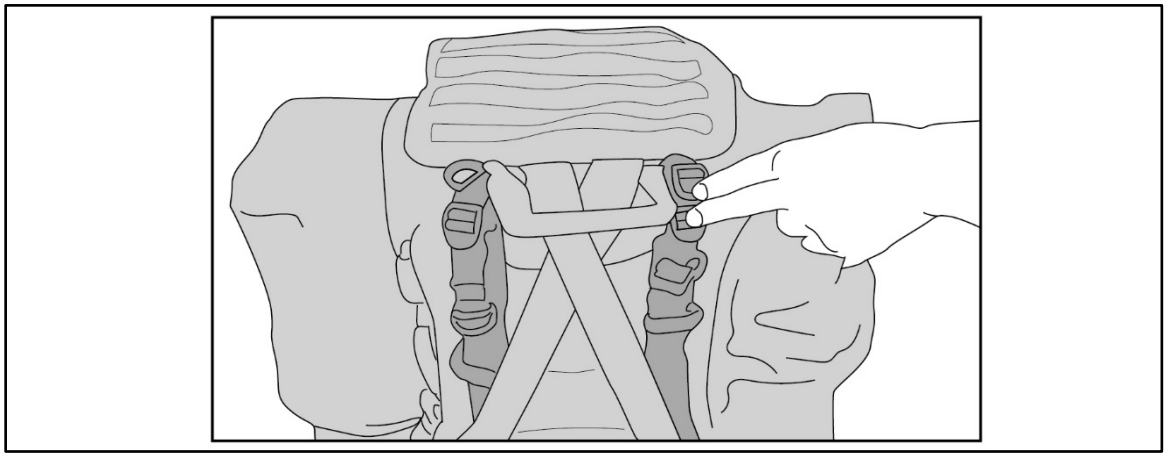


Figure 6-67. Routing equipment retainer straps

- Route the HPT lowering line over the left shoulder carrying strap and route the HPTLL through both retainer bands from top to bottom (See figure 6-68.)
- Route the male portion leg strap release assemblies:
  - To their appropriate female portion leg strap release assemblies by the most direct route.
  - S-fold or roll the free running ends and secure them into their webbing retainers.



Figure 6-68. Securing the hook-pile tape lowering line to the pack body

LARGE AND MEDIUM HYDRATION JUMP PACKS

6-86. 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.

6-87. 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 HPT 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 6-69 on page 100.)

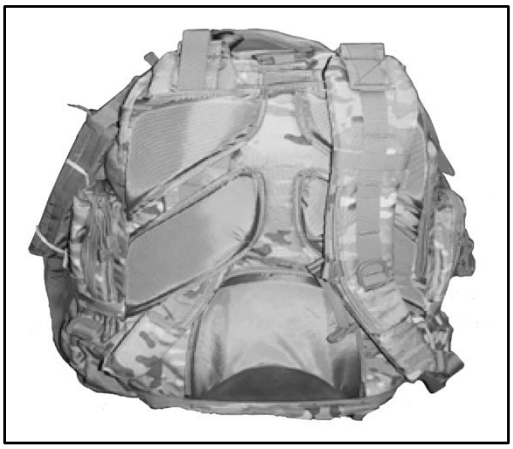


Figure 6-69. Shoulder carrying strap routing on hydration pack

6-88. Rigging procedures for hydration packs are as follows:

- The protective flap that covers the single-point release system should be rolled back and secured in place with the HPT.
- The incorporated single-point release system is rigged in the same manner as the HSPR, and the following must be used in the process:
  - Two adjustable D-ring attaching straps.
  - The two provided female portion leg strap release assemblies (see figure 6-70).

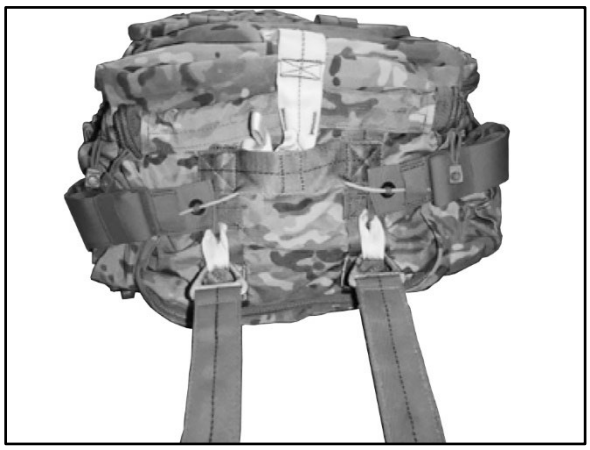


Figure 6-70. Attachment of D-ring attaching straps to hydration pack

- The two permanently sewn equipment retainer straps are only utilized—
  - If the entire load weighs 50 pounds or more.
  - 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 is then only S-folded and secured with masking tape or retainer bands.
- If the hydration pack does not meet these criteria, then the equipment retainer straps are placed inside the top convenience pouch.
- All slack from both shoulder carrying straps should be removed:
  - Roll the excess.
  - Secure with the incorporated HPT retainers.

- The looped end of the HPTLL is then girth hitched to the top carrying handle of the hydration pack from either direction.
- The HPTLL is routed 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 and stow it into its appropriate webbing retainer (see figure 6-71).



Figure 6-71. Attachment of hook-pile tape lowering line to the 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 WEAPONS AND WEAPON'S CASES

6-89. Individual weapons can be jumped with loaded magazines in combat. Blank or live ammunition for individual weapons is 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.

6-90. To rig the M16 series rifle or M4 carbine exposed, the following must be completed:

- 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, tape it to the receiver, and cover 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-inch strand of 1/4-inch cotton webbing by girth, hitching it to the rear sling swivel.
- Route the strand of 1/4-inch cotton webbing on the rear swing swivel—
  - Under the left riser assembly.
  - Through the outermost diagonal backstrap sizing channel above the one being utilized with the diagonal backstrap retainer.
  - Tie the 1/4-inch cotton webbing with a single- or double-looped bowknot (see figure 6-72 on page 102).

CAUTION

Ensure that a round is not chambered, and the weapon remains on safe.

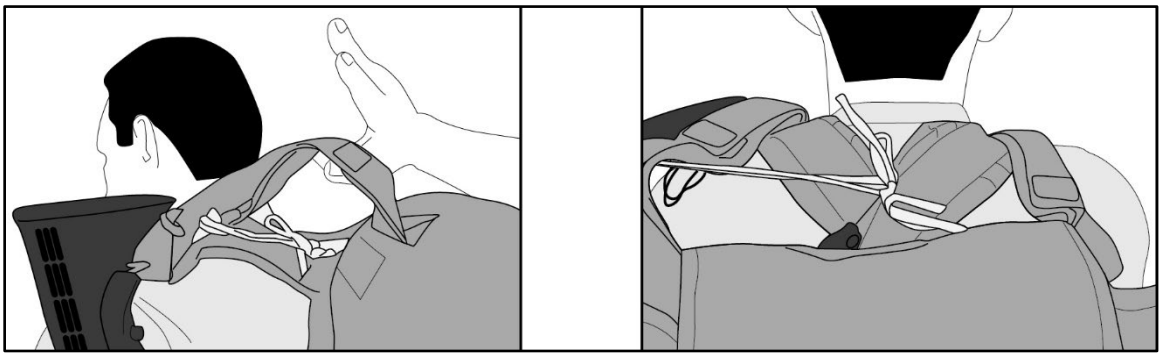


Figure 6-72. Padding, taping the M16 rifle or M4 carbine configured for jumping exposed

- 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 WAP:
  - Tighten the waistband securely so the weapon is snug against the jumper's side.
  - Ensure that the weapon is high, so the waistband rests below the magazine well (see figure 6-73).
- To jump the M320 Grenade Launcher Module (GLM) exposed—
  - Use the procedures as outlined above.
  - Place additional padding and tape over the breech and trigger mechanism and over the muzzle ensuring it is secured to the carbine/rifle above.
- To jump the M110 Semi-Automatic Sniper System exposed—
  - The scope and bipod legs must be removed and placed inside the main compartment of the ALICE pack/MOLLE.
  - Use the same procedures as outlined for the M16 and M4.
  - The waistband is routed directly over the rail where the scope would normally be mounted and then secured to its waistband adjuster pane.



Figure 6-73. M16 rifle or M4 carbine rigged to be jumped exposed

6-91. Inherent hazards of the exposed weapon include:

- Entanglement of the weapon with another jumper's parachute if a mid-air collision occurs.
- Possible injury to the jumper during the PLF.
- Damage to the weapon during landing, which may cause a failure to fire.

PISTOLS

6-92. The pistol does not have a loaded magazine inside the magazine well during training operations, and there is never a round chambered:

- The pistol can be jumped inside the MAWC as a tandem load, inside a jumpable pack, or in a leg holster.
- If the pistol is jumped in a MAWC it is jumped as a tandem load (with an M4, M240, for example):
  - The pistol is placed in a holster and secured in two places to the nylon webbing under the foam padded internal divider with 1/4-inch cotton wedding.
  - The secondary load is placed on top of the internal padded divider.
- If the pistol is jumped inside a jumpable pack the pistol is placed in a holster and tied down.
- If the pistol is jumped inside a leg holster the jumper must—
  - Be able to secure holster to their belt and leg.
  - Rotate the holster to the front of the jumper's leg to avoid the jumper landing on it while conducting a side PLF (see figure 6-74 on page 104).
  - Route the pistol (possibly) over the top of the UPRB depending on the jumper's height (see figure 6-75 on page 104).
- Ensure a lanyard is present and tied down to the jumper.

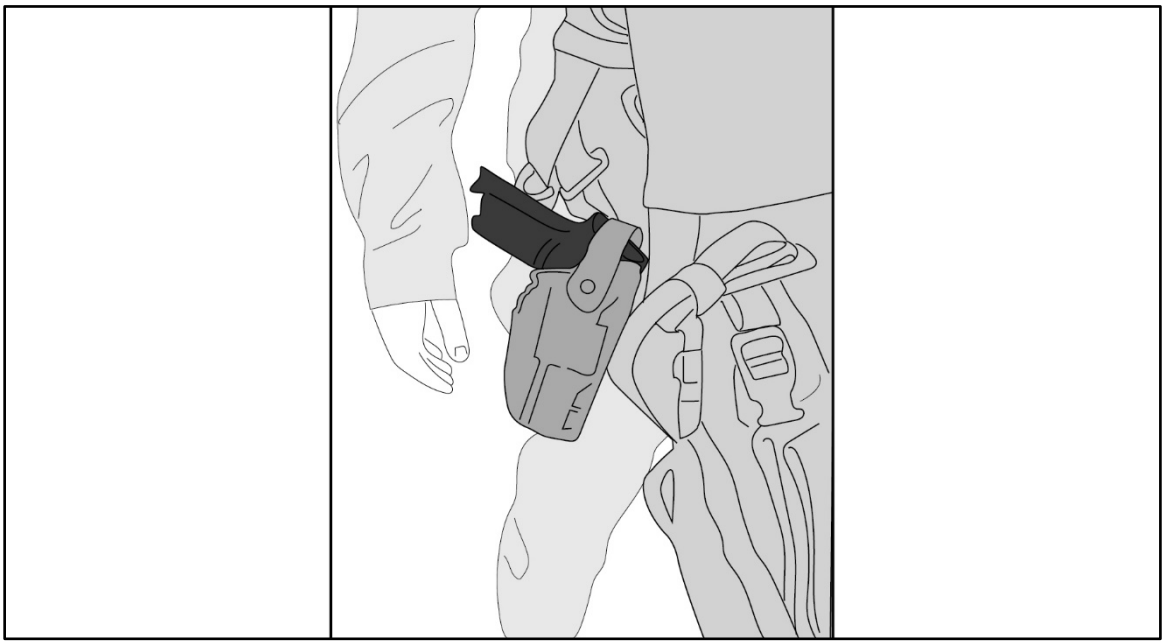


Figure 6-74. Proper positioning of the drop holster

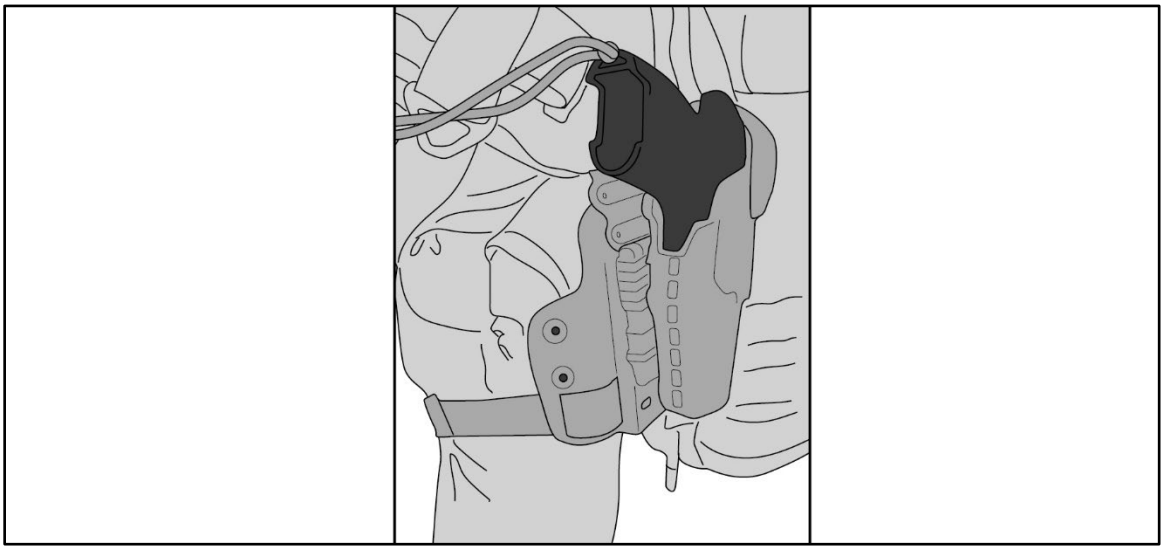


Figure 6-75. routed over top of universal parachutist recovery bag

M320 GRENADE LAUNCHER MODULE

6-93. The M320 GLM comes with a day/night sight (DNS) which may remain attached to the weapon in either configuration for jumping. Prior to rigging, the DNS must be—

- Padded with one turn of bubble wrap.
- Secured by masking tape or retainer bands.
- The DNS must only be removed if the M320 GLM is to be jumped exposed; the M320 GLM can be jumped in two different configurations:
  - Host-weapon (attached to the jumper's M4 Carbine).
  - Standalone.

Note. No ammunition is loaded in the chamber of any weapon to include the M320 GLM during the airborne operation. All rounds must be secured separately in the jumper's combat load, magazine, or pouch.

6-94. Rig the M4 with the M320 attached (host-weapon configuration):

- Collapse the forward pistol grip alongside the barrel into its slimmest configuration and secure it in place with masking tape as seen in figure 6-76.
- Use one strand of masking tape to secure the breech, running laterally from one side of the barrel, around the trigger mechanism, and back to the opposite side of the barrel:
  - This secures the barrel and breech in its closed position.
  - This prevents it from opening during the jump.

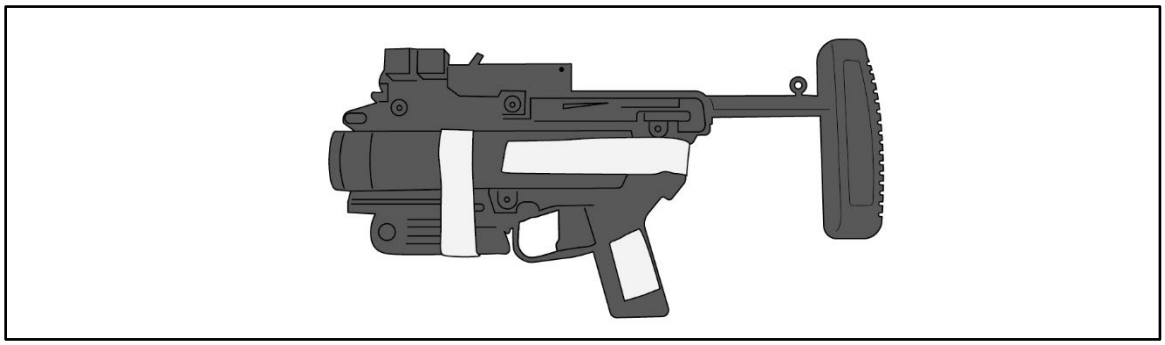


Figure 6-76. Properly taped M320 grenade launcher module

6-95. Rig the M4 inside the MAWC as normal:

- When jumping the M320 attached to M4 with a sighting system, it is too large to fit in the adjustable nose cone of the MAWC:
  - The M4 is placed inside the MAWC.
  - An adequate piece of paper board honeycomb (PBHC) must be used to fill the adjustable nose cone.
- To allow the jumper faster access to the weapon system, all strands of masking tape should have a tag-end folded over, forming a pull-tab.

6-96. Rig the M320 in a stand-alone configuration:

- The DNS can be padded with one turn of bubble wrap and placed inside its carrying case, if desired.
- When it is rigged to be jumped without the carrying case, collapse the buttstock to its shortest position.
- Collapse the forward pistol grip alongside the barrel into its slimmest configuration and secure it in place with masking tape.
- Use one strand of masking tape to secure the breech, running laterally from one side of the barrel, around the trigger mechanism, and back to the opposite side of the barrel:
  - This secures the barrel and breech in its closed position.
  - This prevents shifting during the jump.
- To allow jumpers faster access to the weapon system, all strands of masking tape should have a tag-end folded over, forming a pull-tab.
- The entire M320 GLM must be then placed inside of the main compartment of the combat load, not in any outer accessory pouch or under the nose cone divider of the MAWC.
- Ensure there is no metal-to-metal contact or contact with any other rigid item of equipment inside of the load (such as a radio or ammunition).

Note. Any second item of equipment placed under the internal padded divider must be secured in place using 1/4-inch cotton webbing. This prevents the item of equipment from potentially sliding out of the sides of the adjustable nose cone.

HANDHELD RADIOS

6-97. The AN/PRC-148 Multiband Inter/Intra Team Radio, AN/PRC-152 Single Channel Multiband, Multimission Handheld Radio, and other like systems can be jumped in one of the following methods:

- Inside the jumpable pack.
- Inside the MAWC.
- Inside its compartment on the load bearing vest and worn by the jumper (see figure 6-77).
- The AN/PRC-148 and AN/PRC-152 radio may be jumped on any load bearing vest; however, the hand mic must be removed, and the antenna must not extend past the bottom of the canopy release assembly.

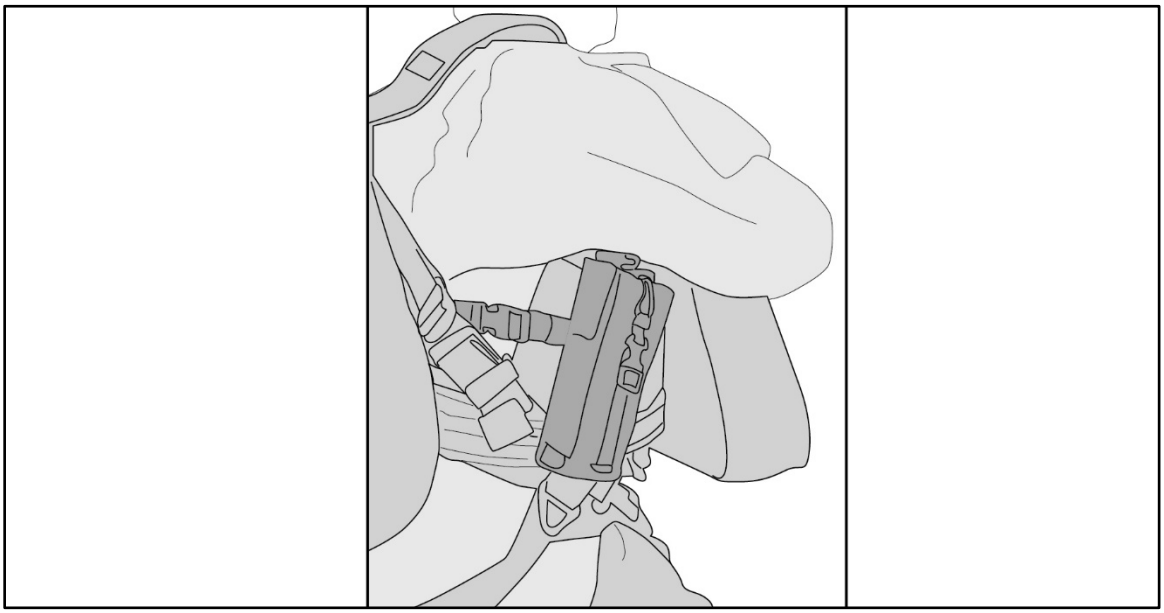


Figure 6-77. Radio pouch in front of the horizontal backstrap

OPTIC SIGHTS AND LASERS

6-98. 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.

6-99. 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 tape vertically and horizontally. Variable or thermal scopes must be padded and taped.

MODULAR AIRBORNE WEAPONS CASE

6-100. The MAWC is a modular, fully adjustable, padded, reinforced design, multipurpose 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 fielded versions of the MAWC: 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.

6-101. There are MAWC rigging equipment and limitations:

- All individual items of CE 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.
- There is a maximum weight for loads:
  - MAWC—the maximum weight does not exceed 65 pounds in compliance with TM 10-8465-236-10.
  - Large MAWC—the maximum weight does not exceed 85 pounds in compliance with TM 10-8465-236-10.

6-102. 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.

6-103. 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 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.

6-104. There are authorized expendables for rigging the MAWC. This includes—

- PBHC which 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.
- PBHC which 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 nose cone.
- 1/4-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 is girth hitched to the vertical nylon equipment hanger below the lower tie-down strap stow pocket.
  - This secures the adjustable leg strap.

6-105. Donning of the MAWC for a proper fit to the jumper's height includes:

- When properly rigged and secured to the parachute harness, the bottom of the adjustable nose cone is not less than 6 inches from the ground.
- The top of the MAWC rests 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 is secured to the male portion snap fastener that provides the most slack.

6-106. A thorough MAWC inspection is conducted prior to any airborne operation. Inspect the following items to ensure:

- An upper tie-down tape is present, constructed of 1/4-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 are 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 so they can be secured to the yellow safety lanyard.

- 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.

6-107. Sizing, rigging, and donning the MAWC to jump as a tandem load with an M4 carbine involves several steps. When sizing the MAWC, the following actions are completed:

- 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 HPT securing the nose cone in place.
- 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 HPT.
- When extending the MAWC to its maximum length, fully secure the uppermost strip of pile tape 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.
  - The forward assist facing skyward.

Note. A 30-round magazine may be placed inside the magazine well, but no round is chambered.

- Secure the closing flap.
- Utilize the HPT, two snap fasteners, and the slide fastener and tab thong, routing 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 1-inch-wide masking tape if the webbing retainers are not present.

Note. The quick-release buckles of both compression straps must be secured.

6-108. After the jumper dons 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 the adjustable nose cone rests no less than 6 inches from the ground.
- The top of the MAWC rests 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 is secured to the male portion snap fastener that provides the most slack.
- The opening gate must be facing the jumper.
- An assessment must be conducted and any adjustments necessary must be made to comply with the first four actions stated here.
- If adjustments are needed, release the snap shackle, remove the MAWC, and make the appropriate adjustments.

6-109. 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 1 to 2 inches).
- The free running end is secured in one of two ways:
  - It is secured underneath the horizontal nylon equipment hangers (not preferred).
  - 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, which 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.

6-110. After the MAWC has been properly adjusted to the height of the jumper, re-secure the snap shackle as the outermost item of equipment on to the left equipment ring in the following manner:

- Secure the yellow safety lanyard to one of the three male portion snap fasteners:
  - Using the top snap fastener is not recommended to ensure proper placement of the MAWC.
  - The top of the MAWC must rest between the base of the left canopy release assembly and above the left D-ring and the base of the nose cone rests no less than 6 inches from the ground.
- Utilize the snap fastener that provides the most slack in the yellow safety lanyard.
- Secure the tab thong by the snap fastener and the upper tie-down tape.
- Girth hitch the upper tie-down tape to the horizontal backstrap below the excess webbing and above the WAP.
- Route one end of the upper tie-down tape—
  - Around the pack body.
  - Through the window created in tab thong portion of the slide fastener and tabbed thong.
  - Through the vertical nylon equipment hanger on the front of the closing flap.
- Route the opposite end of the upper tie down tape—
  - From back to front through the small cutaway portion of the left equipment ring.
  - Secure it to the lead edge of the MAWC with a single- or double-loop bow knot (see figure 6-78).



Figure 6-78. Routing the upper tie-down tape

- Route the ejector snap of the HPTLL—
  - 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 outermost item of equipment.

6-111. 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 of the 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 6-79).



Figure 6-79. Attachment of HPTLL to the modular airborne weapons case

CREW-SERVED WEAPONS/M3 MULTIROLE ANTIARMOR/ANTIPERSONNEL WEAPON SYSTEM

6-112. 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 1/4-inch cotton webbing to the pouch attachment ladder system webbing in two places and secure it using a bowknot. The M3 MAAWS can be rigged in large MAWC or AT4JP. The following also applies:

- The M240L can be rigged in the MAWC with short barrel attached.
- The 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.

M3 MULTIROLE ANTIARMOR/ANTIPERSONNEL WEAPON SYSTEM

6-113. Rigging the MAWC to be jumped as a tandem load with the M3 MAAWS:

- Due to the size and weight of the M3 MAAWS rigged inside the large MAWC, it is considered a special item of equipment.
- The following procedures and restrictions are in place to ensure the safe delivery of this item to the DZ:
  - The jumper is no less than 70 inches in height (5 feet, 10 inches).
  - It is only exited from the right paratroop door and is considered one of the 12 special items of equipment allowed on any one aircraft.
  - The safety dons the M3 MAAWS on the jumper at the 20-minute time warning and conducts a technical inspection (T.I.) ensuring it is properly rigged to the jumper.
  - The M3 MAAWS must be rigged in the large MAWC while the M3 MAAWS may be rigged with an M4.
- Components:
  - M3 MAAWS.
  - Telescopic sight.
  - M4 rifle.
  - One 4-inch piece of PBHC.
  - HPTLL.

6-114. Preparation of equipment and rigging procedures:

- Inspect the large MAWC to ensure serviceability.
- Lay the MAWC on the ground with the internal padded divider folded over the closing flap and the adjustable nose cone fully elongated.
- Insert one 4-inch by 10-inch piece of PBHC into the adjustable nose cone of the weapons case.
- Place the venturi and muzzle covers on the weapon.
- Remove the telescopic sight and laser and pad with bubble wrap or cellulose wadding.
- Either position the telescopic sight package—
  - Between the front grip and the shoulder pad, or alongside the firing mechanism and secure to the weapon with two lengths of 1/4-inch cotton webbing.
  - Place inside the main compartment of the ALICE pack or MOLLE.
- Place the weapon in the case with the muzzle towards the bottom of the case and the front grip flat against the case.
- Position the weapon so the carrying handle is against the non-slide fastener side of the case.
- Push the venturi end of the weapon—
  - Extending the adjustable nose cone until the weapon end is nearly flush with the top of the MAWC.
  - There should be four strips of HPT showing on the adjustable nose cone of the weapons case.
- Tighten the securing straps, ensuring the adjustable nose cone does not extend any further.
- Place the M4 in the MAWC with the muzzle pointed down and the pistol grip towards the M3 MAAWS.

M3 Multirole Antiarmor/Antipersonnel Weapon System 84-millimeter Illuminator, Smoke, or Heat Rounds (Short Twin Tubes) Rigged on a Jump Pack

6-115. When rigging the short twin tubes on the jumpable pack, the rubber container stop must be present to prevent the containers from opening:

- Place the short tubes on the top of the jumpable pack and under the top closing flap:
  - Close the closing flap.
  - Secure all compression straps on the jumpable pack as tightly as possible.
- Route one turn of single type II or type III nylon cord—
  - Through the side nylon equipment hangers on the side of the jumpable pack.
  - Over the tubes.
  - Through the nylon equipment hangers on the other side of the jumpable pack and secure the running ends together as tightly as possible.
- Continue to rig the jumpable pack with the HSPR.

6-116. Rigging the M122 tripod includes the following actions:

- Detach the flex mount and traverse and elevation (T&E) mechanism.
- Pad and tape these items with bubble wrap and masking tape.
- Place the flex mount and T&E mechanism inside the main compartment of the jumpable pack.
- Fold the M122 tripod's short leg down and secure it with a sufficient length of 1/4-inch cotton webbing in a single or double looped bowknot.
- If jumping the M122 tripod inside the spare barrel bag, the short leg does not need to be tied off (see figure 6-80 on page 112).



Figure 6-80. Place M122 tripod under closing flap of MOLLE pack

6-117. 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.

6-118. 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 1/4-inch cotton webbing in a nonslip 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 is protected from impact.
  - This allows 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 6-81).
- Secure the exposed portion of the legs to the horizontal equipment hangars on the side of the jumpable pack with a sufficient length of 1/4-inch cotton webbing using a single- or double-looped bowknot.



Figure 6-81. Place M192 lightweight ground mount in the main compartment of MOLLE

6-119. To rig the spare barrel bag—

- Place the spare barrel bag directly under the closing flap of the jumpable pack.
- Secure the closing flap, removing all slack.

6-120. The 60-mm mortar weapon system (M225 and the M225A1 cannon) are rigged inside the MAWC (see figure 6-82). Follow the same procedures described in the M3 MAAWS section.

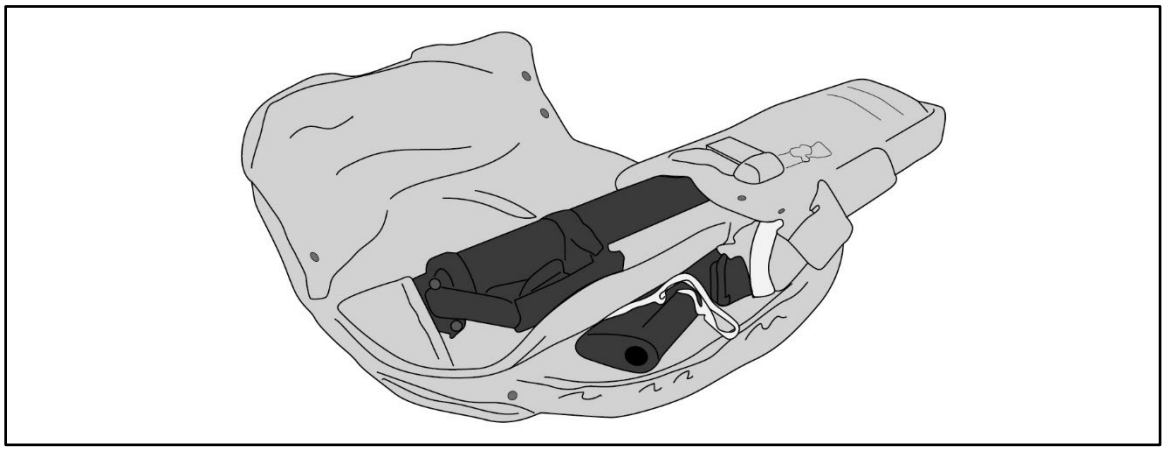


Figure 6-82. M225 cannon and M4 rigged inside the modular airborne weapons case

6-121. 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 adjustable nose cone.
- The M170A1 Bipod Assembly (newer model) must be rigged inside the large MAWC with the M4 following the same rigging procedures as the M170 Bipod (see figure 6-83).

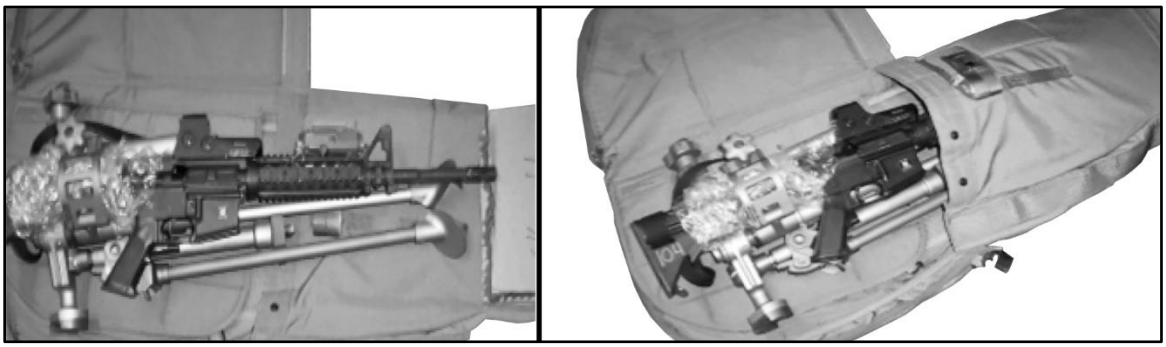


Figure 6-83. M170A1 components and M4 laid out, left, and M170A1 and M4 stowed inside the large modular airborne weapons case, right

6-122. Rigging of 60-mm mortar ammunition:

- A maximum of six mortar rounds can be jumped in the ALICE pack/MOLLE/MOLLE 4K
- The 60-mm mortar ammunition is removed from its case and can be jumped either inside its inner packaging tubes, or with the tubes removed.
- If ammunition is to be jumped inside its inner packaging tube, each tube of ammunition is placed inside the ALICE pack/MOLLE/MOLLE 4K with no additional padding required.
- If ammunition is to be jumped with the inner packaging tube removed, each round is wrapped in two layers of cellulose wadding or bubble wrap and secured with masking tape:
  - It is then placed inside the ALICE pack/MOLLE/MOLLE 4K.
  - The ammunition must be placed inside of the main compartment with the closing flap secured.
  - Do not place any ammunition directly under the closing flap.
- Complete rigging the ALICE pack/MOLLE/MOLLE 4K as previously described.

6-123. Rigging the 60-mm mortar aiming stakes with case:

- Inspect the aiming stakes with case for serviceability, if the lift fastener on the closing flap is missing or unserviceable, it may be secured with two turns of 100-miles per hour (mph) tape.
- Girth hitch two sufficient lengths of 1/4-inch cotton webbing to either the compression straps or around the entire case.

- Place the aiming stakes under the top closing flap of the ALICE pack/MOLLE/MOLLE 4K.
- Route the 1/4-inch cotton webbing through the vertical equipment hangers on each side of the ALICE pack/MOLLE.
- Remove all slack and tie in place with a single or double loop bow knot.
- Secure the closing flap and complete rigging the ALICE pack/MOLLE/MOLLE 4K.

6-124. Rigging the M64 sight assembly:

- The M64 sight assembly may be jumped with or without its case.
- If the M64 sight assembly is to be jumped with the case, secure the case with one layer of cellulose wadding or bubble wrap secured with masking tape.
- If the M64 sight assembly is to be jumped without the case, wrap the M64 sight assembly with two layers of cellulose wadding or bubble wrap secured by masking tape.
- Place the sight assembly inside the ALICE pack/MOLLE/MOLLE 4K and secure the closing flap.

6-125. Rigging the M8 or M8A1 small baseplate:

- Wrap the M8A1 small baseplate in two layers of cellulose wadding or bubble wrap and secure with masking tape.
- Place the M8A1 small baseplate inside the ALICE pack/MOLLE/MOLLE 4K and secure the closing flap.
- Complete rigging the ALICE pack/MOLLE/MOLLE 4K as previously described.

Note. Neither the M8 or M8A1 small baseplate is placed inside of the MAWC. It must be jumped in a jumpable pack.

6-126. Rigging the M7 or M7A1 large baseplate with an ALICE pack:

- Place the M7 large baseplate on top and centered on the center outer accessory pouch of the ALICE pack, with the legs pointed upward and aligned with the four corners of the frame.
- Cut four pieces of 1/2-inch to one-inch tubular nylon webbing and route the four pieces of tubular nylon webbing:
  - Route two under the tubular portion of the baseplate between the V-notch formed by the base of the frame and the tubular portion of the frame bottom.
  - Route two to the inside of the shoulder carrying strap loops (top) of the ALICE frame.
  - Route through the center cut-away portion of the baseplate, behind the legs and temporarily secure with a single or double looped bow knot (see figure 6-84).

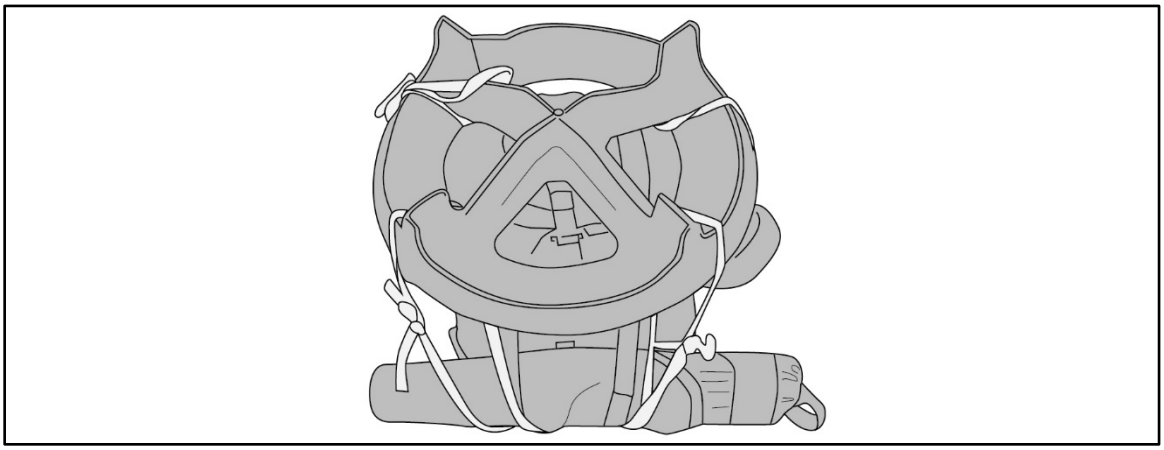


Figure 6-84. Secure M7 large baseplate to ALICE pack with tubular nylon

- Drape a properly assembled HSPR over the baseplate, ensure the opening gates of the snap hooks are facing downward and towards the base of the frame (see figure 6-85).

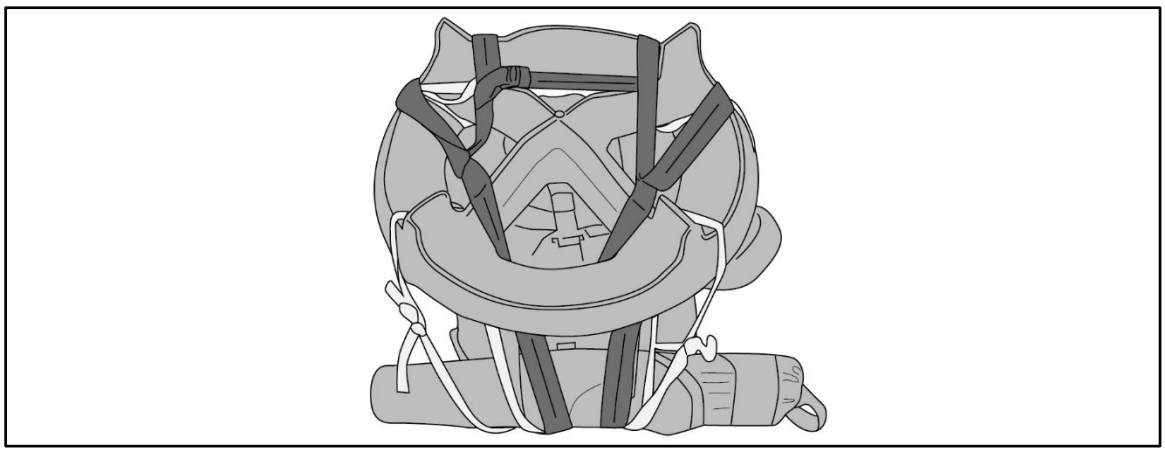


Figure 6-85. Drape harness, single-point release over M7 large baseplate

- Route the equipment retainer straps over the baseplate, between the legs and over the bottom cutaway portion and under the top cut-away portion:
  - Ensure the equipment retainer straps are routed under the top securing ties and to the outside of the shoulder carrying straps loops.
  - Ensure the equipment retainer straps are routed under the envelope cushion portion and the tubular portion of the frame.
- Continue to rig the HSPR to the ALICE pack:
  - Ensure that the white attaching loops are in line and located at the bottom of the ALICE pack.
  - Ensure the entire release handle is accessible to the jumper.
- Untie the four pieces of tubular nylon webbing, tighten and re-secure with a square knot and place a half hitch in each free running end (see figure 6-86).

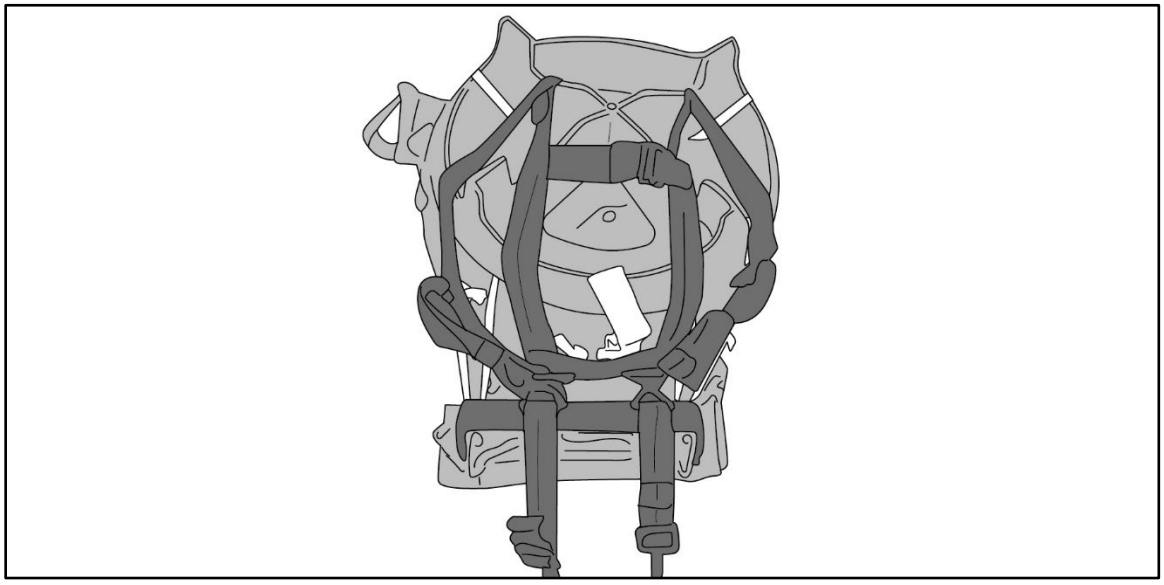


Figure 6-86. M7 large baseplate secured to ALICE pack with hook-pile tape lowering line

- Trim excess tubular nylon webbing to within two inches in length.
- Finally, 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 the male portion 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.

6-127. Rigging the M7 large baseplate with a MOLLE 4000:

- If jumping a MOLLE 4000, the center outer accessory pouch must be empty to ensure the M7 or M7A1 large baseplate remains stable.
- Position the large baseplate on top of the MOLLE 4000:
  - The legs face skyward and are positioned so that the legs face north to south and east to west.
  - The legs are not aligned with the corners of the pack.
- Cut four pieces of 1/2- to one-inch tubular nylon webbing:
  - Route the four pieces of tubular nylon webbing through all cut-away portions of the large baseplate.
  - The top tie downs are secured through the square cut-away portion centered on the MOLLE 4000 frame, under the back pad.
  - The bottom tie downs are secured through the large cut-away portion at the base of the MOLLE 4000 frame.
  - All ties are temporarily secured with a single or double looped bow knot.
- Route the equipment retainer straps—
  - Through the corresponding side bottom opening of the large baseplate.
  - Under the horizontal frame of the baseplate.
  - Through the air item routing channel located above the outer accessory pouches.
  - Through the corresponding top opening of the baseplate and through the friction adapter, ensuring there are no twists.
- Continue rigging the IHSPR to the MOLLE 4000 as normal.
- Untie the four pieces of tubular nylon webbing, tighten, and re-secure the nylon webbing with a square knot and place a half hitch in each free running end.
- Trim excess tubular nylon webbing to within two inches in length (see figure 6-87).

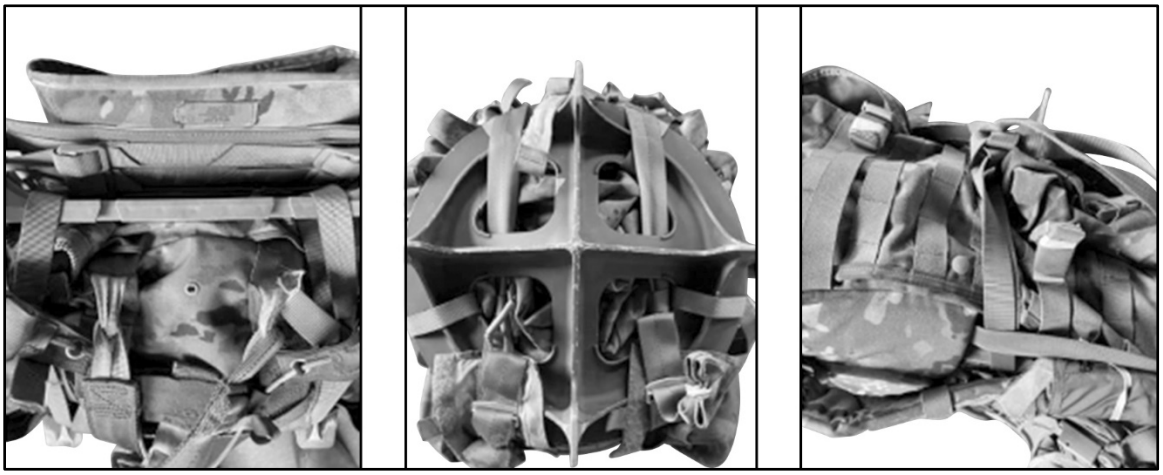


Figure 6-87. Proper rigging of the M7 large baseplate with a MOLLE 4000

6-128. Rigging the M7 large baseplate with a large MOLLE:

- If jumping a large MOLLE:
  - The outer accessory pouch in the center between the release handle cross strap.
  - The adjustable cross strap is removed to ensure that M7A1 large baseplate remains stable.
- Position the M7 large baseplate directly on top of the MOLLE with the legs facing skyward and positioned at the corners of the frame.
- Cut four pieces of 1/2- to 1-inch tubular nylon webbing.
- Route the four pieces of tubular nylon webbing through—
  - The center cut-away portions of the M7 large baseplate.
  - Behind the legs, and then through the top and bottom cut-away portions of the MOLLE frame.
- Temporarily secure the ties with a single or double looped bow knot (see figure 6-88).



Figure 6-88. Route tubular nylon on MOLLE for M7 large baseplate

- Drape a properly assembled HSPR over the baseplate ensuring the opening gates of the snap hooks are facing down and towards the bottom of the MOLLE frame:
  - Route the equipment retainer straps over the baseplate, between the legs and over the bottom cutaway portion and under the top cutaway portion.
  - Ensure the equipment retainer straps are routed under the top securing ties.
  - Routed through the top cutaway portions of the MOLLE frame above the adjustable shoulder carrying straps.
- Continue to rig the HSPR to the MOLLE.
- Ensure the white attaching loops are in line and located at the bottom of the MOLLE, and the entire release handle assembly is accessible to the jumper.
- Untie the four pieces of tubular nylon webbing, tighten and re-secure with a square knot and place a half hitch in each free running end.
- Trim excess tubular nylon webbing to within two inches in length.
- Finally, 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 MOLLE:
  - Secure the male portion 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 6-89).

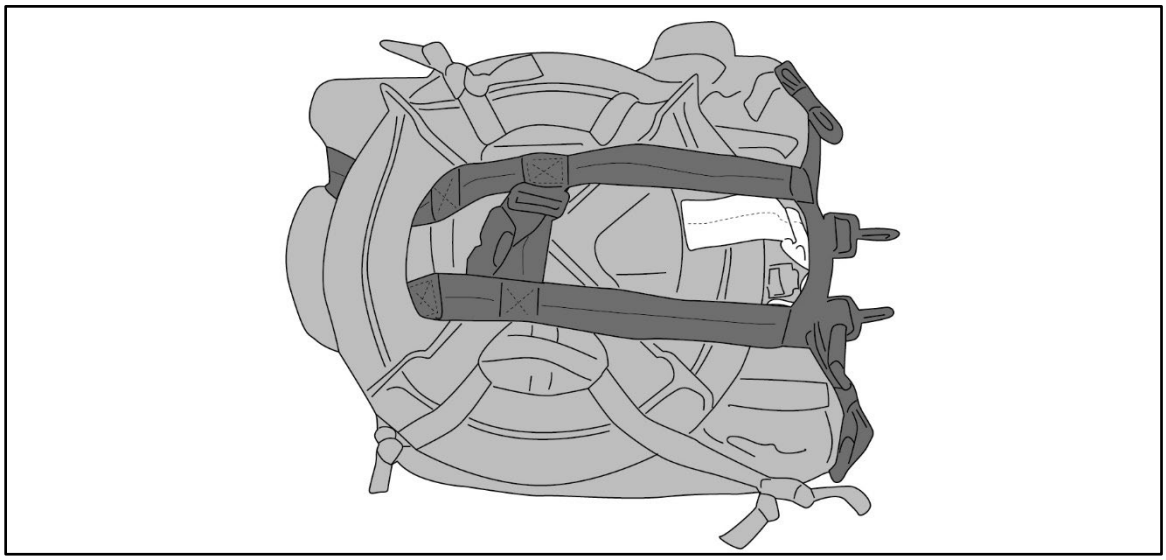


Figure 6-89. HSPR laid out on the M7 large baseplate

M4 CARBINE AND M24 TRIPOD (AIMING CIRCLE TRIPOD)

6-129. Rigging the M4 and M24:

- The M24 tripod is rigged inside the large MAWC with the jumper's M4 carbine.
- Padding and taping the base of the M24 tripod is necessary to ensure the spikes do not damage the MAWC (see figure 6-90).
- The M24 tripod is placed under the internal padded divider.

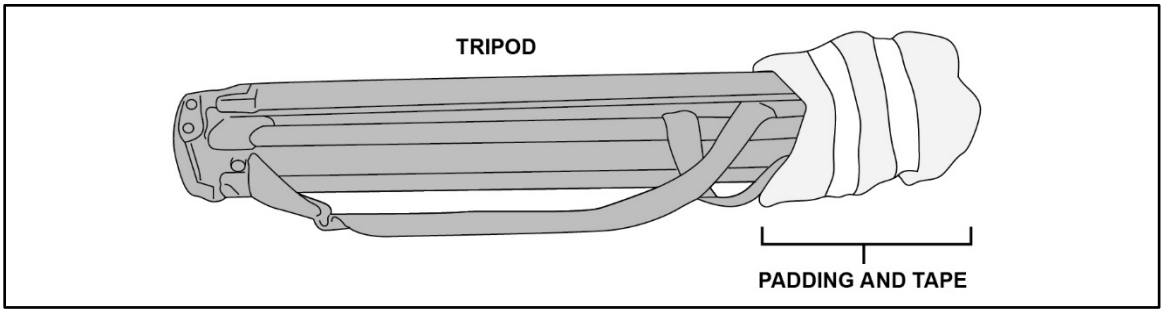


Figure 6-90. M24 tripod

- Place the tripod as close to the closing flap as possible; this allows jumpers to fold over the internal padded divider and secure the weapon as they normally would (see figure 6-91).

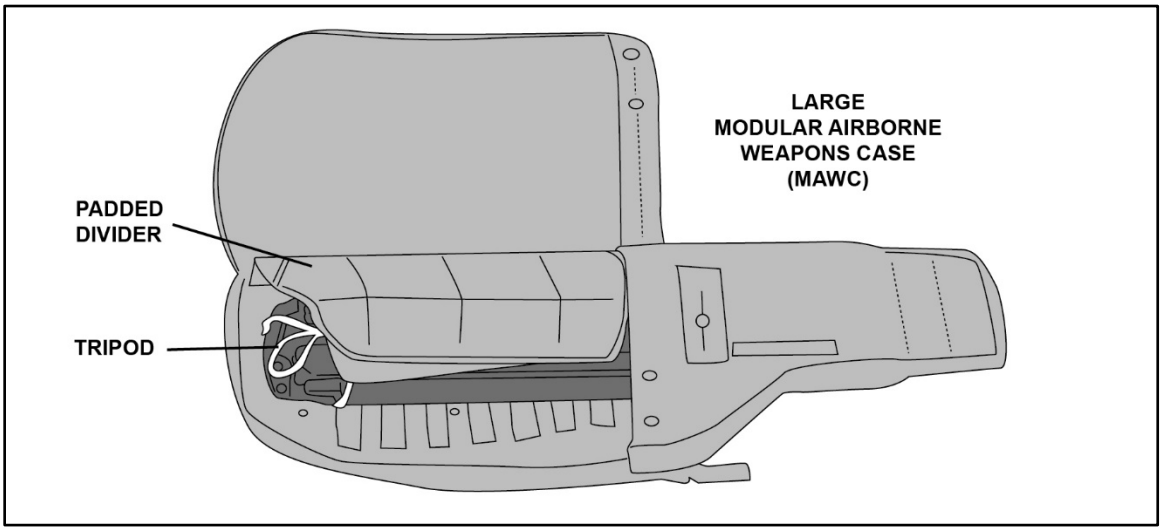


Figure 6-91. Tripod and M4 in the modular airborne weapons case

- Place a piece of 6 1/2-inch by 11-inch PBHC inside the adjustable nose cone to fill the void and allow the muzzle to rest against it.

SNIPER RIFLES

6-130. All snipers or designated marksman are authorized to add an additional primary weapon (M4 carbine or similar weapon system) to the MAWC for personal protection. Depending on the type of sniper rifle being delivered the individual may not be able to effectively defend themselves on the DZ. The M4 is placed inside the MAWC in accordance with the rigging procedures outlined in rigging of M4 with the M3 MAAWS

6-131. The M107 Heavy Caliber Anti-Materiel/Anti-Personnel Sniper Rifle, XM2010 Enhanced Sniper Rifle, M14 Enhanced Battle Rifle (also called EBR), and the M110 sniper rifle are all delivered inside the small MAWC. Padding and taping is required for all variable scopes:

- The collapsible butt stock on the XM2010 must be folded down, protecting the bolt handle when the weapon is placed inside the MAWC with the bolt handle facing down.

- The forward assist is facing down on the M110 because the telescopic sight is too large for the weapon to be placed inside the MAWC with the forward assist facing up (see figure 6-92).
- The suppresser must be removed and placed in the main compartment of the jumpable pack.

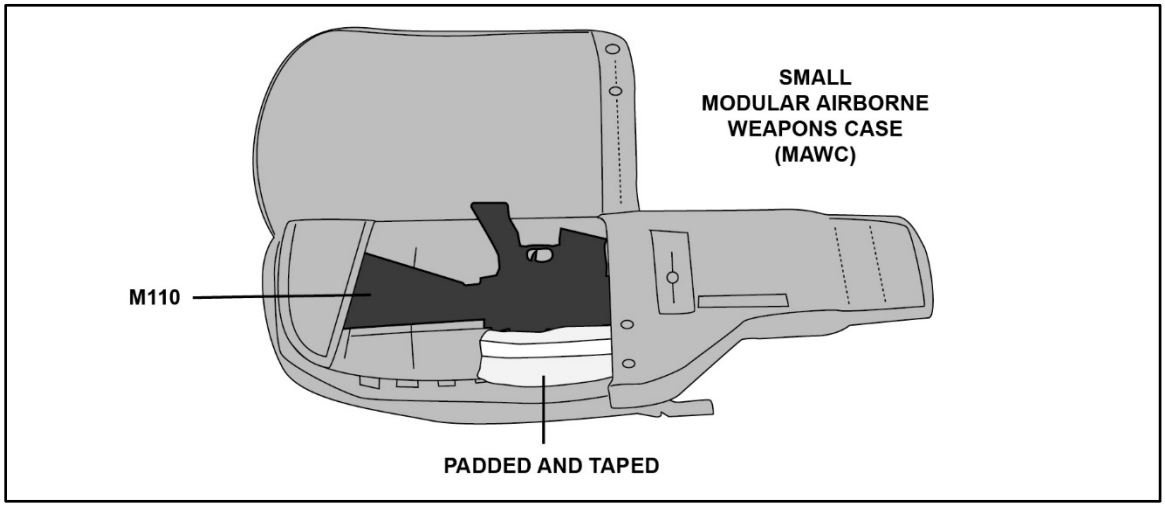


Figure 6-92. M110 rigged in the modular airborne weapons case

6-132. Rigging procedures for the M107:

- The M107 must be broken down into two parts, the upper and lower receiver.
- Configure the lower receiver:
  - The bolt carrier group is recessed into the main spring area of the lower receiver locking it to the rear with the small take down pin and the bipod legs are folded to the rear.
  - Using 1/4-inch cotton webbing, secure both take down pins to the butt stock of the weapon.
- Configure the upper receiver so the barrel is recessed into the upper receiver:
  - Pad and tape the upper receiver before placing it inside the MAWC (see figure 6-93).
  - Both items can be placed on top of the internal padded divider and secured in the adjustable nose cone.

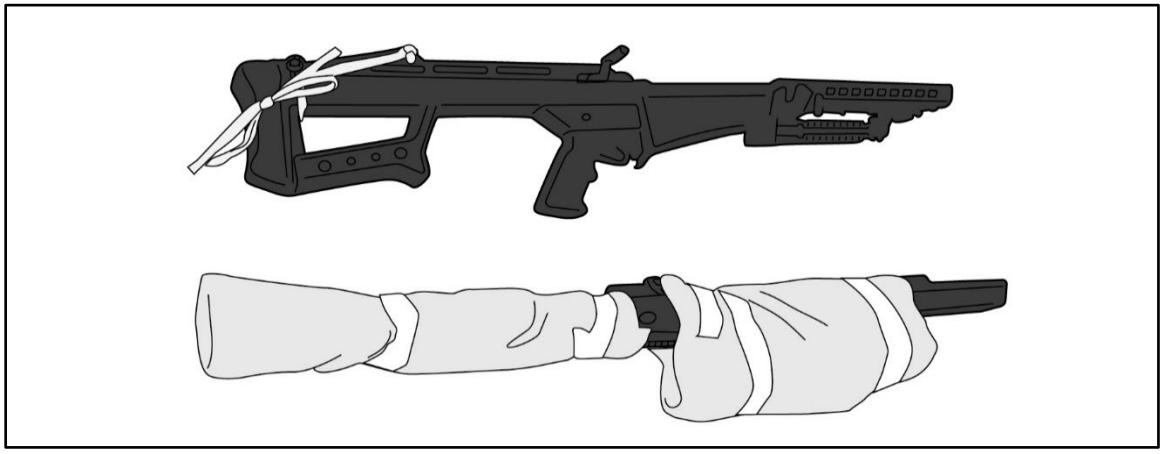


Figure 6-93. M107 broken down, padded, and taped

AT4 OR SHOULDER-LAUNCHED MULTIPURPOSE ASSAULT WEAPON-DISPOSABLE RIGGED INSIDE THE LARGE MODULAR AIRBORNE WEAPONS CASE

6-133. The AT4 or shoulder-launched multipurpose assault weapon-disposable (SMAW-D) when rigged inside the MAWC is no longer considered special items of equipment:

- The AT4 or the SMAW-D is rigged inside the large MAWC with the jumper's M4 carbine:

- The launcher is placed on top of the internal padded divider.
- The M4 carbine is rigged underneath.

- Required materials for rigging:
  - 3-inch by 10-inch piece of PBHC.
  - 1/4-inch cotton webbing.
  - Bubble wrap.
- AT4 rigging procedures:
  - Place the 3-inch by 10-inch piece of PBHC inside the adjustable nose cone.
  - Size the large MAWC to the AT4.
  - Secure the HPT on the adjustable nose cone and tighten both nose cone securing straps.
  - Pad and tape any area of the M4 carbine that rests against the AT4 inside the adjustable nose cone.
  - Secure the M4 to the pouch attachment ladder system webbing with 1/4-inch cotton webbing.
  - Fold down the internal padded divider and place the aft portion of the launcher inside the adjustable nose cone.
  - Rest the forward portion of the launcher on top of the rifle butt pocket (see figure 6-94).
  - Continue to rig the large MAWC.

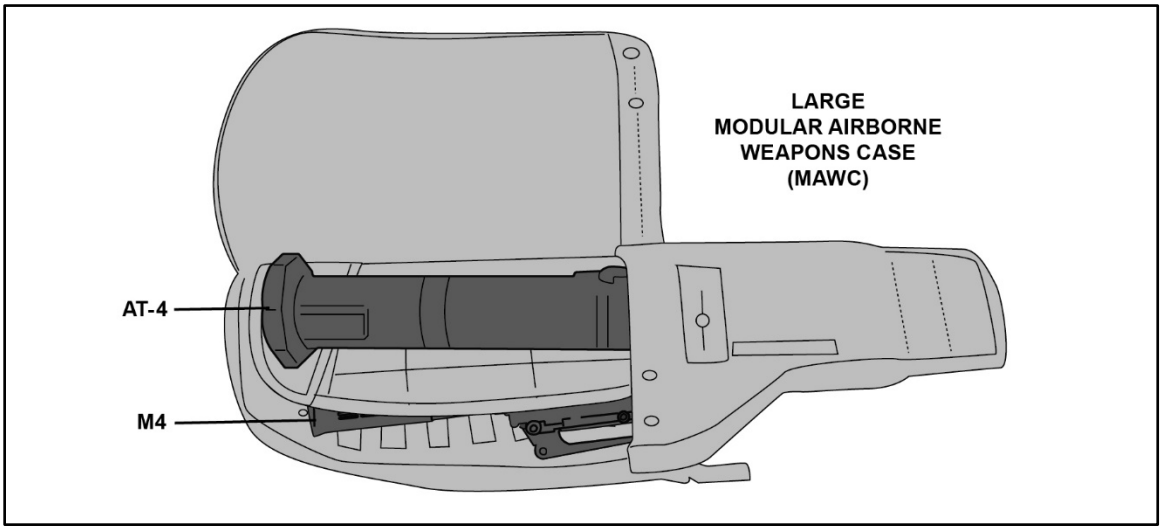


Figure 6-94. AT-4 and M4 rigged inside the large modular airborne weapons case

6-134. SMAW-D rigging procedures:

- Place the PBHC inside the adjustable nose cone (6-inch by 10-inch).
- Size the large MAWC to the SMAW-D.
- Secure the HPT on the adjustable nose cone and tighten both nose cone securing straps.
- Fully collapse the buttstock of the M4 carbine.
- Pad and tape any area of the M4 that rests against the AT4 inside the nose cone.
- Secure the M4 to the pouch attachment ladder system webbing with 1/4-inch cotton webbing.
- Fold down the internal padded divider and place the aft portion of the launcher inside the adjustable nose cone.
- Rest the forward portion of the launcher on top of the rifle butt pocket.
- Continue rigging the large MAWC.

STINGER MISSILE JUMP PACK

6-135. The SMJP is designed to contain one stinger missile. The jump pack consists of a pack body constructed of 7.25-ounce nylon duck material with 1/4-inch polyester felt material, nylon side securing straps, a carrying handle, a lowering line extension sling, and a snap shackle and hook with spring opening gate.

6-136. When the SMJP is rigged with a missile round, it weighs approximately 38 pounds, has a cross section that varies from 5 to 11 inches and is 67-inches long. It is secured vertically by the snap shackle and hook with spring opening gate to the left equipment-ring of the parachute harness. To prevent the SMJP from swaying during the jumper's exit from the aircraft and/or from the opening shock of the parachute, an upper and lower attaching strap are provided. The upper attaching strap is routed around the SMJP and behind the left main lift web directly below the chest strap, while the lower attaching strap is routed through the frame of the authorized jumpable pack, between the jumper's legs, and around the SMJP and the jumper's left leg.

6-137. The HPTLL is used to lower the SMJP and the authorized jumpable pack. Route the HPTLL ejector snap through the D-ring on the lowering line extension sling on the SMJP, then the ejector snap is attached to the triangle link on the left side of the parachute harness.

6-138. Upon landing, the jumper can rapidly get to the weapon by pulling the free running ends of the quick releases on the side securing straps of the SMJP.

QUALIFICATIONS, CURRENCY, AND LIMITATIONS

6-139. To be allowed to jump:

- The jumper must be at least 5 feet, 8 inches tall.
- The jumper must have at least 12 static line jumps from high-performance aircraft.
- The jumper must make two perfect exits from the right paratroop door of the 34-foot tower with an SMJP.
- The jumper must be talked through the five points of performance and lowering procedures, with the SMJP, while in the suspended harness.
- The jumper must make two T-11 daytime jumps from 1,250 feet AGL before they can jump the SMJP from 1,000 feet AGL.

6-140. The time requirements include the following:

- The jumper must jump once every 180 days from a USAF aircraft, with the SMJP.
- If not, the jumper must go back through the prescribed training requirements/qualifications outlined in paragraph 6-138.
- If it has been more than one year—
  - Since the last exit from a USAF aircraft with the SMJP, it is recommended (not required) the jumper conduct one daylight jump from 1,250 feet AGL.
  - Resume jumping at 1,000 feet AGL.

6-141. Limitations include:

- The SMJP cannot be jumped from the left paratroop door of USAF aircraft due to the size and bulkiness of the SMJP.
- With the SMJP on the jumper's left side, it is more likely the jumper could bump the left trail edge of the door with the SMJP when exiting the aircraft.
- The SMJP cannot be jumped from USA aircraft.
- When exiting an A-series container from the right paratroop door, no SMJP is exited on that pass.
- The SMJP and the MAWC cannot be jumped at the same time as the jumper's M16A1/A2 rifle or the M4 carbine is jumped exposed.
- The SMJP must be jumped from the No. 1 and No. 2 jumper positions.

- Only two SMJPs can be jumped:
  - From the right paratroop door, per pass, during mass tactical airborne operations.
  - With a 2-second interval between SMJP jumpers.
  - With a 2-second interval between the last SMJP jumper and No. 1 jumper on the left paratroop door.
- During proficiency jumps, up to six SMJP may be jumped from the right paratroop door, with a 2-second interval between jumpers.

RIGGING THE STINGER MISSILE JUMP PACK TO THE JUMPER

6-142. Padding the Stinger missile includes:

- Flipping up the sight assembly of the missile.
- Fold the bubble wrap over itself three to four times:
  - Place the bubble wrap under the sight assembly and flip the sight assembly down onto the cellulose wadding.
  - Firmly press down on the sight assembly to make sure the bubble wrap fills the gap between the sight assembly and the launch tube, and the sight assembly locks in position.
  - Wrap two to three turns of bubble wrap around the sight assembly and launch tube and secure it in place with masking tape.
- Wrap bubble wrap around the aft end of the launch tube to ensure the end cap fits snugly to the launch tube.
- Place the foam shock absorber—
  - Onto the forward end of the launch tube in the same fashion.
  - Ensuring the 'lollipop' on the forward cap is positioned in the cutout portion of the foam shock absorber.
- Tape the foam shock absorbers together using 100-mph tape if available; masking tape (1- or 2-inches wide) may be used if the other 100-mph tape is not available.
- Positioning the Stinger missile—the pack body is placed with the felt side of the pack body facing up and extend all side securing straps.
- The aft shock absorber (opposite end from the sight assembly) is fitted into the launcher's aft end bridle of the pack body.
- The Stinger missile is positioned in the pack body with the sling facing up.
- Closing the pack body—the pack body is folded around the Stinger missile so the flap with the friction adapters is on the outside of the pack body.
- The five side securing straps are routed through the friction adapters using a quick-release fold and are loosely tightened down to ensure the pack body is formed around the Stinger missile.
- The five side securing straps should be secured with retainer bands or masking tape, using one of the two methods but never both.
- The SMJP is placed up on end so the launcher forward end securing straps are on top:
  - The end straps are routed through the friction adapters opposite of each strap.
  - The pack is held off the ground and shaken to ensure the non-adjustable end strap bridle is taut.
  - The end straps are tightened down all the way.
  - A quick-release fold is not used here; they are rolled back on themselves and secured with 1/4-inch cotton webbing using a single- or double-looped bow knot.
- The pack body is positioned on the aft shock absorber:
  - A 6-inch by 6-inch square block of PBHC is centered and secured across the launcher forward end shock absorber of the Stinger missile, using the launcher forward end securing straps.
  - They are routed over the PBHC, through the appropriate friction adapters, and tightened down to form an X over the center of the PBHC.
  - The launcher forward end securing straps are secured by rolling them back onto themselves and secured with 1/4-inch cotton webbing using a single or double looped bow knot.
  - Jumpers then secure a single piece of 1/4-inch cotton webbing and double it, then form an X configuration over the launcher forward end securing straps and on top of the PBHC.

  - Route the 1/4-inch cotton webbing under the launcher forward end securing strap diagonal across from each other forming an X configuration.
  - Jumpers then tighten down on the 1/4-inch cotton webbing using a single- or double-loop bow knot.
- Rig the individual weapon exposed in accordance with this chapter.

6-143. Attaching the SMJP release assembly:

- The hook tape on the release handle is positioned over the HPT on the pack body.
- The release handle cables are routed through the cable channels.
- The upper attaching strap loop is routed over the upper attaching strap grommet.
- The red attaching loop of the upper attaching strap is routed through the upper attaching strap grommet.
- The release handle cable is routed through the upper red attaching loop.
- The same procedure is used to connect the lower attaching strap.
- The snap shackle and hook with spring opening gate is hooked onto the appropriate O-ring on the pack body:
  - The snap portion is secured to the O-ring.
  - The spring opening gate faces the jumper.
- The lower attachment strap must always be used instead of the adjustable leg strap on the HSPR.
- The lower O-ring is for jumpers between 68 and 70 inches tall and the middle O-ring is for jumpers 70 to 72 inches tall, and the upper O-ring is for jumpers 72 inches and taller.
- The jumpmaster is JMPI (in accordance with chapter 9) from the helmet to the weapon:
  - The jumper's weapon is exposed.
  - Inspect the exposed weapon to ensure it is rigged as previously described.
  - Ensure the butt stock is up, muzzle is down, carrying handle to the jumper's front, and the pistol grip is to the rear.
  - With the working hand, place index finger on the rear sling swivel.
  - Ensure the rifle sling is securely and directly attached to the swivel, with no metal clips or adapters.
- Trace the 1/4-inch cotton webbing—
  - Under the left riser to left diagonal back strap one sizing channel above the diagonal back strap keeper.
  - Ensure it is securely tied with a single- or double-looped bow knot.
- With the index finger of the working hand, trace down the weapon where it attaches directly to the front swivel:
  - Ensure the muzzle and the front sight post are protected with bubble wrap and masking tape.
  - The next item of equipment for inspection is the reserve parachute.

6-144. Attaching the SMJP to the jumper:

- The SMJP is the last item attached to the jumper.
- At the 20-minute time warning the safety attaches the SMJP to the jumper by attaching the snap shackle and hook with spring opening gate to the left equipment ring of the T-11 parachute harness:
  - To do this, release pressure on the snap shackle portion by pulling the release handle lanyard, then lift the pack body up to the equipment ring on the parachute harness.
  - Insert the snap shackle and hook with spring opening gate from bottom to top on the equipment ring and close the snap shackle.
  - Ensure it is the outermost item on the left equipment ring (see figure 6-95 on page 124).

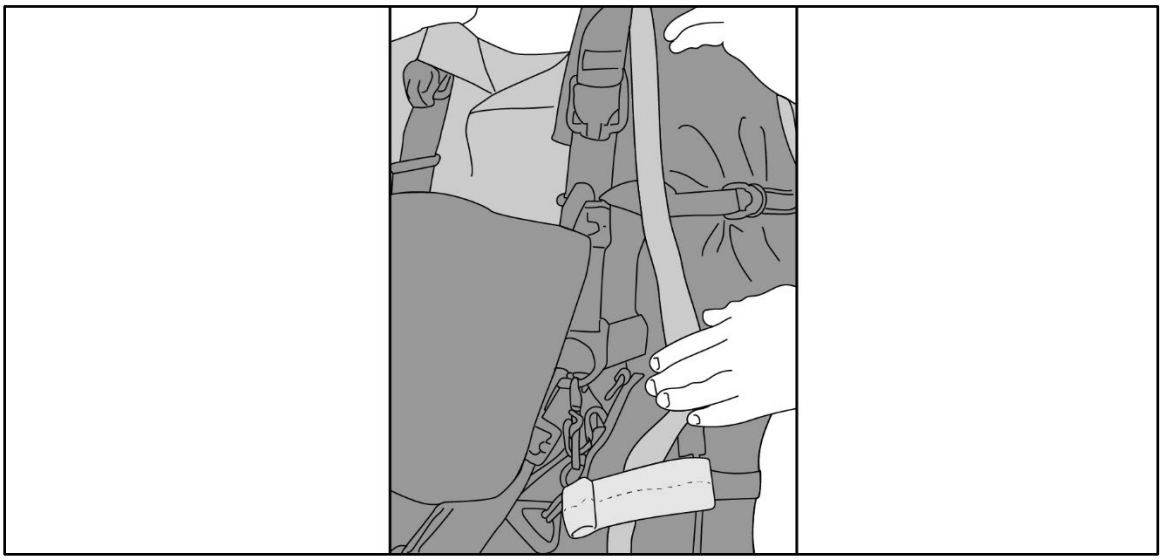


Figure 6-95. Attaching the Stinger missile jump pack to the jumper

- The ejector snap of the HPTLL is routed from bottom to top through the D-ring on the lowering line extension sling, then connected to the triangle link on the jumper's left side.
- On the T-11 parachute harness, the upper tie-down tape is routed from front to rear and top to bottom through the left D-ring:
  - It is then routed around the SMJP and through the adjusting buckle, tightened as much as possible.
  - A half-hitch is incorporated tight against the adjusting buckle.
- The lower attaching strap is routed—
  - Through the frame of the authorized jumpable pack.
  - Between the jumper's legs.
  - Around the SMJP, and through the adjusting buckle, tightened as much as possible.
  - A half-hitch is incorporated tight against the adjusting buckle.
- Attach a piece of 1/4-inch cotton webbing approximately 3 feet in length to—
  - The release handle of the HSPR and to the carrying handle of the SMJP (see figure 6-96).
  - Tie in both places with non-slip knots and secure the excess.



Figure 6-96. Properly rigged Stinger missile jump pack

Note. The lower attachment strap must always be used instead of the adjustable leg strap on the HSPR.

6-145. The following is a checklist of items to be inspected by the safety after attaching the SMJP:

- The HPTLL is properly routed from bottom to top through the lowering line extension sling.
- The lowering line extension sling is properly routed from the top of the SMJP to the HPT securing point.
- The SMJP is rigged properly with all straps secured tightly.
- The ejector snap on the HPTLL is secured to the triangle link with the opening gate facing towards the jumper.
- The snap shackle and hook with spring opening gate are secured to the proper O-ring on the SMJP, preventing the SMJP from dragging on the floor of the aircraft.
- The SMJP is inspected prior to packing to ensure no part of the foam shock absorbers, or the outside of the pack body is damaged:
  - If the pack body is torn/excessively worn, or any textile component missing, the SMJP is not packed until the item is repaired by a qualified parachute rigger (military occupational specialty 92R).
  - Any foam shock absorber that is torn or otherwise damaged is replaced prior to packing.
- Live Stinger missiles are carefully inspected after the jump and prior to firing to ensure no visible damage has occurred.
- No live Stinger missiles are jumped more than once.
- The 1/4-inch cotton webbing is routed properly and tied in a non-slip knot in both places.

6-146. Individual jump procedures:

- The SMJP is jumped with a front-mounted authorized jumpable pack.
- At the 20-minute time warning, one designated safety attaches the SMJP to the jumper and inspects it.
- To release the SMJP on the HPTLL, the jumper does the following:
  - Looks to see that the area below, left, right, front and rear are clear, at approximately 200 feet AGL, and activates the release handle assembly on the SMJP.
  - The carrying handle of the SMJP has a 3-foot piece of 1/4-inch cotton webbing connected to it and to the release handle of the HSPR.
- Once the SMJP is lowered, it pulls the 1/4-inch cotton webbing and activates the release handle on the HSPR and lowers the authorized jumpable pack.
- The SMJP is suspended approximately 4-feet below the authorized jumpable pack.

Note. When jumping a live Stinger missile, the polyurethane shock absorbers and PBHC must be in place and securely fastened.

6-147. Stinger missile components include identification, friend or foe, a battery coolant unit, and a separable grip stock. The separable Stinger components (identification, friend or foe, battery coolant unit and separable grip stock) are individually wrapped in bubble wrap and packed in the main compartment of the authorized jumpable pack. The components must remain in the authorized jumpable pack during the jump.

WEAPONS AND EQUIPMENT CONTAINER SYSTEM

6-148. The airborne pack (AIRPAC) AJM (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.

6-149. 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

6-150. 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

6-151. 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 the bottom to the 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

6-152. 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.
- Attach the ejector snap to the primary short bridle triangle link for transportation.

RIGGING LOAD FOR SIDE-MOUNT CONTAINER

6-153. To rig the load for a side-mount container, the following is required:

- 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.
- 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 6-1).

Table 6-1. Weapon orientation and packing material required for the side-mount container

WEAPON	*PACKED ORIENTATION*	*PACKING MATERIAL*
M240B MG/SAW	Muzzle up	None required
AT4	Muzzle up	One piece of honeycomb on bottom
60-mm mortar	Muzzle down	One piece of 6-by-6-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 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 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- to 6-inch quick release in the strap and tighten.
- From the top, fold the weapon container's excess material downward until flush with the top of the load.
- Wrap unpadded fabric flap over the weapon:
  - Bring the padded fabric flap overload and loosely secure container retaining straps to the friction adapters.
  - Form a 5- to 6-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 3-inch tail.
  - Secure the drawstring on top of the container with a quick-release knot, if necessary.

RIGGING AIRBORNE PACK AS A TANDEM LOAD HOOK-PILE TAPE LOWERING LINE

6-154. 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 the unsewn portion of the short bridle and secure with a girth hitch.
  - Route the looped end of the HPTLL through the floating V-ring of the extended bridle and form a girth hitch.
- Stow the HPTLL in the retention pocket and stow extended bridle excess in the retention pocket, allowing for a 2-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, attach the extended bridle snap hook to the V-ring on the top of the side-mount container.

AIRBORNE PACK ATTACHED TO JUMPER

6-155. The AIRPAC is attached to jumper using the PIE/R2 mechanism as follows:

- Place the front-mount container attaching straps under the reserve parachute.
- 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:
  - Place 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.
  - Always 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 and secure the extended bridle under the retention flap on the container.
- On the PIE/R2 mechanism, route the upper tie-down tape—
  - Around the side-mount container.
  - Through the D-ring from bottom to top.

- Tie the upper tie-down tape utilizing a bowknot 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.
  - 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

6-156. 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 (see chapter 28 and appendix C). A water obstacle is any body of water (for example, a lake, pond, river, stream, or canal) that has a depth of 4 feet or more, is at least 40-feet wide, and is located within 1,000 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: 4220-00-705-8648) 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.

6-157. 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 (CO_2) gas cylinder that inflates the flotation bladders. (See figure 6-97 on page 130.) The TFSS-5326 is intended for use with the T-11 and MC-6 Personnel Parachute Systems.



Figure 6-97. The tactical flotation support system-5326 fastened to a Soldier's waist belt

WARNING

Jumpers must ensure they do not wear the TFSS-5326 flotation packets between the parachute harness and their body. Serious injury may result when worn incorrectly if inflated.

CAUTION

The CO_2 cartridge cover does not extend the entire length of the CO_2 cartridge cylinder, posing a potential for a cold burn to unprotected skin (frostbite 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 CO_2 cartridge movement and ensure there is a layer of clothing between the CO_2 cartridge and the parachutist's skin.

6-158. A secondary method of inflation for the TFSS-5326 is provided by left and right oral inflation tubes. A red bead (indicated by the arrow in figure 6-98) identifies the right-side pouch as worn by the jumper.

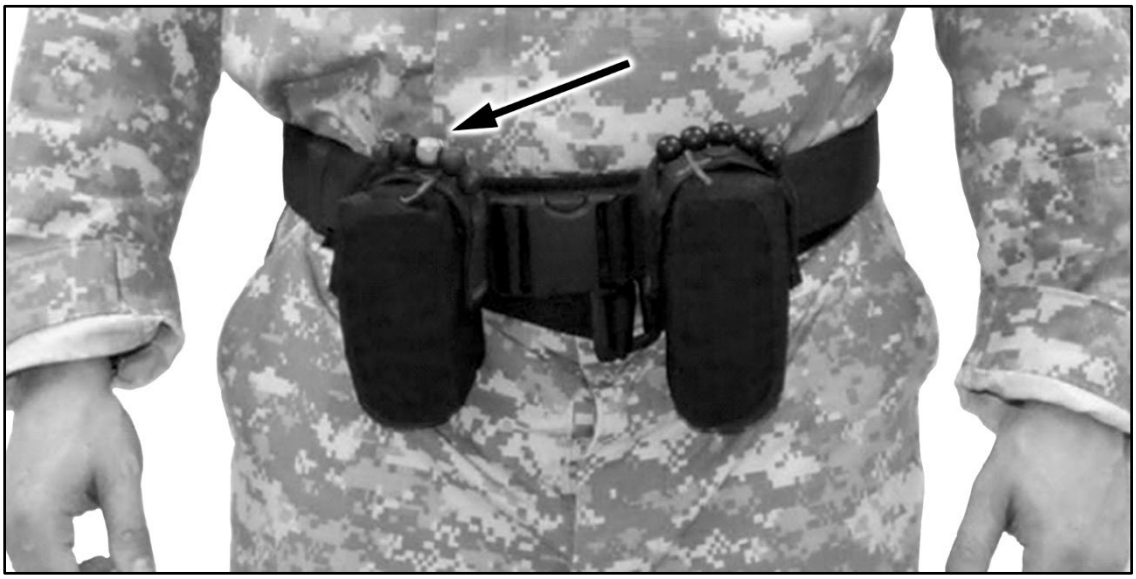


Figure 6-98. Left and right tactical flotation support system-5326 pouches

6-159. 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 6-99 on page 132.) The pouches are made of durable canvas weave fabric with Type I, 9/16-inch 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.

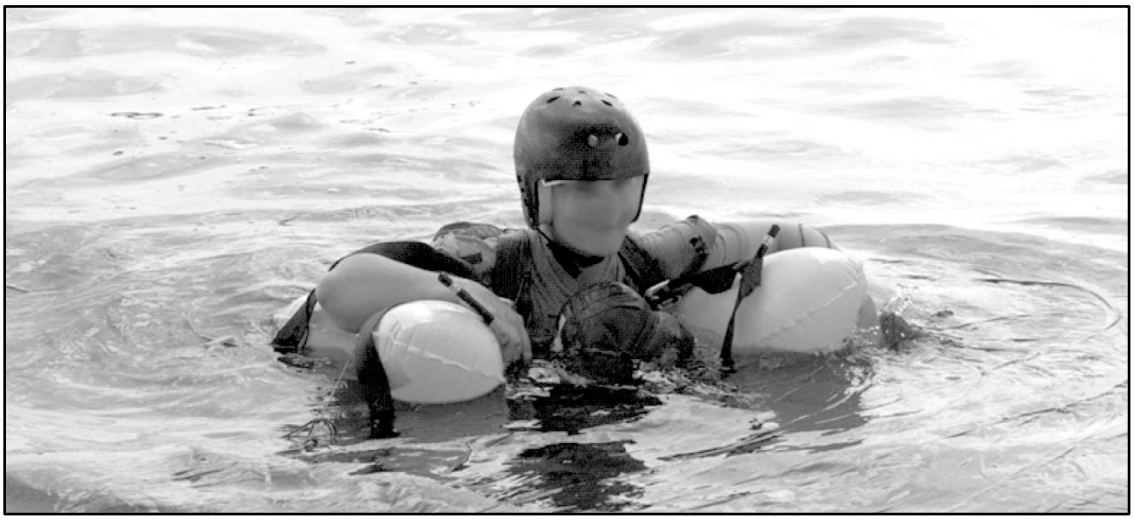


Figure 6-99. Inflated chamber to support the person under the arms

LIFE PRESERVER UNIT 10/P

6-160. The LPU 10/P (NSN: 4220-00-850-8655) is a standard USAF CO_2 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 USAF.

6-161. 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.

6-162. The jumper inflates the LPU 10/P flotation bladders by pulling two toggle cords (at the bottom of the vest) which activate the CO_2 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 CO_2 inflation valves fail to operate.

B-7 LIFE PRESERVER

6-163. 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 backstrap, then from rear to front over the right shoulder, and be attached to the ring on the right flotation packet. Jumpers 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.

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PART TWO

ADVANCED TECHNIQUES

This part discusses key personnel, jumpmaster, safety actions, and the departure airfield control officer (DACO).

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 ensure that these key personnel follow the correct procedures and operational safety measures during airborne operations. Unit commanders certify jumpmasters assigned to their units prior to a jumpmaster conducting duties.

A jumpmaster may remain current after a permanent change of station if they performed jumpmaster 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 at 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 jumpmaster 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 jumpmaster to their next duty station.

BAR 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 PLF. Jumpmaster refresher training is conducted to validate newly assigned jumpmaster qualified personnel on new equipment training for all unit-specific equipment and newly fielded equipment. They also receive training on JMPI, sustained airborne training (SAT), DZ 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 PJMs and AJMs, safety personnel, DACO, drop zone support team leader (DZSTL), drop zone safety officer (DZSO), and malfunction officer (MALFO). The jumpmaster, DACO, DZSTL, or DZSO can delegate their authority to subordinates, but they cannot delegate their responsibilities:

- The airborne commander—
  - Should be a jumper but not a member of any jumpmaster team, or serve as DACO, DZSO, or DZSTL.
  - Must be assigned to the command that approved the DD Form 2977 (*Deliberate Risk Assessment Worksheet*) for the airborne operation being conducted.
- 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 9, 10, and 11.

- The DACO:
  - Is located at the departure airfield and has coordination responsibility with the ground liaison officer (also called GLO) and airlift control element (ALCE) or aircrew for the loading of personnel, equipment, and supplies into the aircraft.
  - Provides the jumpmaster 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 8.
- Each DZ has a DZSO or DZSTL:
  - The DZSO or DZSTL has command authority over the actions and safety of all personnel on the DZ.
  - The DZSO and DZSTL procedures for DZ operations are described in chapters 19, 20, and 21.
- The MALFO:
  - As a member of the drop zone support team (DZST), the MALFO is located on the DZ where they can best view the airdrop.
  - It is the responsibility of MALFOs to investigate malfunctions promptly and accurately, enlisting as many personnel as needed to watch for malfunctions and assist during the investigation process.
  - The MALFO possesses AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 during jump operations as it describes in detail MALFO duties and responsibilities 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 are allowed to perform PJM, AJM, safety, DACO, DZSO, DZSTL, or MALFO duties for personnel and heavy equipment airdrop operations. Individuals, who are appointed as PJMs, AJMs, or safety personnel, must have the prerequisites described. The following qualifications apply to jumpmasters who are commissioned officers, warrant officers, or noncommissioned officers (NCOs):

- United States Army (USA) and USN: E-5 or above.
- USMC and United States Air Force (USAF): E-4 or above.

7-3. Airborne commanders select and certify individuals to perform jumpmaster duties. All jumpmasters should complete a formal program of instruction that meets the requirements according to appendix B. Army personnel who have graduated from an approved USAIS jumpmaster course may be awarded the additional skill identifier 5W. Jumpmaster-qualified personnel, who are not current jumpmasters, must go through jumpmaster refresher training prior to conducting any jumpmaster duties. (See appendix B for reception and integration requirements.)

7-4. To be jumpmaster current, the jumpmaster must have either performed jumpmaster 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 jumpmaster refresher course (see appendix C) in the preceding 180 days and is a current jumper. A jumpmaster must be a current and qualified T-11 or MC-6 (or both) jumper to perform jumpmaster duties.

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

For USN and USMC only: if fixed-wing, high-performance aircraft are not available, the jumpmaster, AJM, and safety may meet currency requirements using organic rotary-wing or nonstandard aircraft.

7-5. A new graduate of a recognized jumpmaster 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 from 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 jumpmaster must first meet the performance duty requirements of the PJM on a fixed-wing. A jumpmaster may conduct jumpmaster duties and maintain currency from a rotary-winged or nonstandard aircraft during a 180-day period. However, the next jumpmaster 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 jumpmaster duties from a rotary-winged nonstandard aircraft, as stated in this paragraph.

Note. This allows all jumpmasters 1 year to execute jumpmaster duties from a fixed-wing, high-performance aircraft.

7-7. Jumpmasters must observe a current jumpmaster 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 jumpmaster must then be observed during the performance of their duties by a current rotary-wing, aircraft-qualified PJM before being allowed to perform the duties listed above unsupervised.

7-8. In addition to meeting the qualifications listed in paragraphs 7-4 and 7-5, the AJM must have performed the duties of a safety officer at least twice. Safety personnel must also meet the qualifications listed in paragraph 7-2 and also be a current and qualified jumpmaster to be appointed a safety.

7-9. To be appointed a DACO, individuals must meet the prerequisites listed in paragraph 7-2, be a current and qualified jumpmaster and have performed the duties as an assistant DACO at least once.

7-10. DZSOs must meet the qualifications listed previously in paragraphs 7-4 and 7-5 and are current and qualified jumpmasters or are combat control team (CCT) certified. For ground marking release system (GMRS) or verbally initiated release system (VIRS) drops, the DZSO must be a qualified jumpmaster 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 USN and USMC operations, the DZSO is an E-4 or above, or DOD Civilian equivalent. USN and USMC DZSOs are also—

- Qualified and current in the operation being conducted (static line or free fall).
- Completed a DZSO course of instruction using Naval Special Warfare/explosive ordnance disposal (EOD) Lesson Training Guide DZSO administered by a current jumpmaster.
- 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, the DZSO received refresher training from a current jumpmaster or DZSO and ran a DZ 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 who is a current and qualified jumpmaster and DZSO. Noncurrent DZSOs need only complete the DZSO requirements of the jumpmaster refresher training curriculum found in appendix A. In addition:

- The individual being refreshed on the duties of the DZSO must be a current jumpmaster.
- At the completion of DZSO refresher training:
  - The jumpmaster must perform duties of the DZSO within 180 days to be a current DZSO.
  - The jumpmaster must 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 DZSO duties.

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 (USA and USN: E-5s or above; USMC and USAF: E-4s or above).
- Be a current and qualified jumpmaster for personnel or heavy equipment drop.
- Be a certified ADZSO by having attended one of the following:
  - USAIS Jumpmaster Course (for computed air release point [CARP] DZs only).
  - The U.S. Army Advanced Airborne School Jumpmaster Course (for CARP DZs only).
  - United States Army Special Operations Command (USASOC) Jumpmaster Course.
- Must have the additional skill identifier 5W for warrant officers and enlisted personnel, and commissioned officers must have the skill identifier of jumpmaster (USA).
- Be ADZSO current by—
  - Performing the duties of a DZSO or assistant DZSO within the preceding 180 days.
  - Graduating jumpmaster school within the last 180 days.
  - Completing 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 (USA and USN: E-5 or above; USMC and USAF: E-4 or above).
- Be a current and qualified jumpmaster for personnel or heavy equipment.
- Be certified as a DZSTL by having attended one of the following:
  - Unit taught DZSTL Course, Lesson Plans on the United States Army Training Development Capability (also called TDC) website.
  - USAIS Jumpmaster Course (for CARP DZs only).
  - The U.S. Army Advanced Airborne School Jumpmaster Course (for CARP DZs only).
  - USASOC Jumpmaster Course.
  - Must have the additional skill identifier 5W for warrant officers and enlisted personnel, and commissioned officers the skill identifier of jumpmaster (USA).
  - Warrior Training Brigade Jumpmaster Course (for CARP DZ's only).
  - Warrior Training Brigade Pathfinder Course.
  - Sabalauski Air Assault School; Pathfinder.
- Be observer and assistant of a current and qualified DZSTL performing their duties during an airdrop operation involving personnel or heavy equipment.
- Be DZSTL current by performing the duties of a DZSTL or assistant DZSTL:
  - Within the preceding 180 days.
  - 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 jumpmaster qualified and current, but they must have attended an authorized pathfinder course or DZSTL 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 MALFO:

- The individual must be a commissioned officer, warrant officer, or NCO (USA and USN: E-5 or above; USMC and USAF: 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/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1.

- For the USMC only: a USMC MALFO is—
  - A parachute rigger NCO, E-4 or above.
  - Jumpmaster qualified, or above.
  - Must be appointed in writing by the commanding officer and must receive unit-level refresher training annually.
  - The MALFO is from the organization that provides the air items.
- For the USN only: MALFOs—
  - Meet qualification, training, currency, and equipment familiarity requirements according to AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1.
  - The MALFO 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 USAF only:
  - The DZC and DCSO fill the duties as the MALFO and be designated in writing as an MALFO.
  - They have a thorough understanding of the parachute equipment used for the operation.
  - USAF combat control personnel are authorized to perform the duties of a MALFO during unilateral operations.

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Chapter 8
Departure Airfield Control Officer

The DACO is appointed by the airborne commander and is responsible for coordination and control loading personnel, equipment, and supplies into the aircraft. The DACO is located at the departure airfield.

Note. Personnel conducting DACO duties must be a current and qualified jumpmaster.

DEPARTURE AIRFIELD CONTROL OFFICER INITIAL COORDINATION

8-1. When advised of an appointment, the DACO receives the following information:

- The units that are 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.
- DZ.
- Names of DZSO, assistant DZSO, DZSTL, PJM, AJM, and safety personnel.
- Coordination with the USAF guide if wheeled vehicles are used for transport to aircraft.
- Action for incident on aircraft or DZ, such as jump refusal, towed jumper or any parachute malfunction according to this publication or the unit SOP.
- Bump plan.

8-2. At the departure airfield, the DACO contacts the ALCE or aircrew to discuss, coordinate, and confirm the following:

- Aircraft parking plan.
- Aircraft tail number or numbers.
- Time of pilot/jumpmaster briefing.
- Inform jumpmaster 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.

DROP ZONE SAFETY OFFICER AND DROP ZONE SUPPORT TEAM COORDINATION

8-3. The DACO is also responsible for the following:

- Contacting the DZSO or DZSTL 1 hour before drop time and maintaining communication throughout the entire operation.
- Relaying the DZ conditions from the DZSO to the airborne commander and all jumpmaster teams.

- Confirming the type of parachutes being utilized.
- Informing the DZSO or DZSTL of aircraft aborts.
- Updating the DZSO or DZSTL on changes and aircraft departures.
- Reporting to the tanker ALCE in reference to any of the following:
  - Malfunctions.
  - Jumpers off the surveyed DZ.
  - Early exit from an aircraft, or serious injury that requires treatment.
- Informing the DZSO or jumpmaster team of any changes caused by aircraft maintenance problems, crew rest, weather delays, or other problems.
- Issuing DACO brief to all jumpmaster teams including:
  - Reporting procedures in the event of a serious incident, static line injury, jump refusal, or other problems.
  - Updating unit-specific procedures for the jumpmaster and safety duties.
  - Reporting procedures upon completion of the operation.
- Requesting a jump closure/flash report from the DZSO or DZSTL.
- Requesting timely wind readings from the DZSO or DZSTL.
- Immediately reporting parachute malfunctions to the tanker ALCE.

AIRFIELD AND RUNWAY SAFETY

8-4. The DACO is responsible for the following airfield and runway safety issues and actions:

- Movements in and around the aircraft, taxiways, and runways.
- Briefing the jumpmaster or AJM on airfield procedures.
- Coordinating with USAF guides for escort to the aircraft (if applicable).

8-5. After mission completion, the DACO is responsible the following:

- Collecting all Army equipment left on aircraft from safeties.
- Securing all alibi and personnel left on board the aircraft from the safeties.
- JMPI jump refusals and ensuring a current and pack-qualified rigger conducts a T.I.
- Collecting any statements in compliance with the unit SOP (malfunctions, red-light exits, jump refusal, inaccurate time warnings, and other issues).

Chapter 9
Jumpmaster and Safety Duties

This chapter covers jumpmaster and safety duties performed in the unit area or at the departure airfield. Appendix B (Collisions, Entanglements, and Center Panel Strike) covers mock door training and prejump for both the T-11 ATPS and the MC-6 series parachute.

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

Note. Jumpmaster duties begin immediately upon notification.

ESSENTIAL INFORMATION

9-1. Upon notification that an individual has been designated as a PJM, the individual obtains or is provided the information that is described in paragraphs 9-2 and 9-3.

9-2. Specific plan information is needed by the PJM. This information includes the following:

- Mission and ground tactical plan.
- Air movement plan to include time of flight, formations, route, direction of flight over DZ, drop altitude, location and design of code letters, racetracks, and emergency call signs/frequencies.
- Names of AJMs 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 times.
- Type of aircraft for the operation and special items of equipment being worn by jumpers:
  - AIRPAC.
  - Antitank 84-mm unguided, SMJP.
  - A-series containers aboard aircraft (door bundles).
- Aircraft tail numbers, chalk numbers, and parking spots.
- Landing plan to include:
  - DZs, drop times, delivery sequence, number/type of loads (personal parachute, CDS, and free drop).
  - 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.

9-3. 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 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 jumpmaster briefing.
- Station time—critical time: all jumpers must be seated onboard the aircraft.
- Takeoff time.
- TOT.

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 jumpmaster must take place.

ASSISTANT'S BRIEFING (UNIT AREA)

9-4. After receiving the initial operation briefing, the PJM returns to the unit and briefs the AJM and safety personnel. The PJM assigns duties to them for the remainder of the operation. The PJM then 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 PJM schedules a full rehearsal with the jumpmaster team before the PJM team assembles the chalk (planeload). The rehearsal includes the following:

- After the briefing—
  - The PJM organizes the chalk according to the tactical cross-load plan and then conducts the initial manifest call.
  - AJMs 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 DZ.
- The PJM ensures the chalk is manifested according to the tactical cross load and the unit SOP.
- The PJM, aided by the AJMs 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 the initial manifest call.

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

JUMPMASTER/SAFETY KIT BAG

9-5. The PJM ensures 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 PJM, AJM, and safety personnel. Items to consider for use onboard the aircraft (depending on the type of airborne operation and according to the unit SOP) include the following:

- Flashlight (night operations).
- Masking tape.
- 100-mph tape, which is scrim-backed, pressure-sensitive tape.
- Roll of 1/4-inch cotton webbing.
- Type-3 retainer bands (T-11 stow bars).
- Type-64 retainer bands (rigging CE).
- 1/4-inch x 3/8-inch heavy-duty retainer bands (static line slack retainer bands).
- HSPR complete.
- HPTLL.
- Modified HPTLL for special items.
- Helmet components, such as suspension pads and chinstraps (including hardware).
- Trash bags.
- Earplugs and airsickness bags.
- Two extra reserve parachutes and extra UPRBs (for USLMs and deployment bags); utilize one UPRB for every 30 deployment bags.
- Knife, which is carried by the PJM, AJM, and safety personnel but should not be carried on a point of contact.
- Four sets of extra T-11 reserve inserts.

MARSHALLING AREA CONTROL OFFICER BRIEF

9-6. 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:

- Introducing key leaders (airborne commander, jumpmaster teams, and others).
- The DZ:
  - Name.
  - Drop heading.
  - Obstacles on or near the DZ.
- Type of aircraft and number.
- Chalk number(s).
- Type of parachute(s).
- Briefing on serial numbers, CDS, 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 are jumping:
  - AIRPAC.
  - Parachute drop bag.
  - Parachutist jump pack.
  - ALICE pack.
  - SMJP.
  - 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.
- TOT.
- Drop altitude.
- Predicted winds on the DZ and direction.
- Route checkpoints.
- DZ assembly aids and area.
- Parachute turn in point(s).
- Medical support plan.

9-7. If the unit jumps nonstandard equipment or equipment containers, the rigging 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 at Fort Bragg. JMPI and rigging procedures can be developed at the 82nd Advanced Airborne School at Fort Bragg, then for validation and approval to Commander, 1st Battalion, 507th Parachute Infantry Regiment at Fort Benning.

SUSTAINED AIRBORNE TRAINING

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

9-8. SAT is conducted in the unit area or at the departure airfield. SAT is scheduled and conducted within 24 hours before takeoff. If more than 24 hours, a colonel/O-6 must give approval. All personnel (jumpmaster teams/jumpers) require SAT. The PJM 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. Jumpmasters, safeties, and key leaders make on-the-spot corrections of any jumper not properly performing the required training. (See appendix B for a sample SAT narrative.)

9-9. 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 includes rehearsal of every detail involved with the airborne operation to include static line control, accidental activation of the reserve onboard the aircraft, red light procedures, jump refusals, exiting procedures, towed jumper procedures, and emergencies onboard the aircraft. The jumpmaster 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.

9-10. SAT is performance-oriented training. The PJM should introduce the jumpmaster team to all jumpers on their aircraft. During SAT, the jumpmaster performing the training needs to be heard by all jumpers (a bullhorn should be used, if necessary). All jumpmasters and leaders must make aggressive and positive on-the-spot corrections.

Note. The jumpmaster team performing duties on the airborne operation conducts mock door training with their jumpers.

9-11. Airborne personnel use aircraft fuselage or mockups to rehearse preflight and in-flight actions. Aircraft fuselage mockups 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.

9-12. Actions in the aircraft training remind jumpers of what occurs in flight before jumping. The PJM can use the mock door apparatus to show jumpers where their relative positions are in the aircraft. If in-flight rigging is to be performed, the rigging station locations can be indicated also. The PJM reviews and leads a rehearsal of all actions related to in-flight procedures so the jump mission is smooth and safe.

9-13. If time and facilities are available, it is recommended to conduct SAT in the following order:

- Mock door training.
- Prejump.
- PLF (side, front, and rear).

Note. Training discussed in paragraphs 9-14 through 9-22 is conducted by the jumpmaster team inside the mock door with the jumpers observing from outside the mock door.

STATIC LINE CONTROL

9-14. After the jumpmaster issues the jumper the command HOOK UP, they remove the USL snap hook from the carrying handle of the reserve parachute. They hook up to the appropriate anchor line cable with the spring opening gate facing toward the skin of the aircraft. The jumper then forms a bight in the USLM, making sure they have a good four in the hand and two below bight. Do not touch the double sewn portion (the double sewn portion is for safety).

9-15. Trace the USLM over the appropriate shoulder. The jumper behind then traces the USLM from the shoulder to the first stow. They ensure that the USLM has not been misrouted through the riser assembly and is properly routed to the first stow. The jumper then covers their ripcord handle with the nonstatic-line hand. The first three jumpers have their arm in the elbow-lock position. This creates a proper 1-second interval. The remaining jumpers have their arm up high with the elbow bent and stagger inboard and outboard.

EXITING PROCEDURES

9-16. As the jumpers move to the paratroop door, they lock their arm out to the elbow-lock position. As they near the paratroop door, they make eye-to-eye contact with the safety.

9-17. The safety takes control of the USLM, the jumper places both hands on the ends of the reserve (ensuring that they DO NOT swim the static line), turns at a 90-degree angle into the paratroop door, and makes a vigorous exit (up 6 inches and out 36 inches) and counts to 6,000.

RED LIGHT PROCEDURES

9-18. There are multiple reasons a red light could come on during flight. Out of the DZ, obstacles on the DZ, low-flying aircraft, rotary-wing aircraft, or other reasons. If a red light comes on during exit, the jumpmaster places their hand in the jumpers' face and gives the command RED LIGHT, RED LIGHT, RED LIGHT, and pushes the stick away from the paratroop door. If the jumper has already handed off their USLM, and committed to the paratroop door, no one stops them. The jumper should continue and get a good vigorous exit out of the aircraft, preparing to avoid any obstacle that caused the red light to come on.

JUMP REFUSALS

9-19. If there is a jump refusal inside the aircraft, the jumpmaster gives the command GREEN LIGHT GO (three times physically and verbally). 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 seats the jump refusal out of the way (on the ramp) and gives the jump refusal a lawful order to not touch their equipment. The jumpmaster team then continues to exit jumpers if green light permits.

9-20. Once the paratroop doors are closed, the safety unhooks the jump refusal's USL snap hook and moves the jump refusal towards the forward portion of the aircraft. The safety then seats the jump refusal and secures the jumper's seat belt. The safety again issues the jump refusal a lawful order of DO NOT TOUCH YOUR EQUIPMENT. Upon landing, the safety takes positive control of the jump refusal and turns them over to the DACO. The DACO then conducts a JMPI on the jump refusal, and a parachute rigger conducts a T.I. of the jump refusal's equipment. If something is found wrong with the jump refusal's equipment, no action against the jump refusal is 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

9-21. If there is an unconscious jumper being towed by their USLM, the jumper is retrieved back inside the aircraft. If conscious, the jumper should make every effort to maintain a good, tight body position with both hands covering the ripcord handle. An attempt is made to retrieve the towed jumper inside the aircraft. As the towed jumper nears the paratroop door, they do not reach for the jumpmaster team, and they continue to protect their ripcord handle.

9-22. If the jumper cannot be retrieved inside the aircraft, their USLM is cut. Once jumpers feel themselves falling free from the aircraft, they start a 6,000 count with T-11 ATPS or the 4,000 count with MC-6 series parachute. If no opening shock is felt, they immediately activate their reserve parachute using the pull drop method. If jumpers are being towed by an item of equipment, regardless of whether they are conscious or unconscious, that item of equipment is cut or jogged free, and the jumpers' main canopy deploy.

Note. Training discussed in paragraphs 9-23 through 9-29 is conducted by the jumpmaster team with the jumpers inside the mock door.

EMERGENCY PROCEDURES

9-23. 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 remain seated and extend their legs out to a 45-degree angle. The jumpers wrap their arms around their legs and place their head on their knees until the aircraft stops moving. The jumpers then exit the aircraft under the direction of the jumpmasters or loadmaster.

9-24. 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 remain seated and extend their legs out to a 45-degree angle. The jumpers wrap their arms around their legs and place their head on their knees. One long continuous ring sounds just prior to impact. Once the aircraft stops moving, the jumpers exit under the direction of the jumpmasters or loadmaster.

9-25. 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 sound off with RESERVE, RESERVE, RESERVE. Once the parachute is contained, one of the jumpers gets the jumpmaster's attention by placing their hand or arm over an anchor line cable. The jumpmaster replaces that reserve with a new one, and the airborne operation continues as planned.

9-26. 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 sound off with RESERVE, RESERVE, RESERVE.
  - All jumpers in the vicinity of the activated reserve attempt to smother and contain the parachute.
  - Once the parachute is contained, one of the jumpers gets the jumpmasters' attention by placing their hand or arm over the anchor line cable.
  - The jumpmasters close the jump doors, replace that reserve with a new one, and the jumper exits 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 is 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.

9-27. Fire during flight: If there is a fire while in flight, an oral warning is issued to the jumpers. The jumpers move away from the affected area, and the loadmasters attempt to extinguish the fire. Be prepared to execute bailout procedures, if instructed to do so.

9-28. 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 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 follow the commands of the jumpmaster team and exit the aircraft as quickly and safely as possible.

EXECUTE MOCK DOOR TRAINING

9-29. 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 including door bundle procedures if included in the mission.

T-11 ADVANCED TACTICAL PARACHUTE SYSTEM SUSTAINED AIRBORNE TRAINING REQUIREMENTS

9-30. SAT must be conducted and performance oriented. All personnel must attend SAT. Jumpers must be positioned so their actions can be viewed and heard by the jumpmaster team. SAT is performance oriented and should be tailored to fit the mission. All jumpmasters and leaders must make aggressive and positive on-the-spot corrections.

Note. The jumpmaster 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 B.

9-31. Training on the five points of performance must be attended by all jumpers and jumpmasters. The following are the five points of performance:

- Proper exit, check body position, and count.
- Check canopy and gain canopy control and immediately compare the rate of descent with fellow jumpers.

- Always keep a sharp look out and constantly compare the rate of descent.
- Prepare to land.
- Land.

9-32. The first point of performance is proper exit, check body position, and count. Jumpers must perform the following actions:

- Keep chin on their 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 6,000 with the T-11 ATPS (fixed-wing aircraft).
- Count to 8,000 with the T-11 ATPS (rotary-wing aircraft).
- Activate the reserve parachute immediately using the pull drop method, if an opening shock is not felt.

9-33. The second point of performance is check canopy and gain canopy control and immediately compare the rate of descent with fellow jumpers. Jumpers must perform the following actions:

- Reach up to the elbow-locked position and secure the front set of risers in each hand.
- Make a 360-degree check of the canopy, then move immediately into comparing the rate of descent with fellow jumpers.
- If jumpers have twists, they compare the rate of descent with fellow jumpers:
  - If falling faster than fellow jumpers, or cannot compare the rate of descent, jumpers activate the reserve parachute using the pull drop method.
  - If jumpers are not falling faster than fellow jumpers, then they 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 the canopy and gain canopy control.

9-34. The third point of performance is keep a sharp lookout at all times and constantly compare the rate of descent. The three rules of the air are the following:

- Always look before a slip.
- Always slip in the opposite direction to avoid collisions using a one-riser or diagonal slip.
- Always give the right of way to the lower jumper.
  - Avoid other jumpers all the way to the ground; maintain 25 feet of separation between jumpers in the air.
  - Compare their rate of descent throughout the third point of performance.
  - Release all appropriate equipment tie-downs at the end of the third point of performance.

9-35. The fourth point of performance is prepare to land. When approximately 200 feet above the ground, the jumper prepares 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, lowering CE and immediately slipping into the wind, keeping the feet and knees together.
- Keeping 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.

9-36. The fifth point of performance is land. When the balls of the feet contact the ground, the following actions 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

9-37. Once the jumper is out of the parachute harness, the jumper removes all air items from the equipment rings. unzips and turns the UPRB right side out. Place the parachute harness inside the 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.

9-38. 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 UPRB.
- Place the canopy and suspension lines inside the UPRB, leaving the drogue parachute, deployment sleeve, and bridle assembly on top of the main canopy.
- Snap, do not zip, the UPRB.
- 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.

9-39. To recover equipment using a tactical method:

- Remain on a knee at the UPRB.
- Begin pulling the suspension lines and canopy towards the 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 UPRB.
- 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

9-40. PLFs must be performed by all manifested jumpers. Each jumper must perform one satisfactory PLF in each of the four directions:

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

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

9-41. 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 continually 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 (see chapter 4 for malfunction definitions).

ACTIVATION OF RESERVE AND RESERVE PARACHUTE CONTROL

9-42. The jumper utilizes the pull drop method when activating the T-11 reserve/single pin parachute. To activate the T-11 reserve/single pin parachute utilizing the pull drop method, the jumper—

- Maintains a good, tight body position.
- Keeps feet and knees together.
- Grasps the ripcord handle with either hand.
- Throws their head back and to the rear.
- Pulls the ripcord handle and drops it to the ground; the reserve parachute activates.
- Ensures neither hand is in front of the reserve parachute as it deploys.

9-43. While descending under the T-11 reserve/single pin parachute, control the reserve canopy by using a one or two riser slip. At approximately 200 feet AGL, the jumper assumes the 'prepare to land' attitude by pulling a two-riser slip in the opposite direction of drift.

9-44. Jumpers must receive training on partial malfunctions (see chapter 4 for definitions), which can be distinguished by certain characteristics. The following are partial malfunctions:

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

9-45. 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.

9-46. 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 front or rear 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 gets up and runs to the apex of the T-11 reserve/single pin parachute.
- The jumper secures the pilot chute of the T-11 reserve/single pin parachute and runs 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

9-47. 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 ripcord 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.

9-48. 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.
- They must not touch the other jumper's canopy release assemblies.
- Both jumpers discuss which PLF to execute upon contact with the ground; both jumpers execute the same PLF away from each other.
- Neither jumper executes a front PLF.
- Both jumpers observe both canopies all the way to the ground and if one canopy collapses both jumpers ride the one good canopy all the way to the ground.

- If both canopies collapse, both jumpers immediately turn away, creating a clear path and activating their reserve parachute using the pull drop method.
- Should jumpers find themselves on another jumper's canopy without rolling, use whatever means necessary to get off the canopy and immediately activate the reserve parachute.
- Jumpers 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 there and be prepared to execute a proper PLF.

CENTER PANEL STRIKE

9-49. 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.

9-50. 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 contacting 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 the lower jumper's canopy. Continue to slip away until a minimum of 25-feet separation has been achieved.

9-51. 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 the closest edge of the canopy that their momentum allows. 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 activate their reserve parachute using the pull drop method. The higher jumper keeps feet and knees together and is prepared to execute a PLF.

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 re-inflating or preventing the higher jumper from deploying the reserve parachute.

9-52. Actions of the lower jumper: At the end of the 6,000 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.

9-53. If there is damage to the canopy or a jumper is 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 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 PLF.

EMERGENCY LANDINGS

9-54. Tree landings can be dangerous and should be avoided. If a tree landing is imminent, the jumper should perform the following:

- The jumper immediately looks and slips away, utilizing a one-riser or diagonal slip when beginning to drift towards a tree.
- If CE is lowered, the jumper looks below to ensure there are no fellow jumpers, then jettisons the CE, making a mental note where it lands, maintaining helmet.
- If CE is not lowered, the jumper keeps it on to provide added protection while passing through the trees.
- The jumper maintains 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.
- After making contact with the trees, the jumper places chin on chest, rotates hands in front of the face, and keeps elbows high.
- The jumper should be prepared to execute a PLF if passing all the way through the trees.
- The jumper considers 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.

9-55. Wires are extremely dangerous and should be avoided. If a wire landing is imminent, jumpers should perform the following (see figure 9-1 on page 154):

- If drifting towards wires, jumpers immediately try to slip or turn away using a one-riser or diagonal slip.
- If jumpers cannot slip or turn away, they look to ensure there are no fellow jumpers below them and jettison their equipment, making a mental note of where it lands.
- Jumpers ensure that the helmet is maintained.
- Jumpers assume a landing attitude by keeping feet and knees together, exaggerating the bend in the knees, eyes open, chins on chest, and backs arched.
- Jumpers place 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, jumpers begin a hard rocking motion and attempt to pass through the wires.

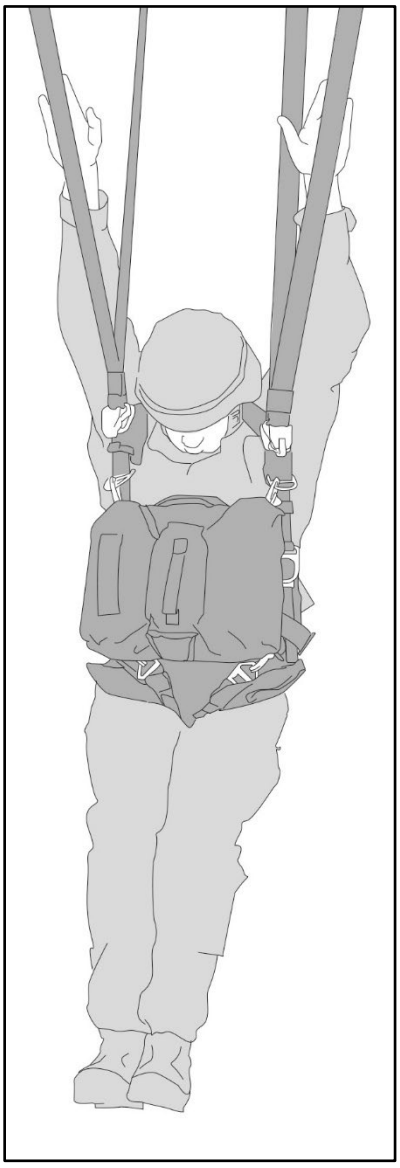


Figure 9-1. T-11 wire landing attitude

WARNING

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

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

WATER LANDING

9-56. 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 jumpers do not have a life preserver, they should perform the following:

- Look below to ensure there are no fellow jumpers and lower and jettison their equipment, making a mental note of where it lands.
- Jettison their helmet, again 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 themselves 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 feet and knees together, knees slightly bent and place their hands on the ejector snaps for the leg straps.
- When the balls of their feet hit the water, activate both ejector snaps for the leg straps, arch their backs, throw their arms above their head, and slide out of the parachute harness.
- Be prepared to execute a PLF if the water is shallow.
- Swim upwind or upstream away from the canopy.
- If the canopy comes down on top of jumpers, locate a seam, and follow it to the skirt of the canopy.

9-57. 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 CE onboard the aircraft, so they do not become entangled with the equipment in the water.
- Jumpers may find themselves over water with attached CE due to drifting off a DZ bordered by water, or during emergency bailout after being hooked up onboard the aircraft:
  - The jumper must lower their CE.
  - The jumper must jettison their equipment.
- Deliberate water landings are executed for training in selected water drop zones (WDZs) and jumpers may wear CE only after:
  - It has been waterproofed.
  - It has been 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 routes 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 jettisons any or all of their equipment including their helmet.
- The jumper looks to ensure there are no fellow jumpers below and lowers and jettisons the equipment.
- The jumper 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 remove the harness and any remaining equipment.

Note. See chapter 6 for more information on life preservers.

MC-6 ADVANCED TACTICAL PARACHUTE SYSTEM SUSTAINED AIRBORNE TRAINING REQUIREMENTS

9-58. All first time MC-6 jumpers must watch the MC-6 instructional video when mandated by the airborne commander or the unit SOP. All personnel must attend SAT. Jumpers must be positioned so their actions can be viewed and heard by the jumpmaster team. SAT is performance-oriented training and should be tailored to fit the mission. All jumpmasters and leaders must make aggressive and positive on-the-spot corrections. SAT must be taught proficiently.

Note. The jumpmaster version of mock door training and prejump for the T-11 ATPS and MC-6 series parachutes can be found in appendix B.

9-59. Training on the five points of performance must be attended by all jumpers and jumpmasters. 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.

9-60. 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 4,000 with the MC-6 parachute (fixed-wing aircraft).
- Count to 6,000 with the MC-6 parachute (rotary-winged aircraft).
- Activate the reserve parachute immediately using the pull drop method if the opening shock is not felt.

9-61. Immediately after the 4,000 or 6,000 count, the jumper conducts 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.
- Makes a 360-degree check of the canopy.
- If the jumper has twists, 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 remove the twists.
- Remove twists by—
  - Reaching up and grasping a set of risers with each hand, thumbs down, knuckles to the rear.
  - Pulling the risers apart and beginning a vigorous bicycling motion.
- When the last twist comes out, immediately check canopy and gain canopy control.

9-62. The third point of performance is keep a sharp lookout at all times and constantly compare the rate of descent. The three rules of the air are:

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

9-63. Avoid other jumpers all the way to the ground, maintaining 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, the jumper releases all appropriate equipment tie-downs.

9-64. The fourth point of performance is prepare to land. When approximately 250 feet above the ground the jumper prepares to land by taking the following actions:

- The jumper turns into the wind prior to lowering equipment.
- The jumper brings both toggles in front of their face and transfers 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 uses the free hand to lower their CE.
- Once the jumper has lowered their CE, immediately regain canopy control with both hands and continue to keep a sharp lookout for other jumpers.
- The jumper uses the appropriate brake position according to chapter 3.
- The jumper keeps knees slightly bent.
- The jumper has balls of the feet hanging naturally towards the ground.
- The jumper keeps head and eyes toward the horizon.
- Before making contact with the ground, the jumper turns 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 makes contact with the ground first.

9-65. The fifth point of performance is land. When the balls of the feet make contact with the ground, the following actions 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.
- Jumpers remain on their 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 activates the second canopy release assembly.
- Jumpers remain on their back, placing the weapon into operation, removing the parachute harness.

RECOVERY OF EQUIPMENT

9-66. Once the jumper is out of the parachute harness, they remove all air items from the equipment rings. unzip and turn the UPRB right side out. Place the parachute harness inside the 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.

9-67. To recover equipment using the nontactical method—

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

9-68. To recover equipment using a tactical method—

- Remain on a knee at the UPRB.
- Begin pulling the suspension lines and canopy towards the 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 UPRB with a half-hitch.
- Snap, do not zip, the UPRB.
- Place the reserve parachute in the reserve parachute stowage pocket.
- Maintain noise and light discipline.
- Secure the equipment, conduct a 360-degree check of the area, and move out to the assembly area.

PARACHUTE MALFUNCTIONS AND CONTROL OF THE RESERVE PARACHUTE

9-69. Jumpers must receive training on total malfunctions and control of the reserve parachute (see chapter 6). While descending under the T-11 reserve/single pin parachute, control the reserve canopy by using a one-or two-riser slip. At approximately 200 feet AGL, the jumper assumes a prepare to land attitude by pulling a two-riser slip opposite the direction of drift.

9-70. Jumpers must receive training on partial malfunctions, which can be distinguished by certain characteristics (see chapter 4). 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 THE RESERVE PARACHUTE

9-71. 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/single pin parachute utilizing the pull drop method. This is done by—

- Snapping back into a tight body position.
- Grasping the ripcord handle with either hand.
- Throwing head back to the rear.
- Pulling out on the ripcord handle and dropping it.
- Ensuring neither hand is in front of the reserve parachute as it deploys.

9-72. 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 or rear 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 gets up and run to the apex of the T-11 reserve/single pin parachute.
- The jumper secures the pilot chute of the T-11 reserve/single pin parachute and runs 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

9-73. 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 ripcord 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.

9-74. 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

9-75. Tree landings can be dangerous and should be avoided. If landing in trees seems imminent, the jumper should perform the following:

- The jumper immediately turns away when beginning to drift toward the trees.
- If CE is not lowered, the jumper keeps it on to provide added protection while passing through the trees.
- The jumper maintains 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, the jumper places chin on chest, rotates hands in front of the face, and keeps the elbows high.
- The jumper should 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.
- The jumper should consider activating the reserve parachute and climbing down if hung up in trees.

9-76. Wire landings are extremely dangerous and should be avoided. Jumpers do the following if unable to avoid wires when landing (see figure 9-2 on page 160):

- If drifting towards wires, jumpers immediately try to turn away.
- If they cannot turn away, jumpers look to ensure there are no fellow jumpers below them and jettison their equipment, making a mental note of where it lands.
- Jumpers ensure that the helmet is maintained.
- Jumpers assume a landing attitude by keeping feet and knees together, exaggerating the bend in their knees, eyes open, chins on chest, and backs arched.
- Jumpers place 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, jumpers begin a hard rocking motion and attempt to pass through the wires.
- Jumpers prepare to do a PLF in the event they pass through the wires.
- If jumpers are hung up in the wires, they do not attempt to lower themselves to the ground.
- Jumpers stay where they are and wait for assistance.

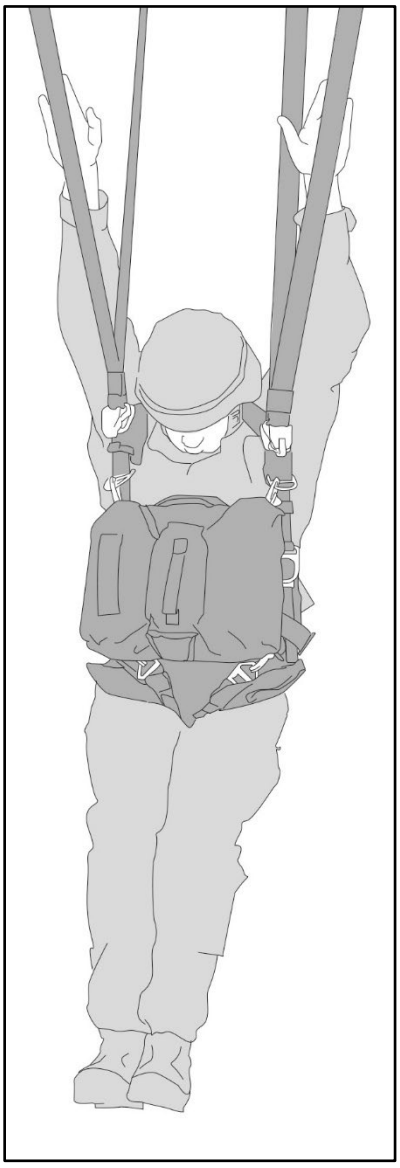


Figure 9-2. MC-6 wire landing attitude

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

9-77. 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, jumpers should perform the following:

- Look below themselves to ensure there are no follow jumpers and lower and jettison their equipment, making a mental note of where it lands.
- Jettison their helmet, again 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 themselves 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 feet and knees together, knees slightly bent, and place their hands on the ejector snaps for the leg straps.
- When the balls of their feet hit the water, activate both ejector snaps for the leg straps, arch their backs, throw arms above their head and slide out of the parachute harness.
- Are prepared to execute a PLF, if the water is shallow.
- Swim upwind or upstream, away from the canopy.
- If the canopy comes down on top of the jumpers, locate a seam and follow it to the skirt of the canopy.

9-78. 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 CE onboard the aircraft, so they do not become entangled with the equipment in the water.
- Jumpers may find themselves over water with attached CE due to drifting off a DZ bordered by water, or during emergency bailout after being hooked up onboard the aircraft:
  - The jumper must lower their CE.
  - The jumper must jettison their equipment.
- Deliberate water landings are executed for training in selected WDZs and jumpers may wear CE but 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 and those wearing a UDT vest 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 jettisons any or all equipment including their helmet.
- The jumper looks to ensure there are no fellow jumpers below, lowers and jettisons their equipment.
- The jumper 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 supports the jumper.

Note. See chapter 6 for more information about life preservers

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Chapter 10

Jumpmaster and Safety Duties at Departure Airfield

Time is a critical factor at the departure airfield. The PJM 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 jumpmaster team personnel must draw their own parachutes for wear during airdrop operations. The aircrew cannot provide parachutes for the jumpmaster team. The following events occur at the same time to allow the unit to meet station time:

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

DEPARTURE AIRFIELD

10-1. The airborne commander selects the appropriate key personnel to perform the PJM, AJM, safety, 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.

10-2. The airborne commander may delegate authority, but not responsibility, and authority 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 but is overall responsible for the safe execution of an airborne operation.

10-3. Upon arrival at the airfield, a member of the jumpmaster team reports to the DACO for an update briefing to include—

- Changing the station time.
- Changing the overall operation plan.
- Updating the current weather forecast and winds on the DZ.
- Receiving the serious incident briefing and signing the serious incident roster.
- Receiving the parking plan of aircraft (location and tail number of the assigned aircraft).
- Coordinating with the USAF guide if wheeled vehicles are used for transport to the aircraft.
- Receiving any changes caused by aircraft maintenance problems, crew rest, weather delays, or other reasons.

10-4. Normally the manifest (DA Form 1306) is distributed as follows:

- DACO—two copies (original plus one copy).
- PJM—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.

10-5. After DACO coordination, a member of the jumpmaster team should proceed to the aircraft for initial coordination. The aircraft is normally open with a crewmember onboard 1 hour before station time. The first item discussed 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 jumpmaster. If only one door is being used, it must be manned by a current jumpmaster 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 CCT 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.
  - Designate which safety is responsible for the troops left onboard in event of an emergency.
  - Emphasize to the aircrew the importance of the accurate direction and velocity of DZ winds (before the 1-minute time warning) and accurate time warnings.
  - The jumpmaster team needs to establish through the loadmaster a predetermined signal that the aircraft has slowed to drop speed before assuming control of the paratroop door.
  - If it is agreed upon by all parties involved, this signal can be ARMY, YOUR DOOR.
  - Jumpmasters should always confirm the aircraft has slowed to drop speed before assuming control of the paratroop door.

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

AIRCRAFT INSPECTION

10-6. The PJM is responsible for this inspection but may delegate the authority to a member of the jumpmaster team. The aircraft should be available for inspection 1 hour prior to station time. A member of the jumpmaster team accompanied by a crew member (usually the loadmaster), inspects the aircraft and coordinates any activities related to the airborne operation and coordinates with the DACO for which individual(s) are sent. Only one jumpmaster or safety is required to complete this inspection.

10-7. If required, USAF guides escort the individual past the red line to the aircraft. During engine running on-load operations, this inspection is conducted on the first lift only. Each subsequent jumpmaster team utilizing the aircraft must ensure that it has been reconfigured for the following lift. A member of the jumpmaster team inspects the aircraft according to chapter 15. However, the minimum requirements for interior, fixed-winged aircraft inspections are as follows:

- A sufficient number of seats, complete with seal belts for all jumpers, safeties, and air lands are available.
- Seat securing straps or suitable expedient straps are present.
- Floors are clean and not slippery (nonskid material present).
- All excess USAF equipment is lashed down properly and does not block the jumper’s path to the door.
- Emergency exits are clearly outlined (yellow boundaries).
- Protruding sockets by the paratroop door (C-130 series aircraft) are taped.
- Emergency floor lighting system is operational (C-17 Globemaster III).

- U-bolts must be silver or green and not cracked, broken, or corroded; ensure the locking pin is present.
- Anchor line cables should utilize a length of 1/4-inch cotton webbing and should be inspected (traced) the entire length of the anchor line cables (must not have any kinks, rust, or corrosion).
- The anchor line cable should be inspected individually from the forward portion of the aircraft to the aft end (the direction a jumper's USL snap hook travels).
- The towed parachutist retrieval system (TPRS) and static line retrieval system must—
  - Be operational (loadmaster operates during inspection).
  - Have both components (sling assembly and securing strap) secured behind the intermediate anchor line support bracket or in red pockets along the bulkhead wall.
  - Not be routed under anchor line cables.
  - Have at least a 4-inch clearance above anchor line cables.
- The jump platform must—
  - Have no cracks or bends.
  - Have nonskid material present.
  - Have down locks seated properly (C-130 series aircraft).
  - Be secured to floor by screws and washers (at two points) or four turns of steel wire (1/32-inch diameter) (C-130 series aircraft).
  - Have lower troop door clearance faring (skin of door frame) in serviceable condition (C-17 Globemaster III).
- Paratroop doors must have—
  - No sharp or protruding edges.
  - Push in place pin is present and secured (C-130 series aircraft).
  - Operational platform lights.
  - A manual lever for the ramp that is secured by a safety strap, if applicable.
  - A functional troop door up-lock and paratroop door lifting bar (C-17 Globemaster III).
- Air deflector:
  - C-130 series aircraft extends 15.5 inches.
  - C-17 Globemaster III extends 30 degrees (+/- 5 degrees).
- Jump caution lights must—
  - Have operational green and red lights, and if jumping from the C-17 Globemaster III, include amber lights.
  - Be highly visible during darkness and daylight.
  - Have seven sets (C-130 series aircraft)—one at the pilot's compartment, three along the skin of the aircraft, two at the jump doors, and one on the ramp.
  - Have 12 sets (C-17 Globemaster III)—4 along the skin of the aircraft, 4 at the jump doors, 2 on the ramp, 1 in the pilot's compartment, and 1 in the forward compartment of the emergency exit on the right before the stairs to the pilot's compartment.
- Have an operational emergency alarm bell.
- Emergency equipment includes—
  - First-aid kits (four each).
  - Fire extinguisher (three each).
  - Emergency Passenger Oxygen System, oxygen, or oxygen masks for each passenger.
- An operational public address system.
- Airsickness bags and earplugs.
- Available water.
- Safety kits should be placed where they are readily available, if needed.
- Action or sport cameras (are required to be used) are mounted in appropriate locations.

Note. For the C-27J inspection, see chapter 15.

10-8. While a member of the jumpmaster team is inspecting the aircraft, safety personnel control the chalk, making sure personnel always remain in their assigned sticks. Personnel must be accounted for at all times.

PARACHUTE ISSUE

10-9. It is the responsibility of the PJM to supervise the chalk during parachute and air item issue. Since parachutes are configured differently for the C-130 and C-17 aircraft, jumpers may potentially draw the incorrect type if not constantly supervised during this process.

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

- Departure airfield layout inspection—all air items and CE should be displayed for inspection by jumpmaster personnel before donning or loading on the aircraft, if not conducted at unit area.
- Parachutes and equipment—the jumpmaster team ensures that all jumpers use the buddy system when donning parachutes and equipment.
- Final DACO coordination—a member of the jumpmaster team reports to the DACO for any special or last-minute instructions.
- JMPI—all current and qualified jumpmaster personnel 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

10-11. 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. For parachute component parts, their characteristics, and serviceability checks can be found in TM 10-1670-332-23&P.

JUMPMASTER PERSONNEL INSPECTION, T-11 AND MC-6

10-12. 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 providing:
  - Additional safety checks.
  - Unnecessary delay prevention during JMPI.
  - 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, which 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.
  - If another jumpmaster is available, then that jumpmaster should not inspect the jumper that they rigged.

Note. All personnel, including the jumpmasters, must utilize the buddy system to don the main and reserve parachutes upon their completion of JMPI.

10-13. The jumpmaster conducts an overall inspection of the jumper prior to placing the jumper into JMPI configuration. The jumpmaster conducts an overall inspection of the jumper to ensure the following:

- Boots—inspect the jumper's boots for open lacing hooks and if the jumper is wearing open lacing hooks, they must be taped prior to the jumpmaster placing the jumper into JMPI configuration.
- CE—inspect the MAWC to ensure—
  - The bottom of the adjustable nose cone is at least 6-inches above the ground.

  - The top of the MAWC rests between the top of the D-ring and the base of the left canopy release assembly.
- Canopy release assemblies—look at canopy release assemblies to ensure that—
  - They are seated in the hollows of the jumper's shoulders, below the collarbone 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.

10-14. The only person authorized to place jumpers into JMPI configuration is the jumpmaster who inspects them. To place the jumper into JMPI configuration, the following occurs:

- The jumpmaster moves behind the jumper and opens the main, curved, pin protector flap from the tuck flap:
  - Ensure the main curved pin is fully seated.
  - On a T-11 main parachute, ensure that the main curved pin securing tie is present and properly secured.
- The jumpmaster disconnects the USL snap hook from the right outer static line stow bar and ensures the spring opening gate has spring tension:
  - Looks at both sides of the double-sewn portion of the USLM.
  - Feels the stitching to verify that the double-sewn portion is present on both sides of the USLM, there are three stitches sewn over the raw edge, and it is not cut, frayed, or burned.
  - Removes all excess USLM from the static line slack retainer band on the static line slack retainer loop.
  - Removes all twists.
  - Routes the USL snap hook through one of the static line slack retainer bands and over the jumper's shoulder corresponding with the paratroop door the jumper is to exit.
- The jumpmaster secures the USL snap hook to the carrying handle of the T-11 reserve/single pin parachute, with the spring opening gate facing the jumper:
  - If the jumper is wearing the T-11 reserve, remove 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 jumpmaster notifies 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 jumpmaster may now begin their inspection:
  - The general principle during JMPI is that the jumpmaster's head and eyes are always looking where their hands are working.
  - After the jumpmaster has completed the JMPI, the jumpmaster places the jumper into jump configuration.

Note. If jumping the MC-6 parachute or any other steerable, military, static line parachute, the jumpmaster identifies blue confluence wrap on both riser assemblies. Steerable and non-steerable canopies cannot be dropped onto the same DZ during the same pass.

FIVE-FOOT UNIVERSAL STATIC LINE EXTENSION

10-15. For jumps from C-17 aircraft, the USLM is configured with the 5-foot USL extension. Jumpmasters must supervise during parachute issue to ensure their jumpers do not draw incorrectly configured parachutes for the aircraft that they are jumping.

10-16. The T-11 series parachutes are easily identifiable when configured with 5-foot USL extensions by:

- Additional stows on the left and right inner static line stow bars.
- The girth hitch formed by the upper looped portion of the USLM.
- The cotton buffer of the 5-foot USL extension, which is centered between the two inner static line stows.

10-17. Jumpmasters must inspect the 5-foot USL extension prior to detaching the USL snap hook from the right outer static line stow bar. When the 5-foot USL is present, ensure the green ID marking thread on the USLM and the USL extension is on top and outside the loop. With the index finger and thumb of both hands pinch off the double sewn portion of both the end of the cotton buffer of the 5-foot USL and the end upper looped portion of the USLM.

10-18. Ensure the 5-foot USL extension is properly girth hitched to the USLM: Push in on the girth hitch at the upper looped portion of the USLM and the cotton buffer of the 5-foot USL extension to ensure that the girth hitch is completely separated. Then visually inspect both the upper looped portion of the USLM and the cotton buffer of the 5-foot USL extension for any burns, cuts, or frays. Ensure the double sewn portion of the 5-foot USL extension is routed through the upper looped portion of the USLM, and the double sewn portion of the USLM is routed through the cotton buffer of the 5-foot USL extension. Redress the girth hitch, ensuring it is centered between two inner static line stows. Then, route the USL 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.

10-19. During the JMPI sequence, when the jumpmaster comes in contact with the girth hitch formed by the end of the cotton buffer of the 5-foot USL extension and the end upper looped portion of the USLM, it is inspected again by taking the following actions:

- When the index finger or thumb of the working hand makes contact with the girth hitch formed by the 5-foot USL extension and the USLM:
  - Leave the working hand in place and conduct a visual inspection.
  - Ensure the green I.D. marking thread on the USLM and the 5-foot USL extension is on top and outside the loop.
- Remove the control hand from the top of the pack tray and the working hand from behind the USLM:
  - With the index finger and thumb of both hands pinch off the double sewn portion of both the end of the cotton buffer of the 5-foot USL and the end upper looped portion of the USLM.
  - Ensure the 5-foot USL is properly girth hitched to the USLM.
  - Push in on the girth hitch at the upper looped portion of the USLM and the cotton buffer of the 5-foot USL, ensuring that the girth hitch is completely separated.
- Visually inspect both the upper looped portion of the USLM and the cotton buffer of the 5-foot USL for any burns, cuts, or frays.
- Ensure the double-sewn portion of the 5-foot USL is routed through the upper looped portion of the USLM, and the double sewn portion of the USLM is routed through the cotton buffer of the 5-foot USL.
- Redress the girth hitch, then ensure the girth hitch is centered between two inner static line stows.
- With either hand regrasp the excess USLM and control it on top of the pack tray:
  - This hand becomes the control hand.
  - The opposite hand becomes the working hand.
- Insert the index finger or thumb of the working hand from bottom to top behind the strand of USL at the end of the 5-foot USL:
  - Make contact with the girth hitch formed by the 5-foot USL and the upper looped portion of the USLM.
  - Continue to trace the USLM in the same manner, bypassing the girth hitch to the main curved pin cover.

ADVANCED COMBAT HELMET (FRONT)

10-20. To inspect the front of the ACH, the jumpmaster places both hands, fingers and thumbs extended and joined, fingertips pointing skyward, palms facing the jumper, on the right side of the ACH. The right hand is the working hand; the left hand is the control hand. The working hand traces across the rim of the ACH

feeling for any sharp or protruding edges that may cut or damage the jumper's USLM upon exiting the aircraft. Once both hands are parallel, place the thumbs on the rim of the ACH and tilt the jumper's 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.

10-21. If the jumper is wearing a modified chinstrap assembly, the jumpmaster places the right index finger on the front left adjustable buckle, ensuring 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, ensuring 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, ensuring 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, ensuring it is not twisted, cut, or frayed, and drop both hands.

10-22. If the jumper is wearing the H-Nape Retention System:

- Place the right index finger on the front left adjustable strap from where it emerges from the helmet shell.
- Trace the front left adjustable strap down ensuring it is not twisted, cut, or frayed until contact is made with the front left slider, ensuring it is free of all cracked components and is serviceable:
  - Continue to trace the front left adjustable strap down ensuring that it is not twisted, cut, or frayed until contact is made with the chinstrap buckle.
  - Ensure that it is free of all cracked components, it is serviceable and is properly secured.
- Trace the long portion chinstrap under the jumper's chin, ensuring that 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 ensuring that it is not twisted, cut, or frayed until contact is made with the front right slider, ensuring that it is free of all cracked components and is serviceable:
  - Continue to trace the front right adjustable strap up ensuring it is not twisted, cut, or frayed to wear it disappears into the helmet shell.
  - Place the right index finger on the right side of the short portion chinstrap and trace it across the front of the jumper's chin, ensuring it is not twisted, cut, or frayed, then drop both hands.

CANOPY RELEASE ASSEMBLIES

10-23. 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 this example, the jumper is exiting the right paratroop door. Since the USLM 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:
  - 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 6-to-8-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 keeps it from seating completely:
  - Let the canopy release assembly return back to its normal position.
  - Keep the right hand in place.

- With the left hand, secure the USLM 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.
  - Insert it from outside to inside behind the main lift web just below the canopy release assemblies.
- Place the 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.
- Let the canopy release assembly return to its normal position.

MAIN LIFT WEB, CHEST STRAP, AND WAISTBAND

10-24. The jumpmaster inspects the main lift web next by taking the following actions:

- Leaves the right hand in place and looks at the left hand and the right main lift web:
  - Makes note of which of the three sizes the main lift web is configured.
  - Keeps this in mind and ensures the main lift web tuck tab assembly is properly assembled and the snap fastener is secure.
- With the left hand, traces down the main lift web, ensuring it is not twisted, cut, or frayed, until making contact with the main lift web adjuster.
- Leaves the left hand in place and looks at the right hand and conducts the same inspection:
  - Ensures the left main lift web tuck tab assembly is in the same location as the right main lift web tuck tab assembly.
  - Leaves the right hand in place.

10-25. The jumpmaster inspects the chest strap by taking the following actions:

- Looks at the chest strap to ensure that it is not misrouted around the left main lift web and with the left-hand palm facing the reserve parachute, grasps the carrying handle and lifts up and out.
- Inserts 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.
- Traces 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.
  - It is secured in its webbing retainer with the tab portion on top and facing towards the chest strap friction adapter.
- Continues to trace the chest strap, ensure it is not twisted, cut, or frayed, until contact is made with the right main lift web and leave the right hand in place.

10-26. The jumpmaster begins inspecting the waistband by leaning to the right side of the jumper and taking the following actions:

- Removes the left hand and inserts 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.
- Looks 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.
- Traces the waistband forward, ensures it is not twisted, cut, frayed, or misrouted behind the horizontal backstrap or the right main lift web:
  - Continues tracing the waistband forward until the right waistband retainer rests in the palm of the left hand.
  - Leaves the left hand in place.

- Removes the right hand from behind the chest strap and inserts it:
  - Fingers and thumb extended and joined.
  - Fingertips pointing skyward, palm facing the jumpmaster.
  - From the bottom to top behind the reserve parachute so the left waistband retainer rests in the palm of the right hand.
  - Makes fingertip-to-fingertip contact and conducts a physical inspection to ensure the waistband is not twisted and has been routed through both waistband retainers.
  - Leaves the left hand in place.
- With the right hand, continues to trace the waistband back:
  - Ensures it is not twisted, cut, or frayed.
  - Ensures it has not been misrouted behind the left main lift web, tracing until the metal adjuster rests in the palm of the right hand.
- Removes the left hand from behind the reserve parachute and—
  - Inserts the index and middle fingers from top to bottom into the quick release formed by the waistband.
  - Ensures it is no more than three fingers, no less than two, and it is not a false quick release.
- Removes the index and middle fingers from the quick release and with the index finger and thumb of the left hand, pinching off the free running end of the waistband where it re-emerges from the metal adjuster.
- Traces the free running end of the waistband to ensure:
  - It is not cut, torn, or frayed.
  - It is easily accessible to the jumper, until the fingertips fall off the end (see chapter 6 for JMPI sequence for the waistband extension).
- With the left-hand palm facing the reserve parachute, grasps the carrying handle, and looks at the right hand and the WAP.
- With the right hand, traces the WAP back, ensures it is not twisted, cut, or frayed, and has not been misrouted behind the horizontal backstrap to where it is sewn to the pack tray.
- Ensures it is properly secured to the pack tray by a box X stitch, with at least 50 percent of the stitching present.
- Removes the right hand and moves back to the front of the jumper.

T-11 RESERVE PARACHUTE

10-27. 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.
  - Ensure it 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.
- 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 the knot with overhand knots.
- Insert the right index finger from top to bottom into the Army parachute log record stow pocket:
  - Conduct a physical and visual inspection to ensure a DA Form 3912 (*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, letting 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.
  - Remove the right hand.
- With the left hand, form a knife-cutting edge, palm facing towards the jumpmaster, and sweep the carrying handle and USL snap hook towards the jumper:
  - Place the left thumb on the top right corner of the ripcord 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
  - It is properly routed through the reserve closing loop to its point of attachment, the curved pin lanyard.
  - Leave the right index finger in place and 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.
  - A visual inspection of the grommet ensures it is not bent, cracked, or corroded.
- Insert the index finger of the right hand from top to bottom behind the ripcord assembly:
  - With the meaty portion of the index finger, trace down the curved pin lanyard to ensure is not twisted, cut, or frayed.
  - Ensure it is properly attached to the ripcord 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, taking 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 ripcord 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 ripcord assembly by reinforced stitching.
  - Withdraw the right index finger.
- Conduct an overall inspection of the reserve parachute 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, taking 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 6-to-8 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.

INSPECTION OF THE MODIFIED T-11 RESERVE SINGLE PIN

10-28. Inspection of the WAP with the left-hand palm facing the reserve parachute grasp the carrying handle of the reserve parachute. For CE also inspect the MAWC:

- With the right hand, knuckles facing towards the pack tray, palm facing skyward, form a fist with the thumb pointing away from you.
- Pinch off the pack opening spring band's pull tab on the left side of the reserve parachute:
  - Pull it slightly towards the center of the reserve.
  - Conduct a visual inspection.
- Look at the pack opening spring band to ensure—
  - It is routed through the left pack opening spring band retainer on the rear of the reserve parachute.
  - It has elasticity and none of the five wire springs are broken or exposed.
- Now release the pull tab and let it pop back into place.

Note. If the MAWC is impeding the CE inspection, you may release the pull tab and, use the right elbow to push it out of the way.

- With the right hand, form a fist with index finger exposed, pluck the spring opening gate one time ensuring—
  - It is properly secured to the left D-ring.
  - It has spring tension.
  - It has not been safetied and the spring opening gate is facing the jumper with the butterfly portion to the outside.
- With the left hand, lift up and out on the carrying handle, conducting a visual inspection of the left connector snap retaining tie ensuring it is serviceable.
- Then visually inspect the left spreader bar tie to ensure that it is properly routed through both grommets and is secured with a surgeon's knot locking the knot with overhand knots.
- Insert the right index finger from top to bottom into the Army parachute log record stow pocket and—
  - Conduct a visual and physical inspection ensuring a DA Form 3912 is present.
  - Withdraw the right index finger.
  - While continuing to lift up and out, transfer control of the carrying handle from the left hand to the right-hand palm facing the reserve parachute.
- Conduct the same visual inspection of the right spreader bar tie and the right connector snap retaining tie.
- Now allow the reserve parachute to return to its natural position leaving the right hand in place and—
  - Inspect the right connector snap with the index finger of the left hand in the same manner.
  - Leave the right hand in place.

- With the left-hand knuckles facing towards the pack tray, palm facing skyward, form a fist with thumb pointing away from you and—
  - Pinch off the pack opening spring band's pull tab on the right side of the reserve parachute.
  - Pull it slightly towards the center of the reserve and conduct a visual inspection.
  - Look at the pack opening spring band ensuring it is routed through the right pack opening spring band retainer on the rear of the reserve.
  - Ensure it has elasticity, and none of the five wire springs are broken or exposed.
- Release the pull tab and let it pop back into place and drop both hands.
- With the left hand form a knife cutting edge, palm facing towards the jumpmaster, and sweep the carrying handle, and USL snap hook towards the jumper.
- Place the hands on the left and right pack closing flaps ensuring the ripcord assembly is not masked.
- With the head and eyes approximately 6-to-8 inches away, visually inspect the ripcord assembly to ensure the window is not cracked, broken, distorted, or distorted.
- Ensure all four tuck tabs are secure and the left pack closing flap is secured over the right pack closing flap.
- Visually inspect the curved pin lanyard attaching loop ensuring it is free of all cuts, frays, or burns.
- Visually inspect the curved pin lanyard in its entirety from its point of attachment to the curved pin, ensuring it is—
  - Routed over the left pack closing flap.
  - Not twisted, cut, frayed, or burned, and it is properly attached to the curved pin.
- Visually inspect the curved pin to ensure it is not bent, cracked or corroded and is properly routed through the reserve closing loop from left to right, and the tip is pointing skyward.
- Visually inspect the reserve closing loop to ensure it is not cut, frayed, or burned at all and has not been punctured in any manner.
- Visually inspect the grommets to ensure they are not bent, cracked, or corroded and then drop both hands.
- 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 seam
- The left hand is the control hand, the right hand is the working hand:
  - With the head and eyes approximately 6-to-8 inches from the working hand, trace across the top pack closing flap, down the left pack closing flap.
  - Bend over so you can see what you are doing.
  - 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, AVIATOR'S KIT BAG AND UNIVERSAL PARACHUTIST RECOVERY BAG

10-29. The inspection of the leg straps rigged with a UPRB 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 UPRB 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.
  - 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 then leave both hands and thumbs in place.
- Conduct a visual inspection to ensure the UPRB:
  - Is present.
  - Neither leg strap retainer is cut or frayed more than 50 percent.
  - 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

10-30. Inspect the USLM by taking the following actions:

- With the right hand, grasp the USL snap hook, ensuring the spring opening gate is facing towards the jumper, open the right hand and let the USL snap hook rest in the palm.
- Place the index finger of the left hand on the girth hitch of the USLM:
  - 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, regrasp the USL 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 USLM at the end of the double-sewn portion.
  - Rotate the USLM down and to the jumper's right and push it toward the USL 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 USL 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 USL snap hook and release the USLM with the left hand.
- Since the USLM is routed over the right shoulder:
  - With the index finger and thumb of the right hand, form an O around the USLM just above the USL snap hook.
  - The jumpmaster should see metal through the O.
- If the USLM were routed over the jumper's left shoulder, after redressing the girth hitch down and around the narrow portion of the USL snap hook:
  - With the index finger and thumb of the left hand forming an O around the USLM just above the USL snap hook, you still see metal.
  - Now drop the right hand.
  - Raise the left hand up and tilt the O towards you, simultaneously inspecting the USLM as it passes through the O to ensure it is free of all cuts, frays, or burns.
- Raise the left hand as high as it can go, or until you feel resistance and issue the jumper the command TURN.

10-31. Raise the right hand up, simultaneously inspecting the USLM 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 USLM tight between the control hand and the first stow.
- Place the index finger or index and middle finger of the left hand behind the USLM below the right hand, making skin-to-skin contact:
  - Trace the USLM 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 USLM to the first stow.
- With either hand, form a bight in the USLM and look at the static line slack retainer loop, ensuring it is present, serviceable, and two serviceable static line slack retainer bands are attached.
- Place the bight on top of the pack tray and control it with either hand which becomes the control hand while 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 1-to-2 inches towards the center of the pack tray:
  - Look behind the first stow, and ensure the USLM 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 jumpmasters trace the USLM toward themselves, only the index finger is 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 USLM, as close as possible to the first stow.
- Trace the first strand of USLM, ensuring that the second stow is free of all—
  - Cuts.
  - Frays.
  - Burns.
- With the index finger and thumb of the working hand, pinch it off and pull 1-to-2 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 USLM and trace it to ensure it is not cut, frayed, or burned.
- Continue to inspect the USLM in the same manner to the main curved pin cover, ensuring the last strand of USLM is routed from the right outer static line stow bar.
- With the index finger of the working hand, gently lift the main curved pin cover and inspect the main curved pin attaching loop to ensure that it is properly attached to both the USLM 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:
  - If the jumper is wearing a T-11 main parachute visually inspect to ensure the main curved pin securing tie is present and made of only one turn of “Orange” ticket 3-inch thread.
  - Ensure the main curved pin is secured by a surgeon’s knot locking knot with the ends trimmed to approximately 2 inches.
- 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; checking the grommet to ensure it is not bent, cracked, or corroded.
- With the index finger and thumb of the working hand, gently lift 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 a qualified parachute rigger skill level 1 or higher, after a routine inspection of 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. 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)

10-32. The jumpmaster inspects the rear of the ACH by placing both hands, fingers and thumbs extended and joined, fingertips pointing skyward, palms facing towards the jumper, on the left side of the ACH. 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 ACH feeling for any sharp or protruding edges that may cut or damage the jumper's USLM upon exiting the aircraft.

10-33. Once both hands are parallel, place the thumbs on the rim of the ACH and gently tilt the jumper's head forward. Conduct a visual inspection to ensure the oval pads are covering the bolt ends, they are flush with the rim of the ACH, and the rear trapezoid pad is flush or protruding slightly past the rim of the ACH, no more than 1/2-inch.

10-34. If the jumper is wearing a modified chinstrap assembly, place the right index finger on the rear right adjustable buckle. Ensure 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.

10-35. Trace the rear right adjustable strap down, ensuring it is not twisted, cut, or frayed until contact is made with the long portion chin strap. Leave the right index finger in place.

10-36. Place the left index finger on the rear left adjustable buckle and conduct the same inspection all the way down to the chinstrap fastener. Leave the left index finger in place.

10-37. Conducts a visual inspection of the nape pad to ensure it is present, secure, serviceable, and has not been reversed. If the jumper is wearing the H-Nape Retention System:

- Place the right index finger on the rear right attaching strap—
  - From where it emerges from the rim of the ACH.
  - Trace the attaching strap down ensuring it is not twisted, cut, or frayed.
  - Route the strap through the nape pad retaining strap until contact is made with the rear right plastic oval link.
  - Ensure it is free of all cracked components and is serviceable.
- Continue to trace down, picking up the inspection of the rear right adjustable strap until contact is made with the rear right slider, ensuring it is free of all cracked components and is serviceable.
- Continue to trace the rear right adjustable strap down, ensuring it is not twisted, cut, or frayed to where it is sewn into the long portion chinstrap:
  - Leave the right index finger in place.
  - Place the left index finger on the rear left attaching strap from where it emerges from the rim of the ACH.
- Conduct the same inspection all the way until contact is made with the chinstrap buckle and keep both hands in place.
- Conduct a visual inspection of the nape pad to ensure that it is present and serviceable.
- Inspect the H-Nape Pad slider and ensure that it is present, serviceable, and free of all cracked components.

Notes. Ensure there is a minimum of seven suspension pads inside the ACH, 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 ACH. The rear trapezoid pad must be flush with the rim of the ACH or may extend past the rim of the ACH, no more than 1/2-inch.

INSPECTING RISER ASSEMBLIES AND PACK TRAYS

10-38. The jumpmaster performs the inspection of the riser assemblies by taking the following actions:

- Reach over the jumper's shoulders and grasp 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.
- Give the left riser assembly a sharp tug to the rear and opens the left hand to form a distinguishable L:
  - Apply upward pressure with the left thumb and trace the riser assembly rearward.
  - Conduct a physical and visual inspection to ensure that a DA Form 3912 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.
- Conduct the same inspection on the right riser assembly with the right hand, ensuring that only one riser assembly contains a DA Form 3912.

10-39. An overall inspection of the pack tray is conducted to ensure the pack tray is free of grease, oil, dirt, mud, or tears. Jumpmasters inspect the pack tray by taking the following actions:

- Place 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.
  - The right hand is the working hand.
- With the head and eyes 6-to-8 inches away from the working hand:
  - Trace across the top pack closing flap, down the right pack closing flap.
  - Jumpmasters bend over to see what they are doing and trace across the bottom pack closing flap.
- Turn the working hand over so the pinkie finger leads the way and trace up the left pack closing flap until skin-to-skin contact is made with the control hand.
- They raise the control hand up out of the way and trace where the control hand has been.
- Form knife edges with both hands, palms facing towards themselves, and issue the command, ARCH YOUR BACK.

INSPECTING BACKSTRAPS

10-40. Jumpmasters inspect both diagonal and horizontal backstraps.

Diagonal Backstraps

10-41. Insert both hands behind the diagonal backstraps where the natural pocket is formed. Ensure that thumbs rest just below the X formed by the diagonal backstrap retainers. Look at the diagonal backstraps to ensure they are properly routed over the appropriate shoulder, and the top diagonal backstrap has one more row of exposed stitching than the bottom. Look at the diagonal backstrap retainers to ensure they are routed through the sizing channels on the diagonal backstraps, the diagonal backstrap retainers are routed around the diagonal backstrap keepers, and the directional snap fasteners are secure.

10-42. Ensuring the directional snap fasteners are secure, jumpmasters use both thumbs to pluck the tab portion of the diagonal backstrap retainers upward from bottom to top. They look at the left hand, and with that hand, trace down the diagonal backstrap to ensure it is not twisted, cut, or frayed to the backstrap adjuster.

10-43. Grasp the backstrap adjuster with the left hand and look at the right hand and the right diagonal backstrap. With the right hand, trace down the diagonal backstrap, ensuring it is not twisted, cut, or frayed.

Horizontal Backstraps

10-44. Bypass the backstrap adjuster and resume inspection of the horizontal backstrap. Trace 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.

10-45. Withdraw the right hand from under the horizontal backstrap, and reinsert it, fingers and thumb extended and joined, fingertips pointing skyward, palms facing towards themselves. Trace from bottom to top behind the horizontal backstrap where it re-emerges from the right main lift web. Issue the jumper the command, BEND.

10-46. 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, pulling down on the backstrap adjuster. With head and eyes approximately 6-to-8 inches away, trace the horizontal backstrap 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.

10-47. Inspect the horizontal backstrap to ensure:

- It is not twisted, cut, or frayed.
- That the horizontal backstrap retainers are properly routed over the horizontal backstrap.
- That the horizontal backstrap retainers are properly routed under and back over the horizontal backstrap keepers and secured with directional snap fasteners.
- Nothing is misrouted behind the horizontal backstrap.

10-48. Withdraw the right hand from behind the horizontal backstrap and reinsert it from top to bottom behind the horizontal backstrap and behind the WAP, where it re-emerges from the left main lift web. Trace up until making skin-to-skin contact with the left hand, ensuring that it is not twisted, cut, or frayed, the free running end is secured in the webbing retainer, and nothing has been misrouted behind it. Remove the right hand and get left hip-to-head with the jumper.

SADDLE

10-49. 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, or frayed, 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.
- Keeping the left hand in place, reaches back and gets a handful of air and issues 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 place the jumper into jump configuration.

10-50. After the jumpmaster has completed their JMPI, they place the jumper into jump configuration (the only person authorized to place the jumper into jump configuration is the jumpmaster who inspected that jumper) and take the following actions:

- The jumpmaster traces the USLM from the USL snap hook to ensure that the USLM is routed over the shoulder corresponding with the door the jumper is to exit.
- Once behind the jumper, the jumpmaster removes all slack from the USLM:
  - USL slack is removed by pulling the USLM through the static line slack retainer band, creating another stow if there is enough slack.
  - Otherwise let the USLM hang free.

- Jumpmasters must inspect the girth hitch formed by the end of the cotton buffer of the 5-foot USL and the end upper looped portion of the USLM in the same manner once again after the JMPI has been completed.
- The jumpmaster 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.
- If the jumper is wearing the T-11 reserve the jumpmaster—
  - Places either hand on the ripcord assembly.
  - Applies steady inward pressure.
  - 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 jumpmaster notifies a rigger.

10-51. If the jumper requires the T-11 reserve inserts, ensure that the T-11 reserve parachute is marked on the carrying handle with 1/4-inch yellow pressure-sensitive tape (see figure 10-1). The jumpmaster—

- Places a T-11 reserve insert in the top tuck pocket.
- Ensures that the top edge of the T-11 reserve insert is flush with the binding tape on the tuck pocket and the yellow tab is visible (see figure 10-2).
- Places a T-11 reserve insert in the bottom tuck pocket.
- Ensures that the bottom of the T-11 reserve insert is flush with the binding tape on the tuck pocket and the yellow tab is visible (see figure 10-3).
- Verifies that the side tuck tabs have not been removed from their tuck pockets, and if the side tuck tabs become unsecure, immediately notify a rigger.

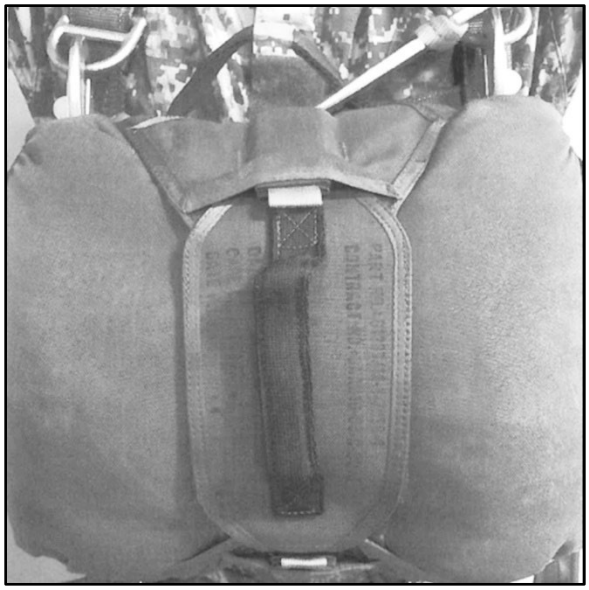


Figure 10-1. Quarter-inch yellow pressure-sensitive tape

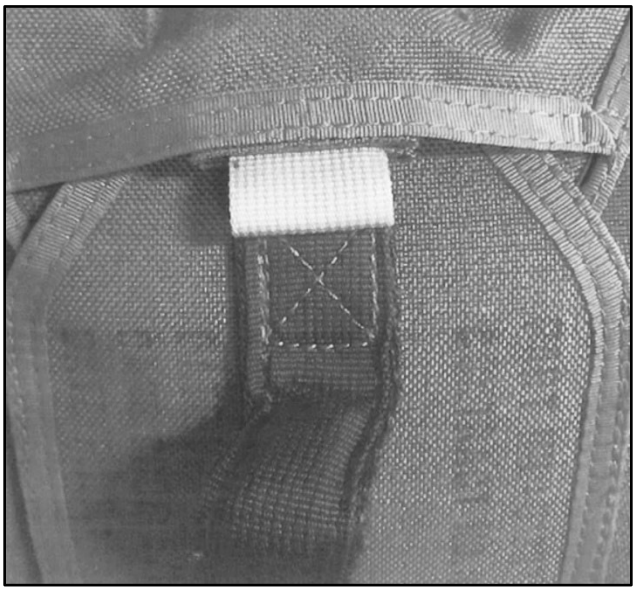


Figure 10-2. T-11 reserve insert is flush with the binding tape



Figure 10-3. T-11 reserve bottom insert is flush with the binding tape

Notes. At a minimum, the PJM and AJM have the T-11 reserve inserts. If the No. 1 jumper is assisting in pushing a door bundle, that jumper is required to have the T-11 reserve 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-11 reserve inserts emplaced. (UH-60 and UH-1.)

INSPECTION OF COMBAT EQUIPMENT (MODULAR AIRBORNE WEAPONS CASE)

10-52. When jumping a MAWC, the inspection sequence for a combat-equipped jumper is the same as a noncombat-equipped rigged jumper all the way down to the waistband. Inspect ACH, canopy release assemblies, main lift webs, and the chest strap, as prescribed in paragraphs 10-20 thru 10-26, 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 and 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 misrouted behind the horizontal backstrap.
  - Ensure it 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 and leave the left hand in place.
- Remove the right hand from behind the chest strap:
  - Insert it, fingers and thumb extended and joined, fingertips pointing skyward.
  - Palm facing the jumpmaster, from bottom to top behind the reserve parachute outside of the left adjustable D-ring attaching strap.
  - 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.
  - Ensure the waistband 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:
  - 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:
  - 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 WAP:
  - With the right hand, trace the WAP back.
  - Ensure the WAP is not twisted, cut, or frayed, and has not been misrouted behind the horizontal backstrap to where it is sewn to the pack tray.
  - Ensure the WAP 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; using the right forearm, push out on the lead edge of the MAWC for the second time.

10-53. The MAWC is 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, ensuring 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:
  - 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.
  - Ensure the adjusting strap is properly routed through 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.
  - Ensure the adjusting strap is routed through the friction adapter from top to bottom.
  - Route the adjusting strap 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, continue tracing down the inside of the MAWC 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.
  - Trace from front to rear along the bottom of the MAWC until the hand falls off the rear, ensuring 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 HPT 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—
  - The compression strap has been properly routed through the vertical nylon equipment hanger.
  - The quick-release buckle is free of all cracked components and is properly secured.
- Visually inspect to ensure the free running end of the compression strap has been routed back through the vertical nylon equipment hanger and is 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 then conduct the same visual inspection.
  - 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:
  - Using 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 MAWC.
- Give the MAWC a sharp slap, feeling for the forward assist of the M4/M16 series rifle or the charging handle of the M249 squad automatic weapon (also called 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 to ensure that the upper tie-down tape is properly routed behind the vertical nylon equipment hanger.
  - Routed through the small window in the tabbed portion of the slide fastener and tabbed thong.
  - Ensure the upper tie-down tape is properly routed around the MAWC, through the small cutaway portion of the equipment ring from bottom to top.
  - Ensure the upper tie-down tape 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

10-54. After completing the overall inspection of the reserve parachute, the jumpmaster then inspects the MOLLE II rucksack in the following manner:

- The inspection of the HSPR begins with the adjustable D-ring attaching straps:
  - These are like items of equipment so either one can be inspected first.
  - For this purpose, begin with the right adjustable D-ring attaching strap.
- Simultaneously—
  - Form fists with index fingers exposed with both hands.
  - Place index fingers on the snap hooks of the adjustable D-ring attaching straps.
  - Focus attention on 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:
  - Ensure that the white attaching loop is routed from bottom to top through the triangle link.
  - Ensure the green attaching loop is routed from bottom to top through the white attaching loop.
  - Ensure the red attaching loop is routed from bottom to top through the green attaching loop and 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 on top and 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 piles of the release handle cross strap.
  - Ensure the release handle is secured by the hook-pile tabs and has not been reversed or is upside down.

- Form a hook with the right index finger and insert it from outside to inside and lift 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 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 HPTLL 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.
  - 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.
  - Use the index finger of each hand and lightly tap the friction adapters 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 ensuring they are—
  - S-folded or accordion folded, never rolled.
  - 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 ensuring they are secure.

ALL-PURPOSE LIGHTWEIGHT INDIVIDUAL CARRYING EQUIPMENT PACK

10-55. After completing the overall inspection of the reserve parachute, the jumpmaster then inspects the ALICE pack. To inspect this pack—

- The inspection of the HSPR begins with the adjustable D-ring attaching straps:
  - These are like items of equipment, so either one can be inspected first.
  - For this purpose, begin with the right adjustable D-ring attaching strap.

- Simultaneously—
  - Form fists with index fingers exposed with both hands.
  - Place index fingers on the snap hooks of the adjustable D-ring attaching straps.
  - Focus attention to the left hand and conduct a visual inspection to ensure that the snap hook is not bent, cracked, corroded, distorted, or out of shape.
  - Ensure 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.
  - Ensure the opening gate 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.
  - Ensure 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:
  - Ensure that the white attaching loop is routed from bottom to top through the triangle link.
  - Ensure the green attaching loop is routed from bottom to top through the white attaching loop.
  - Ensure the red attaching loop is routed from bottom to top through the green attaching loop and 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.
  - 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 piles of the release handle cross strap.
  - Ensure the release handle is secured by the hook-pile tabs and has not been reversed or is upside down.
- Now form a hook with the right index finger and—
  - Insert it from the outside to the inside.
  - 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 contacting 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.
  - Ensure that all the slack has been removed from 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, raise it to eye level, and look at the equipment retainer straps, ensuring 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 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:
  - Visually inspect the free running ends of the equipment retainer straps to ensure they are S-folded or accordion folded, never rolled.
  - Equipment retainer straps are secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both).
  - Equipment retainer straps are not secured to the quick releases.
  - With the index finger of each hand, lightly tap the retainer straps 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 straps out to ensure they are properly secured to the ALICE pack frame.
  - Visually inspect the free running ends of the adjustable shoulder carrying straps.
  - Ensure they are S-folded or accordion folded, never rolled.
  - Ensure they are 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.

MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT 4000 RUCKSACK

10-56. After completing an overall inspection of the reserve parachute, the jumpmaster then inspects the MOLLE 4000 rucksack. To inspect this pack—

- Jumpers inspect the IHSPR beginning with the adjustable equipment ring attaching straps, which are like items of equipment.
  - Either one can be inspected first, so for this example jumpers begin with the right adjustable equipment ring attaching strap.
  - With both hands, simultaneously form fists with index fingers exposed.
  - Place index fingers on top of the snap hooks of the adjustable equipment ring attaching straps, focusing attention on 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 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, it has spring tension and has not been reversed.
- With the left thumb flip the free running end of the right adjustable equipment ring attaching strap out of the way.
- Place the left index finger on the black intermittent stitching on the front of the right adjustable equipment ring attaching strap just below the snap hook:
  - Trace down the right adjustable equipment ring attaching strap.
  - Ensure that it is not twisted, cut, or frayed until contact is made with the yellow attaching loop.
- Trace down the color-coated attaching loops and ensure that they are not twisted, cut, or frayed and—
  - The white attaching loop is routed from bottom to top through the yellow attaching loop.
  - 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.
  - Routed from bottom to top through the grommet on the female portion leg strap release assembly.
  - 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 equipment ring attaching strap until the right index finger rests on the single box X stitch on the release handle cross strap.
- Focus attention on the release handle:
  - With the right index finger and thumb, index finger on top, thumb on the bottom lift gently on the release handle.
  - Ensure the release handle and release handle cable is properly routed between the two piles of the release handle cross strap.
  - Ensure the release handle is secured by the hook-pile tabs, is not reversed, or upside down.
- Form a hook with the right index finger and insert it from outside to inside and gently lift up on the release handle lanyard:
  - Ensure it is not twisted more than one half twist, cut, frayed, or misrouted around the equipment retainer strap or the release handle cross strap.
  - Place your right index finger back on the single box X stitch on the release handle cross strap.
  - Visually inspect to ensure that the equipment retainer straps are properly routed through the air item routing channels inside the air items stowage pocket.
- With both hands, simultaneously—
  - Trace the equipment retainer straps down ensuring they are not twisted, cut, or frayed.
  - Route both equipment retainer straps through the same number of air item routing channels until fingers rest on top of the friction adapters (behind the two to three finger quick releases of the equipment retainer straps).
- Simultaneously, inspect the 2 to 3 finger quick releases of the equipment retainer straps by placing the index and middle finger of each hand, palm facing you, on the outside of the quick releases:
  - Inspect the free running ends of the equipment retainer straps.
  - Ensure that they are S-folded or accordion folded, never rolled.
  - Ensure they are secured with one turn of masking tape or two turns of retainer band, one or the other never both.
  - With the index fingers of each hand, lightly tap the free running ends of the equipment retainer straps to ensure that they are secure.
- Secure the sides of the MOLLE 4000 and raise it to eye level:
  - Conduct a visual inspection ensuring the equipment retainer straps are routed through the friction adapter stowage pockets.
  - Ensure the V-shaped load lifters are on top of the pack, and behind the MOLLE 4000 frame.
- Raise the MOLLE 4000 to the jumper and issue the command HOLD. (Jumpers secure the top of the MOLLE 4000 and hold it up high.)
- Simultaneously, place the index fingers of both hands on the equipment retainer straps where they re-emerge from under the MOLLE 4000:
  - With both hands, trace down the equipment retainer straps ensuring they are not twisted, cut or frayed and form an X configuration on the back of the MOLLE 4000 pack.
  - Bypass the girth hitch of the HPTLL and continue the inspection until fingers rest on the frame of the MOLLE 4000 frame.
  - Leave index fingers in place and conduct a visual inspection of the equipment retainer straps to ensure they are properly routed through the air item routing channels.
- With the thumb and index fingers of each hand, form an O around the base of the adjustable shoulder carrying straps:
  - Whenever possible the shoulder carrying straps' free running ends should be on top of the hands.
  - Simultaneously, pull out to ensure they are properly secured to the MOLLE 4000.
  - Inspect the free running ends of the adjustable shoulder carrying straps.
  - Ensure they are S-folded or accordion folded, never rolled.
  - Ensure they are 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.

MEDIUM MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT PACK

10-57. After completing an overall inspection of the reserve parachute, the jumpmaster then inspects medium MOLLE. To inspect this pack—

- The HSPR inspection begins with the adjustable D-ring attaching straps:
  - These are like items of equipment so either one can be inspected first.
  - Begin with the right adjustable D-ring attaching strap for this example.
- With both hands, simultaneously form fists with the index fingers exposed:
  - Place index fingers on top of the snap hooks of the adjustable D-ring attaching straps, focusing attention on 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 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, 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.
  - Ensure 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 trace down to ensure—
  - 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.
  - The red attaching loop is routed from bottom to top through the grommet in the female portion leg strap release assembly.
- Continue tracing until the left index finger 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, ensuring it is properly routed through the red attaching loop and secured by the cable loop retainer.
- Leaving the left index finger in place, with your 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.
- Focus attention on the release handle:
  - With the right index finger on top and thumb on the bottom, lift gently on the release handle.
  - Ensure the release handle and release handle cable are properly routed between the two piles of the release handle cross straps.
  - Ensure the release handle is secured by the hook-pile tabs and has not been reversed or upside down.
- Form a hook with the right index finger and insert it from outside to inside:
  - Gently lift 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.
- Simultaneously, trace the equipment retainer straps down until you contact the box X stitches on either side of the adjustable cross strap.
- Leave the left index finger in place and with the right index finger and thumb—
  - Grasp the free running end of the adjustable cross strap and give it a tug to the jumper's left.
  - Ensure 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 it.

- Secure the sides of the medium MOLLE and raise it to eye level and—
  - Look at the equipment retainer straps to ensure they are routed through the carrying handle and have not been twisted, cut, or frayed.
  - Raise the medium MOLLE to the jumper and issue the command HOLD.

Note. Jumpers secure the top of the medium MOLLE and hold it up high.

- 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 carrying handle. Ensure they are routed—
  - From outside to inside.
  - Under the adjustable shoulder carrying straps.
- Begin tracing down the equipment retainer straps to ensure they—
  - Are not twisted, cut, or frayed.
  - Are routed over the comfort pad and form an X configuration on the rear of the medium MOLLE.
  - Bypass the girth hitch of the HPTLL.
  - Continue tracing the equipment retainer straps until fingers rest on the friction adaptors behind the 2-3 finger quick releases of the equipment retainer straps.
- Jumpers inspect the 2 to 3 finger quick release simultaneously by placing the index and middle finger of each hand, palm facing them on the outside of the quick releases.
- Conduct a visual inspection of the friction adapters ensuring they are routed behind the medium 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).
  - Ensure they are 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.
- With the index finger and thumb of each hand, form an O around the base of the adjustable shoulder carrying straps, and whenever possible the free running ends should rest on top of the hands:
  - Simultaneously, pull out the MOLLE ruck to ensure it is properly secured to the medium 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.
  - Ensure that the adjustable shoulder carrying straps are 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.

MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT ASSAULT PACK

10-58. After completing an overall inspection of the reserve parachute, the jumpmaster then inspects the MOLLE assault pack. To inspect this pack when rigged with the HSPR—

- Begin the inspection with the adjustable D-ring attaching straps which are like items of equipment:
  - Either one can be inspected first.
  - For this purpose, begin with the right adjustable D-ring attaching strap.
- With both hands, simultaneously form fists with index fingers exposed:
  - Place index fingers on top of the snap hooks of the adjustable D-ring attaching straps, focusing 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 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, 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.
  - Ensure 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 trace down to 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.
  - The red attaching loop is routed from bottom to top through the grommet in the female portion leg strap release assembly.
  - Continue tracing until the left index finger 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 ensuring it is properly routed through the red attaching loop and secured by the cable loop retainer.
- Leaving the left index finger in place:
  - Use the right hand to conduct the same inspection on the left adjustable D-ring attaching strap.
  - Continue until the right index finger rests on the single box X stitch on the release handle cross strap.
- Leave both hands in place and visually inspect to ensure that the harness—
  - Is secured to the vertical nylon equipment hangers on each side of the pack by girth-hitched 1/4-inch cotton webbing.
  - Is approximately 12 inches in length, with a single or double loop bow knot on top of the reinforced stitching.
- Lift gently on the release handle with the right index finger on top and thumb on the bottom:
  - Ensure the release handle and release handle cable is properly routed between the two piles of the release handle cross strap.
  - Ensure the release handle is secured by the hook-pile tabs and has not been reversed or is upside down.
- Now form a hook with the right index finger and insert it from outside to inside and gently lift the release handle lanyard:
  - 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.
- Simultaneously, trace the equipment retainer straps down 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 right index finger and thumb grasp the free running end of the adjustable cross strap and give it a tug to the jumper's left:
  - Ensure 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 assault pack and raise it to eye level and look at the equipment retainer straps to—
  - Ensure they are routed through the carrying handle.
  - Ensure they have not been twisted, cut, or frayed.
- Raise the MOLLE assault pack to the jumper and issue the command HOLD.

Note. Jumpers—secure the top of the MOLLE assault pack and hold it up high.

- Now place the index fingers of both hands inside the adjustable shoulder carrying straps on top of the equipment retainer straps where they—
  - Re-emerge from the carrying handle.
  - Are routed inside the adjustable shoulder carrying straps.

- Begin tracing down the equipment retainer straps to ensure they are—
  - Not twisted, cut, or frayed.
  - Routed over the comfort pad and form an X configuration on the rear of the MOLLE assault pack.
- Bypass the girth hitch of the HPTLL and continue to trace the equipment retainer straps until fingers rest on the friction adaptors behind the 2-3 finger quick releases of the equipment retainer straps.
- Simultaneously, inspect the 2-3 finger quick release by placing the index and middle finger of each hand, palm facing you, on the outside of the quick releases:
  - Conduct a visual inspection of the quick-release buckle of the sternum strap to ensure it is secured and free of all cracked components.
  - Visually inspect the excess webbing of the sternum strap to ensure it has been properly secured in the webbing retainers.
- Visually inspect the free running ends of the equipment retainer straps to ensure they are—
  - S-folded or accordion folded, never rolled.
  - Secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both) and are not secured to the quick releases.
  - With the index finger of each hand, lightly tap the free running ends of the equipment retainer straps ensuring they are secure.
- With the index finger and thumb of each hand, form an O around the base of the adjustable shoulder carrying straps, whenever possible the free running ends should rest on top of the hands.
- Simultaneously pull out the medium MOLLE ruck to ensure it is properly secured to the MOLLE assault pack body.
- Visually inspect the free running ends of the adjustable shoulder carrying straps to ensure they are—
  - S-folded or accordion folded, never rolled.
  - 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.

HOOK-PILE TAPE LOWERING LINE (MODULAR AIRBORNE WEAPONS CASE)

10-59. Inspect the HPTLL—when rigged with a MAWC—by taking the following actions:

- With the index finger of the right hand, place it on the 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 contacting 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 inspecting 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 tracing down until making contact with the second set of hook-pile tabs, ensuring they are—
  - Present.
  - Secured.
  - Without S-folds protruding from the end of the retainer flap.
- Continue to trace the HPTLL until the index finger disappears behind the MAWC:
  - Visually inspect to ensure the HPTLL is properly routed between the main body of the MAWC 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 tracing 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 keeps it from seating completely.
  - With the opening gate facing the jumper.
  - 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

10-60. 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 and below the UPRB 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 that it is—
  - Not twisted, cut, or frayed.
  - Properly routed so the excess webbing is behind the leg strap retainer.
  - 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 that it is—
  - Properly seated over the ball detent.
  - 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, you may remove the right hand and use the right forearm to lift up and out on the MAWC.
- With the right thumb, press down on the activating lever to ensure that it is—
  - Properly seated over the ball detent.
  - Free of any foreign material that keeps it from seating completely and leave both hands and thumbs in place.
- Rock back on heels and conduct a visual inspection to ensure that—
  - The UPRB is present.
  - Neither leg strap retainer is cut or frayed more than 50 percent.
  - 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.

TECHNICAL INSPECTION AND HANG OF COMBAT EQUIPMENT

10-61. The jumpmaster 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.

10-62. There are two methods to attach equipment after JMPI is complete: T.I. and hang of CE, and late hang and JMPI of CE. When the commander decides to T.I. and hang after JMPI has been conducted, the T.I. is conducted on the MOLLE rucksack, ALICE pack, MOLLE 4000 Medium, Assault Pack, MAWC (rigged for a tandem load), the HPTLL (MAWC), and leg strap assemblies.

10-63. The items to be technically inspected are the MAWC, upper tie down tape, the jumpable pack, and the HPTLL. The T.I. of all CE is conducted in the prescribed manner according to that equipment's JMPI inspection sequence. No portion of the inspection sequence is omitted. It may be required to manipulate the equipment in different ways to perform the inspection properly because it is not hung on the individual jumper. After the jumpmaster has completed the T.I. they hang the equipment on the individual jumper.

POSTHANG INSPECTION

10-64. Once the jumpmaster has completed hanging the equipment on the jumper, they complete a posthang inspection verifying all the attachments are properly attached and secured. At a minimum, the following are conducted:

- The snap hooks of the adjustable D-ring attaching straps are:
  - Properly attached to the equipment rings with the opening gates facing the jumper.
  - 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.
  - Ensure that the yellow safety lanyard is secured to the appropriate snap fastener (whichever creates the least amount of tension).
- (MAWC) The jumpmaster should ensure that the upper tie-down tape is—
  - Properly routed through the window on the slide fastener and tab thong.
  - Routed around the body of the MAWC, from back to front through the small cutaway portion of the equipment ring.
  - Secured with a single or double loop bowknot on the lead edge of the MAWC and is easily accessible to the jumper.
- (MAWC) The jumpmaster should 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 the jumper.
  - The activating lever is fully seated.
- The jumpmaster should 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 is routed around the right leg, and the left adjustable leg strap is placed around the MAWC on the jumper's left side.
- If the jumper is exiting from the right paratroop door, the left adjustable leg strap is routed around the jumper's left leg and MAWC, and the right adjustable leg strap is not used.

LATE HANG AND JUMPMASTER PERSONNEL INSPECTION OF COMBAT EQUIPMENT

10-65. When the airborne commander has decided to conduct late hang and JMPI, jumpers attach equipment using the buddy system. After the equipment is properly attached, it must be inspected using the late hang JMPI sequence.

10-66. The only items to be inspected are the MAWC, upper tie down tape, the jumpable pack, and the HPTLL. The late hang JMPI sequence is conducted in the same manner as prescribed in the talk through for that equipment. 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 HPTL. The jumpmaster also inspects the upper tie down tape for proper attachment to the horizontal back strap

ADJUSTABLE LEG STRAPS

10-67. After the jumper is fully rigged, the jumpmaster 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.

JUMPMASTER PERSONNEL INSPECTION SEQUENCE FOR AIRBORNE PACK

Note. This JMPI sequence is for the front mounted AIRPAC when jumped with a MAWC.

10-68. The jumpmaster 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.
  - 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:
  - Trace down until the middle finger makes contact with the circular ring.
  - Ensure 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 ensure the red attaching loop has been properly routed.
- Place the left index finger on the single boxed X stitch just below the circular ring.
- Conduct a visual inspection of the release handle cable to ensure it is properly routed under both piles 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 the release handle to ensure that it—
  - Has been properly routed under both piles of the release handle cross strap.
  - 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 that the—
  - Equipment retainer straps have been properly routed through them.
  - 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 boxed X 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, placing 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 HPTLL, palm facing the jumpmaster and 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 and 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 HPTLL.
- 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.
  - Pay 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 HPTLL where it emerges from the lowering line stow pocket:
  - Ensure no excess of the HPTLL is protruding from the retainer flap.
  - Trace the HPTLL 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 jumpmaster.
- Remove the right index finger and rotate it around to the backside of the MAWC and continue the inspection of the HPTLL where it emerges from the nylon chaffing.
- Trace the HPTLL 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 AIRBORNE PACK

10-69. 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 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 weapon system.

Chapter 11
Jumpmaster and Safety Duties in Flight

This chapter provides an overview of the duties of the jumpmaster team during flight. For aircraft-specific personnel duties, see chapter 14.

PRIMARY AND ASSISTANT JUMPMASTER AND SAFETY DUTIES

11-1. After the aircraft takes off, the jumpmaster 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 (also called GPS). The jumpmaster also remains in communication with the pilot. To do this, the jumpmaster relays messages through the loadmaster.

11-2. On Army aircraft, the jumpmaster or safety personnel always wear a flight helmet or headset for direct communication with the pilot and to monitor the ground control element.

11-3. In general, the jumpmaster team—

- Never sacrifices safety, for any reason.
- Rehearses jumpmaster procedures on the ground with the complete jumpmaster 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.
- Ensures T-11 reserve inserts are in place and checked by the safety prior to taking the paratroop door.

JUMPMASTER DUTIES

11-4. The jumpmaster 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 verbally, but to compensate for engine noise, the jumpmaster also uses hand and arm signals. The signals must be smooth, coordinated, and precise. The commands listed, with variations explained in chapters 15 through 19, are employed on a multitude of aircraft. (Jumpmasters ensure that the correct sequence is used for each particular aircraft.) The correct commands are explained and demonstrated to jumpers during SAT.

11-5. The PJM and AJM must—

- Enforce flight rules and regulations.
- Perform in-flight rigging missions.
- Issue time warnings.
- 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

11-6. 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.

11-7. 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 CE.
- Reinforce the proper static line control and ripcord 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

11-8. 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.

11-9. The time warnings and door procedures are considered critical aspects of jumpmaster operations during all airdrop procedures. When the 20-minute time warning is given, jumpmasters 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 verbal command is given.

11-10. All special items of equipment are attached to designated jumpers and then are inspected. Safety personnel assist the jumpmasters with attaching equipment and ensuring the tie-downs are secure and the lowering lines are attached and secured. At the 20-minute time warning, if door bundles are used for the airborne operation, 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.

11-11. 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 the C-130; two for the 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, the jumpmaster slaps the smooth side of the bundle and ensures it is facing the trail edge of the door.

11-12. Conduct the following inspection for T-10 cargo parachute door bundles. Prior to hooking up the cargo parachute's static line to the outboard anchor line cable, the jumpmaster inspects the cargo parachute and door bundle in its entirety beginning at the point of attachment, making sure that the following is completed:

- Ensure 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 1/4-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.
  - Through the second set of connector link tie loops, secured with a surgeon's knot, locking knot.
- Ensure the securing tie is constructed of 1/4-inch cotton webbing and is securing the parachute tight to the load and is routed underneath the USL.

- Perform an overall inspection of the cargo parachute and door bundle, checking for any loose or excess webbing.
- When satisfied with their inspection, the jumpmaster slaps the smooth side of the door bundle, ensuring it faces the trail edge of the door, completing their inspection.

11-13. 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 jumpmaster paratroop door check.

11-14. When using the 68-inch pilot parachute, the safety—

- Attaches the G-13 clevis by detaching the clevis locking pin and the clevis pin.
- Places 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.
- Routes the clevis locking pin through the clevis pin (ensure the clevis locking pin is always towards the skin of the aircraft), and bends 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.

11-15. When the loadmaster informs the jumpmasters that the aircraft has a 10-minute time warning to the DZ, the jumpmasters unbuckle their seat belts and stand up. They hook up to the inboard anchor line cable and move to the rear of the aircraft.

11-16. Jumpmasters should be positioned forward of the paratroop door when conducting jump commands. The jumpmasters begin jump commands after the 10-minute time warning.

FIRST SEVEN COMMANDS

11-17. The jumpmaster is now ready to issue the first seven jump commands.

GET READY

11-18. This jump command (see figure 11-1) alerts the jumpers seated in the aircraft and directs their complete attention to the jumpmaster.

11-19. The jumpmaster starts the command with their hands centered on the chest the fingers and thumbs extended and joined, and the palms facing the jumpers.

11-20. The jumpmaster then extends both arms forward until the elbows lock with the palms facing the jumpers. The jumpmaster gives the command GET READY, then returns to the start position.

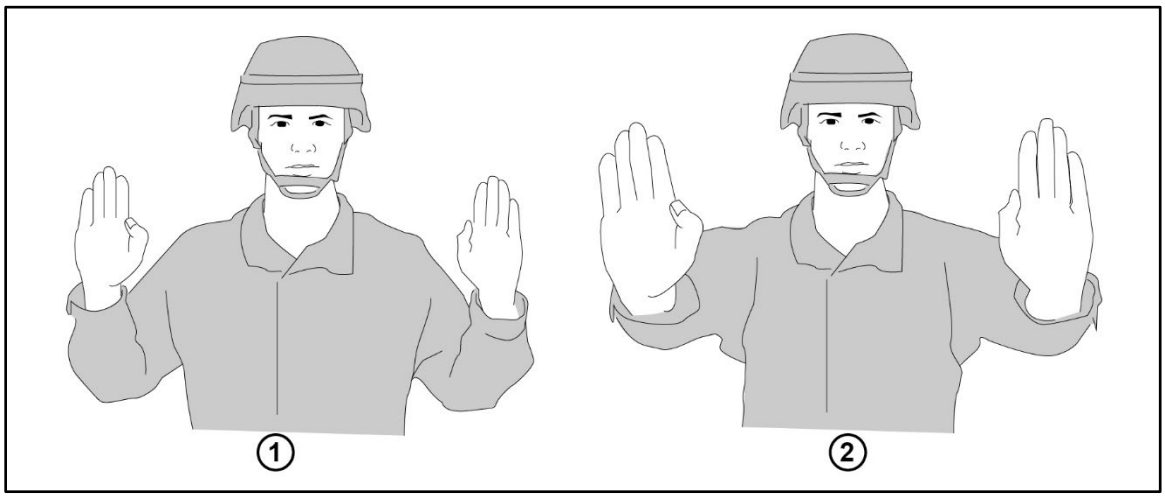


Figure 11-1. GET READY

OUTBOARD PERSONNEL, STAND UP

11-21. The jumpmaster 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 (see figure 11-2).

11-22. Keeping the hands in the same position, the jumpmaster then lowers their arms to their sides at a 45-degree angle and locks their elbows.

11-23. The jumpmaster extends and joins the fingers and thumb of each hand.

11-24. The jumpmaster rotates the hands so their palms face upward.

11-25. Next, they issue the command, STAND UP, and raise their arms straight overhead, keeping the elbows locked.

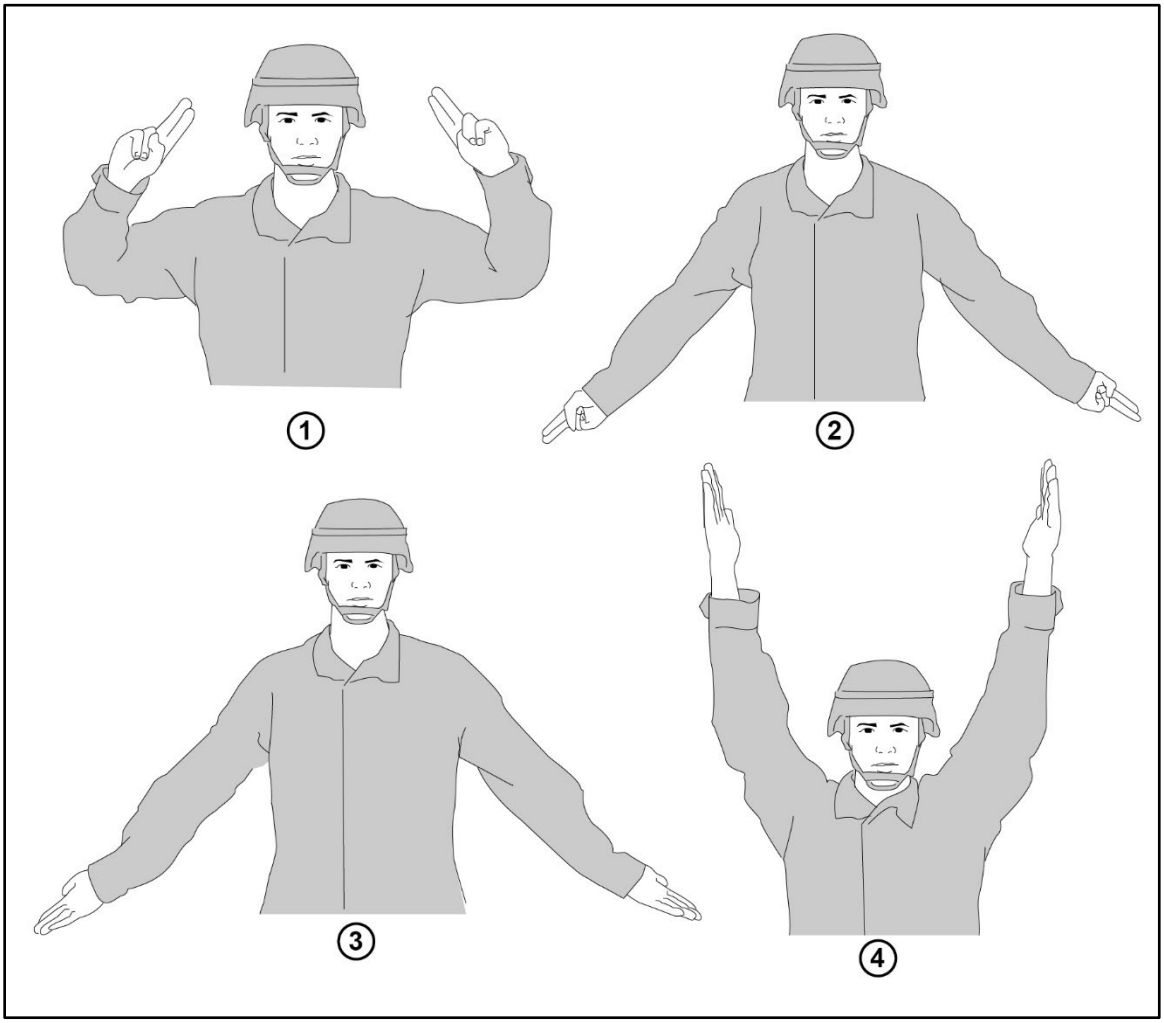


Figure 11-2. OUTBOARD PERSONNEL, STAND UP

INBOARD PERSONNEL, STAND UP

11-26. As shown in figure 11-3, the jumpmaster 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.

11-27. As they issue the command, INBOARD PERSONNEL, they extend their arms toward the inboard seats with the elbows locked. The jumpmaster 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.

11-28. The jumpmaster gives the command, STAND UP, and raises their arms straight overhead, keeping the elbows locked. After the jumpers are standing, safety personnel assist jumpers with stowing the troop cargo seating, if necessary. After the jumpers are standing, safety personnel assist jumpers in tightening down the appropriate adjustable leg straps and securing them in the appropriate webbing retainer.

WARNING

If jumping CE, at this time the jumper must tighten down all appropriate adjustable leg straps and secure any excess webbing in the appropriate webbing retainer.

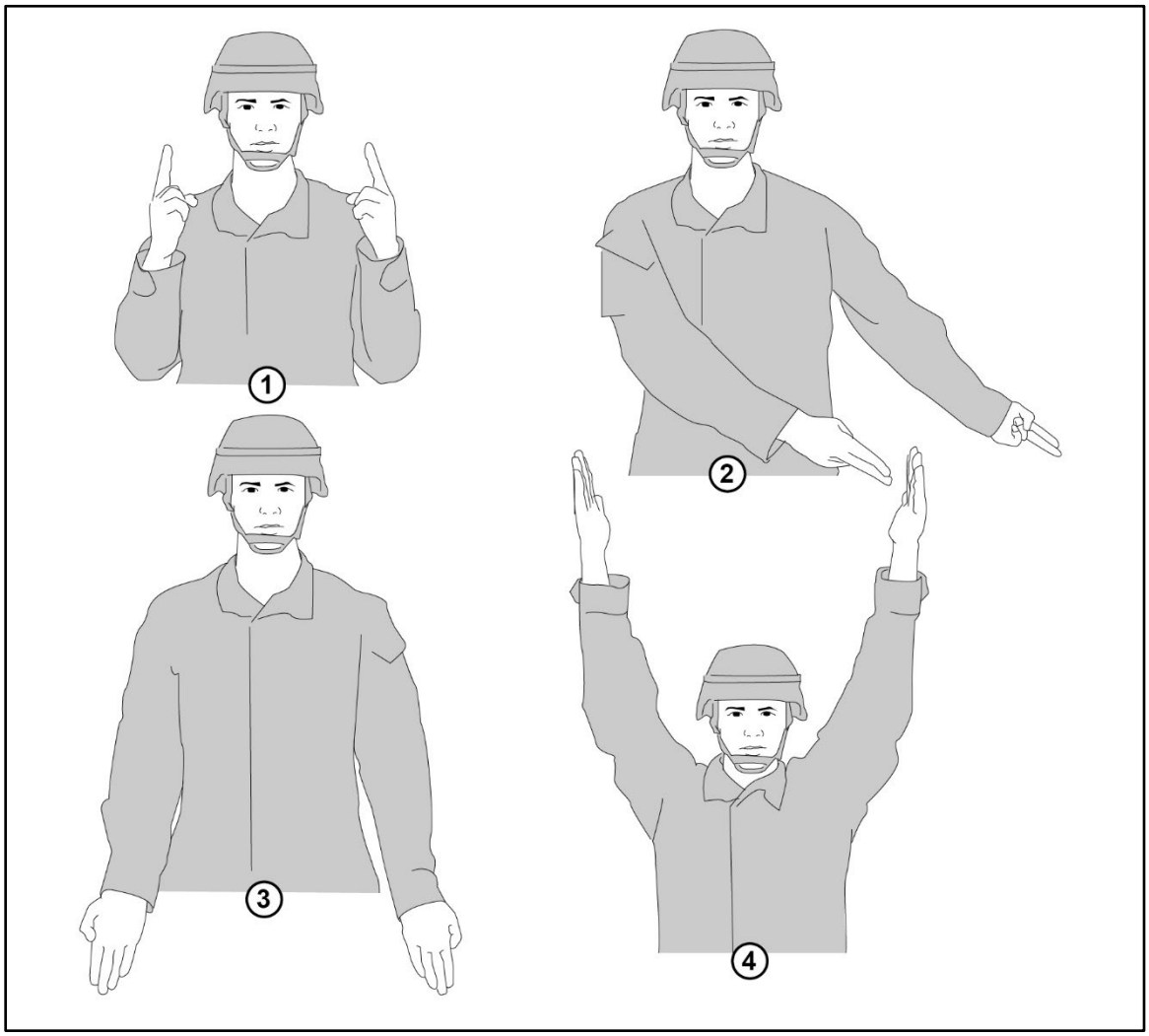


Figure 11-3. INBOARD PERSONNEL, STAND UP

HOOK UP

11-29. The jumpmaster 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, creating fists with the remaining fingers and thumb of each hand.

11-30. Issuing the command of HOOK UP (see figure 11-4), they move their arms down and up or up and down in a pumping motion. They must repeat this motion at least three times. For the C-130H, no more than 20 jumpers per anchor line cable and for the C-130J, no more than 31 jumpers per anchor line cable.

CAUTION

All jumpers on the aircraft must enforce ripcord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic-line hand protects or covers the ripcord handle.

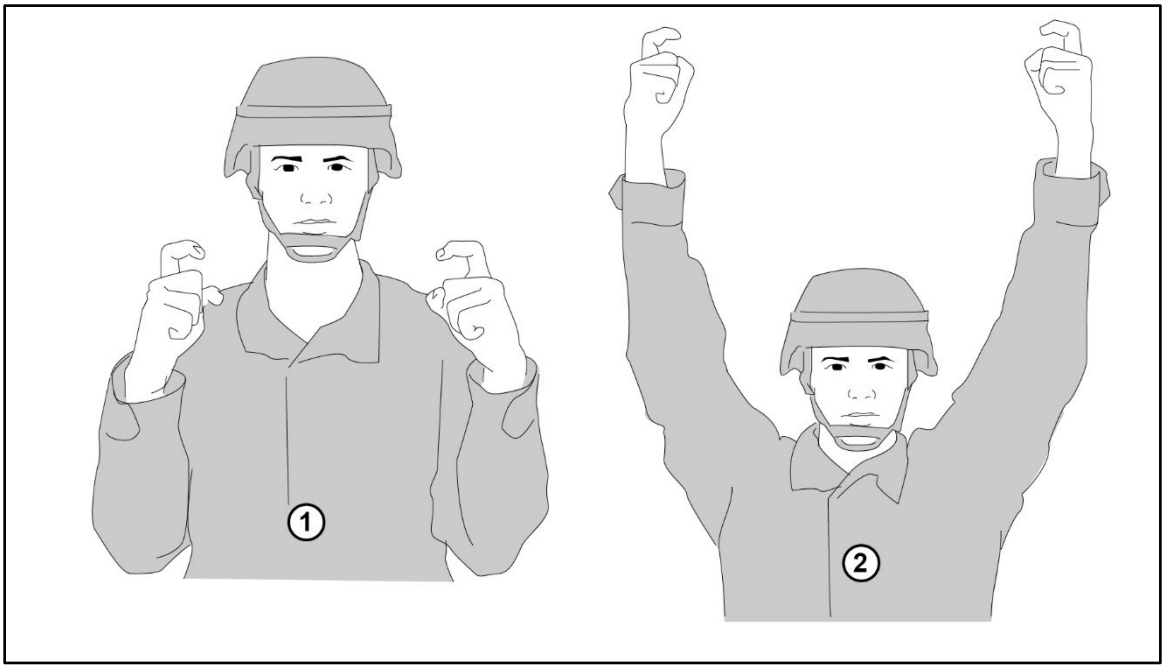


Figure 11-4. HOOK UP

CHECK STATIC LINES

11-31. This is a plural command (see figure 11-5) 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 jumpmaster 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.

11-32. 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.

Note. Safety inspections: Once the safety has 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 inspects with both hands and eyes.

11-33. Safeties check each jumper's USLM. Ensure the USL snap hook is properly secured to the proper anchor line cable with the opening gate facing towards the skin of the aircraft. Safeties 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.

11-34. Safeties trace the USLM over the jumper's shoulder, ensuring it is not misrouted. Continue to trace the USLM to the first stow.

11-35. Safeties 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.

11-36. Safeties 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.

11-37. Jumpers do not exit the aircraft if a member of the jumpmaster team determines that a jumper's USLM is not stowed in the proper manner.

11-38. Safeties remind all jumpers to make eye-to-eye contact and hand their static line to the safety.

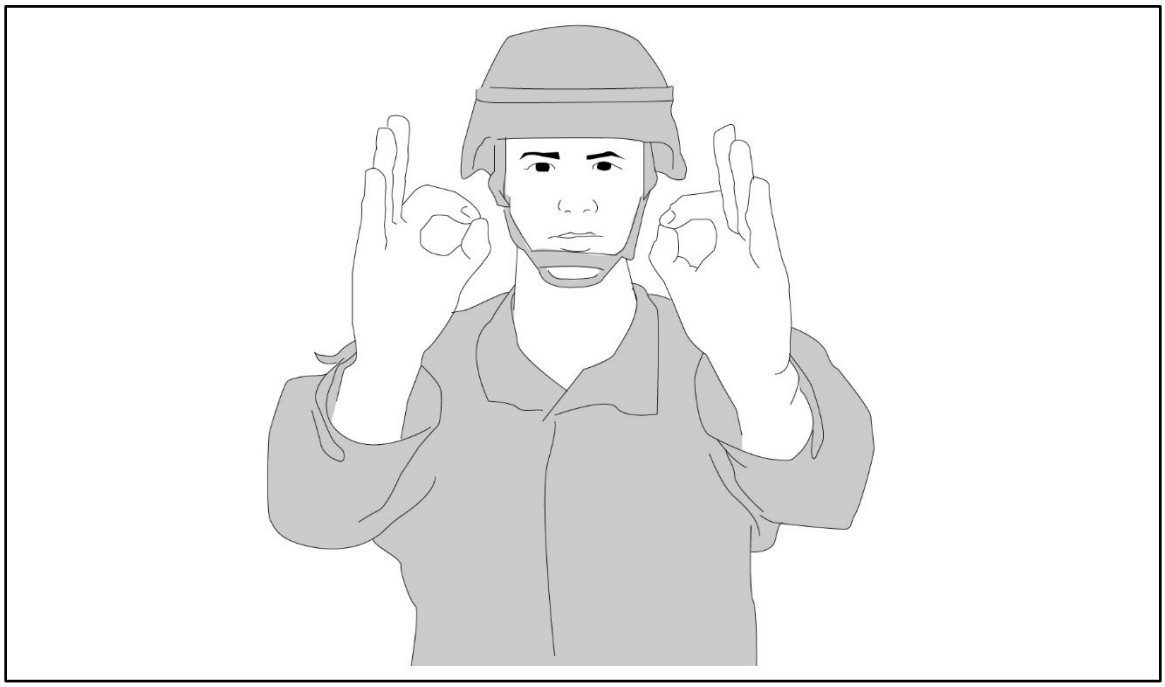


Figure 11-5. CHECK STATIC LINES

CHECK EQUIPMENT

11-39. The jumpmaster begins this hand and arm signal (see figure 11-6) 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.

11-40. 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.

11-41. Jumpmasters lean left then lean right and observe the stick of jumpers as they check their equipment. Once all movement has ceased both jumpmasters give each other a thumbs-up. This tells the other jumpmaster that their jumper's equipment is good, and they are ready to proceed. After the thumbs-up has been issued, both jumpmasters check their own equipment.

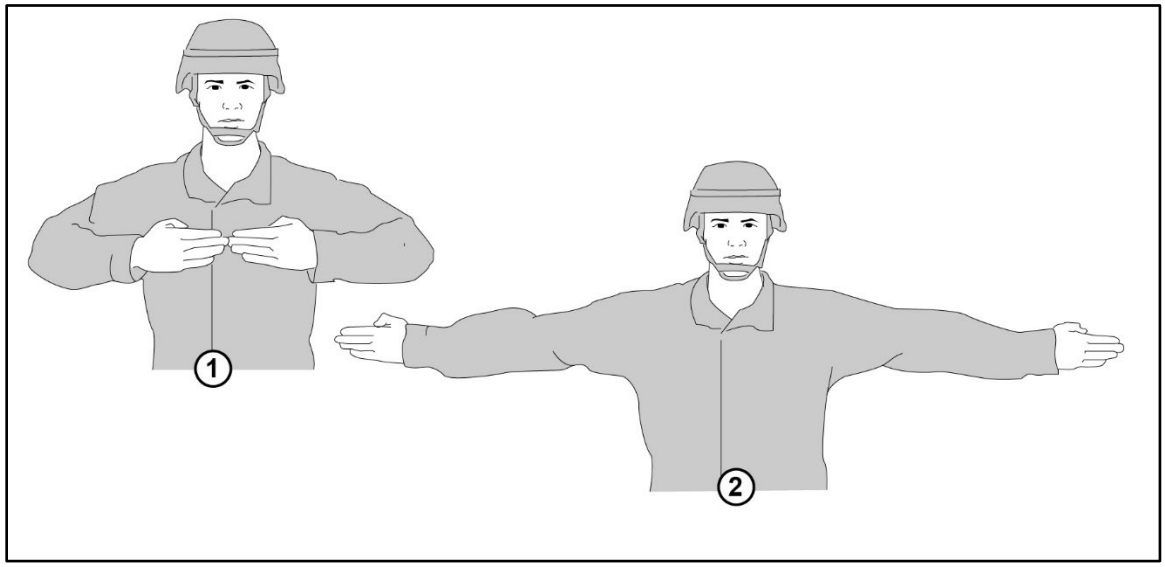


Figure 11-6. CHECK EQUIPMENT

SOUND OFF FOR EQUIPMENT CHECK

11-42. The jumpmaster extends fingers and joined; hands cupped around the ears of the helmet. The jumpmaster issues the command, SOUND OFF FOR EQUIPMENT CHECK (see figure 11-7).

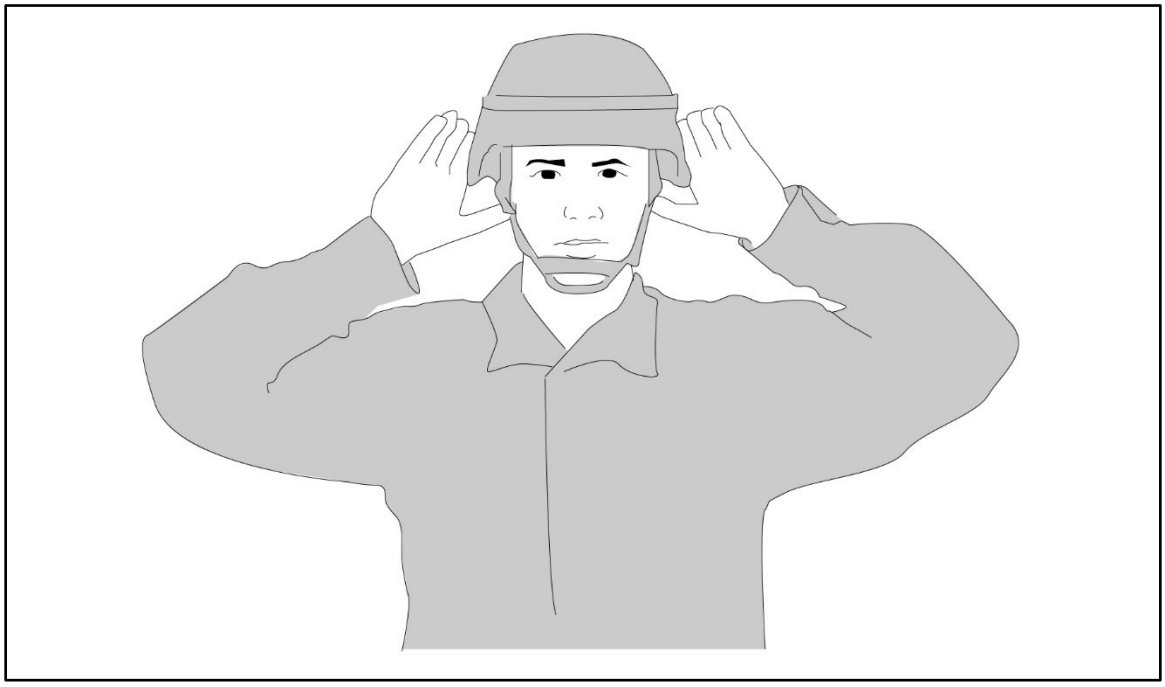


Figure 11-7. SOUND OFF FOR EQUIPMENT CHECK

Note. Safeties must be alert for any excess webbing and stow webbing that is loose or misrouted.

DANGER

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 is aborted. An improperly routed USLM can cause death or serious injury.

CAUTION

All jumpers on the aircraft must enforce ripcord handle awareness at all times. Once the USLM is hooked up to the anchor line cable the nonstatic-line hand protects or covers the ripcord handle.

11-43. After both jumpmasters receive ALL OKAY, JUMPMASTER, from the No. 1 jumper, the AJM gives the PJM a thumbs-up or verbally informs the PJM by saying ALL OKAY, JUMPMASTER. Both jumpmasters 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 jumpmaster in securing the USLM.

11-44. The jumpmasters then turn towards the skin of the aircraft, remove the incorporated twist, and re-establish a proper bight. The jumpmaster assumes the No. 1 position and inspects their USLM from the USL snap hook until it disappears over their shoulder and sounds off with, NUMBER ONE JUMPER CHECK MY STATIC LINE. After completing the No. 1 jumper's USLM check, the safety inspects the jumpmaster's USLM.

11-45. Once the aircrew has completed their 3-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 T.I. of the paratroop door.

PARATROOP DOOR SAFETY CHECK

11-46. Once the safety and T.I. of the paratroop door is complete, the loadmaster informs the jumpmasters, ARMY, YOUR DOOR:

- The jumpmaster confirms 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 or aircrew/jumpmaster briefing before flight.

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

- The safety inspects the jumpmaster's ripcord assembly to ensure the tuck tabs are in place and the T-11 reserve inserts are installed properly.
- The jumpmaster assumes control of the paratroop door.
- The safety then takes control of the jumpmaster's USLM.
- Safety personnel position themselves near the trail edge of the paratroop door, and the jumpmaster secures the lead edge of the paratroop door with the nonstatic-line hand.
- The jumpmaster hands the safety their USLM and sounds off with SAFETY CONTROL MY STATIC LINE.
- The safety controls the USLM for the jumpmaster 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 jumpmaster 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 jumpmaster'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 allows the safety to release the jumpmaster's USLM easily in the event the jumpmaster prematurely exits the paratroop door.

11-47. The jumpmaster conducts a proper door safety check (see figures 11-8 and 11-9) in the following manner:

- They grasp the lead edge of the door with their lead hand and transfer control of their USLM to the safety.
- They 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 jumpmaster must ensure the safety has positive control of the USLM before moving toward the paratroop door.

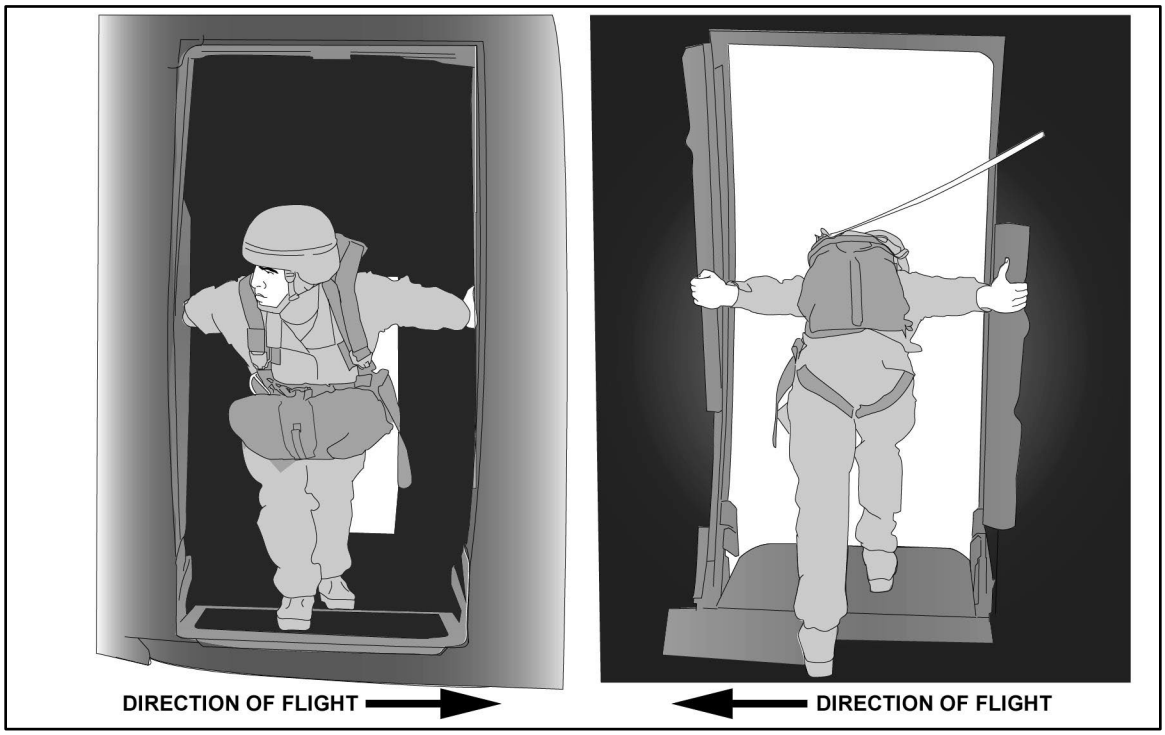


Figure 11-8. Jumpmaster safety check, right door position

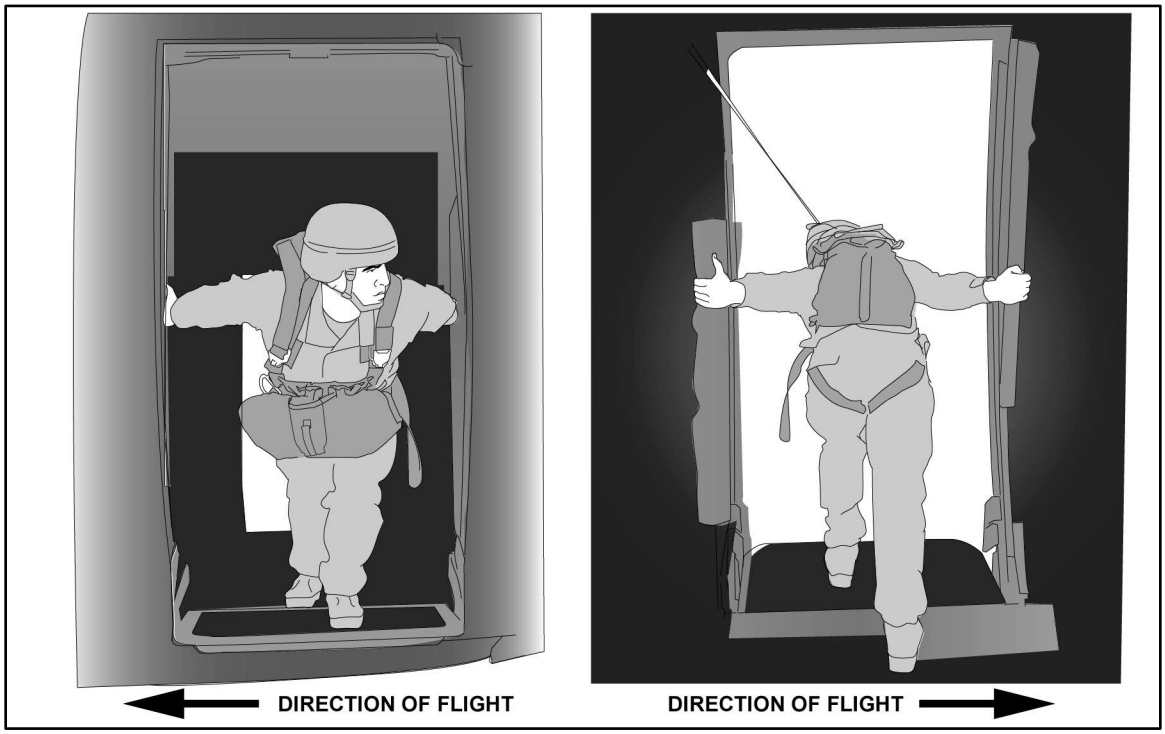


Figure 11-9. Jumpmaster safety check, left door position

JUMP PLATFORM AND TRAIL EDGE OF THE DOOR

11-48. The jumpmaster checks the jump platform in the following manner:

- First, kick the lead-down lock one time with the lead foot while visually inspecting to ensure the down lock is engaged.
- Bring the lead foot back behind the yellow caution line and firmly plant that foot.
- The jumpmaster uses the trail foot to kick the trail-down lock one time and visually inspects to ensure the down-lock is engaged.
- Then, without bringing the trail foot back inside the aircraft, the jumpmaster 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 because if the jumpmaster 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 jumpmaster's weight has been shifted, this is the door relaxed position.

11-49. With the trail hand, the jumpmaster 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 jumpmaster's hand breaks contact with the trail edge of the door, the jumpmaster 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 aircraft deck. 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.

11-50. The jumpmaster leans towards the trail edge of the door, while looking in the direction of flight while ensuring the air deflector is properly deployed.

INITIAL OUTSIDE SAFETY CHECK

11-51. The jumpmaster 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 jumpmaster 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. Jumpmasters are encouraged to conduct checks in all cardinal directions to maintain the best situational awareness, but at a minimum they check below and behind the aircraft.

11-52. The jumpmaster then comes to the door in a relaxed position, continues observing outside the aircraft spotting for reference points enroute to the DZ. In the absence of reference points and checkpoints, they use additional time advisories from the aircrew, which was identified during the air mission briefing. A *checkpoint* is a predetermined point on the ground used to control movement, tactical maneuver, and orientation (FM 3-90). Jumpmasters relay time warnings to the jumpers by leaning back inside the aircraft, keeping their foot centered on the platform, facing the jumpers, and calling off the 1-minute and 30-second time warning, as well as giving the proper arm-and-hand signal for each time warning.

11-53. Once the doors are open and the jumpmasters are conducting their door checks, safeties have all the jumpers close in tight, reducing the interval between the No. 1 jumper and the paratroop door. Jumpers maintain the proper interval.

11-54. The jumpmaster locks out their elbows to conduct outside air safety checks properly. The safety also locks their elbows while checking for towed jumpers after each pass.

11-55. The loadmaster should relay time warnings to the jumpmaster or safety by using hand signals. The exact hand signals that must be coordinated between the jumpmaster and loadmaster during the aircrew brief are:

- A 1-minute time warning—with the elbow locked out, the index finger extended vertically.
- A 30-second time warning—with the elbow locked out, the index finger and thumb held closely together.

ONE-MINUTE WARNING

11-56. Once the jumpmaster spots their 1-minute reference point and is about 1 minute from the green light, or the safety passes along the loadmaster time warning to the jumpmaster:

- The jumpmaster relays the 1-minute time warning to the jumpers by leaning back, keeping their foot centered on the platform, facing the jumpers, 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 jumpmaster 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

11-57. Once the jumpmaster 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 jumpmaster:

- The jumpmaster 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 announcing, THIRTY SECONDS.
- The jumpers relay the time warning by looking over their shoulder closest to the skin of the aircraft and shouting, THIRTY SECONDS.

11-58. After the jumpmaster has called off the 30-second reference point, they immediately conduct their final clear to the rear outside safety check. The jumpmaster 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 jumpmaster is not responsible for positively identifying the DZ, code letter, or color of smoke. The USAF and other service aircraft personnel are responsible for positively identifying the DZ, code letter, or color of smoke.

11-59. If the jumpmaster 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

Jumpmasters or safeties can call a NO DROP anytime they determine something is wrong or unsafe.

11-60. Once jumpmasters make their final clear to the rear air safety check:

- The jumpmaster removes the trail foot from the jump platform and plants the foot inside the cargo compartment.
- The jumpmaster then releases the paratroop door with the lead hand.
- The jumpmaster rotates into the aircraft facing the jumpers.
- 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 jumpmaster stays in place and issues the eighth jump command STANDBY.

Note. If the first suspended object is an A-series container or door bundle, see door bundle procedures in this chapter.

EIGHTH JUMP COMMAND

11-61. Once the jumpmasters give the thumbs-up signal to each other, they immediately issue the eighth jump command of STANDBY (see figure 11-10). Starting at the shoulders with the elbows bent, the jumpmaster 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 STANDBY, they extend their arms up and out to their sides, ending at a 45-degree angle.

11-62. The jumpmaster takes a step forward with the inboard foot and rotates their body so that both jumpmasters are facing the skin of the aircraft, with the body bisecting the lead edge of the paratroop door. Jumpmasters must ensure they are not impeding either anchor line cable. Each jumpmaster reaches out with the trail hand and secures a proper bight in their USLM. The safety returns control of the jumpmaster's USLM to the jumpmaster by forming it into a small bight, then assumes a position bisecting the trail edge of the paratroop door ensuring the flow of jumpers are not impeded.

11-63. Whenever possible the jumpmaster should protect their ripcord 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 while preparing to control the next jumper's USLM with the lead hand.

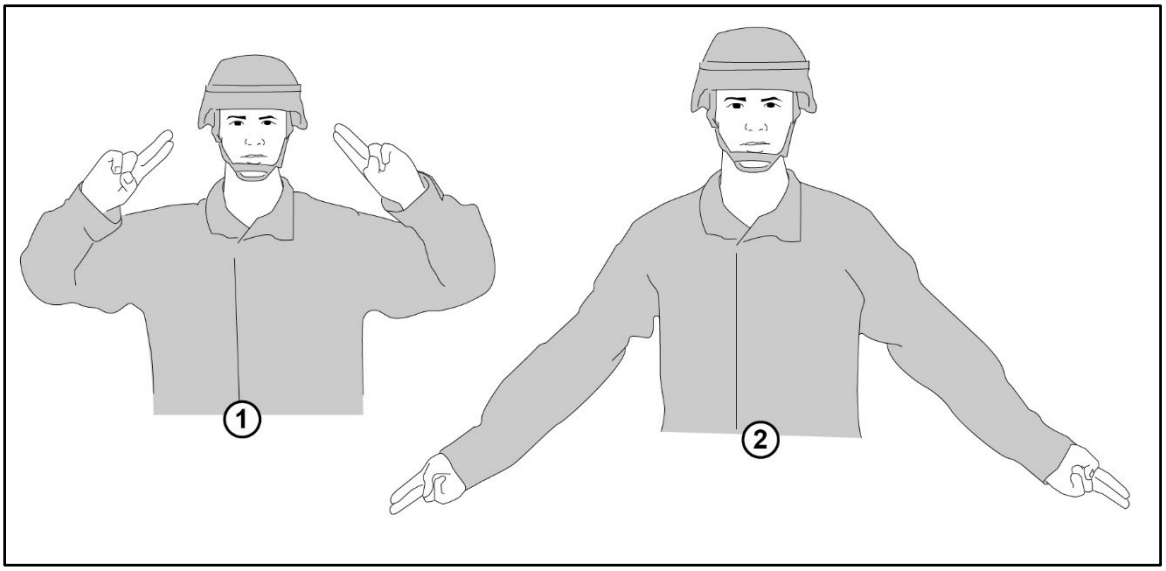


Figure 11-10. STANDBY

NINTH JUMP COMMAND

11-64. Once the green light comes on, the PJM issues the ninth jump command, GO. Both jumpmasters give the physical and verbal 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.

11-65. 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 to establish the proper interval between paratroop doors.

11-66. Both jumpmasters ensure they are positioned 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.

11-67. The jumpmaster team must have situational awareness of their jumpers once the green light comes on. Jumpmasters—

- 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.

11-68. 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 themselves 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.

11-69. 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.

11-70. 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.

11-71. 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

11-72. After issuing the eighth jump command, the safety receives the first jumper's 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 jumpmaster continues to spot for the DZ and DZ markings over the No. 1 jumper's shoulder. When the panels come into view, the jumpmaster issues the ninth jump command, ensuring the jumper is clear of the aircraft when the panels bisect the jump door.

11-73. For USAF operations, a safety is not used and either the jumpmaster or loadmaster fulfills the duties. Coordination is made during the air movement brief.

Note. For GMRS operations, jumpmasters are not certified to throw exiting jumpers using GMRS unless they are a USASOC jumpmaster graduate, are assigned to a USASOC unit, and have been certified by a USASOC jumpmaster.

RED LIGHT PROCEDURES AND JUMP REFUSALS

11-74. If a jumpmaster 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 are stopped only by an oral command; this reduces the risk of an incident. If any jumper tries to exit on the red light, they are allowed to exit, except in the case of an unsafe jumper.

11-75. The procedure for handling a jump refusal is as follows:

- When removing a jump refusal from the door, the jumpmaster 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-11 reserve ripcord 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 jumpmaster team then continues to exit jumpers if any green light remains.
- The safety assists the USAF personnel in retrieving all deployment bags and once the door is closed—
  - They move the jump refusal as far forward as possible inside the aircraft and buckle them in.
  - They unhook their USLM from the anchor line cable, and once again direct them not to touch any of their equipment.

TOWED JUMPER PROCEDURES

11-76. 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 jumpmaster or safety prevents any other jumpers from exiting the paratroop door and notifies the remainder of the jumpmaster team and the loadmaster. The loadmaster informs the aircraft commander of the situation.

11-77. The safety conducts 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.

11-78. The jumpmaster team moves all remaining jumpers on that door towards the forward portion of the aircraft. Only the loadmaster and the jumpmaster team perform towed-jumper retrieval procedures. The jumpmaster team on the opposite door assists in moving all jumpers away from the TPRS, creating a clear space to work.

11-79. If the jumper is being towed by the USLM, the jumpmaster or safety may make a retrieve or cut-free recommendation to the aircraft commander through the loadmaster. If the jumper is to be retrieved, the jumpmaster team assists the loadmaster in the retrieval process. Once the jumper nears the paratroop door, the jumpmaster and safety gain physical control of the jumper without grasping the reserve parachute.

11-80. If the jumper cannot be retrieved, they are cut free over the DZ. The loadmaster cuts the USLM on the command of the aircraft commander. This is only considered if the jumper is conscious. If the jumper is being towed by anything other than the USLM, the jumpmaster or safety tries to jog them free from the aircraft.

11-81. Once free from the aircraft, jumpers do not need to activate their reserve since their main parachute deploys as normal. If the jumper cannot be freed, they are retrieved using the TPRS. Once inside, the jumper is brought to the forward portion of the aircraft where medical assessment and aid is administered. If the retrieval is unsuccessful and the jumper must be cut free, the jumpmaster or loadmaster cuts free the item of equipment that is towing the jumper.

11-82. The jumper stays in a tight body position and protects the ripcord 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 start a 6,000 count with T-11 ATPS or the 4,000 count with MC-6 series parachute. If no opening shock is felt, 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 deploys as normal.

11-83. The loadmaster attaches and operates the TPRS with the assistance of the jumpmaster and safety. They 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 jumpmaster and safety gain physical control of the jumper without grasping the reserve parachute. The loadmaster then relieves slight tension on the TPRS so that the jumper can be brought inside the aircraft. The loadmaster cuts the USLM on the command of the aircraft commander, if directed.

11-84. 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 lowers the landing gear and sets 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, increasing the possibility of injury. The aircraft commander makes the final decision about cutting the towed jumper free. If the decision is to cut the jumper free, the loadmaster cuts the USLM on the aircraft commander's command.

Note. It is a general rule that the jumpmaster or safety cuts away anything green (indicating equipment) and the loadmaster cuts away anything yellow (indicating a 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

11-85. Tailgate drops are those 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, PJs, USAF survival evasion resistance escape specialists, U.S. Army Special Forces, USN (sea-air-land) SEAL teams, 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.

11-86. 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 to cut it. If the jumper is to be retrieved, the loadmaster uses the TPRS or installs a CGU-1/B cargo strap (C-130-NSN: 1670-00-725-1437) about 5 and 1/2 feet above the ramp. The static lines are retrieved over the CGU-1/B strap. As the jumper is retrieved to the ramp area, the jumpmaster 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.

11-87. Thread the hook end of the 5,000-pound tie-down strap, front to rear, around the right/left vertical support member at framework support (FS) 840, approximately 5 and 1/2 feet above the ramp in the joint precision airdrop 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 5,000-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.

11-88. 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 is premeasured prior to pre-slowdown and excess strap is 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 5 feet are the most crucial for the towed parachutist. An oscillating parachutist usually strikes the aircraft headfirst. 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 ripcord 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

11-89. If the towed jumper procedures in paragraphs 10-75 through 10-87 must be modified, jumpmasters are responsible for the safety and deployment of all jumpers as long as they are onboard the aircraft. No additional jumpmasters or safeties are required to remain onboard the aircraft unless specified in the jumping unit's airborne SOPs.

11-90. If all jumpers have exited, those actions described as jumpmaster 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 (PRACTICAL WORK INSIDE THE AIRCRAFT)

11-91. The universal static line (USL) 5-foot extension is required when jumping the C-17A. (See TM 10-1670-272-23&P/NAVSEA-SS400-AS-MMI-010&P for more information.) Time warnings include the following:

- TWO-HOUR, TWENTY-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 jumpmasters need more time to accomplish their duties.

- TEN-MINUTE TIME WARNING—the aircrew turns on the jump caution lights and then notifies the jumpmaster that the inspections are complete:
  - The jumpmasters 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 jumpmasters 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 jumpmasters need more time to accomplish their duties.

JUMP COMMANDS

11-92. 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.

Note. 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 and place their seatbelts in their seats (the inboard seats do not fold).

11-93. If time permits, it is recommended after the jumpers stand that safety personnel inspect the following items for 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, up to 51 jumpers, and two bundles can be dropped from each paratroop door).

CAUTION

All jumpers on the aircraft must enforce ripcord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic-line hand protects or cover the ripcord 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 USLM of the jumper to their front.

11-94. Once the safety has 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 checks and inspects with both hands and eyes:

- Safeties check each jumper's USLM and ensure the USL snap hook is properly secured to the proper anchor line cable with the opening gate facing towards the skin of the aircraft.
- Safeties 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.
- Safeties trace the USLM over the jumper's shoulder, ensuring it is not misrouted, then continue to trace the USLM to the first stow.
- Safeties visually inspect the remainder of the USLM:
  - Ensure it is properly stowed to the pack tray.
  - Ensure the main curved pin protector flap is properly stowed in the tuck flap and not routed over any portion of the USLM.
- Safeties 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.
  - Not taut to the point where the excess static line loop hangs below the main curved pin protector flap.
- If a safety or any member of the jumpmaster team determines that a jumper's USLM is not stowed in the proper manner, that jumper does not exit the aircraft.
- Safeties remind all jumpers to make eye-to-eye contact and hand their static line to the safety.

CAUTION

All jumpers on the aircraft must enforce ripcord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic-line hand protects or covers the ripcord handle.

- CHECK EQUIPMENT—jumpmasters lean left then lean right and observe the stick of jumpers as they check their equipment:
  - Once all movement has ceased, both jumpmasters give each other a thumbs-up.
  - This tells the other jumpmaster that their jumper's equipment is good, and they are ready to proceed.
  - After the thumbs-up has been issued, both jumpmasters 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.

11-95. The aircrew completes its 6-minute slowdown checklist:

- Aircraft deck is set between 6 and 7 degrees.
- Aircraft slows to a drop speed of 130 knots (+/- 3 knots indicated airspeed).
- Air deflectors are deployed and troop doors are opened.
- The loadmasters give control of the doors to the jumpmasters and take a position between both jump doors.
- Once the safety and T.I. of the paratroop door is complete, the loadmaster informs the jumpmasters, ARMY, YOUR DOOR.
- The jumpmaster 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 air mission briefing or aircrew and jumpmaster briefing before flight.

Note. Jumpmasters do 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

11-96. After both jumpmasters receive, ALL OKAY, JUMPMASTER, from the No. 1 jumper, the AJM gives the PJM a thumbs-up or verbally informs (or both) the PJM by saying ALL OKAY, JUMPMASTER. Both jumpmasters 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 jumpmaster in securing their USLM. The jumpmasters then turn towards the skin of the aircraft, remove the incorporated twist, and reestablish a proper bight. The jumpmaster assumes the No. 1 position and inspects their USLM from the USL snap hook until it disappears over their shoulder and then sounds off with NUMBER ONE JUMPER CHECK MY STATIC LINE. After completing the No. 1 jumper's USLM check, the safety inspects the jumpmaster's USLM. Once the safety or T.I. of the paratroop door is complete, the loadmaster informs the jumpmasters by saying ARMY, YOUR DOOR, and the following occurs:

- The safety inspects the jumpmaster's ripcord assembly to ensure the tuck tabs are in place and the T-11 reserve inserts are installed properly, before the jumpmaster assumes control of the jump door.
- The safety then prepares to take control of the jumpmaster's USLM.
- Safety personnel position themselves near the trail edge of the paratroop door, and the jumpmaster secures the lead edge of the paratroop door with the nonstatic-line hand.
- The jumpmaster hands the safety their USLM and sounds off with SAFETY CONTROL MY STATIC LINE.
- The safety controls the USLM for the jumpmaster as they perform the door safety check in the following manner:
  - The safety controls the jumpmaster's USLM by grasping it with one hand above and one hand below their bight.
  - They keep the USLM taut between their hands, ensuring no excessive slack is impeding the jumpmaster 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 jumpmaster'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 allows the safety to release the jumpmaster's USLM easily in the event the jumpmaster prematurely exits the paratroop door.

Note. The jumpmaster 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

11-97. With the trail hand, the jumpmaster grasps the troop door lifting bar and then pulls it down to ensure it is seated on the door up lock. Once the physical check has been completed, a visual inspection of the door up lock gauge 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 aircraft deck. 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 ripcord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic-line hand protects or covers the ripcord handle.

11-98. With the lead hand, the jumpmaster 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 jumpmaster's hand breaks contact with the trail edge of the door, the jumpmaster must begin the trace of the door over at the top of the door.

11-99. The jumpmaster leans towards the trail edge of the door while looking in the direction of flight and ensures the air deflector is properly deployed.

Note. To check the air deflector, the jumpmaster can visually inspect the interior angle gauge and verify the wind deflector is at 35 degrees (+/- 5 degrees), then rotate into the paratroop door.

INITIAL OUTSIDE AIR SAFETY CHECK

11-100. The jumpmaster 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 jumpmaster visually conducts a down-and-behind air-safety check. Once the initial clear to the rear is complete, the jumpmaster returns to the relaxed door position and looks at the jumpers, then the safety, comes to a rest position, and waits for the 1-minute reference point.

Note. Jumpmasters are encouraged to conduct checks in all cardinal directions to maintain the best situational awareness.

11-101. Once the doors are open and the jumpmasters are conducting their door checks, safeties 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 extend their arms before moving. Jumpers maintain the proper interval.

11-102. The jumpmaster locks out their elbows to conduct outside air safety checks properly, and the safety also locks out their elbows while checking for towed jumpers after each pass.

11-103. The loadmaster should relay time warnings (see table 11-1) to the jumpmaster or safety by using hand signals. The exact hand signals that must be coordinated between the jumpmaster and loadmaster during the aircrew brief are as follows:

- A 1-minute time warning—with the elbow locked out, the index finger extended vertically.
- A 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 is aborted. An improperly routed USLM can cause death or serious injury.

Table 11-1. Time Warnings

Time Warning	*Action*
1-Minute	The jumpmaster issues the time warning to the jumpers with their lead hand and then re-secures a handhold with their lead hand by grasping the troop door guide or the handhold provided on the lead edge of the door. The jumpmaster continues to watch for any unsafe conditions and spots for the 30-second reference point.
30-Seconds	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 jumpmaster then rotates into the aircraft, lets go of the paratroop door, and with their body facing towards the jumpers, issues a thumb-up to the jumpmaster on the opposite paratroop door indicating that all conditions outside the aircraft are safe.

CAUTION

The jumpmaster or the safety can call a NO DROP anytime they determine something is wrong or unsafe.

Note. Jumpmasters do not issue the command of STANDBY until the amber light is on.

- STANDBY—once the jumpmasters rotate back into the aircraft and cover their ripcord handles with their trail hand, they give the thumbs-up signal to each other:
  - The jumpmasters look at the jump caution lights to ensure the amber light is on, which illuminates at 30 seconds prior to the green light, based off the CARP.
  - Once the amber light is on, the jumpmaster then issues the command of STANDBY.
  - Starting at the shoulders with the elbows bent, the jumpmaster 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, STANDBY, they extend their arms up and out to their sides, ending at a 45-degree angle.
  - Jumpmasters then take a step forward with the inboard foot and rotate their body so that both jumpmasters are facing the skin of the aircraft, with the body bisecting the lead edge of the paratroop door.
  - Jumpmasters must ensure they are not impeding either anchor line cable, then each reaches out with the trail hand and secure a proper bight in their USLM.
  - The safety returns control of the jumpmaster's USLM to the jumpmaster by forming it into a small bight, then assumes a position bisecting the trail edge of the paratroop door, ensuring they do not impede the flow of jumpers.

- Whenever possible, the jumpmaster should protect their ripcord 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.

11-104. Once the green light comes on, the PJM issues the ninth jump command, GO. Both jumpmasters 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.

11-105. 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 their No. 1 jumper. This action needs to occur in 1/2-second to establish the proper interval between paratroop doors. Both jumpmasters ensure they are positioned 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.

11-106. The jumpmaster team must have situational awareness of their jumpers once the green light comes on. Jumpmasters—

- Control the flow, spacing, and interval 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.

11-107. 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.
- Pausing or stopping the stick for any unsafe act or condition, fixing the issue and continuing to exit jumpers.
- Watching for towed jumpers.

11-108. 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.

11-109. 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.

11-110. Both safeties immediately conduct a clear to the rear for towed jumpers and give each other a thumbs-up. They give a thumbs-up to the loadmaster(s) and help retrieve deployment bags. After all jumpers have exited the aircraft—

- The AJM transfers control of USLM to the safety.
- The AJM takes up a good door position.
- The AJM reconfirms that the jump caution light is still green.
- The AJM exits if the light is still green.
- The PJM transfers control of the USLM to the safety, upon seeing the AJM exit.
- The PJM takes up a good door position.
- The PJM reconfirms that the jump caution light is still green.
- The PJM exits if the light is still green.

11-111. Both safeties immediately conduct a clear to the rear for towed jumpers and give each other a thumbs-up. They 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 jumpmasters and safety personnel must be seated and strapped in, guarding the ripcord 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

11-112. There are two different and viable door bundle procedures. The airborne commander decides which procedure they want to use and best support their ground tactical plan.

11-113. The commander ensures that the jumpmaster team has rehearsed the door bundle procedure that they have directed to be used.

Note. If the No. 1 jumper pushes a door bundle, the No. 1 jumper must be a jumpmaster (does not have to be current) and must have T-11 reserve inserts.

Method 1: Jumpmaster and Number 1 Jumper Pushing Door Bundle

11-114. At the 20-minute time warning—

- Jumpmasters and safeties unlash door bundles and move them near the jump door.
- Once positioned, the jumpmaster attaches the static line of each cargo parachute to the outboard anchor line cable and inspects the bundle in accordance with chapters 6, 8, and 11.
- 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 clear to the rear, the jumpmasters exchange thumbs-up and issue the command STANDBY.

- The safety forms the jumpmaster static line into a bight and controls it with the trail hand.
- The No. 1 jumper then passes their static line to the safety who controls it with their lead hand:
  - They position themselves below the intermediate anchor line cable support bracket to make room for the jumpmaster.
  - The safety keeps eyes on the jumpers.
- The jumpmaster 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 then makes all three static lines tight with their lead hand to prevent excess static line from routing around the jumpmaster or the No.1 jumper.
- The jumpmaster 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 jumpmaster ensures that the cargo parachute static line is routed over the trail shoulder.
- 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 jumpmasters keep their eyes on the jump caution light and the safeties have their eyes on the jumpers and the static lines:
  - When the light turns green, jumpmasters verbally give the command, GO.
  - The jumpmaster and No. 1 jumper eject the door bundle, ensuring that it goes straight out and does not tumble through the risers.
  - They only remove their hands from the jump door if required to eject the door bundle.
- The AJM or PJM must 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.
  - If the bundle becomes lodged, the jumpmaster and the No. 1 jumper attempt to dislodge the bundle and push it out.
- The No. 1 jumper rotates away from paratroop door and assumes the No. 1 jumper position awaiting their static line from the safety:
  - The safety hands the No. 1 jumper their static line with their lead hand.
  - The No. 1 jumper grasps their static line and reforms into a proper bight.
- The jumpmaster rotates away from the paratroop door and awaits their static line from the safety:
  - The safety hands the jumpmaster their static line with their trail hand.
  - The jumpmaster grasps their static line and reforms into a proper bight.
  - The safety conducts a clear to the rear, outside air safety check.
  - The safety rotates back into the aircraft and gives the jumpmaster a thumbs-up to indicate that there are no unsafe conditions outside the aircraft.
- The jumpmaster ensures 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 jumpmaster knows of any unsafe condition
  - That each paratroop door is ready to exit personnel.
- The jumpmaster centers their body on the lead edge of the jump door and issues the command STANDBY.
- The jumpmaster ensures the caution light is still green, and issues the ninth jump command of GO, and exits jumpers normally.

Method 2: Safety and Number 1 Jumper Pushing Door Bundle

11-115. 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.
  - The jumpmaster inspects the bundle in accordance with chapters 6, 8, and 11.
- 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 clear to the rear, the jumpmasters exchange thumbs-up and issue the command STANDBY.
- The jumpmaster bisects the lead edge of the paratroop door, then secures their own USLM with their trail hand and the No. 1 jumper's USLM with their lead hand.
- 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, 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.
  - The parachute is on the top or inboard side of the bundle.
- The safety—
  - Maintains a firm grasp on the bundle with the lead hand.
  - Keeps a firm grasp on the trail edge of the jump door with the trail hand.
  - Ensures that the cargo parachute static line is routed over the trail shoulder.
- 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 jumpmasters keep 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.
  - That it does not tumble through the risers.
  - That they only remove their hands from the jump door if required to eject the door bundle.
- The AJM or PJM must push straight out on the lower portion of the bundle without pushing it at an angle as it may lodge in the paratroop door.
- The safety—
  - Conducts a clear to the rear, outside air safety check.
  - Rotates back into the aircraft and gives the jumpmaster a thumbs-up indicating that there are no unsafe conditions outside the aircraft.
  - With the No. 1 jumper, attempts to dislodge the bundle and push it out if the bundle becomes lodged.
- The No. 1 jumper rotates away from paratroop door and assumes the No. 1 jumper position awaiting their static line from the jumpmaster.
- The jumpmaster hands the No. 1 jumper their static line with their trail hand; the No. 1 jumper grasps their static line and reforms into a proper bight.
- The jumpmaster ensures 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 jumpmaster knows of any unsafe condition.
  - That each paratroop door is ready to exit personnel.
- The jumpmaster centers their body on the lead edge of the jump door issues the command STANDBY.
- The No. 1 jumper makes eye-to-eye contact with the safety, hands them their static line, and assumes the standby position.
- The jumpmaster ensures the caution 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

11-116. The PJM must remember that jumpers' eyes require 20 minutes to adjust to lower light levels before night operations. Therefore, only red compartment lights or night vision imaging systems lighting are used 20 minutes before drop time.

11-117. 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 AN AIRCRAFT OR DROP ZONE

11-118. Any incident involving life-threatening injuries or death, or incidents based on severity by the airborne commander and the drop ceases. Any medical treatment of injured personnel takes priority over preserving the jumper's equipment or the aircraft. The jumpmaster team—

- Ceases exiting jumpers.
- Retrieves all deployment bags but do not unhook them from the anchor line cable.
- Treats any injured personnel.
- Does not tamper with any equipment or allow any jumper to de-rig, making every effort to preserve the aircraft.
- Ensures everyone is belted into their seat and the aircraft immediately returns to the departure airfield.
- Does not allow anyone to get off the aircraft until released by investigative authorities.

Note. See chapter 24 for investigation procedures.

ACTIONS DURING RETURN TO DEPARTURE AIRFIELD

11-119. Safety personnel 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 UPRBs, 30 deployment bags per UPRB.

11-120. While en route to the departure airfield, safety personnel 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 airsickness bags.

11-121. 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 USAF to be ready for any additional training or follow on missions they may have to support.

11-122. At the departure airfield, safety personnel escort all personnel left aboard the aircraft, including jump refusals, to the DACO according to the unit SOP. Safety personnel also turn over any unit or personal equipment left aboard the aircraft and complete any necessary paperwork to the DACO according to the unit SOP.

C-27J SPARTAN (PRACTICAL WORK INSIDE THE AIRCRAFT)

11-123. Time warnings include the following:

- TWO-HOUR TWENTY-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 jumpmasters need more time to accomplish their duties.

- TEN-MINUTE TIME WARNING—the aircrew turns on the jump caution lights and then notifies the jumpmaster that the inspections are complete:
  - The jumpmasters hook up to their respective anchor line cables.
  - They 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 jumpmasters issue the commands at the same time.

Notes. All jump commands and arm-and-hand signals conducted by the jumpmaster 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 jumpmasters need more time to accomplish their duties.

JUMP COMMANDS

11-124. Jump commands are given in the following sequence:

- GET READY—jumpers undo their seatbelts.
- PORTSIDE PERSONNEL, STAND UP—only the jumpers for that pass stand up, securing seats is optional based upon the unit SOP and mission:
  - Seats should be raised and secured.
  - Seats can be left secured down, causing 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.
  - They secure the excess webbing in the webbing retainer when jumping with CE.
- STARBOARD SIDE PERSONNEL, STAND UP—only the jumpers for that pass stand up, securing seats (in the up position) is optional based upon the unit SOP and mission:
  - Seats should be raised and secured.
  - Seats can be left secured down, causing 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.
  - They secure the excess webbing in the webbing retainer when jumping with CE.

Note. When the jumpmaster and safety stand up, their seats remain down and locked. This configuration helps ensure jumpers exit at a 90-degree angle perpendicular to the paratroop door.

11-125. After the jumpers are standing it is recommended (if time permits) that the safety personnel inspect the following items on each jumper or complete the following while moving forward (toward the cockpit) in the aircraft:

- Inspect the waistband for proper quick release.
- Inspect the ejector snap on the HPTLL for proper attachment.
- Ensure the weapons 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 (jumpmaster 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 USLM of the jumper to their front.

11-126. 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 checks or inspects with both hands and eyes:

- The safety checks the entire length of each jumper's USLM from the USL snap hook to the main curved pin protector flap and—
  - That it is attached to the anchor line cable.
  - The opening gate faces towards the skin of the aircraft.
- Stows any excess static line in the static line slack retainer band so—
  - Each static line is taut from the anchor line cable to the pack tray.
  - It is not taut to the point where the excess static line loop hangs below the main curved pin protector flap.
- Ensures 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).
  - The USLM routed over the proper shoulder, not under the arm, and elbow held high.
- If a member of the jumpmaster team determines that a jumper's USLM is not stowed in the proper manner, that jumper does 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 but complete the full inspection of each jumper's USLM. If the inspection cannot be completed in time, the pass is aborted. An improperly routed USLM can cause death or serious injury.

- CHECK EQUIPMENT—jumpmasters lean left, then lean right and observe the stick of jumpers as they check their equipment:
  - Once all movement has ceased, both jumpmasters give each other a thumbs-up, which tells the other jumpmaster that their jumper's equipment is good, and they are ready to proceed.
  - After the thumbs-up has been issued, both jumpmasters 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.

11-127. The aircrew completes its 3-minute slowdown checklist:

- The aircraft slows to a drop speed of 130 knots (+/- 3 knots indicated airspeed).
- Paratroop doors are opened (if applicable).
- The loadmaster or flight engineer gives control of the doors to the jumpmasters and takes a position between both jump doors.
- Once the safety or T.I. of the paratroop door is complete, the loadmaster informs the jumpmasters by saying, ARMY, YOUR DOOR, and takes a position between both paratroop doors.

- The jumpmaster 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 air movement brief, aircrew, or jumpmaster briefing before the flight.

Note. Jumpmasters do 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

11-128. After both jumpmasters receive, ALL OKAY, JUMPMASTER, from the No. 1 jumper, the AJM gives the PJM a thumbs-up or informs the PJM by saying ALL OKAY, JUMPMASTER. Both jumpmasters 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 jumpmasters in securing their USLM.

11-129. The jumpmasters then turn towards the skin of the aircraft, remove the incorporated twist, and reestablish a proper bight. The jumpmaster assumes the No. 1 position and inspects their USLM from the USL snap hook until it disappears over their shoulder and then sounds off with NUMBER ONE JUMPER CHECK MY STATIC LINE. After completing the No. 1 jumper's USLM check, the safety then inspects the jumpmaster's USLM. Once the safety or T.I. of the paratroop door is complete, the loadmaster informs the jumpmasters by saying ARMY, YOUR DOOR, and the following occurs:

- The safety inspects the jumpmaster's ripcord assembly to ensure—
  - The tuck tabs are in place.
  - The T-11 reserve parachute inserts are installed properly before the jumpmaster assumes control of the jump door.
  - The safety then prepares to take control of the jumpmaster's USLM.
- Safety personnel position themselves near the trail edge of the paratroop door.
- The jumpmaster secures the lead edge of the paratroop door by only grasping the metal upper or lower medical evacuation (MEDEVAC) litter support bracket:
  - Jumpmasters hand the safety their USLM and sound off with SAFETY CONTROL MY STATIC LINE.
  - Then the jumpmaster grasps the trail seat back support rail on the trail edge of the paratroop door.
- The safety controls the USLM for the jumpmaster as they perform the door safety check in the following manner:
  - The safety grasps the jumpmaster's USLM with one hand above and one hand below their bight, keeping the USLM taut, ensuring no excessive slack is impeding the jumpmaster 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 jumpmaster'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 release the jumpmaster's USLM easily, in the event the jumpmaster prematurely exits the paratroop door.

CAUTION

All jumpers on the aircraft must enforce ripcord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic-line hand protects or covers the ripcord handle.

Notes. The jumpmaster 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 HPT or 100-mph tape to prevent a potential snagging hazard for the jumpers as they approach the paratroop door.

TRAIL EDGE OF THE TROOP DOOR

11-130. The jumpmaster does not stomp on the platform at any time when conducting door safety checks and applies 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 aircraft deck. 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.

11-131. 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-11 reserve ripcord handle is exposed to higher winds than with other fixed-wing aircraft and could cause inadvertent reserve parachute deployment. Minimize unnecessary exposure of the reserve parachute to relative wind for extended lengths of time.

INITIAL OUTSIDE AIR SAFETY CHECK

11-132. The jumpmaster leans out by bending forward at the waist 90 degrees, keeping both heels flat, elbows bent, and maintaining a firm grasp on the seat back support rail and upper and lower litter support bracket with both hands. The jumpmaster performs an initial outside air safety check down and to the rear of the aircraft for any unsafe conditions. Jumpmasters are encouraged to conduct checks in all cardinal directions to maintain the best situational awareness.

11-133. Once the initial clear to the rear is complete, the jumpmaster returns to a relaxed door position and looks at the jumpers, then the safety, comes to a rest position, and waits for the 1-minute reference point. In the absence of reference points or checkpoints, the jumpmaster uses additional time advisories from the

aircrew, which must have been identified during the air mission briefing. The jumpmaster relays time warnings to the jumpers by leaning back inside the aircraft, keeping their foot centered on the platform, facing the jumpers. The 1-minute and 30-second time warnings are called while giving the proper arm-and-hand signals for each.

WARNING

At no time does the jumpmaster lock their elbows out during the outside air safety check. Doing so could cause an inadvertent reserve parachute deployment.

ONE-MINUTE WARNING

11-134. Once the jumpmaster spots their 1-minute reference point and is about 1 minute from the green light, or the safety passes along the loadmaster time warning to the jumpmaster:

- The jumpmaster relays the 1-minute time warning to the jumpers by—
  - Leaning back and keeping their foot centered on the platform.
  - Facing the jumpers, extending the index finger of their lead hand and announcing, ONE MINUTE.
- The jumpers relay the time warning by looking over their shoulder closest to the skin of the aircraft, shouting ONE MINUTE.
- The jumpmaster 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

11-135. Once the jumpmaster 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 jumpmaster:

- The jumpmaster relays the THIRTY SECONDS, warning to the jumpers by—
  - Leaning back, keeping their foot centered on the platform.
  - Facing the jumpers, extending the index finger of their lead hand, and announcing, 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 jumpmaster has called off the 30-second reference point, they immediately conduct their final clear to the rear outside safety check:
  - The jumpmaster leans forward 90 degrees at the waist, keeping both heels flat, elbows bent, while keeping both heels flat on the floor of the cargo compartment.
  - The jumpmaster 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 jumpmaster or the safety can call a NO DROP anytime they determine something is wrong or unsafe.

UNSAFE CONDITIONS OUTSIDE THE AIRCRAFT

11-136. If the jumpmaster 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.

11-137. Once the jumpmaster makes the final clear to the rear outside safety check:

- The jumpmaster removes the trail foot from the jump platform and plants the foot inside the cargo compartment; releasing the paratroop door with the lead hand.
- The jumpmaster rotates into the aircraft facing the jumpers and covers the ripcord 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 jumpmasters 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 STANDBY to their stick of jumpers.

Note. The AJM waits and observes the actions in the PJM's door. When they spot the last three jumpers in the vicinity of the paratroop door of the PJM's stick, they face their jumpers and issue the jump command of STANDBY.

- Each jumpmaster then reaches out with the trail hand and secure a proper bight in their USLM, protecting their ripcord 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 jumpmaster's USLM to the jumpmaster by forming it into a small bight.
  - Assumes a position bisecting the trail edge of the paratroop door, ensuring they do not impede the flow of jumpers.
  - 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.
  - 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.

11-138. The jumpmasters and safety personnel take the following action:

- Once the green light comes on, the PJM issues the ninth jump command of GO.
- Both jumpmasters give the physical and verbal command of GO, executed by bending forward at the waist and giving the No. 1 jumper a sharp tap on the thigh.
- The AJM observes the actions in the PJM's door:
  - When the AJM spots the last three jumpers in the vicinity of the paratroop door of the PJM's stick, they face their jumpers and issue the jump command of STANDBY.
  - When the AJM sees the last jumper clear the jump platform in the PJMs door, they turn and recheck their jump caution lights.
  - The PJM is now observing the actions in the AJMs paratroop door.
- Both jumpmasters ensure they are positioned 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.

11-139. The jumpmaster team must have situational awareness of their jumpers once the green light comes on. Jumpmasters:

- Control the flow and spacing or interval 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.

11-140. Safeties take the following actions:

- They control the flow and spacing or interval between jumpers without impeding the flow of jumpers.
- They ensure that there is a positive transfer of the static line between themselves and the jumpers as they exit.
- They pause or stop the stick for any unsafe act or condition, fix the issue, and continue to exit jumpers.
- They watch 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.

11-141. 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.

11-142. 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.

11-143. Both safeties immediately conduct a clear to the rear for towed jumpers and give each other a thumbs-up. They give a thumbs-up to the loadmaster or flight engineer(s) and help retrieve deployment bags.

OTHER PROCEDURES

11-144. If a jumpmaster 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 are stopped only by an oral command; this reduces the risk an incident. If any jumpers try to exit on the red light, they are allowed to exit, except in the case of an unsafe jumper.

11-145. The procedure for handling a jump refusal is outlined in this chapter. The C-27J is equipped with a TPRS and towed-jumper procedures are also outlined in this chapter.

Note. It is a general rule that the jumpmaster or safety cuts away anything green (indicating equipment) and the flight engineer cuts 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

11-146. The 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. For parachute component parts and characteristics of each part, and serviceability checks can be found in TM 10-1670-332-23&P.

PLANNED AND UNPLANNED EXITS

11-147. 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. At 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.

11-148. AEBP training should focus on body position after an unplanned exit, ripcord 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 ripcord.
- Deployment sequence.
- Body position.
- Actions under the canopy.
- Emergency procedures for collisions.
- Emergency procedures for entanglements.
- Emergency procedures for canopy activation inside the aircraft.

11-149. To properly pull the ripcord, personnel must take the following actions:

- To activate, the jumper should grasp the ripcord grip (located over the left breast pocket)—
  - With one or both hands.
  - Pulling the ripcord downward (hard and fast) toward their feet and away from their body.
- The jumper should pull the ripcord to arm's length, ensuring it clears the housing, then, immediately bring arms close to the body.
- Jumpers scheduled to wear the AEBP should rehearse ripcord activation in conjunction with proper body position during SAT mock aircraft rehearsal.
- Immediately after donning the system, jumpers should identify the ripcord grip location and simulate ripcord activation.

11-150. After an emergency bailout, the jumper manually pulls the ripcord handle, which removes the ripcord 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, followed by the main canopy. Upon the deployment of the main canopy, a slider attached to the suspension lines slides down the suspension lines towards the jumper, reducing canopy-opening shock. The main canopy inflates.

11-151. 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 ripcord grip, and then pull the ripcord. However, when bailing out of an aircraft at extremely low altitude (below 1,000 feet AGL), the most important factor is to pull the ripcord 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 ripcord 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.

11-152. 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 to 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, jumpers complete the remaining four points of performance:

- Check canopy and gain canopy control.
- Always keep a sharp lookout 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).

11-153. 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 is the same location without becoming entangled. If not, the AEBP-equipped jumper should follow the emergency procedures for entanglement.

11-154. 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 hold their positions until they reach the ground. If both parachutes lose lift capabilities, the jumper with a reserve uses 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.

11-155. If the pilot chute deploys from the pack tray, the jumpmaster or safety immediately attempts to contain the pilot chute. If contained, the AEBP-equipped jumper should remove the parachute and place it inside its kitbag. Jump operations are on hold until the affected nonjumping jumpmaster 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 jumpmaster 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 cease if the nonjumping jumpmaster 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

11-156. The BA-18 USAF emergency back automatic parachute is used by nonjumping jumpmasters and safety personnel onboard USAF 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.

11-157. The BA-18 is equipped with an automatic release system. The owning USAF unit's life support department sets the time-delay release (from 1 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 (3 seconds, 4 seconds, 5 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 automatic release system 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 USAF's automatic release is a time-delay release.

INSPECTION CRITERIA

11-158. The inspection procedures are simple, and their sequence is not important. However, the parachute must be inspected before each donning in the following manner:

- Check the canopy release assemblies in the same manner as the T-11 ATPS main parachutes.
- Ensure that straps (chest, leg, and horizontal backstrap) are not cut or frayed.
- Ensure all three ejector snaps are serviceable.

- Inspect between the parachute harness assembly and the pack tray, where 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.
  - Ensure that the cable is free of rust or other corrosion.
  - Re-secure 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.
  - Ensure that no canopy or suspension lines protrude from the pack tray.
- Open the slide fastener on the back of the pack tray and 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 ripcord 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

11-159. Once the last jumper has exited the aircraft, pull the red automatic release arming knob to arm the automatic release system and exit the aircraft. After reaching an altitude of 14,000 feet, the canopy opens. However, at any time during descent, the ripcord can be activated and override the automatic release system.

11-160. If the parachute is equipped with an automatic release system set for a delay of 4 seconds or more, pull the automatic release arming knob and exit the aircraft. If the parachute is equipped with an automatic release system set for less than 4 seconds, exit the aircraft, assume the correct body position, and pull the automatic release arming knob.

11-161. 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 ripcord. Allow sufficient time (1 second, minimum) to clear the aircraft, then pull the ripcord.

Note. When bailing out of an aircraft at extremely low levels, the most important factor is to pull the ripcord immediately upon clearing the aircraft, regardless of body position.

PROPER METHOD TO PULL THE RIPCORD

11-162. The automatic release may be overridden by pulling the ripcord. Grasp the T-handle with the right hand and guide or assist it with the left hand. Pull the ripcord, 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 ripcord clears the housing.

11-163. 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.

Chapter 12
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, primary jumpers, USAF survival evasion resistance escape specialists, Army Special Forces, USN SEALs, paratroopers equipped for arctic airdrop, other U.S. and allied special operations personnel, USAQMS, 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

12-1. The exiting interval between each parachutist is increased to 2 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.

12-2. 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 lever malfunction due to the heavy loads. Standard equipment modifications must be made for airborne operations under cold weather conditions.

12-3. During the freeze and thaw months, ice depth checks happen on all water obstacles within 1,000 meters of any planned DZ. If the ice is greater than 10 inches, a boat detail is not required. Ice depth checks must be conducted by qualified personnel.

12-4. 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 to wear as soon as the jumper is on the ground. (See figure 12-1 on page 236.)

12-5. Authorized gloves may be worn and should be worn in temperatures below 32 degrees. Form-fitting and flame-retardant gloves are authorized for all jump passengers during airborne operations to include safeties. Gloves must be leather palmed including the thumb. Gloves that are bulky or have additional padding (not to include light insulation), are not authorized for airborne operations as they drastically hinder abilities to safely perform individual jumper tasks during the duration of an airborne operation.

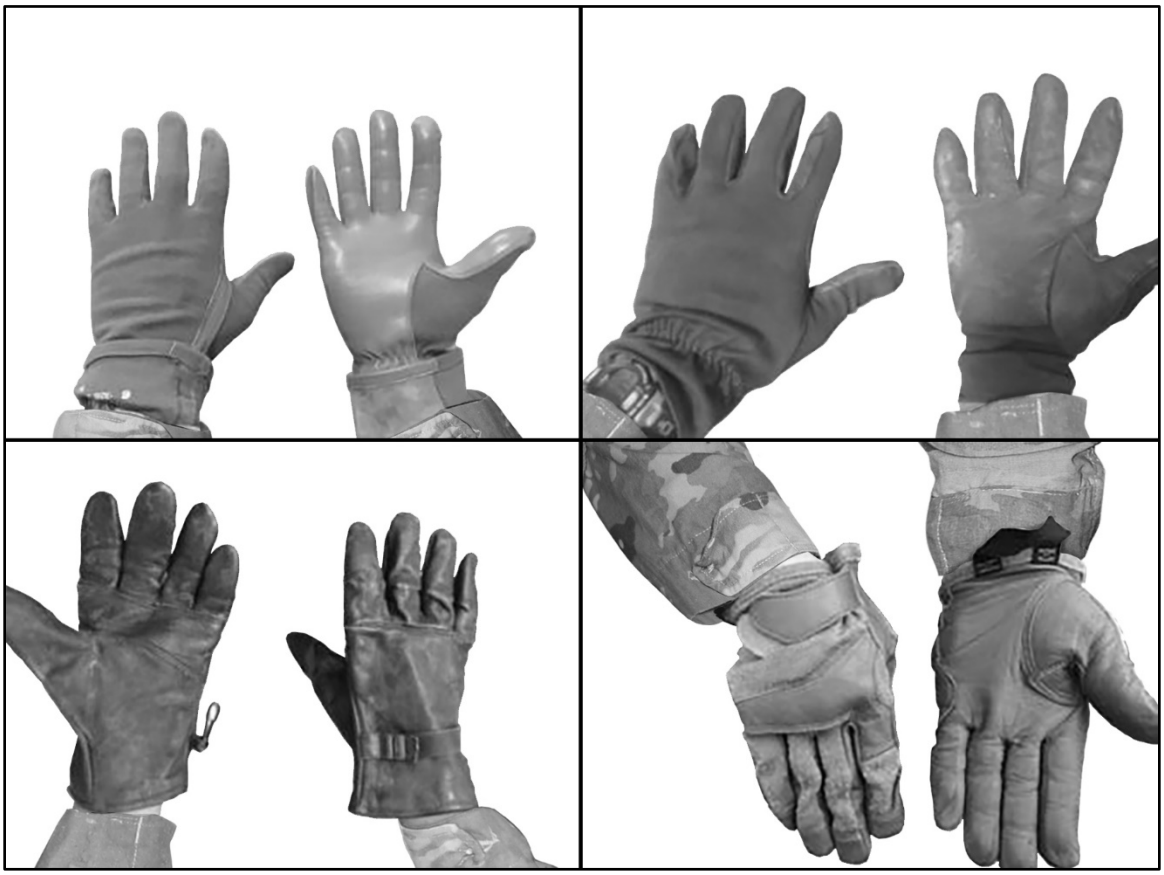


Figure 12-1. Types of authorized gloves

RIGGING MOUNTAIN SAFETY RESEARCH SKI POLES (COLLAPSIBLE) INTO THE MODULAR AIRBORNE WEAPONS CASE

12-6. Mountain safety research ski poles (collapsible) are rigged into the MAWC in the following manner:

- Inspect the small MAWC for serviceability.
- Fully collapse ski poles; pad and tape the lower portion of the ski poles below the snow baskets using cellulose wadding or bubble wrap (see figures 12-2 and 12-3).

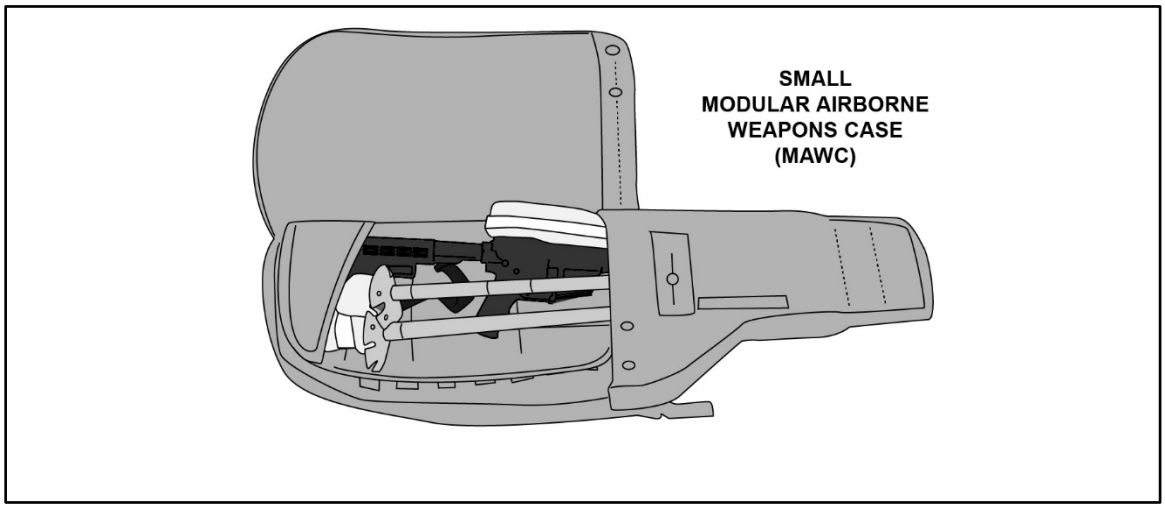


Figure 12-2. Modular airborne weapons case with prepared ski poles and weapons system

- Lay out both the MAWC and ski poles and adjust the nose cone based on the size of the collapsed poles.
- Cut and install a 3-inch by 3-inch cube of PBHC into the adjustable nose cone.
- Place the handle portion of the ski poles into the adjustable nose cone next to the PBHC insert.
- Install the fully extended M4 into the MAWC so that both the buttstock of the weapon and the end of the poles are retained in the rifle buttstock stowage pocket.
- Continue rigging the MAWC.

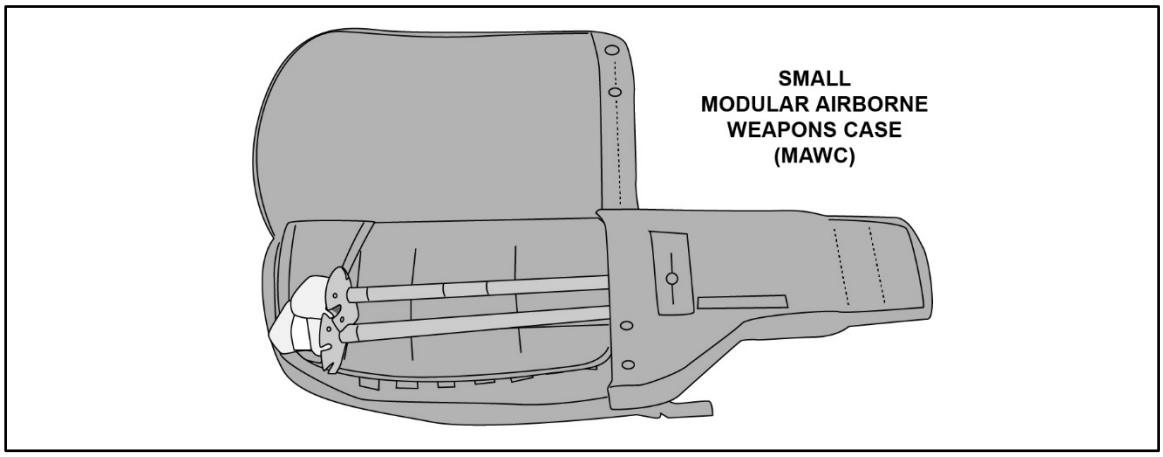


Figure 12-3. Modular airborne weapons case sizing utilizing collapsed ski poles

MOUNTAIN SAFETY RESEARCH SNOWSHOES

12-7. Snowshoes are usually rigged on the parachutist to allow for immediate access. Configurations for use of snowshoes are described in paragraphs 12-8 and 12-9.

12-8. Snowshoes (see figure 12-4 on page 238) are rigged under the closing flap of the MOLLE or ALICE pack with the tails removed. (See figure 12-5 on page 238.) 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 12-6 and 12-7 on page 239.)

12-9. 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 previously 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 do not fall out. The MOLLE pack is now ready to be rigged with the harness single-point release and lowering line. Figure 12-7 shows the MOLLE I rigged with the snowshoes.

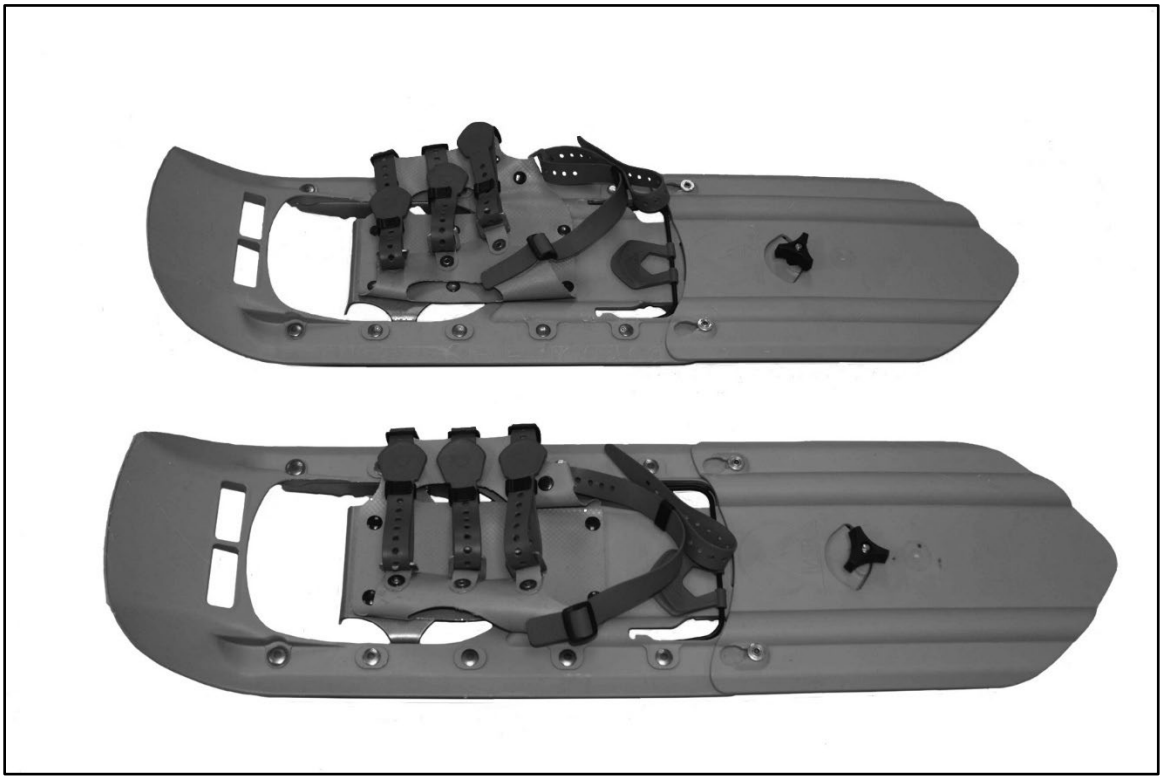


Figure 12-4. Rigged snowshoes



Figure 12-5. Snowshoes under the closing flap or placed on the inside of the MOLLE I



Figure 12-6. Snowshoes under the closing flap or placed on the inside of the ALICE

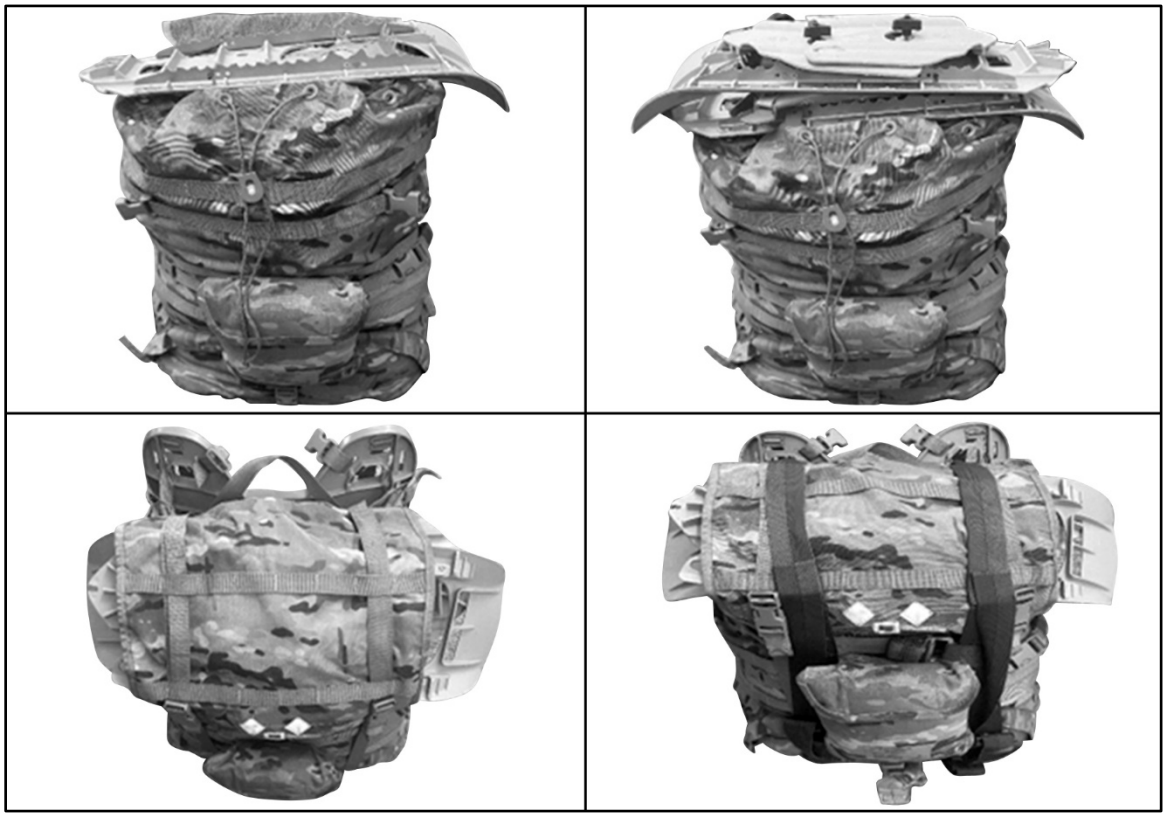


Figure 12-7. MOLLE I rigged with snowshoes

SKIS AND MOLLE/ALICE PACK WITH AIRBORNE PACK SIDE-MOUNT CONTAINER

12-10. Skis, along with a weapon, can be jumped using the procedures described in paragraphs 12-8 and 12-9. 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.

12-11. The MOLLE/ALICE pack with AIRPAC side-mount container with skis is considered a special item of equipment due to ski length 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 5 feet, 8 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 do 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.

12-12. The MOLLE or ALICE pack is rigged with the HSPR and the HPTLL. 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 left. (See figure 12-8.)

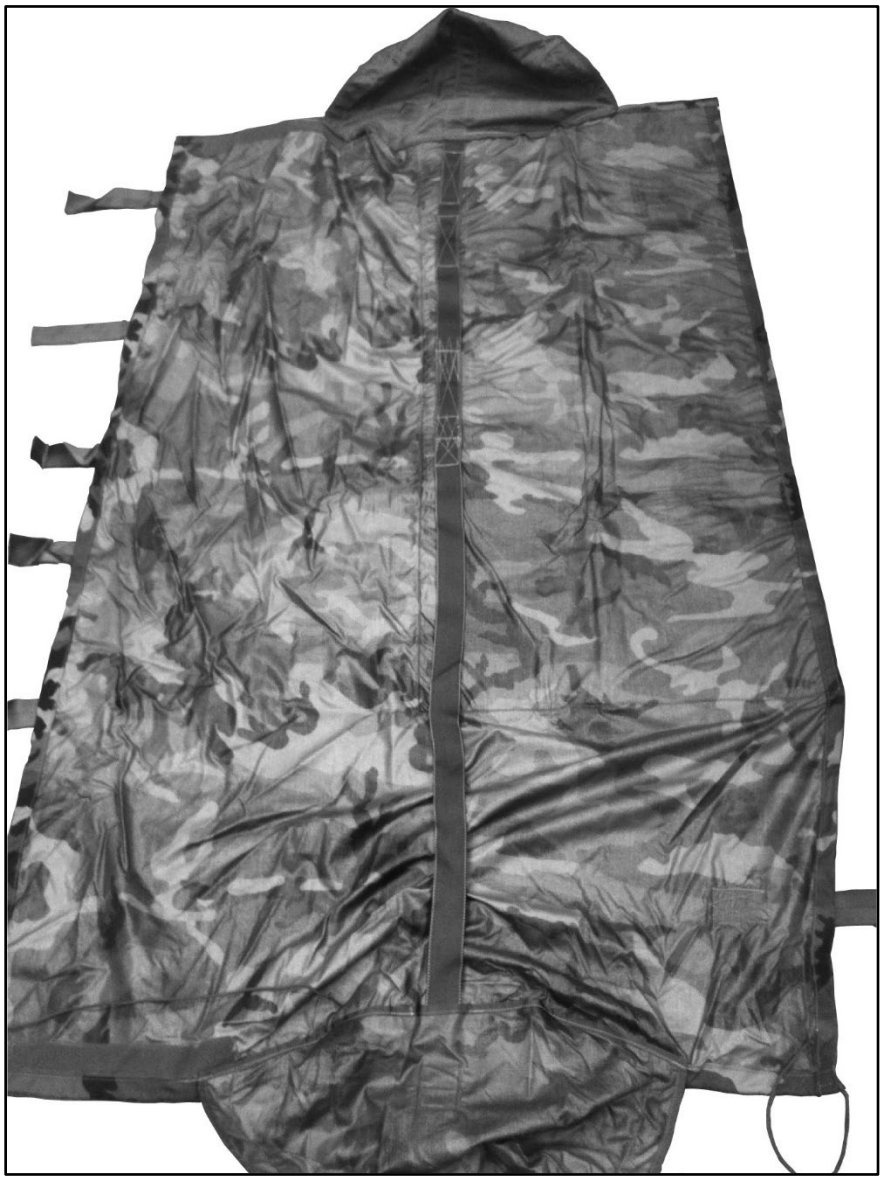


Figure 12-8. Placement of friction adaptors

12-13. 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 1/4-inch cotton webbing. Tie one end at the shovel of the ski and the other tie at the waist of the ski. (See figure 12-9 on page 242.) 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 12-9. Ski placement when jumping

12-14. Center the load on the internal securing strap (see figure 12-10) 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- 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 12-11 on page 244.)



Figure 12-10. Placement of internal securing strap

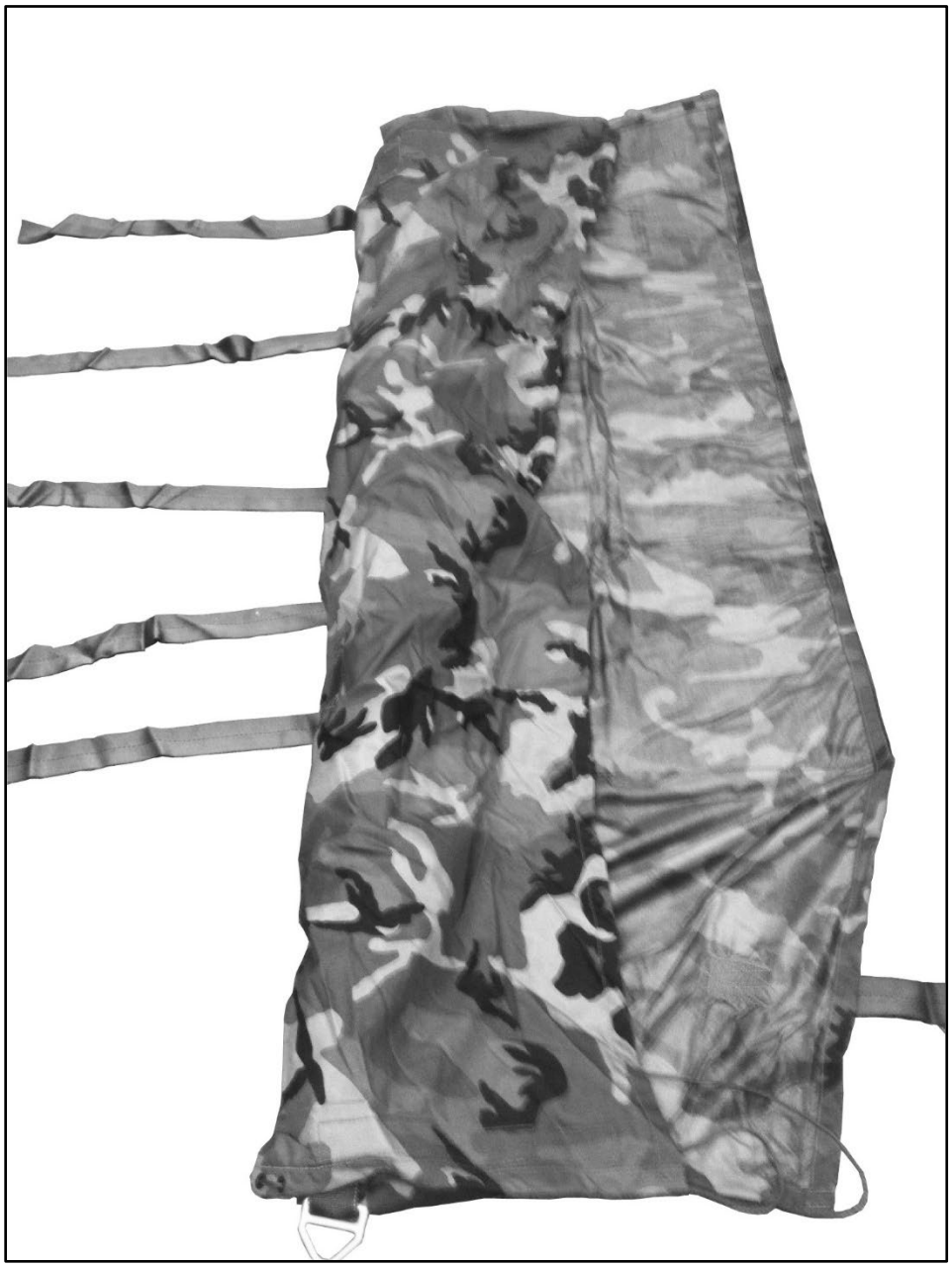


Figure 12-11. Fold of excess weapons-container material

12-15. Wrap unpadded fabric flap over the load. (See figure 12-11.) Bring the padded fabric flap over the load and loosely secure the container retaining straps to the friction adapters; form a 5- to 6-inch quick release in the strap. Do not tighten the strap.

12-16. If jumping an M4, Ml6, M203, or M302, place the weapon muzzle down in the container slide fastener compartment and secure the slide fastener. (See figure 12-12.) 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 3-inch tail. Secure the drawstring on top of the container with a quick-release knot, if necessary. (See figure 12-13 on page 246.)



Figure 12-12. Placement of weapon in container



Figure 12-13. Container with a quick-release knot

12-17. 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 1/4-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 does 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 12-14.)

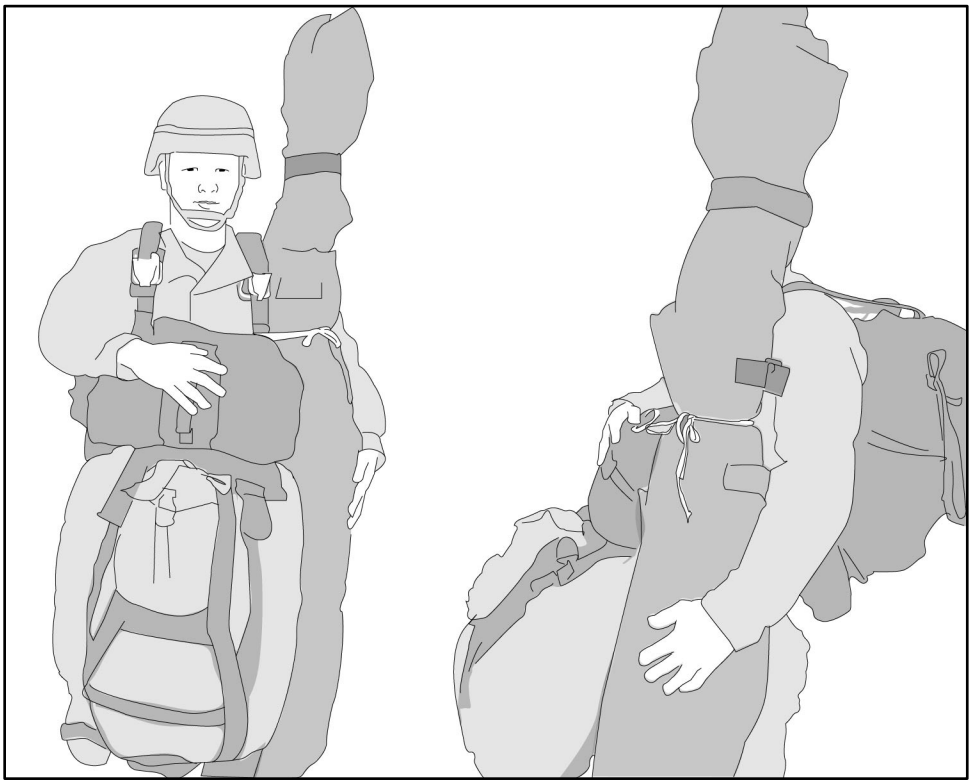


Figure 12-14. Jumper with side-mount container and tandem load

AIRBORNE PACK SIDE-MOUNT CONTAINER TECHNICAL INSPECTION PROCEDURES

12-18. 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 weapons.
- Inspect the quick-release snap in the same manner as the weapon's case:
  - Ensure a piece of 1/4-inch cotton webbing is attached to the separate V-ring above the quick-release snap.
  - Utilize it 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 outermost 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 HSPR 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 jumper's left D-ring as the outermost item of equipment.
- Tie the upper tie-down tape utilizing a bowknot on the lead edge of the side-mount container.

Chapter 13
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 are 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 lines. 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 respective 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

13-1. 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.

13-2. 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 like 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.

13-3. 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 1/4-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.

13-4. If hazardous materials are placed inside bundles, they must have a shipper's declaration for dangerous goods completed in compliance with AFMAN 24-604/TM 38-250/NAVSUP PUB 505/MCO P4030.19/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

13-5. The A-7A airdrop cargo sling assembly consists of four identical sling straps. Details include the following:

- 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.

13-6. 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 dimension 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.

How to determine minimum allowable weight, example

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 figure 13-1.)

EXAMPLE:

Height (without parachute)	27 inches
Length	44 inches
Width	21 inches

44 inches X 27 inches = 1,188 square inches
1,188 ÷ 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.

Legend: X—times; =—equals; ÷—divided by

Figure 13-1. Determine minimum allowable weight, example

13-7. Position straps as shown in figure 13-2 and figure 13-3 on page 252. The following is required:

- When two straps are used, a piece of type III nylon cord, which is nylon rope called parachute 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.

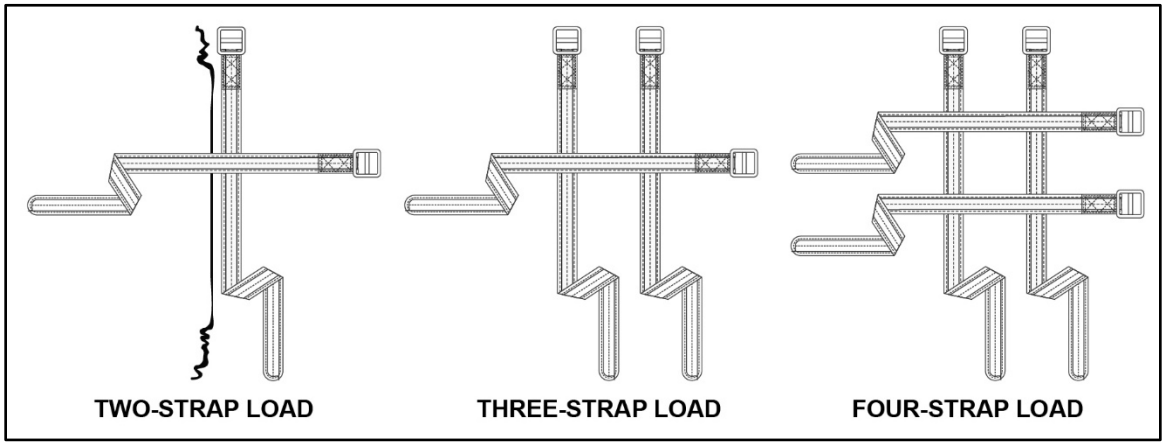
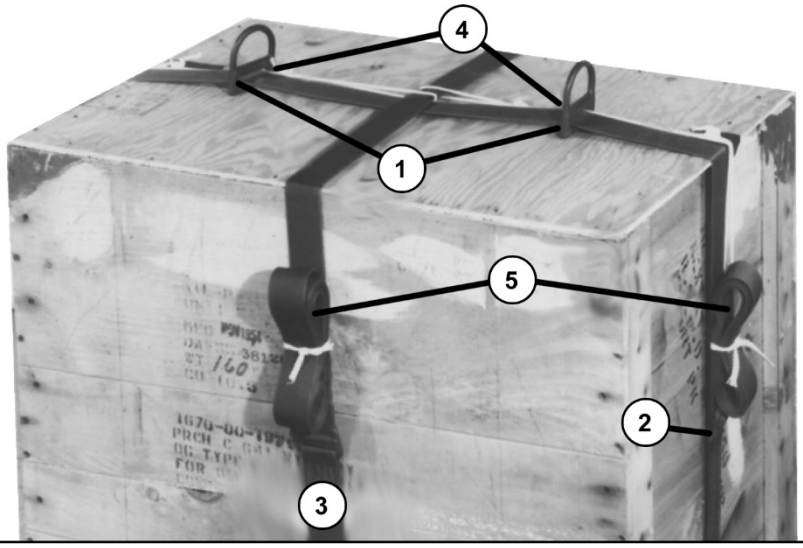


Figure 13-2. A-7A straps

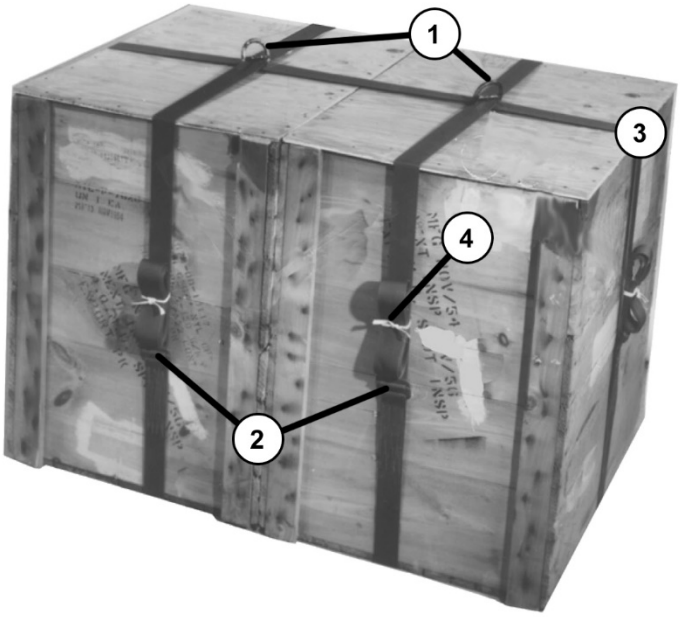
POSITIONING LOAD AND SECURING STRAPS

13-8. Center the equipment on the straps. If needed, honeycomb can be placed under the equipment. Secure the straps as shown in figure 13-3 on page 252 for a two-strap load, figure 13-4 on page 253 for a three-strap load, and figure 13-5 on page 254 for a four-strap load.



1. Using the strap with the type III nylon cord beside it, route the strap through the rectangular portion of the two D-rings.
2. Route the strap with D-rings on it over the load and route it through the friction adapter. Center the D-rings on top of the load 12 inches apart and apply tension to the strap.
3. Route the other strap over the load and route it through the friction adapter. Apply tension to the strap.
4. Route one end of the type III nylon cord over the top of the load. Tie a knot around the first D-ring and tie the running end of the type III nylon cord to the other D-ring. Repeat step for the other side. Tie knots in the running ends and trim the excess to two inches.
5. S-fold or roll the excess webbing. Secure it with one turn single, type I, l4-inch cotton webbing using a surgeon's knot and locking knot.

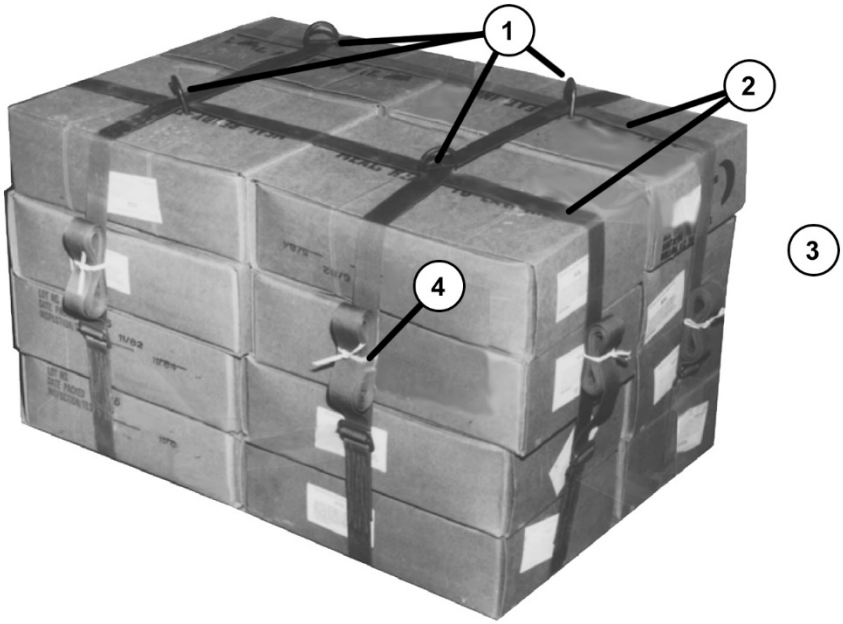
Figure 13-3. Two-strap load positioned and secured



1. Route each parallel strap through the rectangular portion of a D-ring.
2. Route the two straps with D-rings over the load and through the friction adapters. Center the D-ring on top of the load and apply tension.
3. Route the third strap through the rectangular portion of each D-ring, through the friction adapter, and apply tension.
4. S-fold or roll the excess webbing. Secure it with one turn single, type I, 1/4 -inch cotton webbing using a surgeon's knot and locking knot.

Figure 13-4. 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.



1. Using two straps and four D-rings, route each strap through the rectangular portion of two D-rings and route the straps over the load and through the friction adapters. Ensure the D-rings are on top of the load.
2. Using two additional straps for the sides, route one strap through the rectangular portion of the rear set of D-rings and through the friction adapters. Repeat with other strap through front set of D-rings.
3. Apply tension to all straps ensuring the D-rings stay in place.
4. S-fold or roll the excess webbing. Secure it with one tum single, type I, 1/4-inch cotton webbing using a surgeon's knot and locking knot.

Figure 13-5. Four-strap load positioned and secured

13-9. 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 13-6.) A DD Form 2890 (*DoD Multimodal Dangerous Goods Declaration*) may be required. Use the equipment listed in table 13-1 to rig a four-strap load for low-velocity airdrops as shown in figure 13-6.



Two-strap with one 68-inch parachute	30 - 50 pounds	Four-strap with one 68-inch parachute	30 - 50 pounds
with three 68-inch parachutes	51 - 200 pounds	with three 68-inch parachutes	51 - 200 pounds
with one T-10 modified parachute	90 - 300 pounds	with one T-10 modified parachute	90 - 500 pounds
with one G-14 cargo parachute	200 - 300 pounds	with one G-14 cargo parachute	200 - 500 pounds
Three-strap with one 68-inch parachute	30 - 50 pounds		
with three 68-inch parachutes	51 - 200 pounds		
with one T-10 modified parachute	90 - 400 pounds		
with one G-14 cargo parachute	200 - 400 pounds		

Figure 13-6. Typical four-strap load rigged for low-velocity paratroop door airdrop

Table 13-1. 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 Parachute, cargo, G-14	One
Not applicable	OR Parachute, cargo, modified, T-10 OR	One
1670-00-216-7297	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, 2-inch	As required
8305-00-268-2411	Webbing, cotton, 1/4-inch, Type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required

A-21 CARGO BAG ASSEMBLY

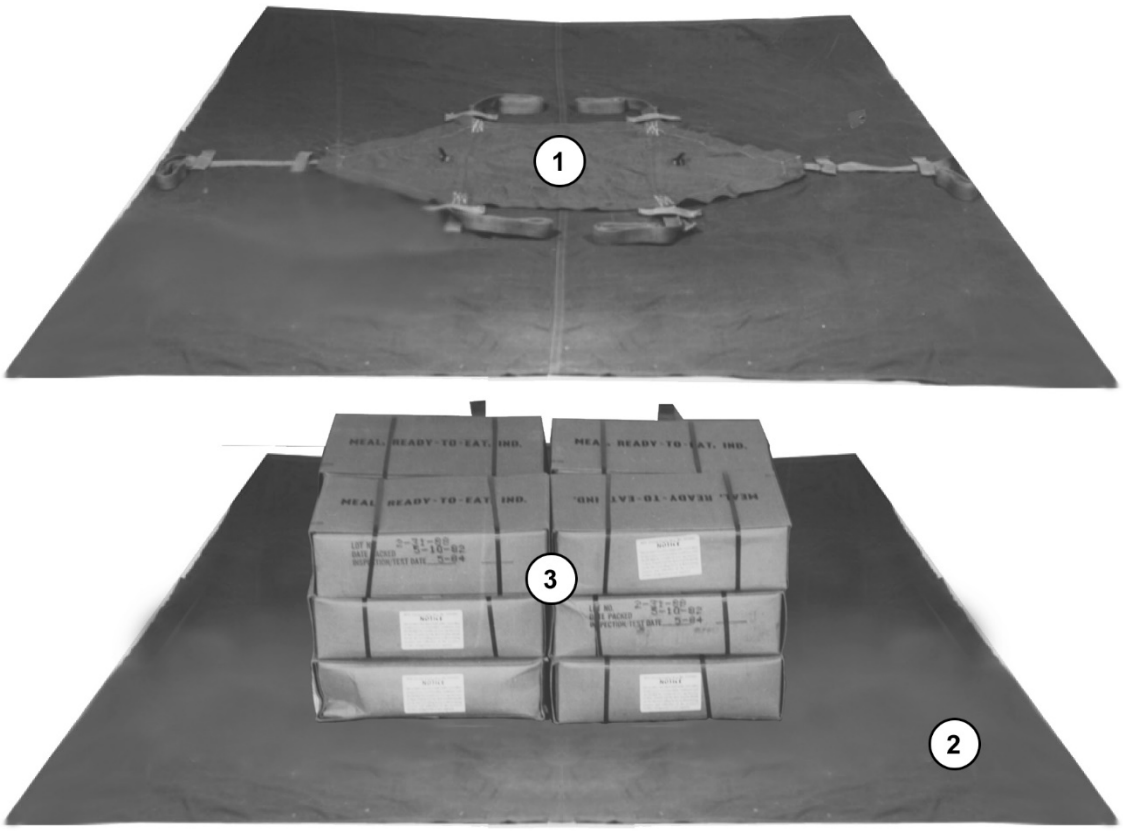
13-10. The A-21 cargo bag assembly is an adjustable container. It consists of the following items:

- 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.

13-11. 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.

13-12. 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 13-7.

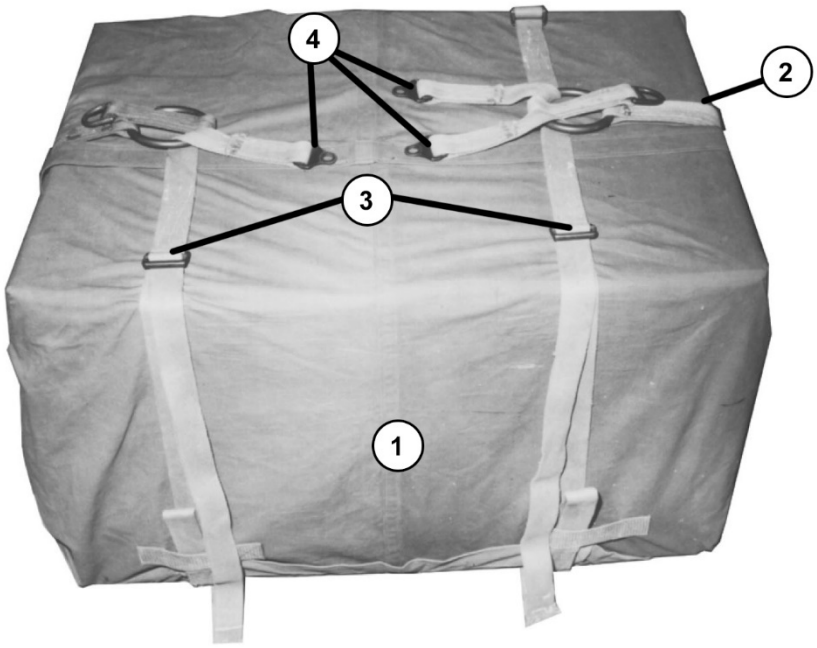


1. Lay the A-21 bag cover on a flat, dry surface with the strap keepers up. Center the sling assembly on the cover with the sewn webbing facing the cover. Route the straps through the strap keepers.
2. Flip the cover and sling assembly over. The scuff pad should be on the bottom.
3. Center the load on the cover and the sling assembly.

Figure 13-7. Container and load positioned

Note. One or two layers of honeycomb may be placed under the load, if needed.

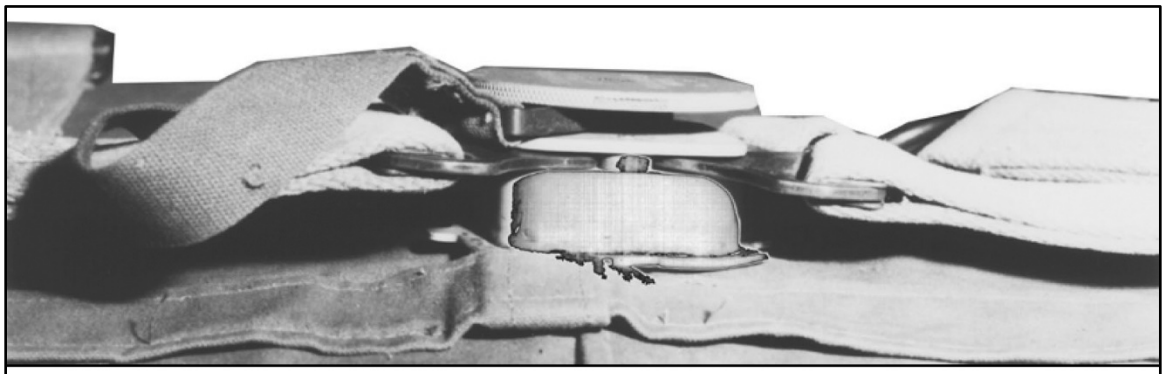
13-13. The container is rigged as shown in figure 13-8 on pages 258 and 259.

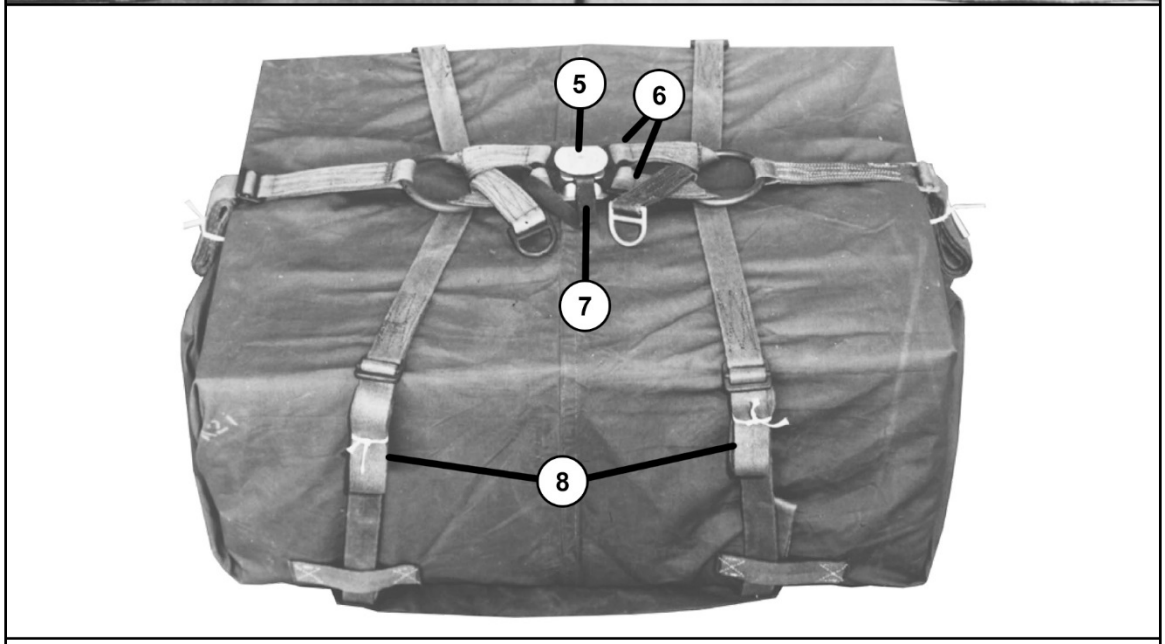


1. Fold the cover over the load. Fold the excess cover under itself.
2. Loosely fit an 0-ring strap on the right side long strap. Repeat for the left side.
3. Fit a quick-release strap on the two front straps and the rear right strap.
4. Pass the free end of the quick-release strap under the 0-ring and up through the center of the 0-ring. Lay the running end toward the center of the load. Repeat step for the other two quick-release straps. There should be a half twist inward when the straps are routed properly.

Figure 13-8. Container rigged

Note. Make sure the friction adapters are fastened properly.





5. Center the strap with quick-release assembly on the load. Route the strap over the left 0-ring and down through the center. Fasten the friction adapter to the rear left strap. Make sure the friction adapter is fastened properly.
6. Make sure the quick-release assembly plungers are up. Insert the three quick-release strap lugs into the quick-release assembly. Pull slightly on each to make sure the plungers lock the straps in place.
7. Insert the safety clip.
8. Tighten all straps. Make sure the quick-release assembly is centered on the load. Fold the excess strap, and tie or tape in place.

Figure 13-8. Container rigged (continued)

13-14. Install the T-10 modified cargo or the G-14 cargo parachute. Compute the rigged load data for the A-21 container loads. DD Form 2890 may be required. (See figure 13-9 on page 260.)



Figure 13-9. Container load rigged for low-velocity paratroop door airdrop

REQUIRED EQUIPMENT AND FINAL INSPECTION

13-15. Use the equipment listed in table 13-2 to rig an A-21 container load for a low-velocity paratroop door airdrop.

Table 13-2. 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 Not applicable	Parachute, cargo, high-velocity, G-14 OR Parachute, cargo, modified, T-10	One One
8305-00-268-2411	Webbing, cotton, 1/4-inch, Type I	As required

13-16. 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:

- Checking for serviceability of webbing, straps, and covers.
- Ensuring the load is rigged according to procedures outlined in TM 4-48.03/MCRP 4-11.3C/TO 13C7-1-11.
- Ensuring the loads containing hazardous materials comply with AFMAN 24-604/TM 38-250/NAVSUP PUB 505/MCO P4030.19/DLAI 4145.3 and are labeled accordingly.
- Ensuring the proper size parachute has been used and checking its condition.
- Inspecting the log record book, if applicable.
- Ensuring 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.

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PART THREE

AIRCRAFT

A proficient jumpmaster must first be familiar with the aircraft being utilized. Each aircraft has its own characteristics, and all jumpmasters must become familiar with each of the characteristics of those aircraft.

Chapter 14

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

14-1. 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 can determine the CARP by a member of the aircrew (navigator).
  - They must be able to exit paratroopers out of a troop door using either ADEPT option two or mass exit procedures (see chapter 19 for nonstandard jump aircraft).
- The UH-60 series, CH-47, and the CH-53 (USMC) are the most commonly used rotary-wing aircraft for troop airdrops.

JUMP ALTITUDES

14-2. The minimum criteria discussed in paragraphs 14-3 and 14-4 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 in paragraph 14-3 and in table 14-1.

14-3. See table 14-1 on page 264 for peacetime training. The jump altitudes for basic airborne training are as follows:

- 1,250 feet AGL (T-11).
- 1,000 feet AGL with a waiver from the Airborne Ranger Training Brigade commander.

14-4. For tactical training, it is 1,000 feet AGL for the MC-6 and T-11. Aircraft with a drop speed of less than 90 knots is 1,500 feet AGL.

CAUTION

The T-11 parachute should not be jumped above 1,250 feet AGL for high-performance aircraft. Due to the drift characteristics of the parachute, the jumper may drift off the surveyed DZ.

14-5. 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**
>
> The T-11 may be used for rotary-winged operations if justified by a command deliberate risk assessment worksheet.

14-6. 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 14-1. Minimum jump altitudes for all aircraft

TACTICAL STATUS	*AIRCRAFT TYPE*	*APPLICATION*	*FEET AGL*	
			T-11	*MC-6*
Peacetime	Fixed wing	Basic airborne training	1,250	N/A
	Fixed wing[1]	Tactical training	1,000[1]	800[1]
	Rotary wing	Aircraft with a drop speed less than 90 knots	1,500[3]	1,500
	Rotary wing	Aircraft with a drop speed more than 90 knots	1,250[3]	1,250
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

NOTES.
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 the surveyed drop zone.

Legend: AGL—above ground level; N/A—not applicable

14-7. SAT can be modified for a combat operation, but it is recommended that the individual jumper accomplishes the following tasks:

- Upon receiving the opening shock of the main canopy, immediately lowers individual equipment.
- Assumes the landing attitude (T-11 series) or canopy control (MC-6 series) parachute.

RISK ASSESSMENT DECISION MAKING

14-8. 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 14-2. 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 14-2. 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 6,000-COUNT (SECONDS)*
1,250	+/- 125	1,375 1,250 1,125	9.4 8.8 8.2	5.4 4.8 4.2
1,000	+/- 125	1,125 1,000 875	8.2 7.6 6.9	4.2 3.6 2.9
800	+/- 125	925 800 675	7.1 6.4 5.6	3.1 2.4 1.6
Legend: +/- —plus or minus; AGL—above ground level				

HIGH-ELEVATION JUMPING

14-9. The term high-elevation jumping refers to airdrop operations that begin at normal altitude AGL (1,000 feet AGL), but where the DZ is 5,000- to 10,000-feet above mean sea level (MSL), such as in mountainous terrain. Commanders must consider that lower air density or higher altitude increases the canopies' rate of descent. Commanders should consider the following:

CAUTION

The T-11 ATPS meets the operational requirements for use at altitudes of 7,500 feet MSL and below. The T-11 ATPS has not been tested above 7,500 feet MSL; therefore, a deliberate risk assessment must reflect using the T-11 ATPS at altitudes above 7,500 feet MSL. Jumpers 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 5,000- 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 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.

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Chapter 15
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 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 procedure.

C-130 VARIATIONS AND PARATROOPER INTERNAL CONFIGURATION INFORMATION

15-1. 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 by using the two paratroop doors or the ramp. Aircraft configurations are listed in table 15-1 for the C-130E/H/J and table 15-2 for the C-130J-30.

Table 15-1. C-130 E/H/J

CONFIGURATION	*JUMPER LOAD*
TAP-1 mass drop	62 plus two safeties
A*TAP-1 with aircraft armor	48 plus two safeties
TAP-2 in-flight rigging	52 plus two safeties
A*TAP-2 with aircraft armor	38 plus two safeties
TAP-3 over-the-ramp operations	40 plus two safeties
A*TAP-3 with aircraft armor	30 plus two safeties
Legend: A*TAP—tactical airdrop paratroop with armor; TAP—tactical airdrop paratroop	

Table 15-2. C-130J-30

CONFIGURATION	*JUMPER LOAD*
TAP-1 mass drop	74 plus two safeties
A*TAP-1 with aircraft armor	68 plus two safeties
TAP-2 in-flight rigging	74 plus two safeties
A*TAP-2 with aircraft armor	64 plus two safeties
TAP-3 over-the-ramp operations	54 plus two safeties
A*TAP-3 with aircraft armor	44 plus two safeties
Legend: A*TAP—tactical airdrop paratroop with armor; TAP—tactical airdrop paratroop	

Note. Tactical airdrop paratroop (TAP). Tactical airdrop paratroop with armor (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-130J-30 (stretch) configuration jump loads (see figures 15-1 and 15-2 on page 268).

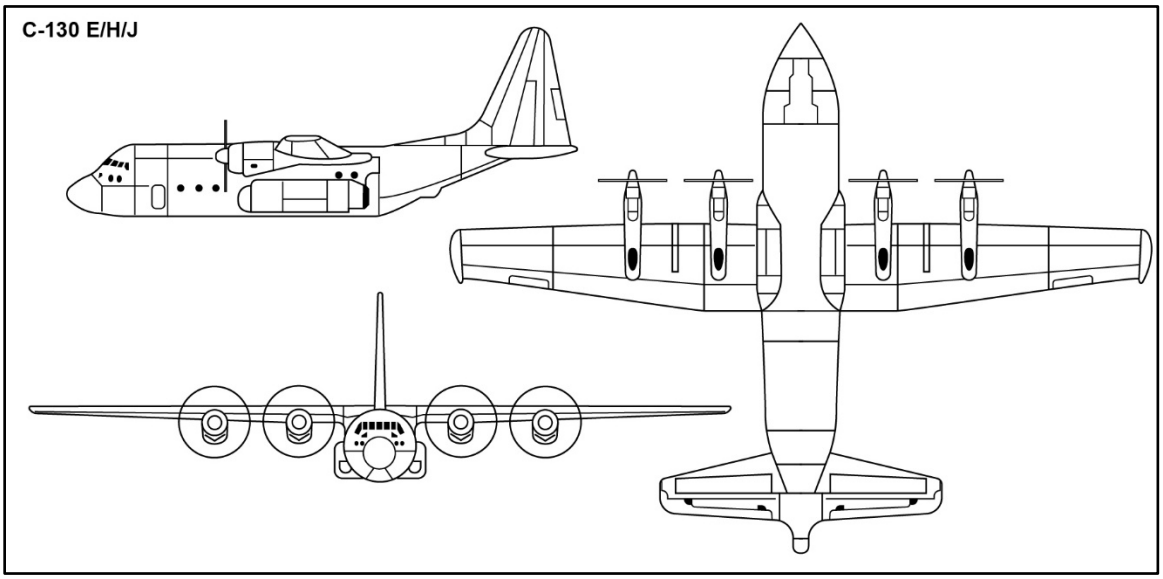


Figure 15-1. C-130 E/H/J

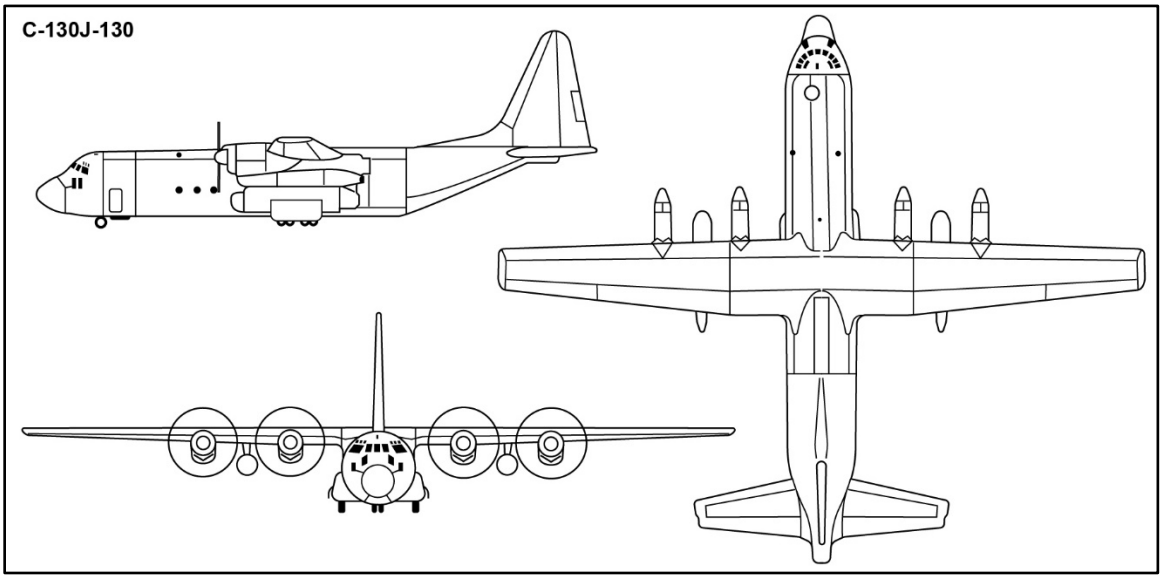


Figure 15-2. C-130J-30

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

15-2. The seating configurations for C-130 mass drop operations (TAP-1/A*TAP-1) are described:

- A total of 62 jumpers can be seated in two sticks of 31 (see figure 15-3).
  - Jumpers No. 1 and 2 are seated outboard aft of the wheel well.
  - Jumpers 3 through 22 are seated on the inboard seats.
  - Jumpers 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.
  - Jumpers 3 through 18 are seated on the inboard seats.
  - Jumpers 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.

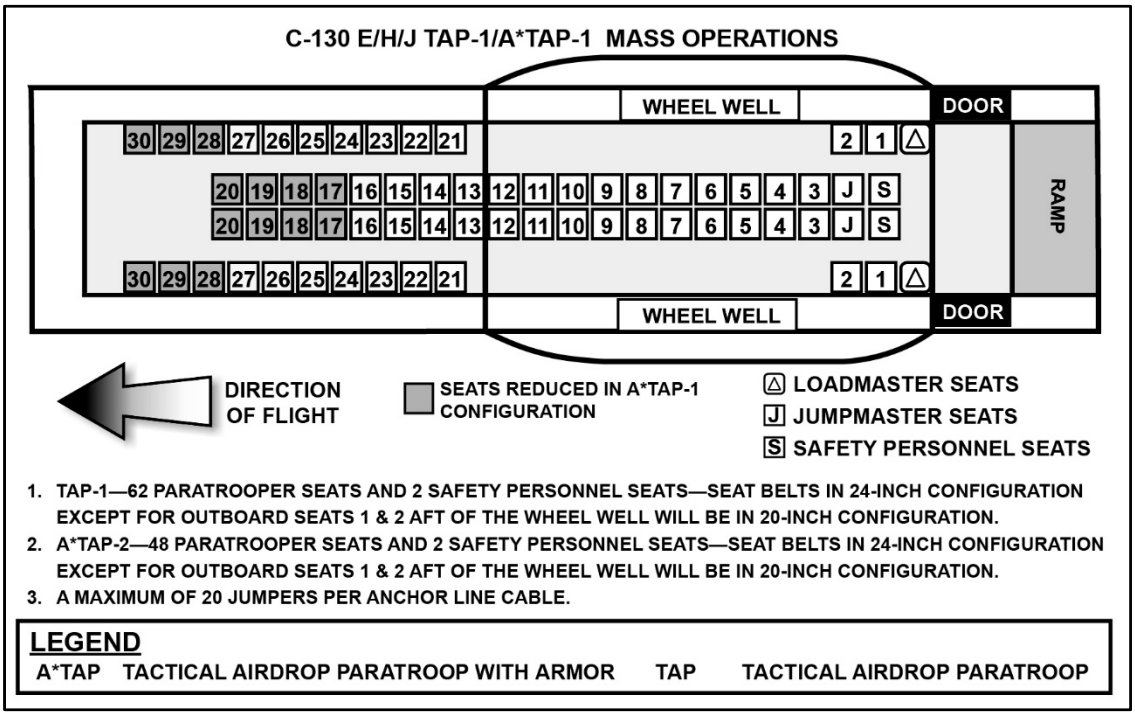


Figure 15-3. C-130E/H/J TAP-1/A*TAP-1

C-130J-30 CONFIGURATIONS

15-3. The seating configurations for C-130J mass drop operations (TAP-1/A*TAP-1) are the following:

- A total of 76 jumpers can be seated in two sticks of 38 (see figure 15-4 on page 270):
  - Jumper No. 1 is seated outboard aft of the paratroop doors.
  - Jumpers 2 and 3 are seated outboard aft of the wheel well.
  - Jumpers 4 through 26 are seated on the inboard seats.
  - Jumpers 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 2 and 3 are seated outboard aft of the wheel well.
  - Jumpers 4 through 24 are seated on the inboard seats.
  - Jumpers 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.

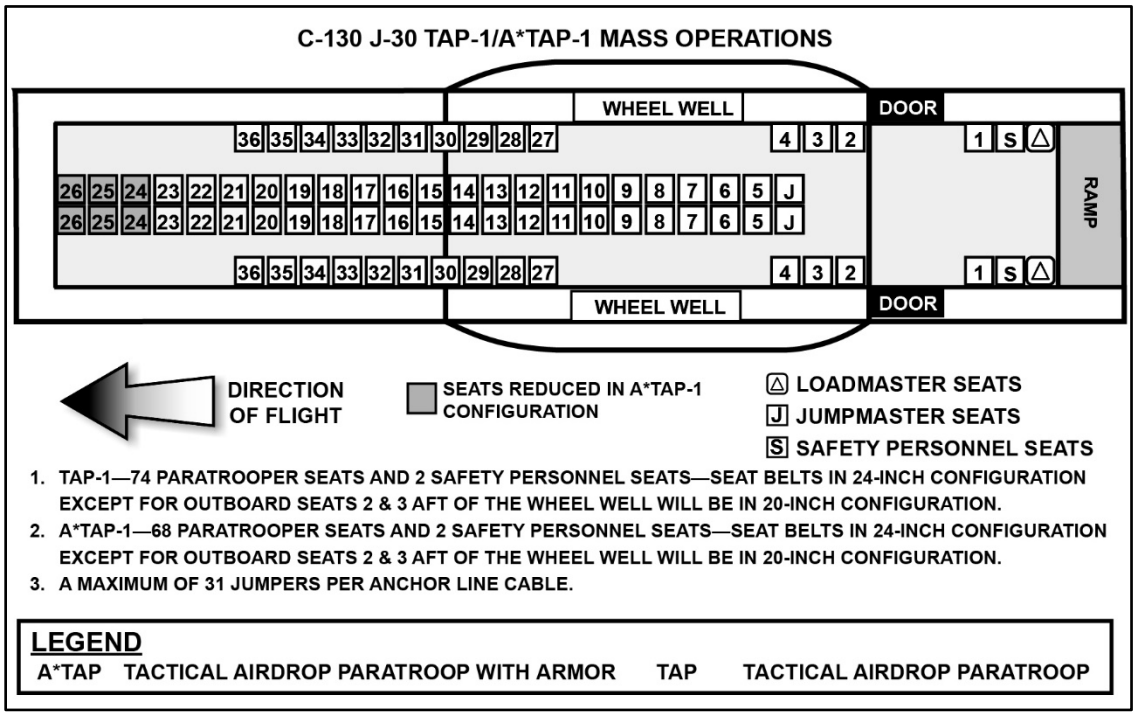


Figure 15-4. C-130J-30 configurations

REQUIRED SUPERVISORY PERSONNEL

15-4. Six personnel supervise jumpers and ensure safety measures are followed (ADEPT options 1 and 2, and mass exit). USN operations may not have an AJM or safety onboard the aircraft if the total number of jumpers participating (including the PJM) is 10 or less, a single door or ramp is used, and jumpers are not rigged with CE. The supervisory personnel required include the following:

- Two jumpmasters.
- Two safety personnel.
- Two airdrop qualified loadmasters.

Note. USMC and USN utilize one door; the other door remains closed and unmanned. Therefore, only one jumpmaster and one safety are used.

C-130E/H/J IN-FLIGHT RIGGING OPERATIONS (TAP-2/A*TAP-2)

15-5. The seating configurations and personnel required for C-130E/H/J in-flight rigging operations are described:

- There are a total of 52 jumpers (with equipment) including two nonjumping safeties with jumpers in two sticks of 26.
- Four jumpers within the stick should be current and qualified jumpmasters 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 nonjumping safeties.
- Jumpers are normally loaded over the aft end loading ramp (see figure 15-5).
- The maximum number of jumpers per anchor line cable is 20.
- One rigger for in-flight rigging is optional.

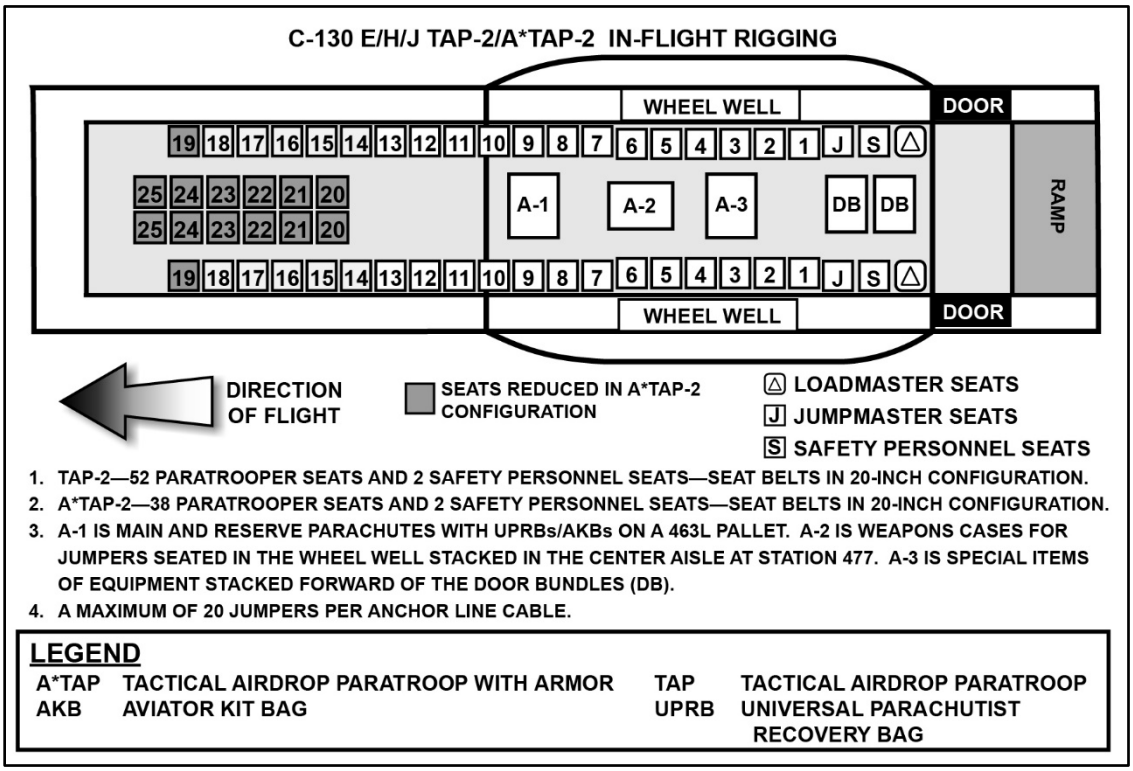


Figure 15-5. C-130E/H/J TAP-2/A*TAP-2 configuration

C-130/J-30 IN-FLIGHT RIGGING OPERATIONS (TAP-2/A*TAP-2)

15-6. The seating configurations for C-130/J-30 in-flight rigging operations follow:

- A total of 74 jumpers (with equipment) including 2 nonjumping safeties in two sticks of 37.
- Six jumpers within the stick should be current and qualified jumpmasters to assist in rigging and JMPI and 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 15-6 on page 272).
- 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 jumpmaster 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.

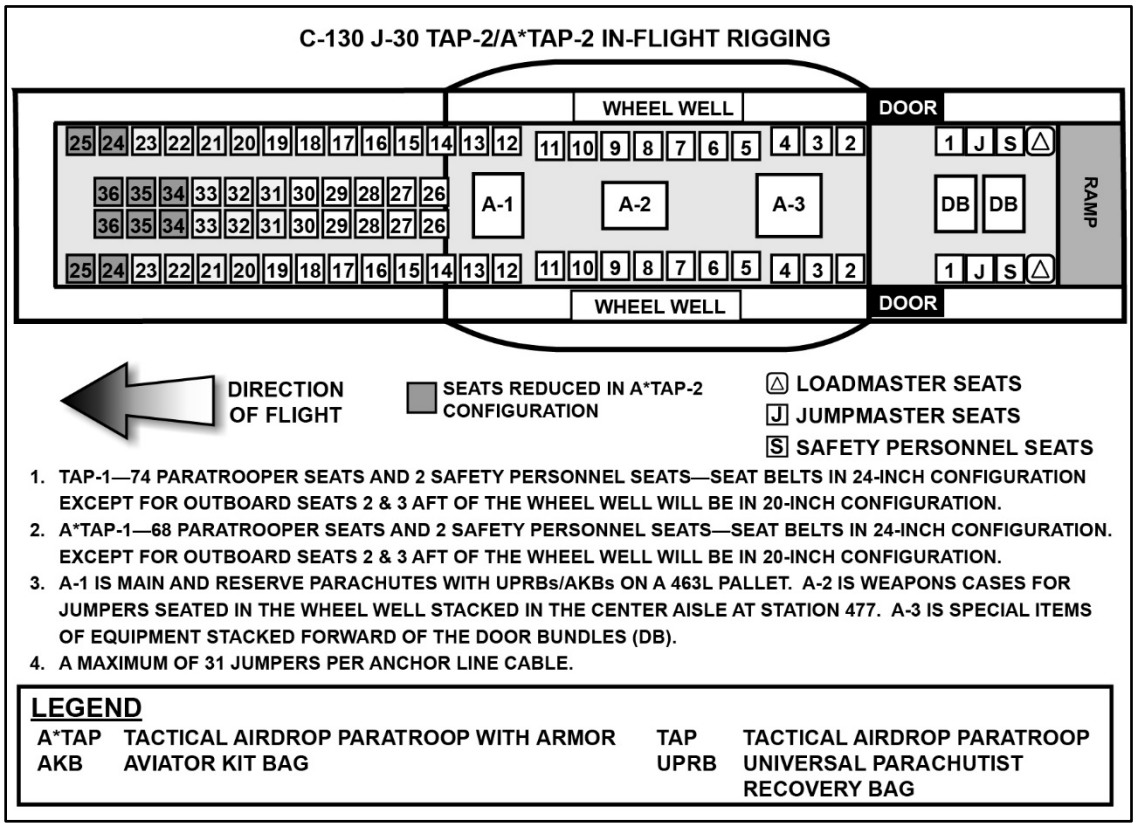


Figure 15-6. C-130 J-130 TAP-2/A*TAP-2 configuration

Briefing and Equipment Storage

15-7. 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 jumpers' movement in the aircraft. The other method, station rigging, is seldom used.

15-8. 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 the 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)

15-9. Buddy rigging begins 2 hours, 20 minutes before drop time. Rigging must be completed by the 20-minute time warning, and consists of the following:

- The main and reserve parachutes, with UPRB, are passed forward until each jumper has a parachute.
- Once everyone has a parachute, buddy rigging begins under the supervision of—
  - The jumpmasters.
  - Designated jumpmaster qualified jumpers.
  - 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 jumpmasters:
  - 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 jumpmasters don equipment and safety personnel inspect them.
  - Other jumpmaster-qualified jumpers should be used to speed up the rigging process.

15-10. 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 of 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 CE. Each jumper moves to the designated rigging station to don the parachute and equipment, assisted by a jumpmaster.

15-11. 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 jumpmaster.

15-12. In-flight rigging time warnings, include the following:

- TWO-HOUR, TWENTY-MINUTE TIME WARNING—this is used only on in-flight rigging missions:
  - At the 20-minute time warning, all in-flight rigging is complete, and 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.
- TWENTY-MINUTE TIME WARNING:
  - Special items of equipment should be attached to designated jumpers and a thorough T.I. conducted.
  - Door bundles should be positioned in vicinity of the paratroop door, T.I. conducted, and the USL snap hook is hooked up to the outboard anchor line cable.
- TEN-MINUTE TIME WARNING—no change, see chapter 11 for jump commands.
- THREE/6-MINUTE TIME WARNING AND AIRCRAFT SLOWDOWN—no change, see chapter 10 for jump commands.
- ONE-MINUTE TIME WARNING—no change, see chapter 11 for jump commands.
- THIRTY-SECOND TIME WARNING—no change, see chapter 11 for jump commands.
- GREEN LIGHT—no change, see chapter 10 for jump commands.

OVER-THE-RAMP OPERATIONS (TAP-3/A*TAP-3)

15-13. The seating configurations for C-130 in-flight rigging operations are described. Units authorized for over-the-ramp operations are as follows:

- Tailgate drops are approved for:
  - Special tactics teams.
  - Primary jumpers.
  - USAF survival evasion resistance escape specialists.
  - U.S. Army Special Forces.
  - USN SEALs.
  - Paratroopers equipped for arctic airdrop.
  - Other U.S. and allied special operations personnel.
  - USAQMS.
  - Yuma Proving Ground Airborne Test Force.
  - Units for which a combination drop is their normal method of deployment.
- Authorization of Arctic-equipped jumpers to tailgate was granted to allow arctic-equipped jumpers with large field packs and skis, if included, to tailgate from C-130 aircraft.

- USMC force reconnaissance and air-naval gunfire liaison company 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.
- Based on airborne materiel and training proponency, the 1st Battalion, 507th Parachute Infantry Regiment, Airborne and Ranger Training Brigade, USAIS, Fort Benning, Georgia, is authorized to plan and conduct over-the-ramp operations from the C-130 aircraft.
- USN EOD is authorized to plan and conduct over-the-ramp operations to include combination drops from the USN or USMC C-130 aircraft and USAF C-130.

C-130 E/H/J (TAP-3/A*TAP-3)

15-14. The seating configurations for C-130 E/H/J operations are described:

- A total of 40 jumpers (with equipment) including 2 nonjumping safeties; jumpers are in 2 sticks of 20.
- When the aircraft is equipped with protective armor, the total number of jumpers is reduced to 28 and 2 nonjumping safeties.
- Jumpers are normally loaded over the aft end loading ramp (see figure 15-7).

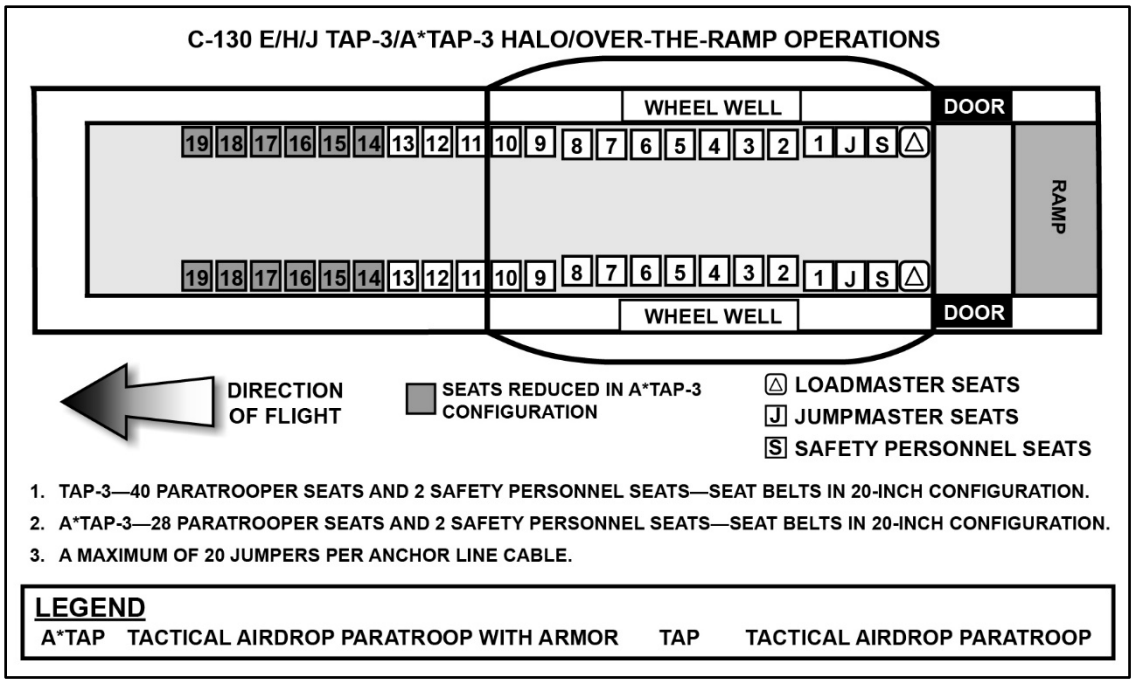


Figure 15-7. C-130E/H/J TAP-3/A*TAP-3 configuration

C-130/J-30 (TAP-3/A*TAP-3)

15-15. The seating configurations for C-130J-30 operations are as follows:

- A total of 58 jumpers (with equipment), including 2 nonjumping safeties, who 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 and they are normally loaded over the aft end loading ramp (see figure 15-8).
- Once the command of FIRST PASS/OUTBOARD PERSONNEL STAND UP is given, the No. 1 jumper along with the jumpmaster team moves 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.

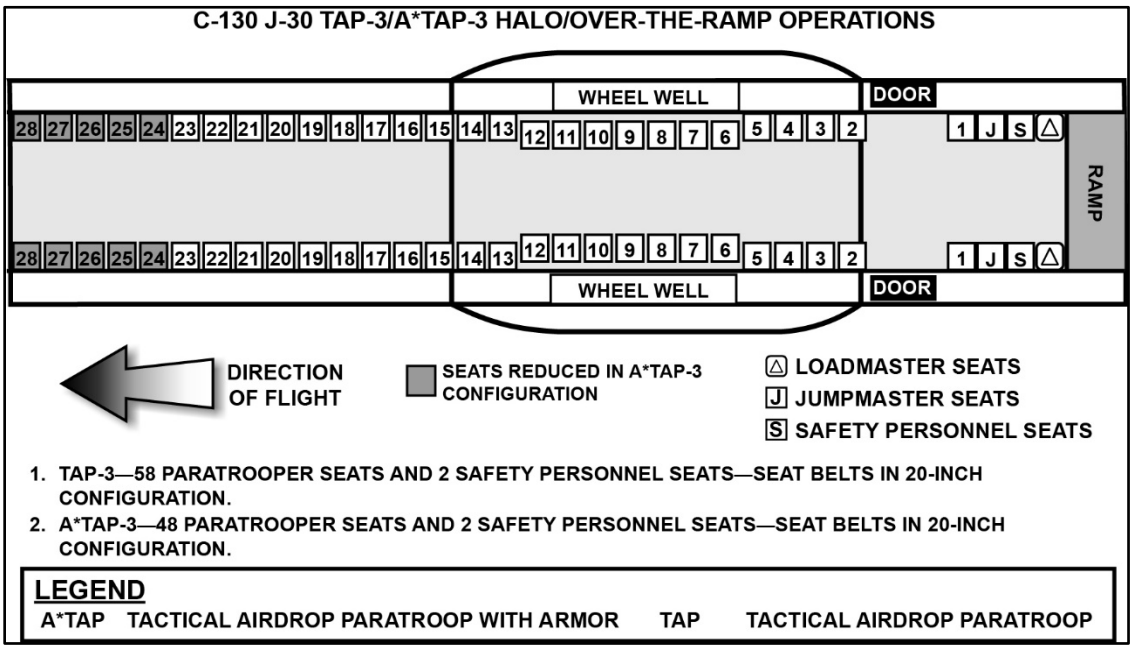


Figure 15-8. C-130/J-30 TAP-3/A*TAP-3 configuration

15-16. 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 3-second interval between the exit of equipment and the exit of jumpers 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

15-17. 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 padded and taped small clevis) 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.

15-18. If the PJM and AJM elect to jump, they are the No. 1 jumper of each stick. Therefore, the safeties 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 T.I. conducted.
- TEN-MINUTE TIME WARNING—at the 10-minute time warning, the jumpmasters hook up to the anchor line cable:
  - The jumpmaster gives the 10-minute time warning.
  - The jumpmaster begins the standard jump commands beginning with GET READY.
  - A door safety check is not required as the jumpmaster normally spots their reference points from the left side of the ramp.
- ONE-MINUTE TIME WARNING—once the jumpmaster spots their 1-minute reference point, is approximately 1 minute from the green light, or the safety passes along the loadmaster time warning to the jumpmaster; the jumpmaster relays the 1-minute time warning to their jumpers.
- 30-SECOND TIME WARNING—once the jumpmaster 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 jumpmaster) the jumpmaster relays the 30-second time warning to their jumpers.

Note. If using GMRS, the jumpmaster must spot the ground marking from the left side of the ramp.

15-19. If the jumpmaster is jumping:

- After giving the command STANDBY:
  - The jumpmaster moves to the center edge of the ramp.
  - Once the green light illuminates, the jumpmaster 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 jumpmaster is static:
  - After giving the command STANDBY, the jumpmaster is positioned immediately behind the hinged portion of the ramp.
  - The jumpmaster 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 15-9).

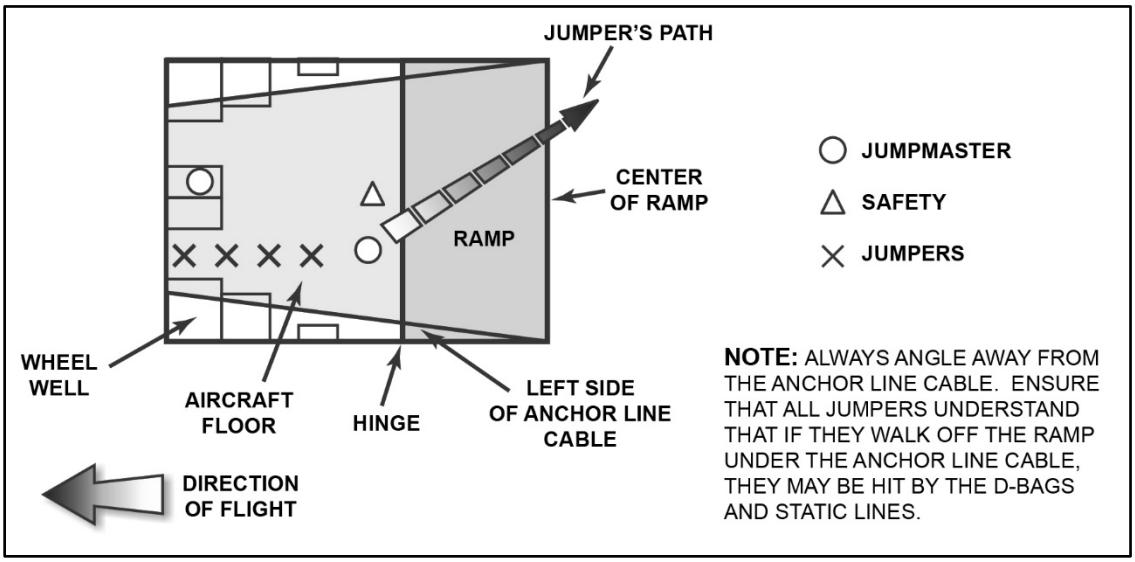


Figure 15-9. Personnel locations

JUMP COMMANDS AND TIME WARNINGS OVER THE RAMP

15-20. 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 ensuring the thumb is routed over the front of the bight resting on the index finger.
  - The thumb should not be routed behind the bight or pointed straight down at waist level and the arm is at a 45-degree angle (see figure 15-10).



Figure 15-10. Static line grasped with reverse bight

- CHECK STATIC LINES.
- CHECK EQUIPMENT.
- SOUND OFF FOR EQUIPMENT CHECK.
- ONE-MINUTE TIME WARNING.
- 30-SECOND TIME WARNING.
- STANDBY.
- 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. See chapter 11 for over-the-ramp towed jumper procedures.

C-130 JUMPMASTER CHECKLIST

15-21. The PJM is responsible for this inspection but may delegate the authority down to the AJM or a safety. This includes seat inspection to ensure—

- Seats are available for all jumpers, including safeties, and all have safety belts.
- 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.
- The 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 the 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 USAF equipment is lashed down properly and does not impede the jumper's path to the door.
- If a crash worthiness seat is present, it is stowed properly with type III nylon cord (see figure 15-11).



Figure 15-11. Crash worthiness seat with type III nylon cord

15-22. The jumpmaster (or delegate) inspects the jump platform to ensure that—
- Nonskid surface is present.
- No cracks or bends are present.
- Hinge plate slots are engaged by tie-down studs and screw (with a 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.
- The clutch mechanism is present on the spring-down lock catches' jump doors.

15-23. Inspection of the paratroop doors includes the following:
- No excessive grease is on the door tracks.
- No sharp edges or protrusions are on doorframes.
- The pip pin in in the top, and the forward edge of doorframe is present.
- The auxiliary hydraulic ramp pump handle is secured (after takeoff).
- The doors open and close easily (doors are operated in-flight by aircrew members).

15-24. The jumpmaster (or delegate) inspects the air deflectors to ensure that—
- No sharp edges are on trailing edge.
- Deflectors operate electrically.
- No items or trash are stored in wells.

15-25. The caution lights are inspected for the following:
- Set 1—crew entrance door.
- Sets 2 and 3—top leading edges of the right and left doors.
- Sets 4 and 5—trailing edges of the right and left doors, waist high.
- Sets 6 and 7—the right and left anchor cable aft supports.

15-26. This is followed by inspection of the anchor cable system that includes the—
- Forward support beam.
- Four U-bolts with self-locking nuts, or nuts with cotter pins attached.
- Anchor cables that are attached to the first and second U-bolts right and left of the centerline for personnel jump.
- The forward latch assembly is in the locked position and secured with locking pins.

15-27. The inspection of the anchor cable involves the following:
- Using a length of 1/4-inch cotton webbing to inspect (trace) the entire length of the anchor line cables.
- Inspecting each anchor line cable individually from the forward portion of the aircraft to the aft end (the direction a jumper's USL snap hook travels).
- Ensuring there are no breaks, frays, or kinks existing.
- Ensuring the cable is clean and free of rust.

15-28. Inspection of the anchor cable intermediate center support consists of the following:
- Ensuring cables run through slots after the ramp is closed.
- Ensuring quick-release retaining pins are present.

15-29. To inspect the anchor cable aft support, the jumpmaster (or delegate) makes sure that—
- The aft latch assembly is closed.
- U-bolts, nuts, and safety pins are present.
- Support anchor bolts, nuts, and safety pins are present.

15-30. For the TPRS, the jumpmaster (or delegate) makes sure that the—
- 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 the support with two turns of 1/4-inch cotton webbing.
- Retriever cables are secured with two turns of 1/4-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.
  - The retriever cable must be at least 4 inches above the anchor line cable.

15-31. When checking emergency equipment, the jumpmaster (or delegate) ensures that—

- Four first-aid kits are present.
- Three fire extinguishers are present.
- Cargo tie-down straps (for retrieval of towed jumpers) are present.
- The alarm system is operational.
- The public address system is operational.
- The Emergency Passenger Oxygen System and oxygen masks are available for each passenger.
- Emergency exits are operational and accessible.

15-32. Other things the jumpmaster or delegate look for includes—

- An operational lighting system.
- The availability of airsickness bags and earplugs.
- The availability of comfort facilities.
- That a safety kit (extra equipment) is on board.

MC-130J/H/P

15-33. The MC-130J/H/P is a special operations medium-range, high-wing transport aircraft powered by four turboprop engines (see figure 15-12). Each version has different configurations. Jumpers may be dropped using either the two paratroop doors or the ramp.

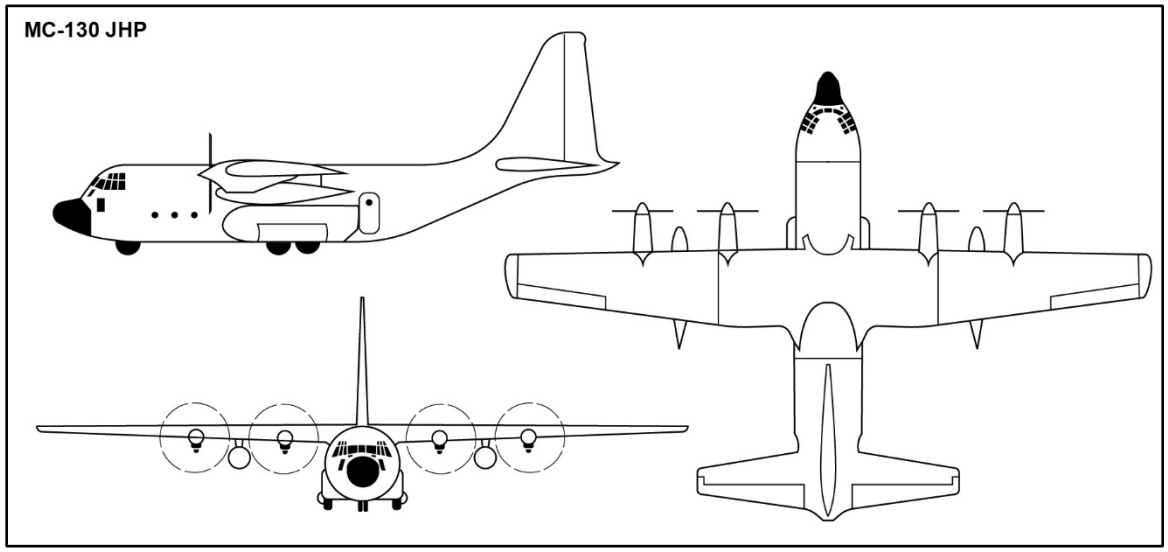


Figure 15-12. MC-130J/H/P

15-34. Aircraft configurations are listed in tables 15-3, 15-4, and 15-5.

Table 15-3. MC-130H configurations

CONFIGURATION	*JUMPER LOAD*
TAP-1 mass drop	28 + (plus) two safeties
TAP-1A mass drop paratroop door	28 + two safeties
TAP-2 in-flight rigging	16 + two safeties
TAP-2A in-flight rigging troop door	16 + two safeties
TAP-1 mass drop over the ramp	28 + two safeties
TAP-1A mass drop paratroop door	28 + two safeties
Legend: TAP—tactical airdrop paratroop	

Table 15-4. MC-130J configurations

CONFIGURATION	*JUMPER LOAD*
TAP-1 mass drop	74 + (plus) 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	

Table 15-5. MC-130P configurations

CONFIGURATION	*JUMPER LOAD*
TAP-1 mass drop	28 + two safeties
TAP-1A mass drop paratroop door	28 + two safeties
TAP-2 in-flight rigging	16 + two safeties
TAP-2A in-flight rigging troop door	16 + two safeties
TAP-1 mass drop over the ramp	28 + two safeties
TAP-1A mass drop paratroop door	28 + two safeties
Legend: +—plus; TAP—tactical airdrop paratroop	

MC-130 FINAL PREPARATIONS

15-35. 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 for MC-130 series aircraft are the same as for C-130 series aircraft.

15-36. The seating configurations for MC-130 series in-flight rigging operations vary greatly and should be coordinated with the airlift unit. General jumper procedures are the same for MC-130 series aircraft as for C-130 series aircraft.

15-37. Time warnings are the same as the C-130 series aircraft. The jumpmaster inspection checklist is the same as the C-130 series aircraft.

C-17A GLOBALMASTER III

15-38. 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 (see figure 15-13 on page 282). An inflight refueling capability increases the deployment range.

15-39. 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 MEDEVAC operations.

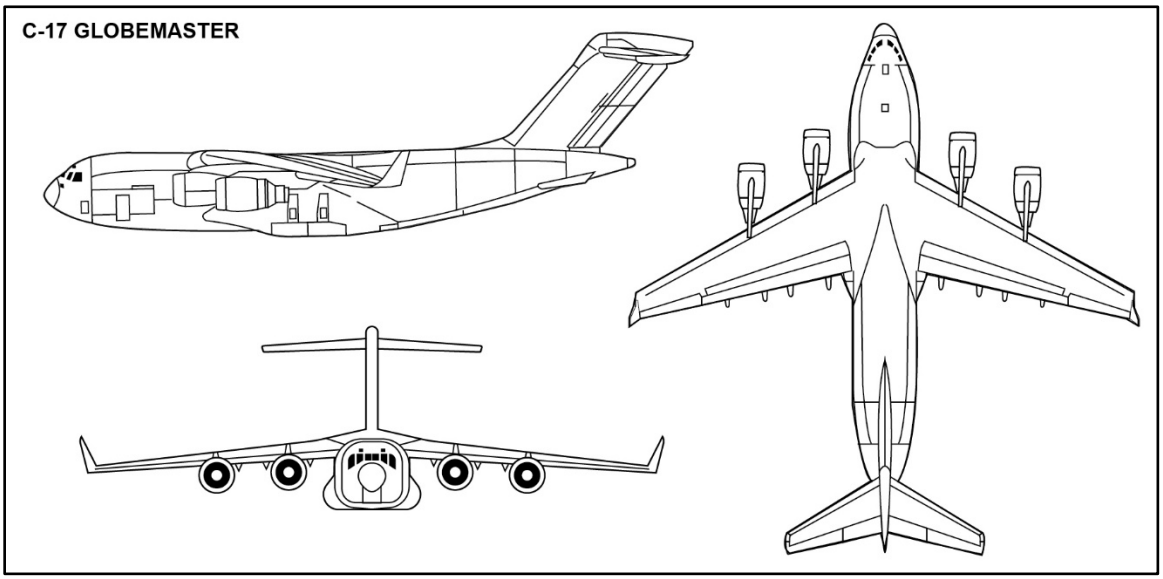


Figure 15-13. C-17A Globemaster III

15-40. 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 communication systems en route. Aircraft configurations comply with AFMAN 11-2C-17, V3, addenda A. C-17A configuration and mission planning are listed in table 15-6.

Table 15-6. C-17A airdrop passenger configuration

CONFIGURATION	*JUMPER LOAD*
TAP-1 mass drop over the ramp	28 + (plus) 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	

15-41. The seating configuration for the C-17A airdrop passenger-1 configuration is as follows:

- 52 jumpers, including 2 nonjumping safeties.
- One loadmaster seated in the forward loadmaster station.
- Two door bundles (one per door) placed on the aircraft floor aft of the inboard seats (see figures 15-14 through 15-16 through page 284).
- The maximum number of jumpers per anchor line cable:
  - 27 outboard anchor line cable.
  - 24 inboard anchor line cable.

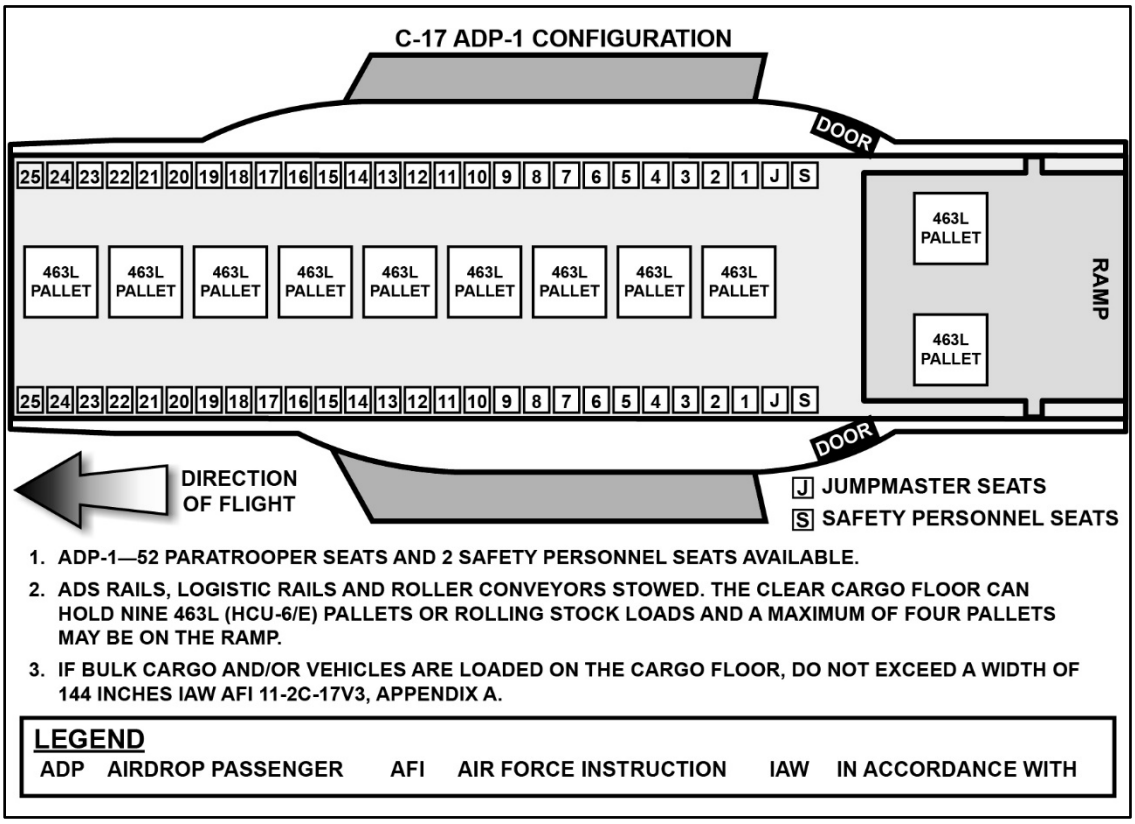


Figure 15-14. C-17A airdrop passenger-1 seating configuration, sidewall seats only

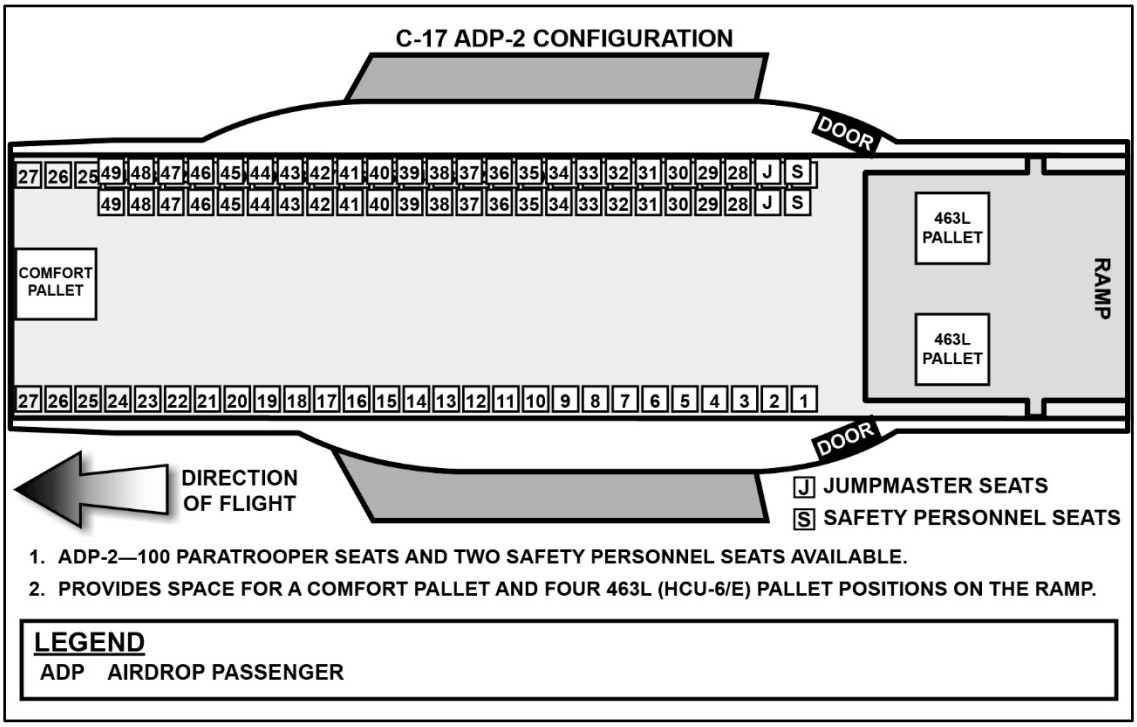


Figure 15-15. C-17A airdrop passenger-two seating configuration, sidewall and center seats

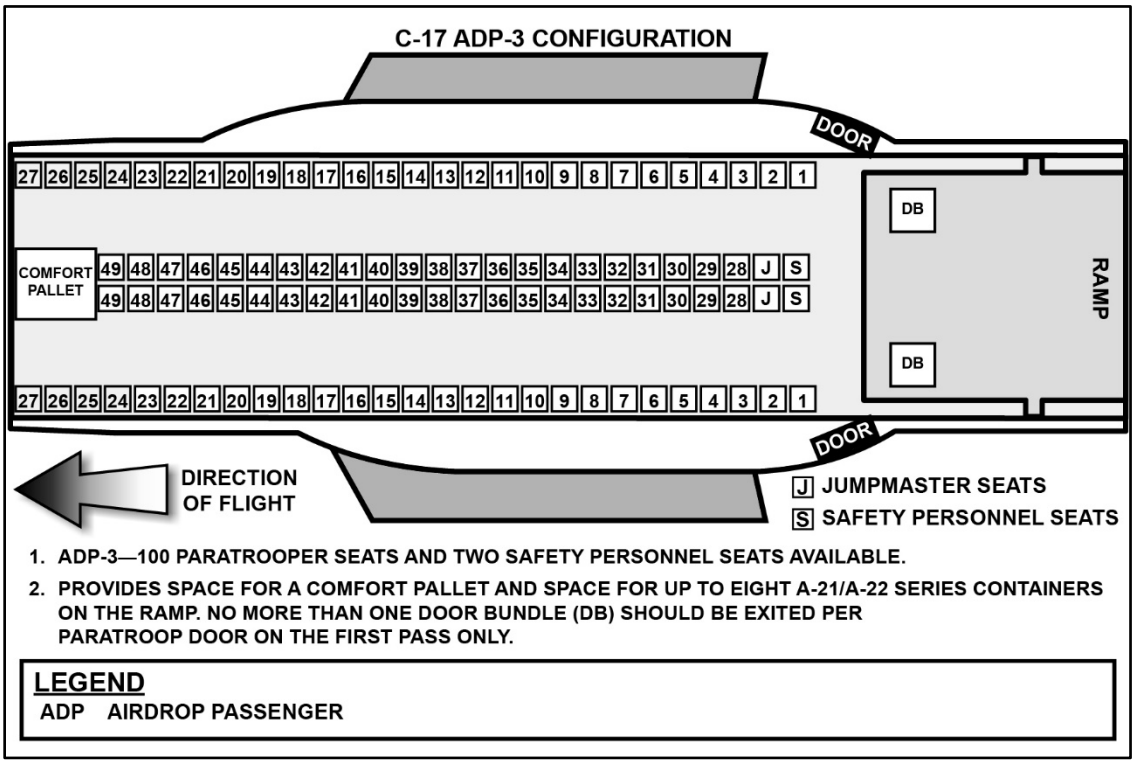


Figure 15-16. C-17A airdrop passenger-three seating configuration, sidewall and center seats

REQUIRED SUPERVISORY PERSONNEL AND AIRCRAFT CONFIGURATION

15-42. The following personnel are required for all C-17A personnel airdrop operations:

- One PJM.
- One AJM.
- Two safety personnel.
- One loadmaster.
- One rigger for in-flight rigging is mandatory.

15-43. Static line personnel airdrops from the cargo ramp from the C-17 are prohibited. All door bundles must be equipped with a 5-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 6 and 7 degrees below horizontal during static line personnel airdrops with an air speed of 130 knots, +/- 3 knots indicated airspeed.
- The total aircraft gross weight should not exceed 360,000 pounds at the time static line personnel airdrops are initiated.
- The troop air deflector is deployed.

15-44. Before the flight, the jumpmaster 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.

15-45. Static line personnel airdrops are restricted to C-17A aircraft with an installed TPRS (Canadian retrieval system). The jumpmasters 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.

15-46. For personnel airdrop operations, the formation separation time between aircraft is 2 and 1/2 minutes to 5 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

15-47. The C-17A seats 100 jumpers, 2 nonjumping safeties, and 1 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 jumpmasters in the stick:
  - Assist in rigging and JMPI.
  - Are seated where they can best support the mission.
- Two nonjumping safety personnel.
- One loadmaster.
- One rigger for in-flight rigging is mandatory.

15-48. 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 CE 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

15-49. All the CE 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 CE on the seat, walks to the pallets on the ramp, draws a main parachute, reserve and a 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 CE on their seats, and draw 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.

15-50. The jumpmaster initiates in-flight buddy rigging 2 hours before the 20-minute time warning, and it consists of the following actions:

- Once the parachutes are issued, buddy rigging begins:
  - The jumpmaster, safety personnel, and designated jumpmasters supervise.
  - Once a jumper has been rigged, they sit down and wait to be inspected by one of the jumpmasters.
- The jumpmaster personnel serve as roving inspectors.
- The PJM supervises the operation and ensures all personnel are inspected, and if there are other current and qualified jumpmasters onboard the aircraft, they may be used.
- Once all the jumpers have been inspected, the jumpmasters don their equipment and the safety personnel inspect them.

AIRCRAFT INSPECTION CHECKLIST

15-51. The PJM is responsible for this inspection but may delegate the authority down to the AJM or a safety. A member of the jumpmaster 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, ensuring that the rubber seal is in place and that there are no sharp edges or snag hazards.
- Seats:
  - There should be enough seats for a 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 is present.
  - No cracks or bends.
  - Lower troop door clearance faring (skin of the doorframe) is serviceable.
  - Platform lights operate for night jumps.
- Jump doors:
  - No excessive grease on the door tracks.
  - No sharp or protruding edges on doorframes.
  - 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 the 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 (30 seconds), to green.
  - Twelve 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 1/4-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 travels).
  - 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.
- TPRS:
  - 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:
  - The public address system is operational.
  - First aid kits and fire extinguishers are present.
  - The alarm system is operational.
  - Emergency exits are operational and accessible.
  - The emergency floor lighting system is operational.
  - Sufficient emergency parachutes are available.
- Miscellaneous:
  - The lighting system is operational, especially red lights for night operations.
  - Airsickness bags and hearing protection are available.
  - Comfort facilities, water, urinals, and so forth, are available for in-flight rigging.
  - A complete safety kit is on the aircraft.

C-27J SPARTAN

15-52. The C-27J fixed-wing aircraft is a high-wing, twin-engine, medium-range and short-range transport airplane (see figure 15-17) designed for the transportation of cargo and troops during day and night under visual meteorological conditions or IMC. 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.

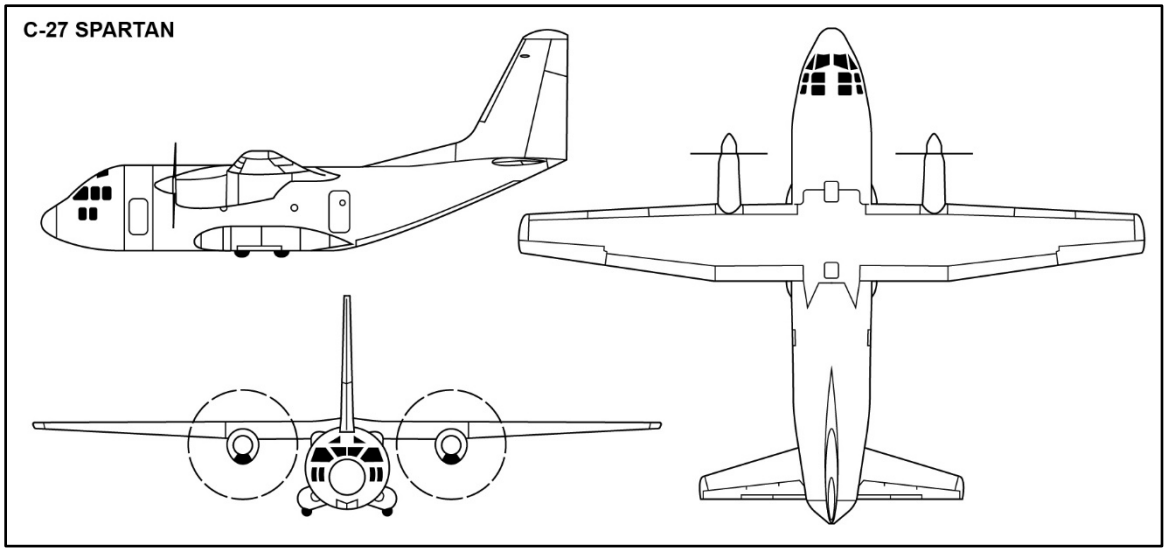


Figure 15-17. C-27J Spartan

15-53. 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 15-7.

Table 15-7. 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

15-54. The sidewall (only) seating configuration (see figure 15-18 on page 288) for the C-27J is as follows:

- 26 jumpers, includes seating for the PJM and AJM.
- 2 nonjumping safeties.
- 2 airdrop-certified flight engineers.

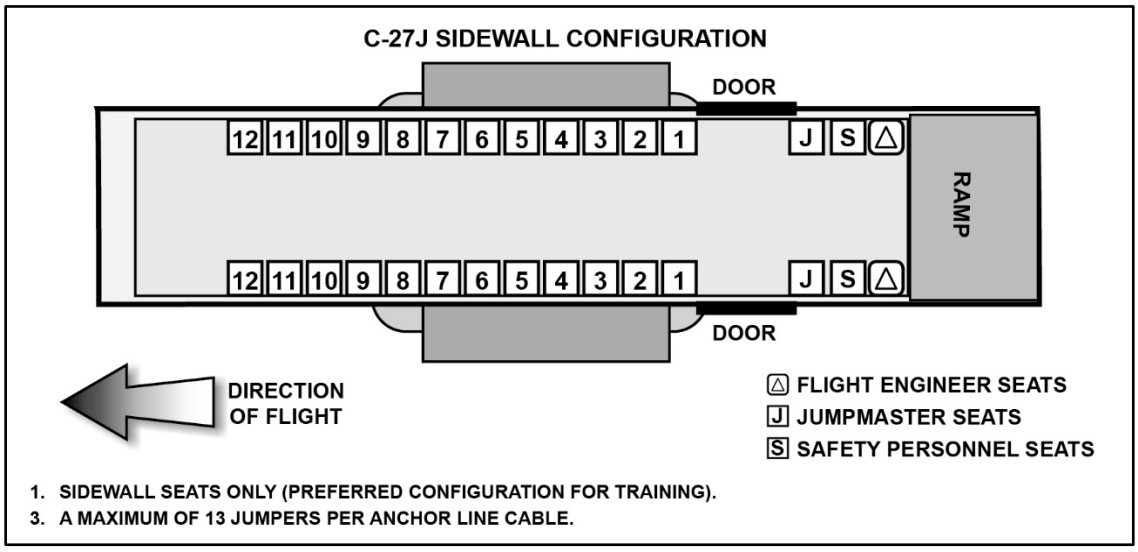


Figure 15-18. C-27J sidewall seats (only) configuration

15-55. The sidewall and center row seating configuration (see figure 15-19) for the C-27J is as follows:

- 36 jumpers, includes seating for PJM and the AJM (administrative/nontactical only).
- 2 nonjumping safeties.
- 2 airdrop-certified flight engineers.

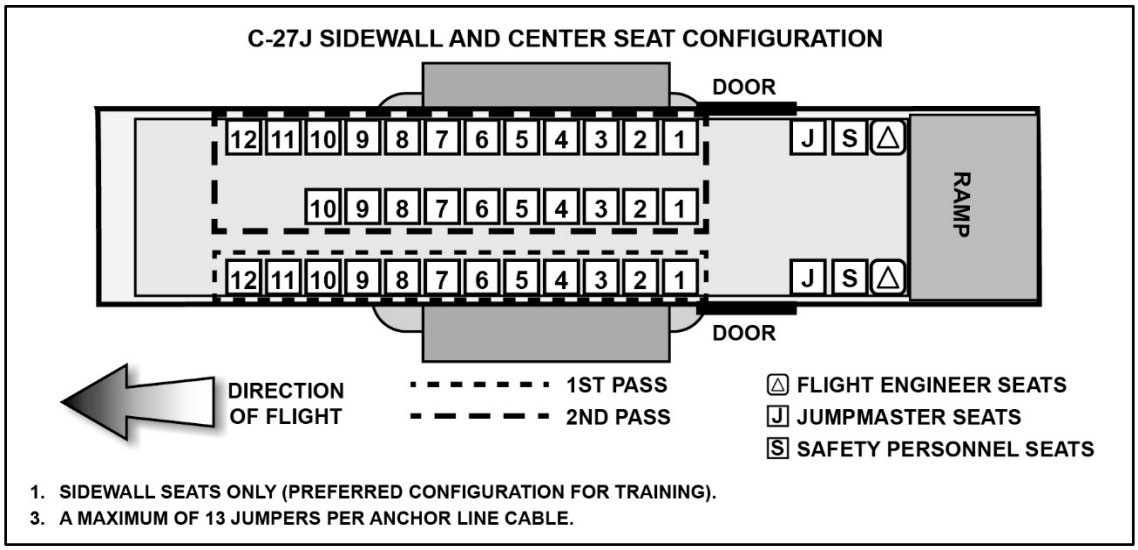


Figure 15-19. C-27J sidewall and center seats configuration

AIRCRAFT INSPECTION

15-56. Static line personnel airdrops from the cargo ramp of the C-27J are prohibited. Before the flight, a member of the jumpmaster 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:
  - The nonskid surface covering is in good condition.
  - The 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 nuts and bolts are present.
  - Platforms swing in and out easily.
- Paratroop doors:
  - There are no sharp or protruding edges on doorframes.
  - 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 and 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 doorframe.
  - 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 doorframe by approximately 1/2-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:
  - The forward end of the cable is firmly secured to bracket on bulkhead with three threads showing on the turnbuckle.
  - The rear of cable has a pin in it with tape.
  - The cable has no breaks, frays, or kinks.
  - Utilize a length of 1/4-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 travels).
  - The cable is clean and free of rust.
  - Static line stop is present.
  - The support bracket at the trailing edge of the door is locked in place to support the cables.
  - The anchor line cable bumper stop is in the vicinity of station 480 for door operations and station 610 for over-the-ramp operations.

- TPRS:
  - The motor is operational.
  - The cable is secured to the ceiling with one turn of double 1/4-inch cotton webbing.
  - The Y attachment is in place so one retrieval cable can pull in two groups of deployment bags (a Y cable is used if both jump doors are used).
  - The retriever cables are not broken, frayed, or kinked and are clean and free of rust.
  - The phenolic block or anchor cable spool is installed on both anchor cables with the pull ring on the forward end and retriever equipment is available.
- Emergency equipment:
  - A first aid kit is onboard (one).
  - Fire extinguishers are onboard (two).
  - The alarm system is operational.
  - Emergency exits are operational and accessible.
- Miscellaneous:
  - The day lighting system is operational.
  - The night lighting system is operational.
  - The 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 are 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

15-57. 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 CE. 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 CE. 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 the over-the-ramp exit of the C-27J.

WARNING

Due to turbulent airflow outside the aircraft ramp and the erratic behavior of the deployment bags, the flight engineer must use the retrieval system when retrieving deployment 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 do not jump with CE (rucksack and weapons case) for over-the-ramp operations. Ramp exits with CE 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.

Notes. When conducting over-the-ramp operations, a 5-foot extension must be added to the USLM.

A static line bumper stop must be positioned at station 610 for over-the-ramp operations.

EQUIPMENT DROP

15-58. CDS bundles can be pushed off the ramp. Cargo rollers can be installed on the ramp to aid in handling larger bundles.

JOINT PREFLIGHT INSPECTION

15-59. The jumpmaster coordinates the exact time sequence of prejump procedures with the pilot in command and the flight engineer. Following preliminary orientation, and before loading personnel onboard the aircraft, the jumpmaster 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

15-60. To ensure command and control when jumping over-the-ramp, one jumpmaster, two nonjumping safeties, and two flight engineers are required. If using a static jumpmaster, only one safety is required. When using two safeties, the aft safety wears 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

15-61. 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:
  - They 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 maintain a reverse bight 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.
- STANDBY:
  - If the jumpmaster is jumping, the jumpmaster moves to the hinge of the ramp.
  - If a static line jumpmaster is jumping, the No. 1 jumper moves to the hinge of the ramp.

- GO:
  - If the jumpmaster is jumping, at the command of GO, the jumpmaster looks at the No. 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.
  - At the command of GO, the No. 1 jumper (if a static jumpmaster) 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 STANDBY, do not put any jumpers out and make another pass.

WARNING

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 two flaps are used when conducting static line over-the-ramp operations.

OVER-THE-RAMP SPECIFIC CHECKLIST

15-62. 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.

15-63. Ensure a cargo strap is available and in the appropriate position in the event of a towed parachutist. The cargo strap is pre-positioned 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 is readily accessible for towed jumper retrieval.

TOWED JUMPER PROCEDURES FOR RAMP EXIT

15-64. 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 jumpmaster or safety is responsible for identifying how the jumper is being towed. If being towed by anything other than the static line, the jumpmaster or safety shall attempt to free the jumper. If the jumpmaster or safety is unable to free the jumper, the jumper is 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.

Notes. 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.

If the parachutist is towed following a ramp exit, it is necessary to rewind the static line retriever partially to reach the static line for cutting.

15-65. If a parachutist is to be cut free, the flight engineer retrieves the static line far enough inside the aircraft to allow the jumpmaster to reach the static line to cut the towed parachutist's static line.

15-66. If the parachutist is to be retrieved, the flight engineer secures the 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 cargo strap, the flight engineer pulls the towed parachutist in using the static line retrieval winch. The static line is retrieved over the 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

Nonjumping personnel do not proceed aft of the paratroop doors unless wearing an 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 helps keep the towed jumper in the center of the cargo and/or ramp opening for better control, reducing the possibility of injury during retrieval.

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Chapter 16
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 jumpmaster's responsibility. Aircraft preparation is usually accomplished jointly by the crew chief and jumpmaster.

REQUIREMENTS AND SAFETY CONSIDERATIONS

16-1. All personnel are required to participate in ground training or SAT not later than (NLT) 24 hours prior to executing the airborne operation. If more than 24 hours, a colonel/O-6 must give approval. Although safety considerations for each aircraft are discussed, these requirements apply to all Army aircraft (unless otherwise indicated):

- Personnel are shown the correct movement procedures—
  - To the aircraft.
  - Inside the aircraft.
  - For exiting the aircraft.
- A variation of techniques is 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 ripcord 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—It is needed 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 parachutes require an additional 100 feet of altitude.
  - The jumper extends the normal 4,000 count to a 6,000 count with the MC-6 and 6,000 count to an 8,000 count with the T-11 ATPS.

STATIC LINES AND DEPLOYMENT BAGS

16-2. USLs and deployment bags are retrieved by the jumpmaster or crew chief immediately after the last jumper is clear. The USLs and deployment bags are secured as soon as they are retrieved inside the aircraft.

16-3. If the door on the aircraft can be closed, the USLs can be removed from the anchor line cable or attaching point; otherwise, the USLs are not detached until the aircraft is on the ground.

CROWDED CONDITIONS

16-4. Crowded conditions inside these aircraft dictate that caution is 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.

16-5. Jumpers also observe all static lines trailing from the lower aft corner of the cargo or personnel door. This precaution ensures that ensuing 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 HOOKUP PROCEDURES

16-6. 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 a 68-inch pilot chute, or G-14 cargo parachutes, with breakaway or nonbreakaway static lines. They may be airdropped from the ramp of cargo helicopters with jumpers following after a 3-second delay between the cargo and the first jumper. (See 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 (FM 4-20.142)/MCRP 4-11.3P/NAVSEA SS400-AD-MMO-010/TO 13C7-51-21.

16-7. 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 jumpmaster 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 USL 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

16-8. In the event of a towed jumper on a rotary-wing aircraft, the following occurs:

- The jumpmaster prevents any other jumpers from exiting and notifies the pilot.
- The jumper stays in a tight position and protects the ripcord handle with both hands.
- The jumpmaster ensures the jumper is securely attached to the aircraft by the USLM and does not break free during descent.
- If the jumper is not securely attached, the jumpmaster attempts to shake or cut them free.
- If the jumper is securely attached, the aircraft comes to a hover (preferably over the designated DZ).
- The jumpmaster or static safety recovers and stores all other deployed static lines and deployment bags.
- The pilot slowly descends to the DZ until the towed jumper's feet touch the ground.
- The jumpmaster maintains visual contact with the towed jumper.
- Once the towed jumper is on the ground, the aircraft comes to a hover allowing the jumper to—
  - Move away just enough to allow the aircraft to land.
  - Maintain ripcord handle awareness with both hands at all times.
- The jumpmaster or static safety—
  - Detaches 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

16-9. The UH-60A is a four-blade, twin-turbine, medium-lift, single-main rotor helicopter. (See figure 16-1.) Its features include the following:

- Jumpers—eight noncombat-equipped jumpers or six combat-equipped jumpers.
- Airspeed—65 to 75 knots.
- Minimum drop altitude—1,500 feet AGL.
- Jumpmaster team—one nonjumping jumpmaster.

Note. On missions requiring a window gunner, the maximum number of jumpers is reduced to six.

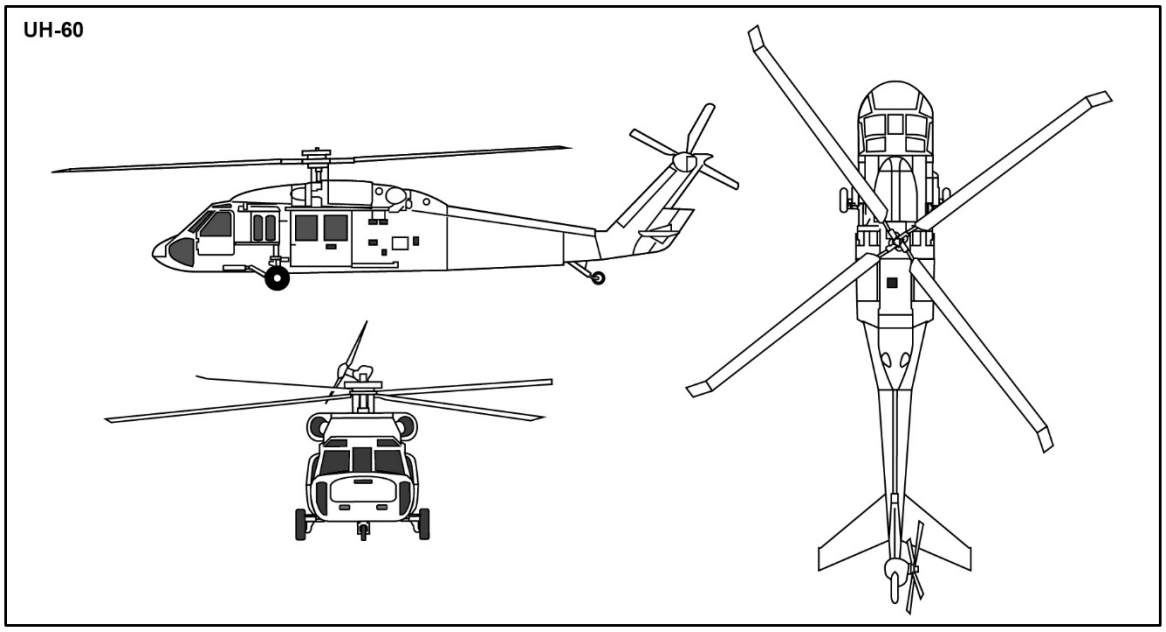


Figure 16-1. UH-60 series Blackhawk

PREPARATION AND INSPECTION

16-10. The jumpmaster prepares and inspects the UH-60 series by taking the actions described:

- Removes seat belts in the cargo compartment (except as required by aircraft crew and jumpmaster).
- Tapes the UH-60 aircraft radio frequency antenna with 100-mph tape (forming a web):
  - Reduces the chance of the static lines or deployment bags being wrapped around the radio frequency antenna on the left side of the aircraft during parachute deployment.
  - (See figure 16-2.)
- Tapes cargo floor troop seat and tie-down fitting wells in front of the cargo doors.
- Tapes 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.
- Tapes the weather stripping on cargo doors below the door catch (see figure 16-3 on page 298).
- Tapes up 18 to 24 inches from the cargo compartment.

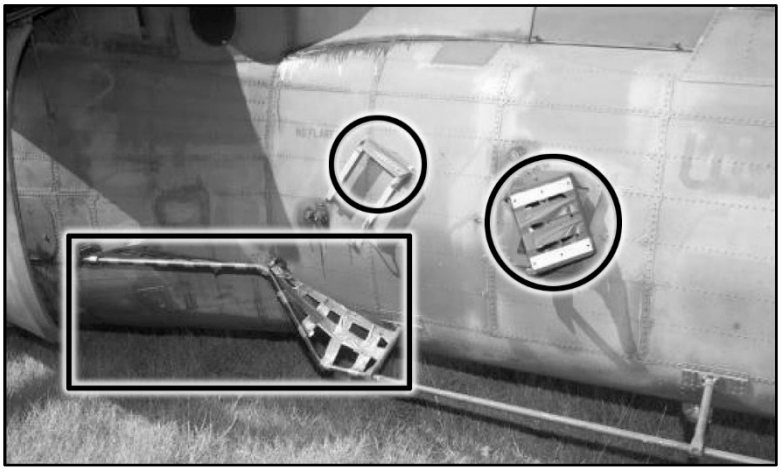


Figure 16-2. UH-60 radio frequency antenna padded and taped

Notes. It is required 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 16-3. 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

16-11. The following anchor line system actions must be taken:

- Install a floor mounted anchor line system (see figure 16-4) 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.

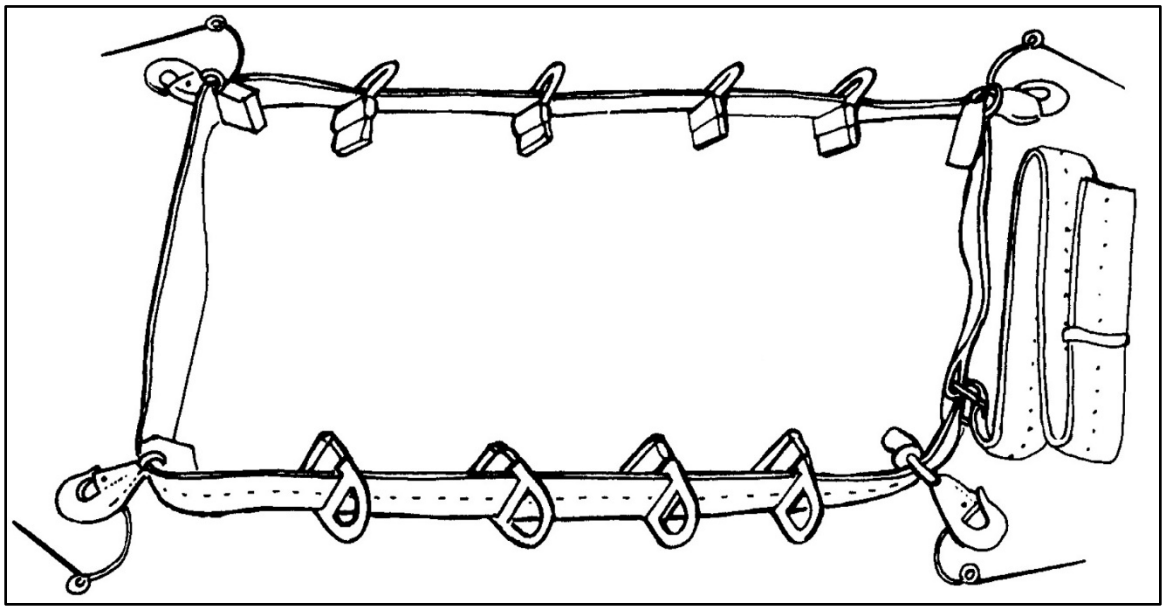


Figure 16-4. UH-60 series anchor line

- 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.
  - One connector snap (see figure 16-5 on page 300).

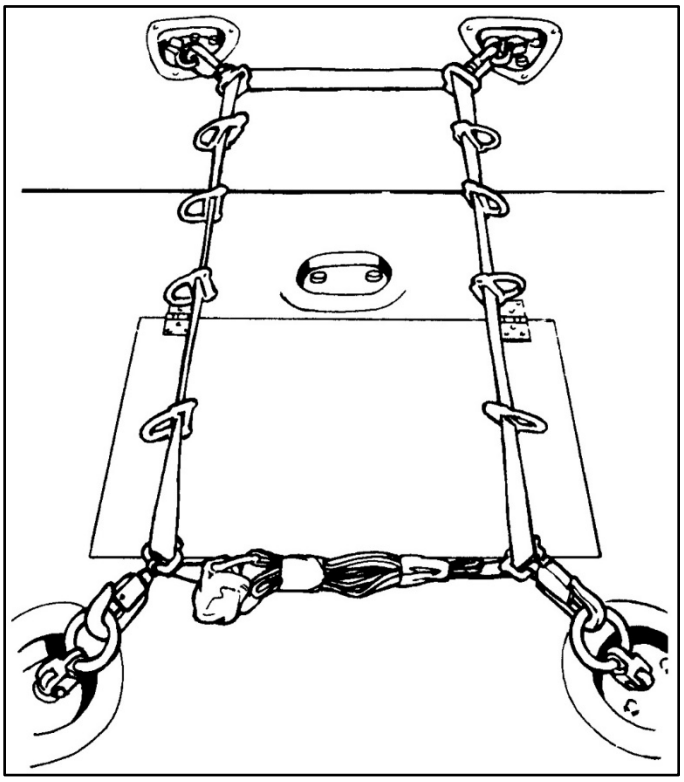


Figure 16-5. UH-60 series anchor line secured to the floor

- Insert about 30 inches of the anchor line's 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.
  - Insert the safety wires.
  - 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.
  - Tape excess webbing to the rear of the anchor line between the connector snaps.

SAFETY BELT INSTALLATION

16-12. 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 jumpmaster (this is necessary only if a seat has not been left for the jumpmaster).

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 jumpmaster (and the crew chief, when required).

16-13. The jumpmaster'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 ripcord handle awareness at all times.

INSPECTION

16-14. Before loading jumpers, the jumpmaster 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 doorjambs (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 jumpmaster are available and operational, and the intercom extension cord is secured overhead (see figure 16-6 on page 302).
- Safety harnesses and backpack type emergency parachutes are available for the jumpmaster and the crew chief, as required.

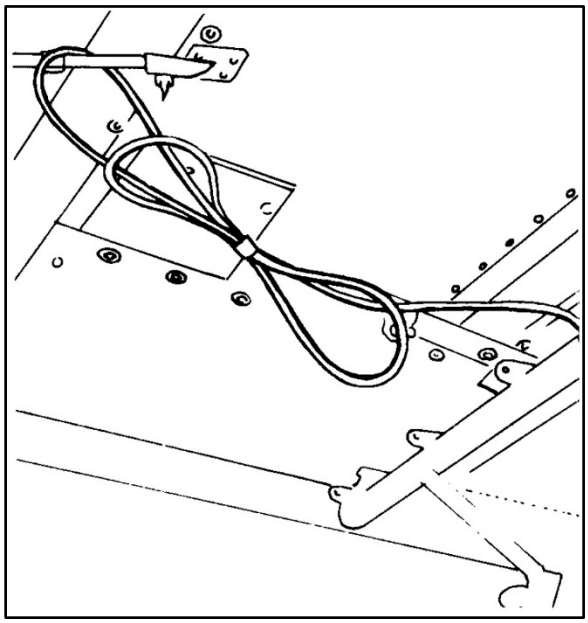


Figure 16-6. UH-60 series jumpmaster's intercom stowed overhead

LOADING TECHNIQUES

16-15. 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 Nos. 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 16-7.)

16-16. For example, jumper No. 8, followed by Nos. 7, 6, and 5, enter the left door on command from the static jumpmaster. Jumpers Nos. 4, 3, 2, and 1 move towards the crew chief positioned at the nose of the aircraft and follow the crew chief's guidance around the nose of the aircraft until they reach the right door and enter the right door on command from the static jumpmaster.

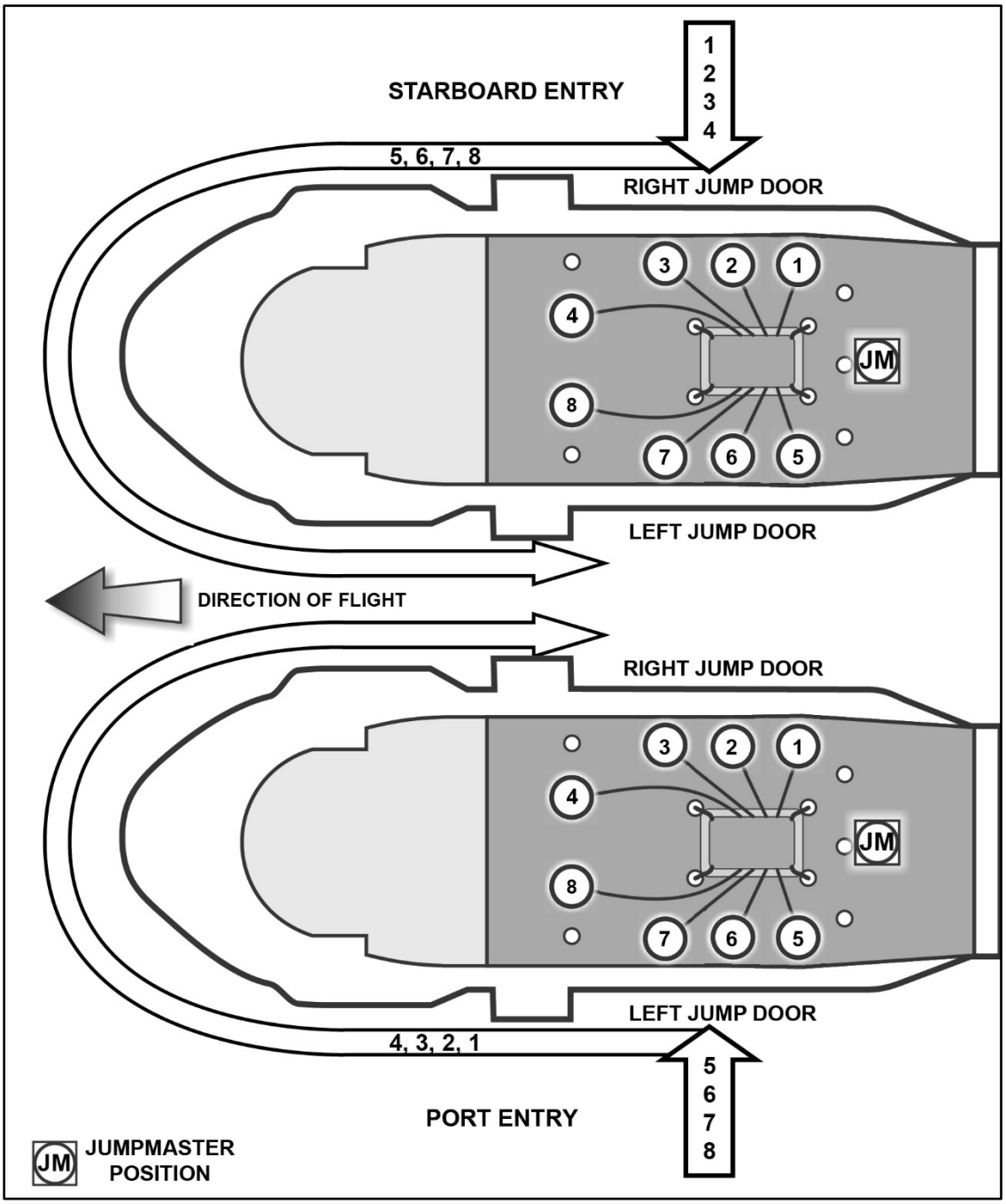


Figure 16-7. UH-60 series loading

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

16-17. The jumpers are hooked up and seated individually by the jumpmaster in reverse numerical sequence, beginning with jumper No. 8. Each jumper hands the jumpmaster their USL snap hook. The jumpmaster hooks 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.

16-18. The jumpmaster then routes the USLM's excess from bottom to top in the static line slack retainer. (See figures 16-8 and 16-9.) Because only three jumpers being allowed to sit in each door, jumpers Nos. 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 jumpmaster 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.

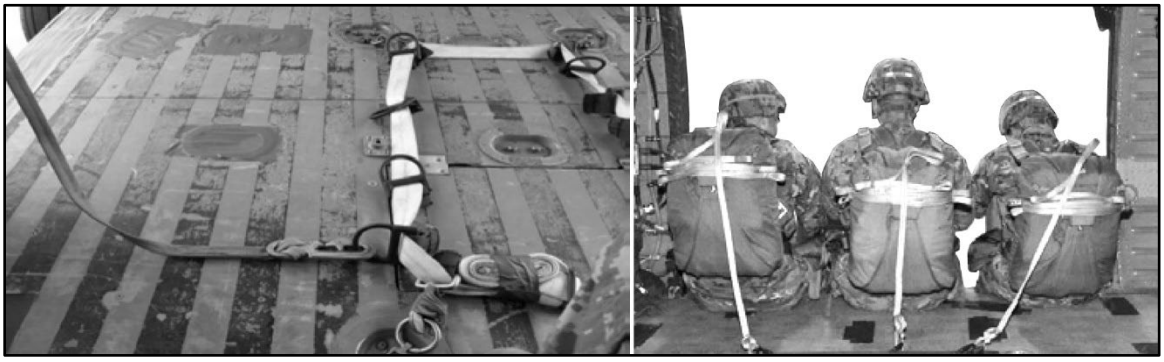


Figure 16-8. UH-60 series hook up of universal static line snap hook and excess universal static line modified routed

Note. To preclude binding during exit, Nos. 1, 2, 3, 5, 6, and 7's excess static lines are stowed from the bottom to the top through the static line slack retainer loop on the jumper's pack tray.

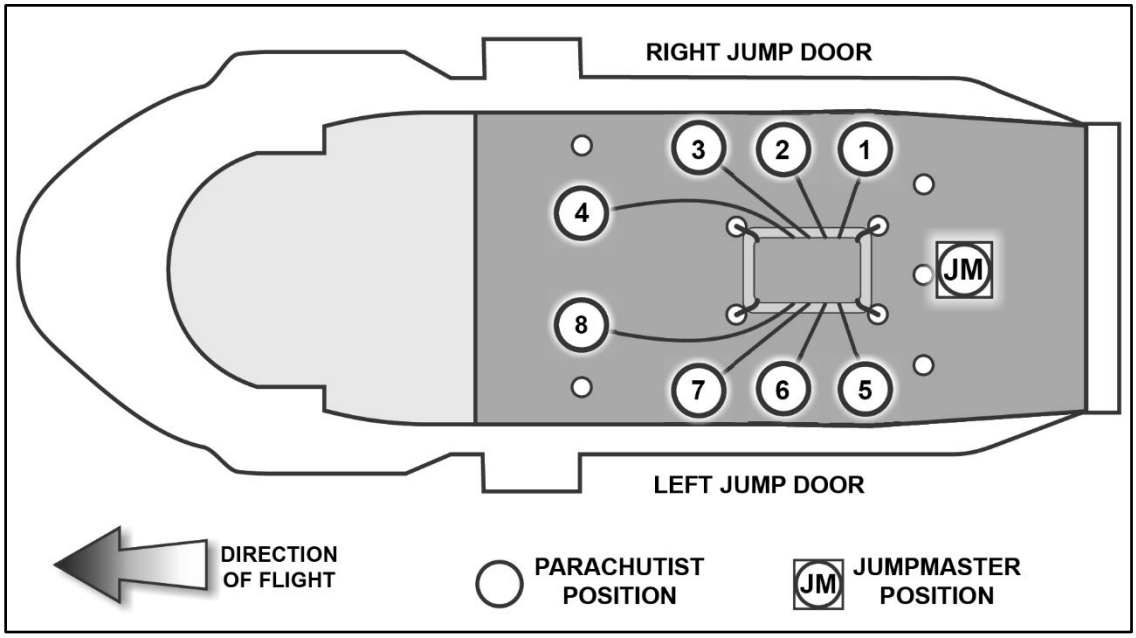


Figure 16-9. UH-60 series seating and static line routing

16-19. When the jumpmaster commands FASTEN SAFETY BELTS, jumpers take the following actions:

- Jumpers Nos. 4 and 8 pass the running ends of their safety belt to the center, fasten the belt, and remove excess slack.
- Jumpers Nos. 5 and 7 pass the running ends of their safety belt to No. 6, who fastens the belt and removes excess slack.
- Jumpers Nos. 1 and 3 pass the running ends of their safety belt to No. 2, who fastens the belt and removes excess slack.
- The static line bight and safety belt are secured.

16-20. The jumpmaster inspects all safety belts to ensure that they are securely fastened and properly fitted. The jumpmaster is seated aft with the safety belt fastened for lift off and landing. (One seat should have been left in place for the jumpmaster.) For airdrop operations requiring the crew chief and window gunner (seat installed), the number of combat-equipped jumpers is reduced to six. The modified seating configuration deletes positions 4 and 8 and positions 5, 6, and 7 are renumbered 4, 5, and 6.

CARGO DOOR PROCEDURES AND JUMP COMMANDS (TIME WARNINGS)

16-21. The jumpmaster should receive a 4-minute, a 30-second, and an 8- to 10-second time warning relayed by the pilot through the intercom system. The jumpmaster issues the following jump commands:

- GET READY—this command is given to alert the jumpers; all safety belts are removed at 1,000 feet AGL or when permission is given by the pilot.

Note. At 1,000 feet, safety belts are released by jumpers Nos. 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 jumpmaster checks the routing of all USLMs (from the main curved pin protector flap down to the appropriate D-ring on the anchor line system):
  - Ensuring they are correctly routed and properly attached to the D-ring and that the USL snap hook is facing towards the pilot compartment.
  - The jumpmaster 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.
  - The jumpmaster ensures that Nos. 4 and 8 have the prescribed reverse bight in their USLMs and the excess USLM does not interfere with other jumpers.
- CHECK EQUIPMENT—all jumpers check their equipment; helmet, chin strap, chest strap, both leg straps, and HPTLL if jumping CE.
- SOUND OFF FOR EQUIPMENT CHECK—on this command, all jumpers place one of their hands on top of their helmet:
  - They 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 (see figure 16-10).



Figure 16-10. Sound off for equipment check

- SIT IN THE DOOR—this command is given by the jumpmaster 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.

- STANDBY—this command is given at the 8-second to 10-second time warning:
  - The jumpmaster ensures that all jumpers hear and understand this command.
  - Jumpers Nos. 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 STANDBY command is given to ensure there is no confusion, the command of GO is given to each individual jumper.

- GO—the jumpmaster gives this command on the first EXECUTE given by the DZSTL 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 jumpmaster assumes control of No. 4 jumper's static line as the jumper begins moving to the door.
  - Jumpers Nos. 5, 6, 7, and 8 repeat the sequence on the opposite door.

SAFETY PRECAUTIONS

16-22. During movement inside the aircraft, the jumper protects the ripcord 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 CE from this aircraft.

16-23. The jumpmaster, who does not jump from this aircraft, ensures all jumpers remain secured by their safety belts until directed by the jumpmaster. The jumpmaster prevents (or corrects) excessive static line from flopping about the aircraft. The jumpmaster 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 communication with the aircraft crew. If communication is lost, operations should cease until communications are restored.

16-24. After the last jumper has cleared the aircraft, the static lines are retrieved inside the aircraft and secured in an UPRB or secured by a safety belt to the aircraft floor. The USL 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 in paragraph 16-8 on page 296.

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

16-25. 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.

16-26. 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 as follows:

- 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 jumpers 4 and 8 seated in the cargo compartment (see figure 16-11).

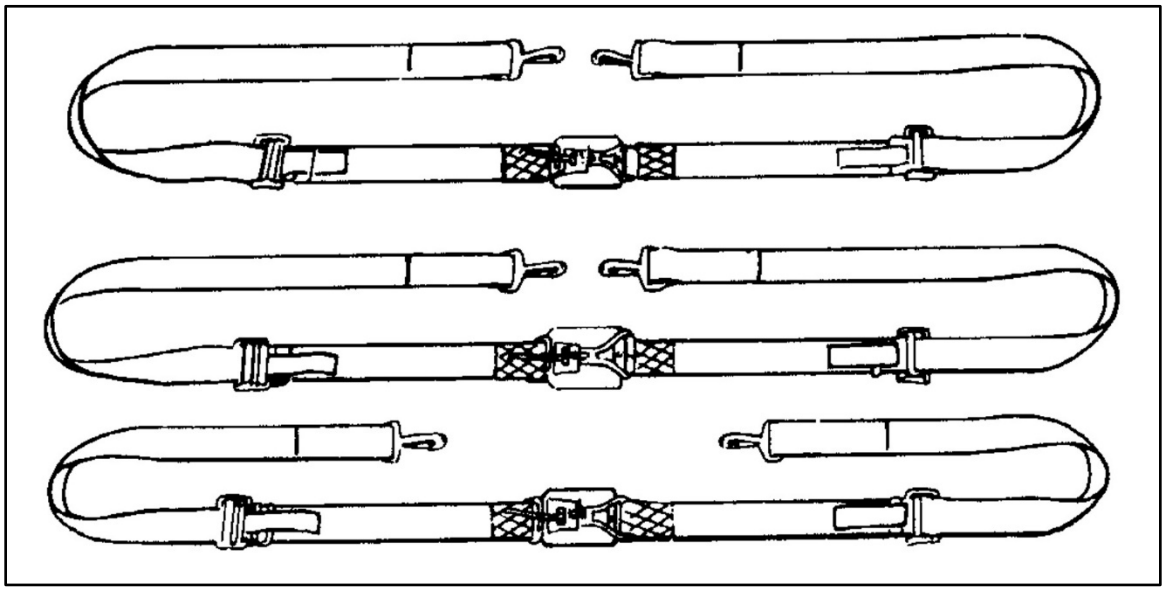


Figure 16-11. Modified C-3A troop safety belts

16-27. 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 8-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 5-inch fold back, and tack in place.
- Sew a 4-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 4-inch lengths of webbing.

CH-47 CHINOOK

16-28. The CH-47 Chinook is a tandem-rotor, heavy-lift transport helicopter. Twenty-eight combat equipped jumpers can jump from this aircraft. (See figure 16-12 on page 308.) The jumpmaster may be a jumping or a static jumpmaster. The CH-47's features include the following:

- Jumpers—28 combat-equipped jumpers.
- Airspeed—80 to 110 knots.
- Minimum drop altitude—1,250 to 1,500 feet AGL.
- Jumpmaster team—one jumping or static (nonjumping) jumpmaster, or one safety if the jumpmaster is jumping.

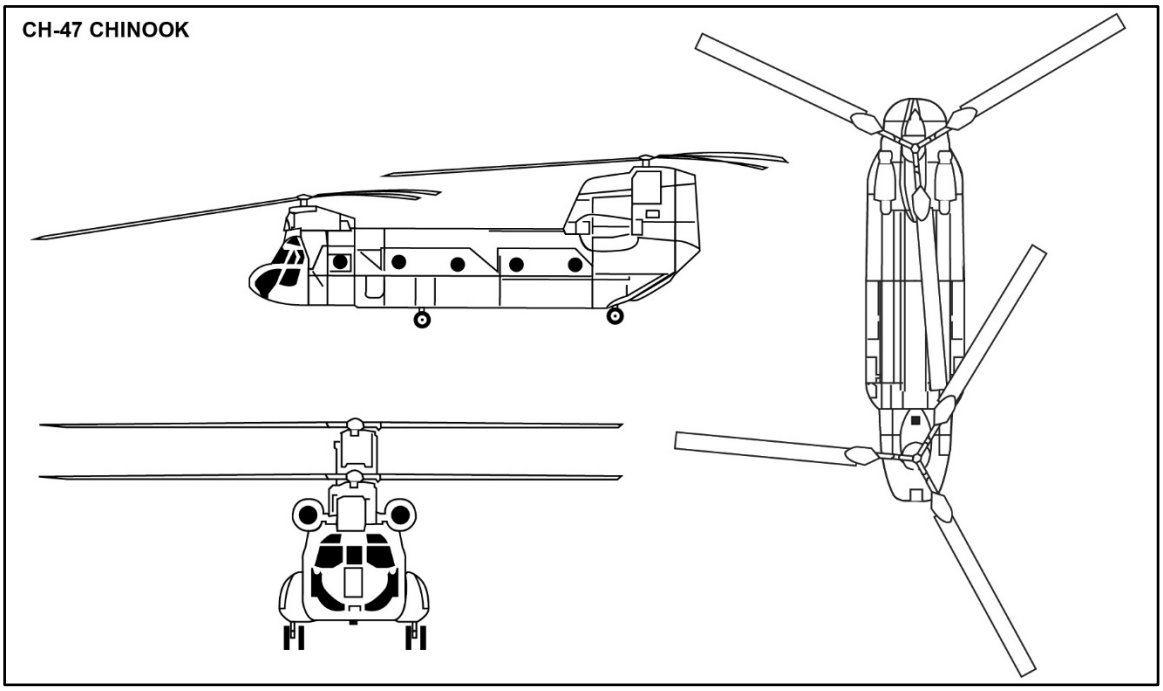


Figure 16-12. CH-47 Chinook

16-29. The jumpmaster must prepare the CH-47 as described:

- Installs safety belts for each jumper and extends them all the way out to ensure positive hookups while seated.
- Secures the permanently installed anchor line cable to the attachment points on the starboard side of the aircraft (see figure 16-13).
- Inclines the ramp for personnel parachute drops during flight.

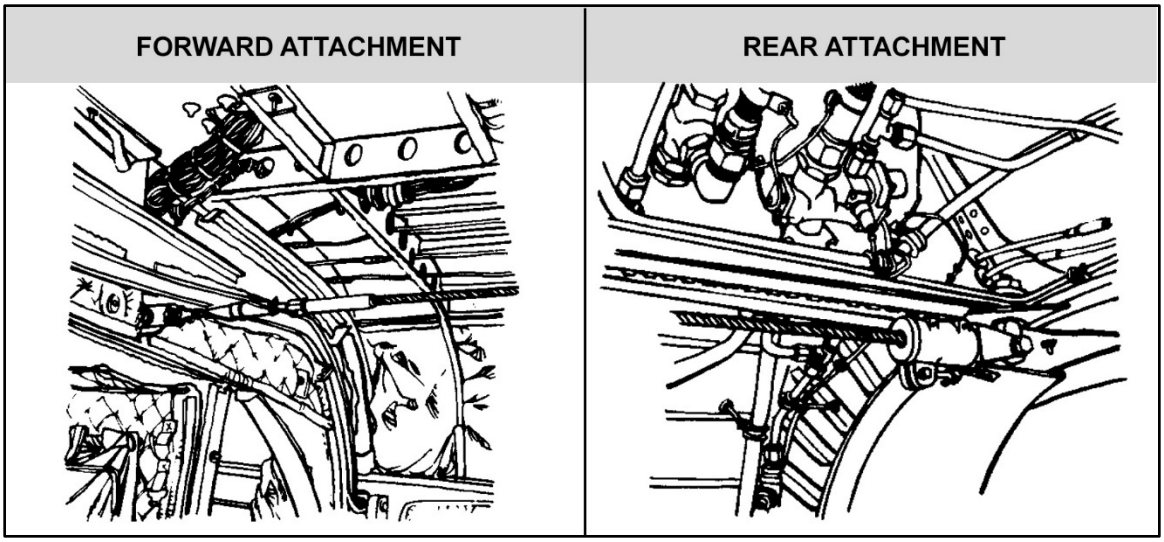


Figure 16-13. CH-47 anchor line cable attachment

Note. The best angle is 3 degrees below horizontal. Scribe marks may be placed on the ramp to show this degree of incline. . The anchor line stop is fully seated at the end of the cable.

INSPECTION AND SEATING CONFIGURATION

16-30. Before loading jumpers, the jumpmaster 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 jumpmaster or static safety position.

16-31. The jumpers are divided into two chalks with the odd-numbered jumpers seated on the starboard side, and the even-numbered jumpers seated on the port side. (See figure 16-14.)

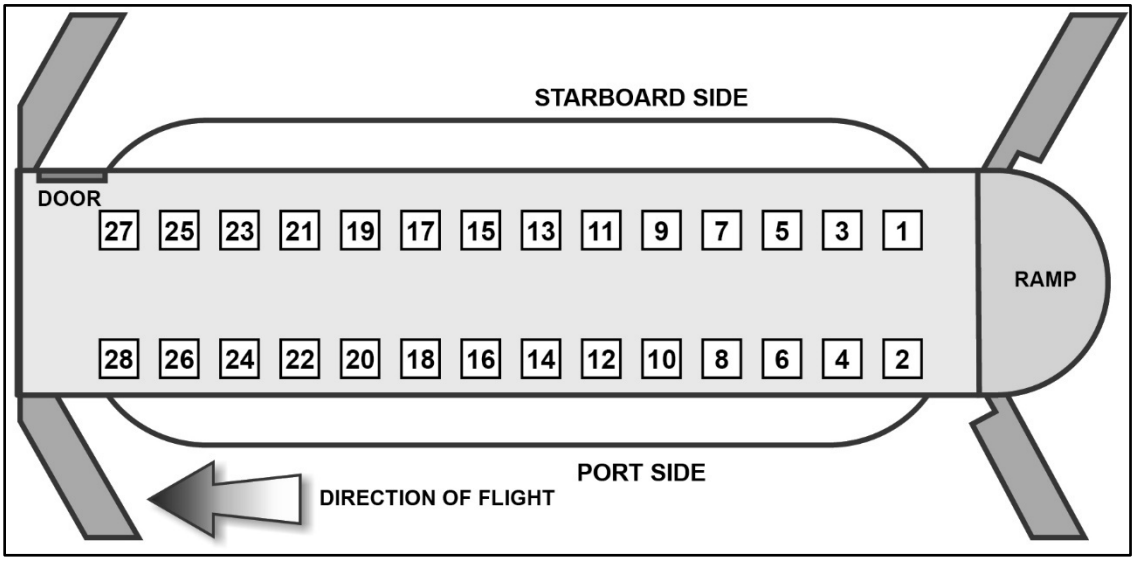


Figure 16-14. CH-47 seating configuration

JUMP PROCEDURES, COMMANDS, AND TIME WARNINGS

16-32. If jumpmasters jump, they are No. 1; this requires a nonjumping safety to control the flow of jumpers. Once the jumpers are stood up, they intermingle remaining in numerical order if planning to exit from the starboard and port sides. (See figure 16-15 on page 310.)

16-33. Aircraft safety requires that the speed during jumps is not less than 80 knots or more than 110 knots, with 90 knots being the optimum. No special preparation is required if the aircraft has skis. Minimum jump altitude is 1,500 feet AGL when jumping below 90 knots. Minimum jump altitude is 1,250 feet AGL when 90 knots and above. After the last jumper has cleared the aircraft, the static lines are retrieved inside the aircraft and secured in an UPRB. The ramp must not be lowered until all jumpers have hooked up to the anchor line cable.

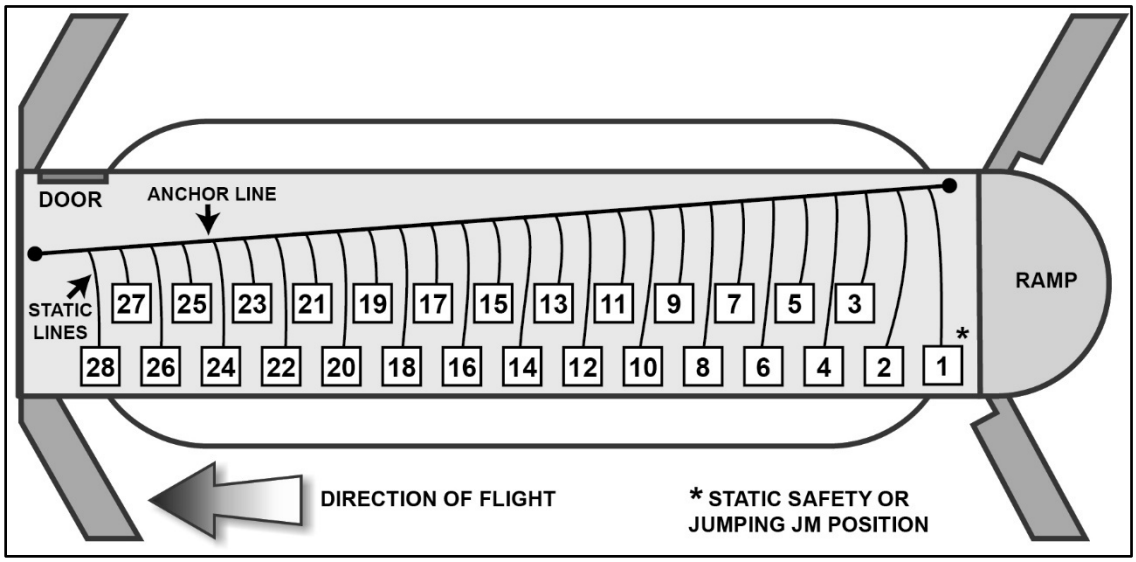


Figure 16-15. CH-47 universal static line modified routing

16-34. The 6-minute and 1-minute time warnings are given by the pilot to the crew chief, who then relays them verbally and by hand signals to the jumpmaster. The jumpmaster issues the following commands:

- GET READY—this command is given at the 6-minute time 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 faces starboard.
  - Ensure the thumb is routed over the front of the bight resting on the index finger.
  - The thumb should not be routed behind the bight 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 jumpmaster or safety checks the routing of all USLMs from the USL snap hook down to the main curved pin protector flap:
  - The jumpmaster or safety confirms each jumper has a proper reverse bight.
  - The jumpmaster or safety confirms that the USLM is routed over the left shoulder.
- CHECK EQUIPMENT— all jumpers check their equipment: helmet, chinstrap, chest strap, both leg straps, and HPTLL if jumping CE.
- SOUND OFF FOR EQUIPMENT CHECK—beginning with No. 28—
  - The jumpers pass the status of their equipment toward the aft end of the aircraft.
  - No. 1 jumpers verbally (and with a hand signal) indicate to the jumpmaster the status of their and all other jumpers' equipment by stating, ALL OK, JUMPMASTER.
- STANDBY—this command is given 8 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 the interval behind the first jumper.
- GO—on the command of GO, if jumpmasters are the No. 1 jumper:
  - They give the command of FOLLOW ME and exit 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 jumpmaster is static, the No. 1 jumper follows the same procedures except for saying FOLLOW ME.
- The remaining jumpers follow at 1-second intervals (see figure 16-16).

Note. The static jumpmaster or safety controls the flow from their position on the port side near the ramp hinge. Less than a 1-second interval between jumpers may result in entanglement of jumpers and USLMs.

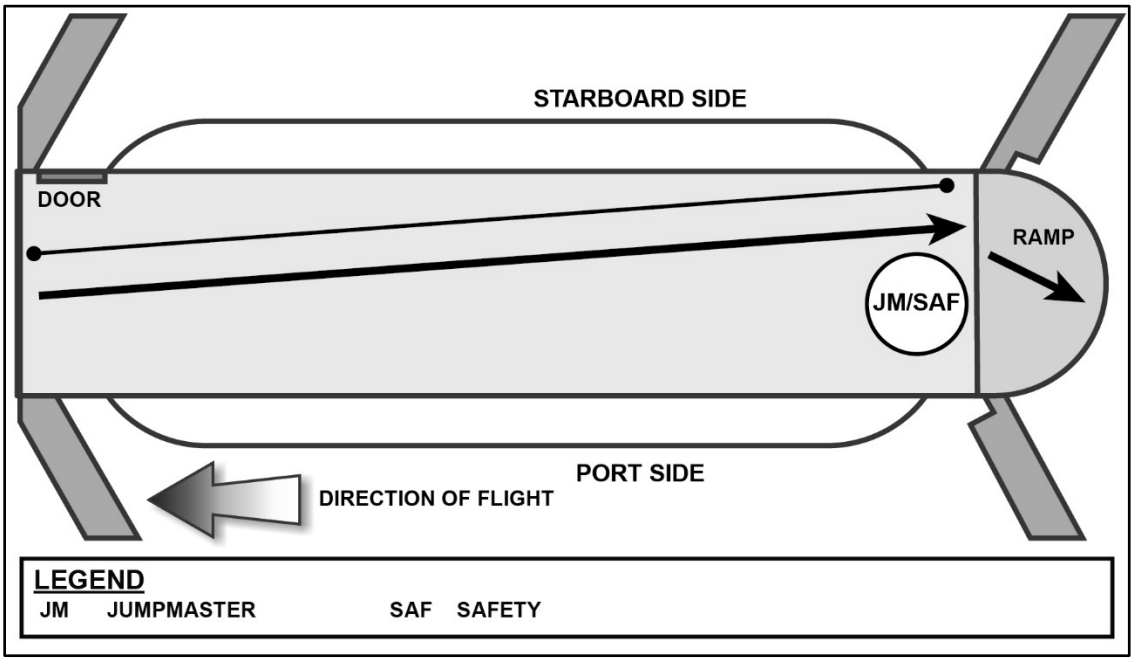


Figure 16-16. CH-47 exiting and position of static jumpmaster or safety

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 3-degrees-below horizontal prior to exiting jumpers.

SAFETY PRECAUTIONS

16-35. During movement inside the aircraft, the jumper always protects the ripcord handle. Crowded conditions inside the cargo compartment pose a possible hazardous situation regarding accidental activation of the reserve parachute. Jumpers are authorized to jump CE 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 exiting 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.

16-36. The jumpmaster ensures all jumpers remain secured by their seat belts until the command GET READY is given. The jumpmaster or safety personnel ensure that jumpers are hooked up consecutively, 1 through 28. If the jumpmaster does not jump, he wears a safety harness or AEBP while the aircraft is in flight and either the static jumpmaster 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 are restored. They check each jumper after they hook up and control the flow of jumpers. When an external load is delivered, the jumpmaster 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 jumpmaster jumps, one nonjumping safety is required; the safety wears a safety harness or an AEBP. The jumpmaster may spot from the crew chief door or the ramp if a safety is controlling the jumpers. If spotting from the ramp and jumping, the jumpmaster leads the stick and the AJM stays with the aircraft. Towed jumper procedures are described in paragraph 16-8.

UH-72A LAKOTA LIGHT UTILITY HELICOPTER

16-37. The UH-72A is a multipurpose, twin-engine, low-to-medium range light utility helicopter (LUH) with a skid landing gear. (See figure 16-17.) As many as four noncombat-equipped or combat-equipped jumpers can jump from the UH-72A 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 1,500 feet AGL. The jumpmaster is a nonjumping jumpmaster. Its features include the following:

- Jumpers—four combat-equipped jumpers.
- Airspeed—50 to 70 knots.
- Minimum drop altitude—1,500 feet AGL.
- Jumpmaster team—one nonjumping jumpmaster.

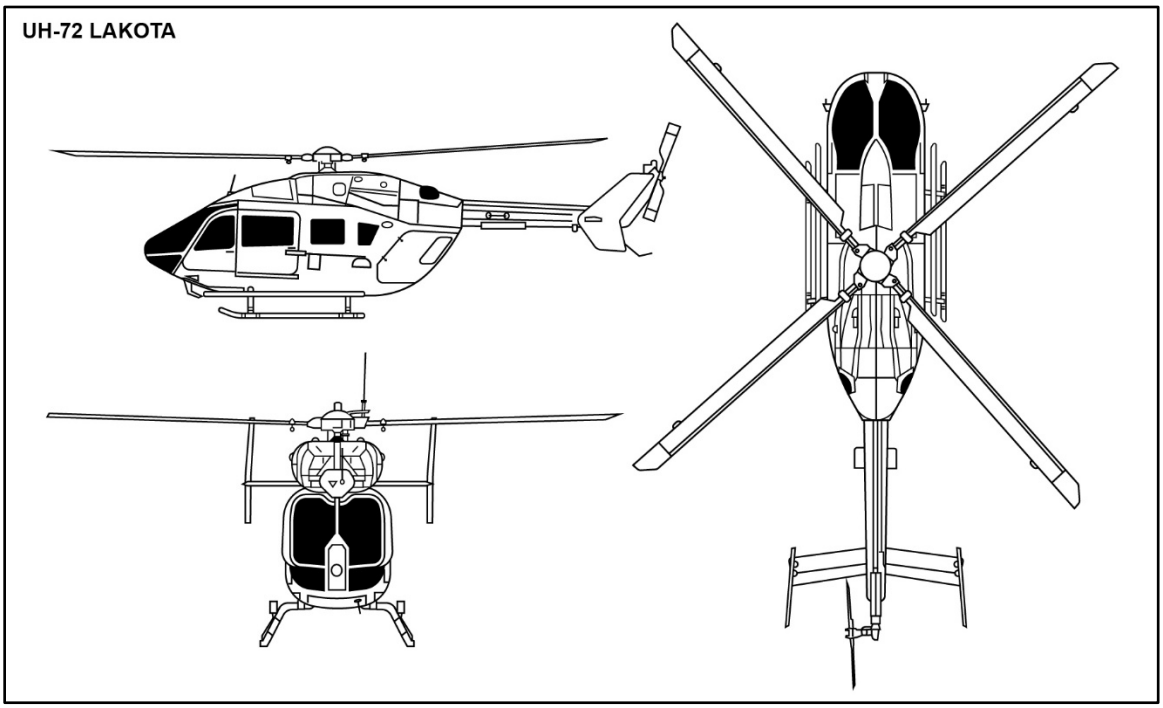


Figure 16-17. UH-72A Lakota

PREPARATION AND INSPECTION

16-38. 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 16-18).

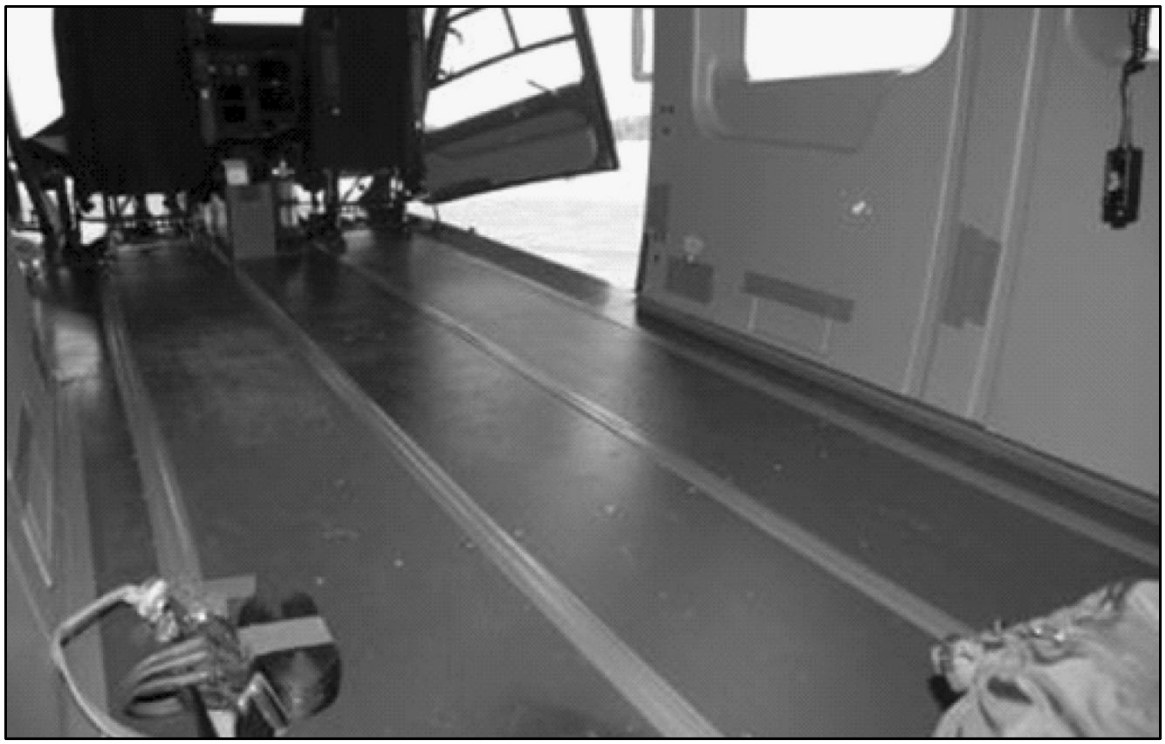


Figure 16-18. Right side of UH-72A Lakota shown with tape

16-39. The following outside preparation steps ready the UH-72A LUH for jumping. (See figure 16-19 on page 314):

- 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 the 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.

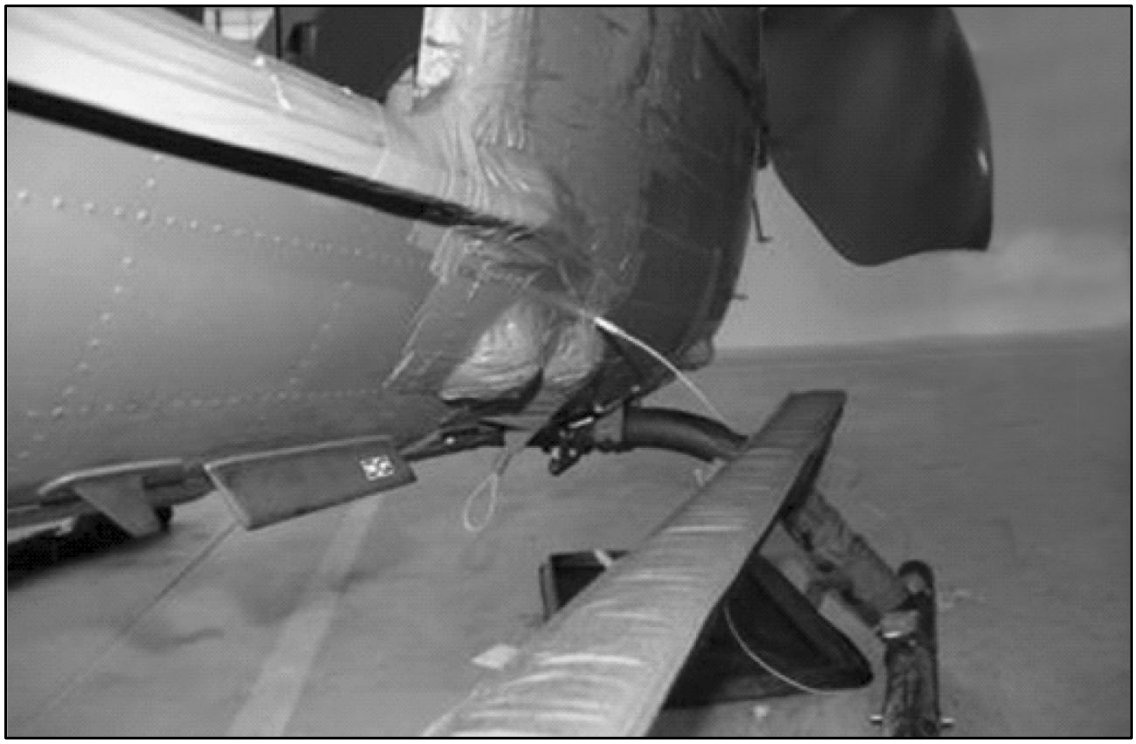


Figure 16-19. Left UH-72A Lakota exterior shown with tape

- Remove the left door handle.
- Install the skid pad cover on the top skid (see figure 16-20).



Figure 16-20. Left UH-72A Lakota exterior shown with tape and skid pad cover

16-40. UH-72A LUH static line aircraft rigging and procedures include:

- Installing the static line anchor device; this step is the responsibility of the crew chief or aircraft maintenance crew.
- Installing the aft anchor device on the 11th hole from the aft of the aircraft floorboard, leaving 10 open holes (see figure 16-21).

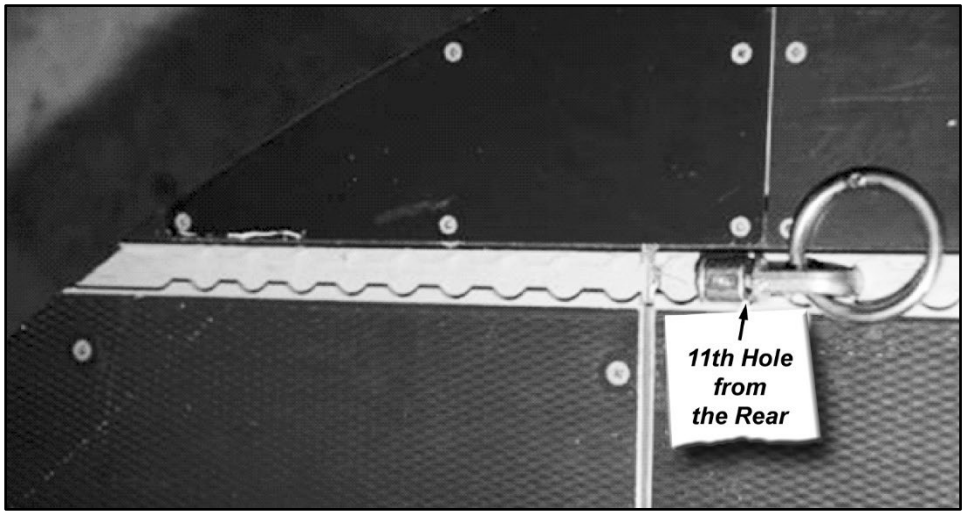


Figure 16-21. Location of aft static line anchor device

- Install the forward anchor device on the 36th hole from the aft of the aircraft floorboard, leaving 25 open holes (see figure 16-22).

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.

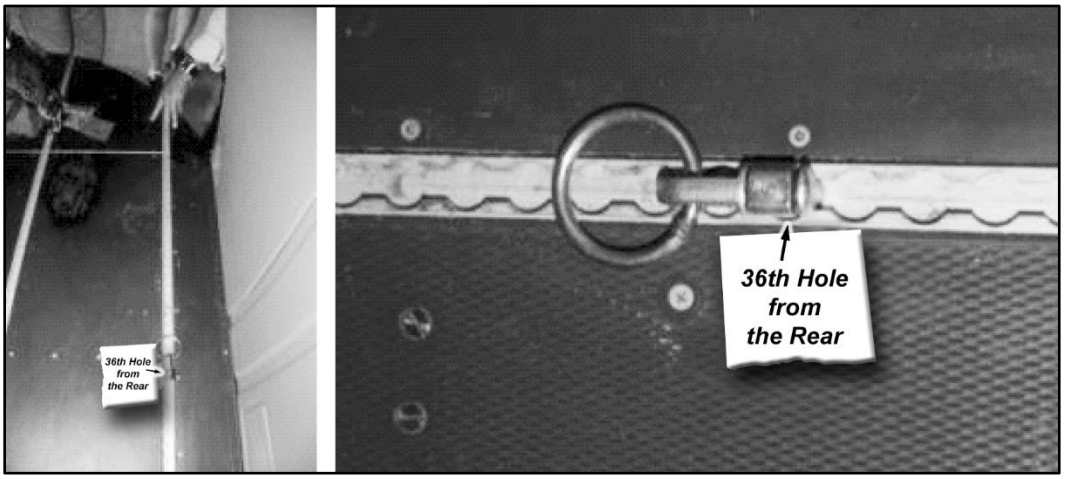


Figure 16-22. Location of the forward static line anchor device

- Face the O-rings of each anchor device toward each other (see figure 16-23).

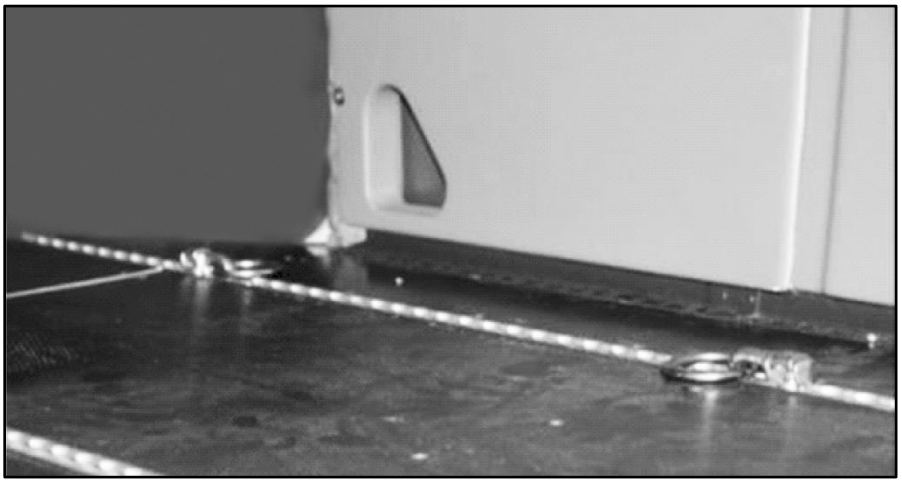


Figure 16-23. O-rings of each anchor device facing each other

- Install and secure a safety roll pin on each anchor device (see figure 16-24).

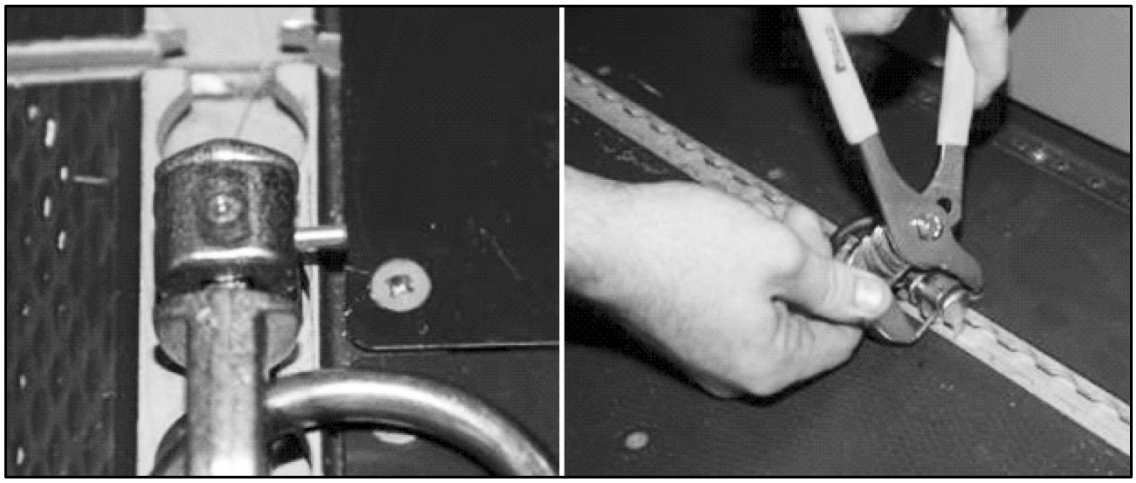


Figure 16-24. Installation of safety roll pins on each anchor device

- Cover each anchor device with tape (see figure 16-25).

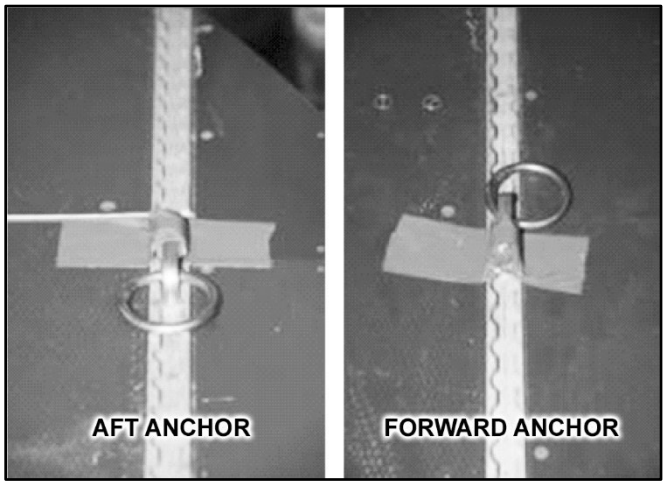


Figure 16-25. Aft and forward anchor devices with tape after installation of the safety roll pin

- Installation of the anchor line system (see figure 16-26 on page 318) includes:
  - Installing the anchor line system with the running end of the strap oriented toward the front of the aircraft.
  - Installing the anchor line system with D-rings toward the skin of the aircraft.

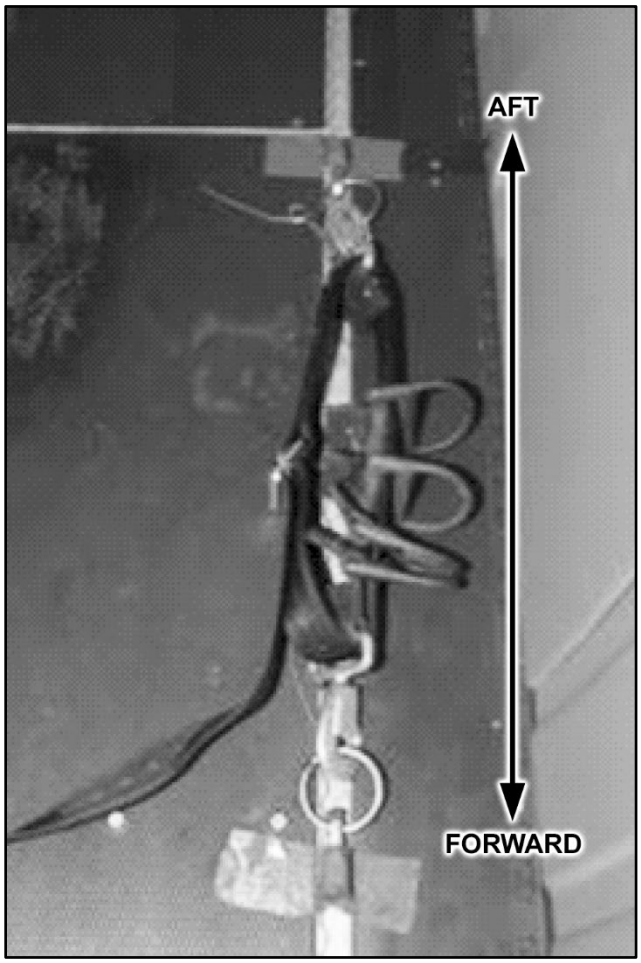


Figure 16-26. Anchor line system shown with running end of strap oriented toward the front of the aircraft and D-rings toward skin of aircraft

- Install safety wire through the snap hook of the anchor line system from inboard to outboard (see figure 16-27).

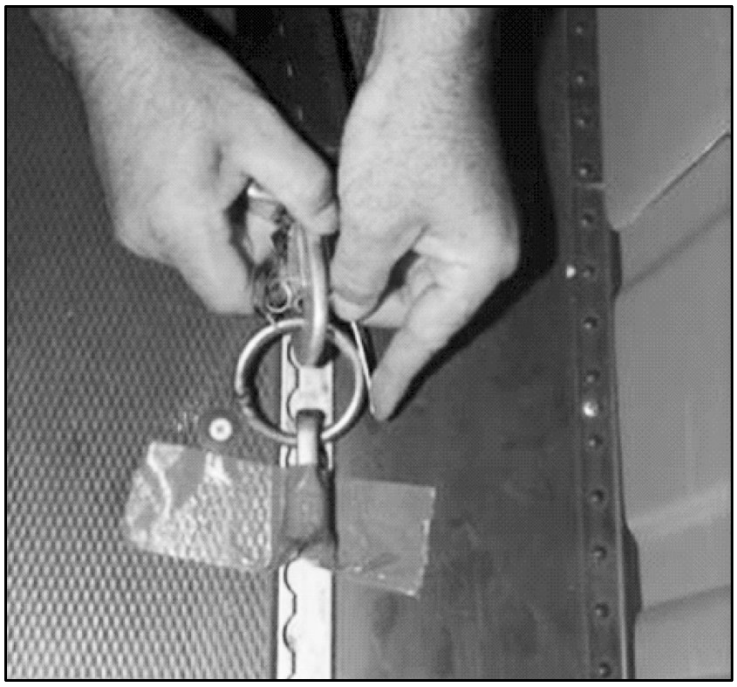


Figure 16-27. Safety wire installed through the snap hook of the anchor line system

- Wrap the end of the safety wire around the snap hook (see figure 16-28).



Figure 16-28. End of the safety wire around the snap hook of the anchor line system

- The crew chief does not tape any item on the aircraft until the jumpmaster has completed the aircraft inspection.
- Tape the safety wire and snap hook (see figure 16-29 on page 320).

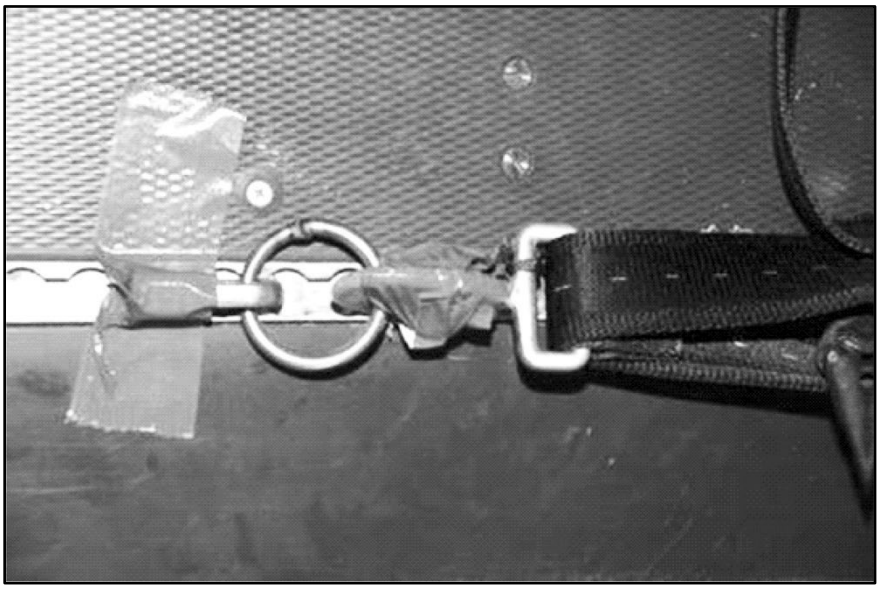


Figure 16-29. Safety wire and snap hook taped

- Roll excess webbing and tape in place (see figure 16-30).

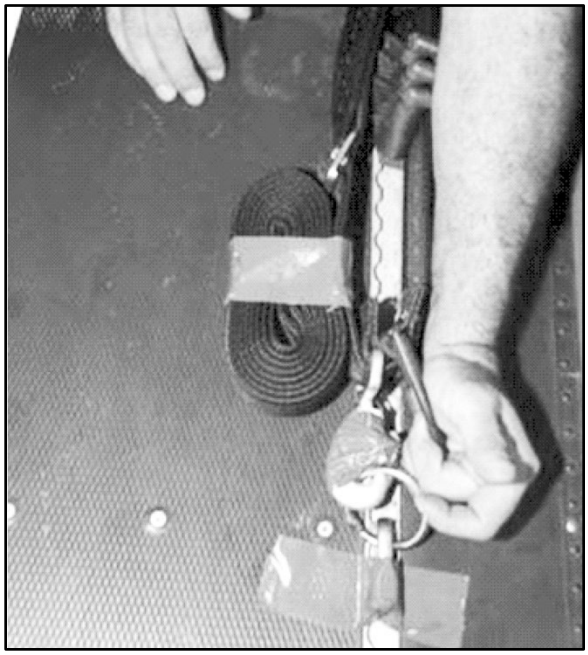


Figure 16-30. Excess webbing taped in place

16-41. 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 a safety strap with a center break (such as quick release) and tape excess webbing. (See figure 16-31.)

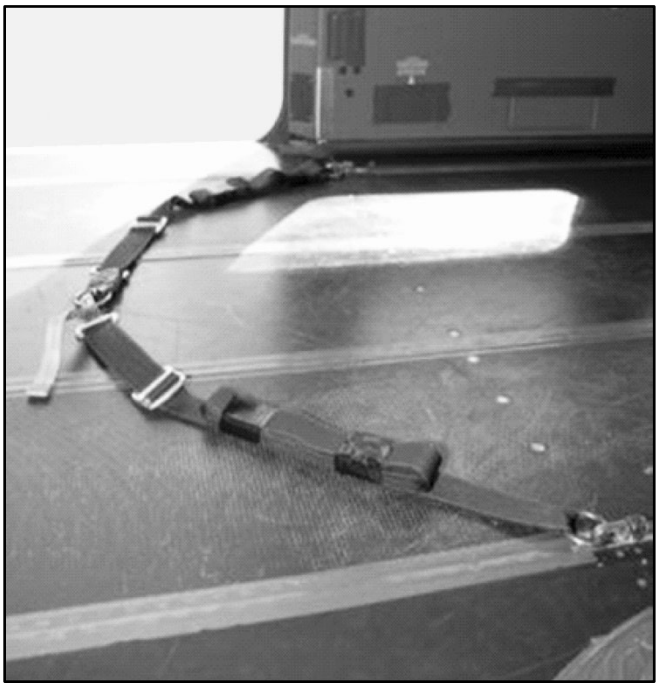


Figure 16-31. Static line personnel safety straps

LOADING TECHNIQUES AND SEATING CONFIGURATION

16-42. The seating configurations for static line personnel without CE and the crew chief are outlined (see figure 16-32 through page 322):

- 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 16-32. Seating configuration for static line personnel without combat equipment and crew chief

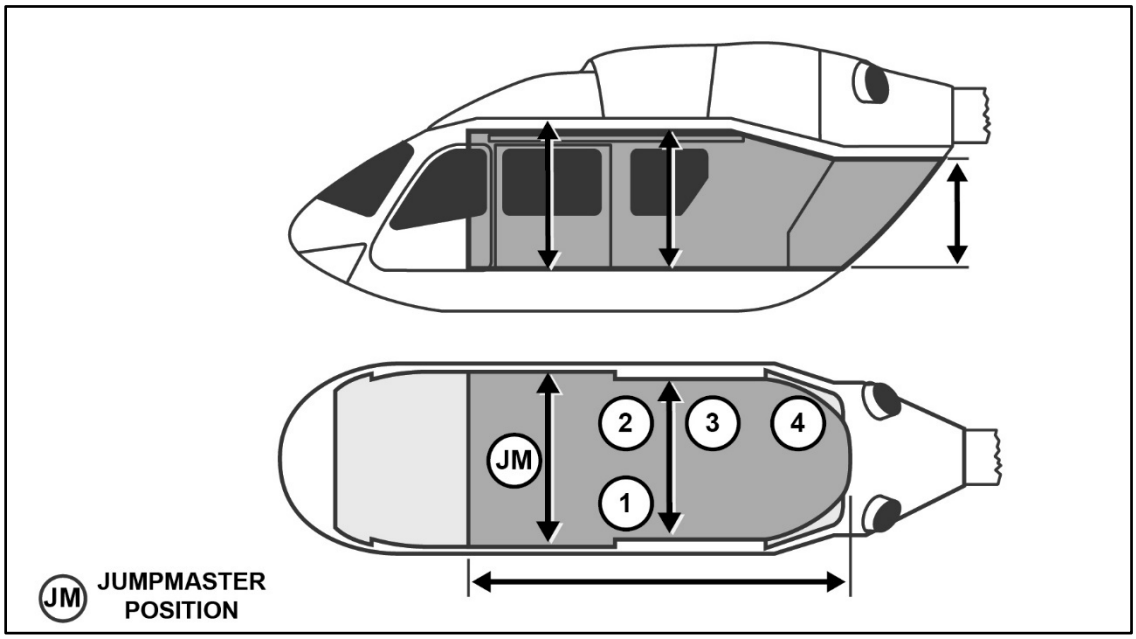


Figure 16-32. Seating configuration for static line personnel without combat equipment and crew chief (continued)

16-43. The seating configurations for static line personnel with CE and crew chief, if on board, are outlined (see figure 16-33):

- 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.
- The crew chief, if on board, is positioned behind jumper No. 3.

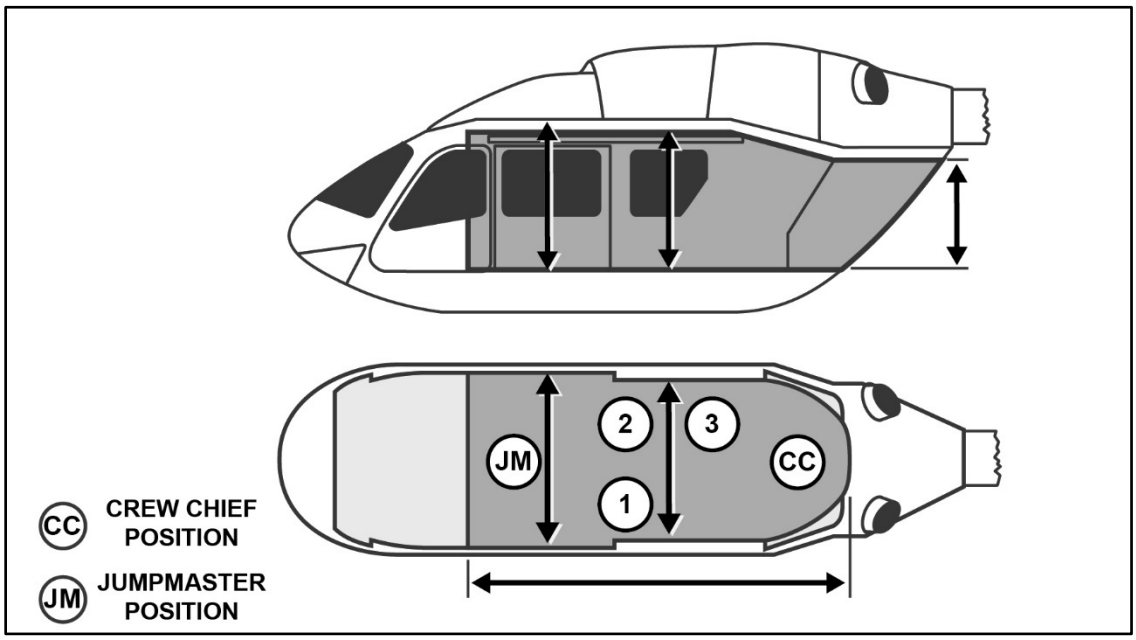


Figure 16-33. Seating configuration for static line personnel with combat equipment and crew chief

- Jumpers load the aircraft in reverse stick order.
- The jumpmaster hooks the jumper's USL snap hook:
  - To the anchor line system.
  - The opening gate of the USL snap hook faces toward the skin of the aircraft, as seen from point of view when the jumper exits the aircraft (see figure 16-34).

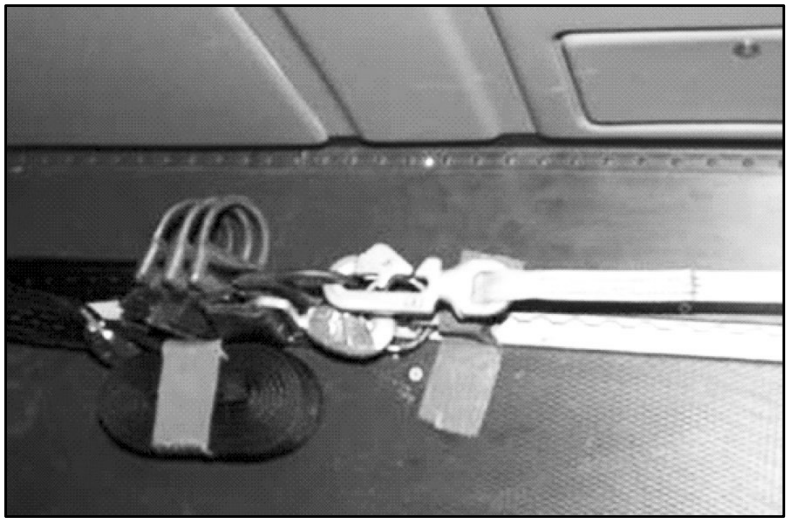


Figure 16-34. Universal static line snap hook faced toward aircraft skin

- After jumpers are seated, each jumper takes up the slack of the USLM of the jumper in front of them and stows them in the static line slack retainer band (see figure 16-35).



Figure 16-35. Slack retainer stowed properly

- The safety strap is secured across jumper No. 1 (see figure 16-36).



Figure 16-36. Safety strap shown across jumper No. 1

JUMP COMMANDS

16-44. The jumpmaster issues the following commands:

- GET READY—this command is given at the 4-minute time warning to alert the jumpers:
  - The safety strap is removed at 1,000 feet AGL.
  - Jumpers Nos. 1 and 2 undo the anchor device with the safety strap and hand it over to the jumpmaster.
  - The jumpmaster then secures the safety strap in a UPRB.
- CHECK STATIC LINES—the jumpmaster 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.
  - Ensuring the excess static line is stowed through the static line slack retainer band on the parachutes of the Nos. 1, 2, 3, and 4 jumpers.
  - Each jumper ensures 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 verbally (and with a hand signal) to the jumpmaster the status of their equipment, followed by the remaining jumpers in numerical order.
- SIT IN THE DOOR—this command is given by the jumpmaster at the 30-second time warning:
  - The No. 1 jumper assumes the door position with feet together outside the cargo compartment.
  - Jumpers Nos. 2, 3, and 4 remain in place, ensuring that their feet are clear of their USLMs.
- STANDBY—this command is given at the 8- to 10-second time warning.
  - The jumpmaster 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 jumpmaster.
  - The No. 3 and No. 4 jumpers remain in place.
- GO—the jumpmaster gives this command verbally with a sharp tap on the rear of the jumper's helmet as 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 Nos. 3 and 4 follow the same as No. 2.
  - Each jumper monitors the jumper's USL in front of them as the jumper in front of them begins moving towards the door.

16-45. The jumpmaster controls the jumper's exit and ensures a 1-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

16-46. Safety precautions on the UH-72A LUH include the following:

- During movement inside the aircraft, the jumper protects the ripcord 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 CE is authorized for this aircraft.
- The jumpmaster ensures all jumpers remain secured by their safety belts until the command GET READY is given:
  - The jumpmaster prevents (or corrects) excessive static line from flopping about the aircraft.
  - The nonjumping safety always wears a safety harness inside the aircraft.
  - After the last jumper has cleared the aircraft, the static lines are retrieved inside the aircraft and secured in a 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 in paragraph 16-8 on page 296.

WARNING

The parachutist jump pack, AT4JP, or SMJP 28440 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.

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Chapter 17

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 chapter 11 also apply. 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 USA.

According to the USAIS, when conducting over-the-ramp operations, the use of the T-11 reserve with the T-11 reserve parachute inserts is mandatory for the jumpmaster and all PJM, AJM, and the No. 1 jumper, while pushing a door bundle with inserts emplaced. 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

17-1. The CH-53 Sea Stallion is a twin-engine, single-rotor, medium-transport helicopter used by the USMC. Using the ramp, 20 combat-equipped jumpers may exit from this aircraft. (See figure 17-1.)

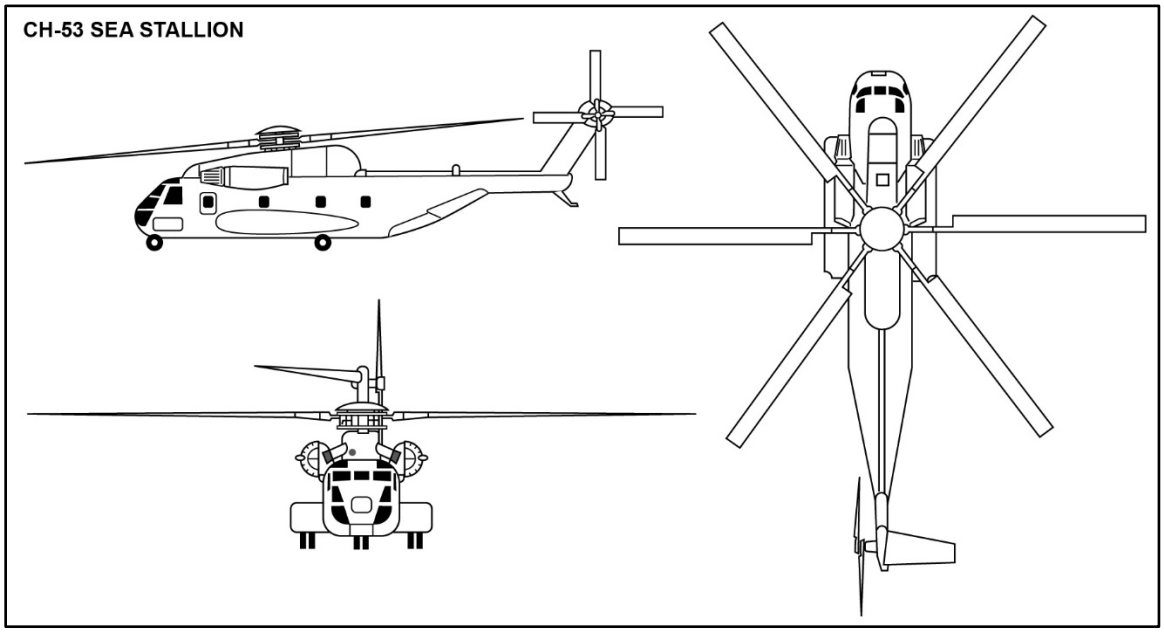


Figure 17-1. CH-53 Sea Stallion

17-2. The following procedures prepare the CH-53 for jumping:

- Install the anchor line cable on the port side of the floor (see figure 17-2 on page 328) using the appropriate 5,000-pound tie-down fittings for the length of cable used (forward attachment point) and station 522 (rear attachment point).
- Use one 1/4-inch or 3/8-inch steel cable (3/8-inch preferred) of an acceptable length, with four 1/4-inch or 3/8-inch cable clamps, lock washers, nuts, and bolts:
  - The minimum installed length of the anchor line cable is 8 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 jumpmaster 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 a 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 4-inch-by-4-inch-by-6-inch wooden block between the anchor line cable and floor and attach a clevis assembly (G-13) to the tie-down ring at station 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.

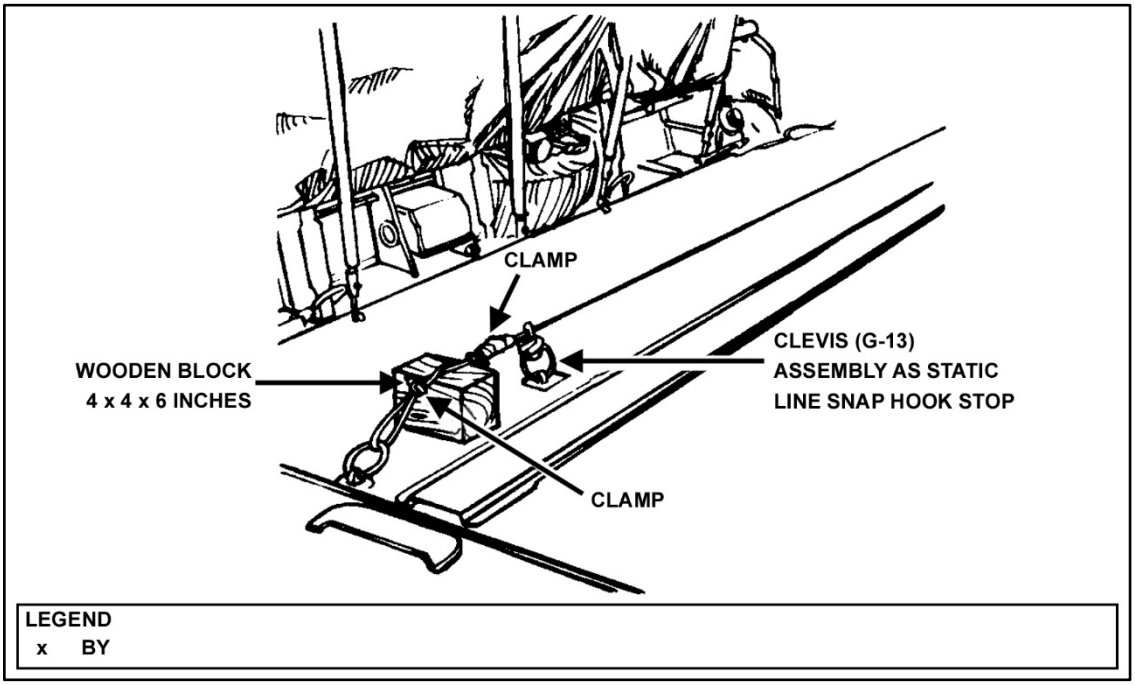


Figure 17-2. CH-53 anchor line installation

17-3. Before enplaning, the jumpmaster and pilot, or pilot's representative, jointly inspect the aircraft to determine the following:

- Safety belts are installed for all jumpers and extend all the way out to ensure positive hookups 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.

17-4. 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 17-3.) PJM ensures that all jumpers have T-11 reserve inserts in place.

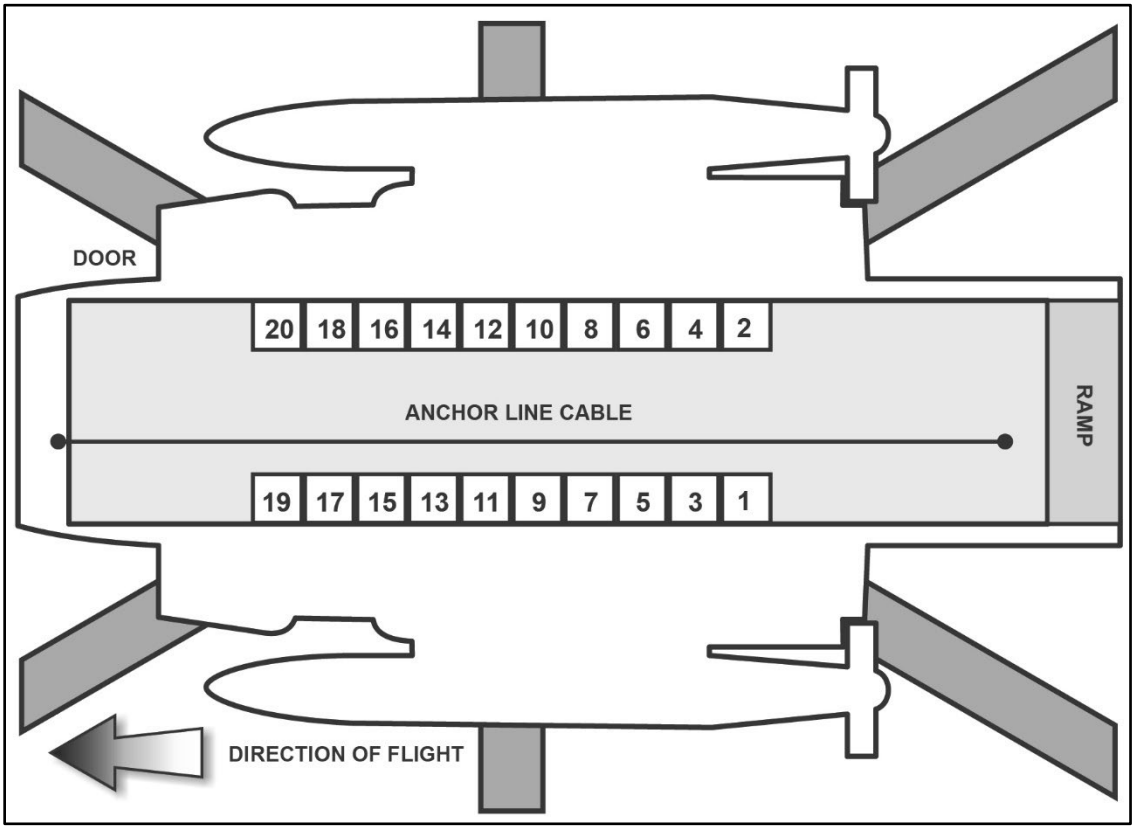


Figure 17-3. CH-53 seating configuration

TIME WARNINGS AND JUMP COMMANDS

17-5. The 6-minute and 1-minute time warnings are given by the pilot to the crew chief, who in turn relays them verbally and by hand signals to the PJM.

17-6. 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 the assistance of the AJM, the jumper connects the USLM snap hook to the anchor line cable and takes a reverse bight.

WARNINGS

The jumpmaster must ensure the jumper has T-11 reserve inserts in place and a 5-foot USL extension attached to the USLM. Failure to use a USL extension may cause personal injury from deployment bag strikes.

The jumpmaster 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 Nos. 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.
- STANDBY—the No. 1 jumper assumes a standing position at the ramp hinge and the remaining personnel close intervals behind the first jumper.
- GO—the No. 1 jumper walks off the center of the ramp and the remaining jumpers follow at 1-second intervals.

17-7. Upon exit of all jumpers, the crew chief or static jumpmaster recovers all USLMs.

WARNING

Jumpers deliberately walk off the ramp, which is lowered a minimum of 11-degrees below centerline gauge. Jumpers do not make a vigorous exit by jumping off the ramp.

Less than a 1-second interval between jumpers may result in entanglement of jumpers and USLMs.

SAFETY PRECAUTIONS

17-8. The static jumpmaster or safety personnel ensure that jumpers are hooked up consecutively (1 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 1,250 feet AGL. Either the jumpmaster or AJM must remain with the aircraft to handle the deployment bags and towed jumpers.

17-9. The jumpmaster spots the aircraft using the WSVC, VIRS, GMRS, or JSJR methods. The jumpmaster may spot from the crew chief door or the ramp if a safety is controlling the jumpers. If spotting from the ramp and jumping, the jumpmaster leads the stick and the AJM stays with the aircraft.

V-22 OSPREY AIRCRAFT

17-10. The V-22 Osprey (see figure 17-4) 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 seat two pilots operationally, two crew members, and 24 non-airborne troops.

17-11. 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 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 worldwide self-deployment.

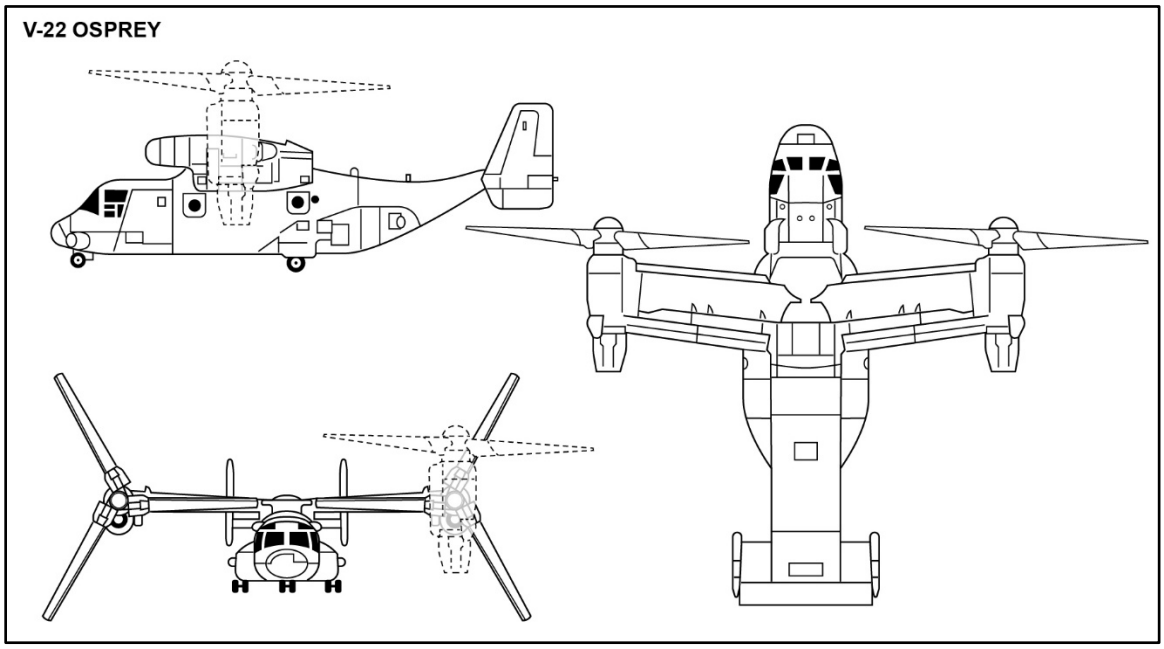


Figure 17-4. V-22 Osprey

PROCEDURES

17-12. This section outlines the procedures regarding the conduct of airborne operations by USMC units from the V-22 Osprey. The PJM ensures that all jumpers have T-11 reserve 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.

17-13. The V-22 aircraft can fly in three modes: helicopter, conversion, and airplane modes. (See figures 17-5 through 17-7 through page 332.) Transitioning from helicopter to airplane mode takes about 12 seconds.



Figure 17-5. V-22 Osprey helicopter mode

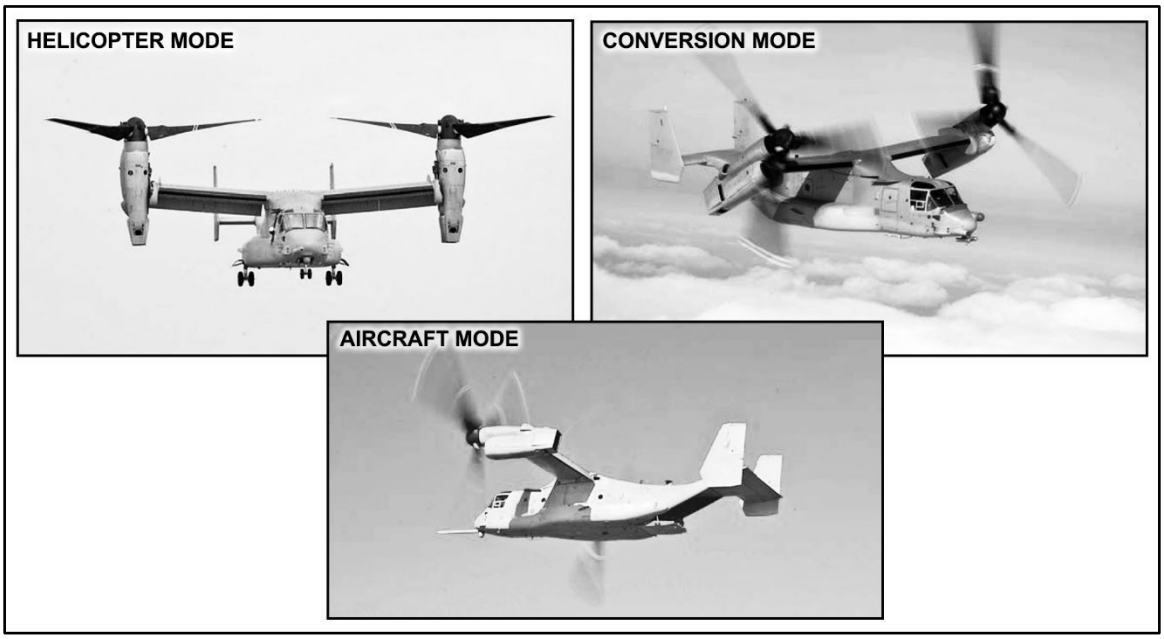


Figure 17-6. V-22 Osprey conversion mode



Figure 17-7. V-22 Osprey aircraft mode

17-14. 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 1,000 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 CE.

17-15. 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. The PJM ensures that all jumpers have T-11 reserve 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 ripcord 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

17-16. The space limitations for the V-22 Osprey aircraft are described in paragraphs 17-17 through 17-20. A total of 24 passengers can be transported to conduct parachute operations.

17-17. Multiple CDSs maximum gross weight is 4,950 pounds. Individual CDSs maximum rigged weight does not exceed 2,328 pounds gross rigged weight. The 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 the 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 the ramp is level and the upper ramp door is completely open to maintain adequate clearance between the load and aircraft when the load exits.

17-18. When the MV-22 cargo release system releases the cargo load, it 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.

17-19. USLMs and deployment bags are manually retrieved by the crew chief with assistance from the jumpmaster 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.

17-20. 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 deployed, and that the deployment bag has trailed to the rear of the aircraft.

TOWED JUMPER PROCEDURES

17-21. In the event of a towed jumper, the jumpmaster prevents any other jumpers from exiting and notifies the pilot. The jumper stays in a tight position and protects the ripcord handle. The jumpmaster ensures the jumper is securely attached to the aircraft and does not break free during descent. If the jumper is not securely attached, the jumpmaster attempts to shake or cut them free.

17-22. If the jumper cannot be safely freed, the aircraft converts to helicopter mode and slowly descends to the DZ. A jumper can be lowered and landed safely 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 jumpmaster cuts the jumper free.

STATIC LINE OPERATIONS AND SEATING CONFIGURATION

17-23. The aircraft speed is 125 +/- 5 knots for static line operations. The jumpmaster controls 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 4-second count when conducting the first point of performance.

Note. Airplane and conversion modes can only be used for military free-fall operations.

17-24. Jumpers in troop seats should have the seat back webbing in the lower position (see figure 17-8 on page 334) and use only the lap belt. Jumpers may also be floor loaded (see figure 17-9 on page 334). In-flight rigging of paratroopers is authorized. Safety- and mission-essential equipment dictates the number of paratroopers to be airdropped in compliance with the MV-22. Jumpers can be seated on the floor facing the rear of the aircraft at a 45-degree angle split between the port and starboard sides of the aircraft. The jumpers are restrained by individual safety belts routed around each jumper.



Figure 17-8. Troop seat with seating back webbing



Figure 17-9. Seating configuration (noncombat-equipped jumpers)

JUMPMASTER AND SAFETY

17-25. The jumpmaster can be either a static or a jumping jumpmaster. If static, the jumpmaster has communications with the pilot at all times. If jumping, the safety is required to have communications with the pilot at all times.

17-26. The safety then relays all time warnings to the jumpmaster 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 jumpmaster. The V-22 aircraft has unique connections for onboard communications. The jumpmaster or safety have to wear one of the V-22 helmets or have a modified helmet connection.

JUMP COMMANDS AND PROCEDURES

17-27. 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; seat belts are also 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 is 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, using the port side method for assisting jumpers to their feet.
- HOOK UP—the open portion of the USL 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 forming 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 inspects 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 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 remains closed until all jumpers have sounded off for equipment check.

- STANDBY—the static jumpmaster 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 1-second intervals walking off the centerline of the ramp:
  - Jumpers do not execute an up and out exit off the ramp because the jumper's head will strike the top of the clamshell door creating a safety hazard.
  - Instead, jumpers walk off the ramp without jumping up.
  - Jumpers 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 17-8 on page 334) and use only the lap belt. Jumpers may also be floor loaded using the multiaircraft tether. In-flight rigging of paratroopers is authorized. Safety and mission-essential equipment dictates the number of paratroopers to be airdropped.

17-28. 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 mandatory hearing protection during V-22 operations.

17-29. The safety must ensure the aircraft floor and ramp area are suitable for jumpers. Prior to takeoff, the safety ensures all jumpers are secured and prepared for takeoff. If the jumpmaster is jumping, the safety moves to the aft end of the aircraft and physically controls the jumpmaster's static line. The AJM or safety maintains communications with the pilots through the intercom system located in the aft of the aircraft and relays all information to the jumpmaster.

WARNING

The jumpmaster must ensure the jumpers' T-11 reserve inserts are in place and have 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.

17-30. If jumping, the jumpmaster must exit first. When the jumpmaster gives the command, STANDBY, they move to the centerline of the ramp and assume a proper exit position. On the command GO, the jumpmaster looks at the No. 2 jumper and gives the command, FOLLOW ME, and then they exit the aircraft. Once the jumpmaster exits, the safety controls the flow of the exit.

17-31. For jumpmaster-directed release, the jumpmaster 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 techniques present challenges and advantages in their use; the jumpmasters decide which technique they use.

Note. New jumpmasters or those unfamiliar with the V-22 should be given a thorough briefing and in-flight training (if practical) by an experienced jumpmaster knowledgeable in V-22 operations prior to being assigned as the PJM on any V-22 parachute operations.

17-32. The V-22 only supports over-the-ramp operations. The V-22's interior is manufactured with a nonskid coating, which provides nonslip footing. The vehicle ramp extensions are removed.

17-33. As soon as all jumpers are seated, the crew chief briefs them on aircraft safety, emergency procedures, and comfort facilities.

TIME WARNINGS

17-34. Time warnings include the following:

- TWENTY-MINUTE TIME WARNING—jumpmasters check personnel and equipment:
  - If CE is not already attached to the jumper, it is 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.
  - The ramp remains closed.
- TEN-MINUTE TIME WARNING—final onboard JMPI of all jumpers is complete:
  - A verbal and visual 10-minute time warning is given to the jumpmasters by the crew chief.
  - The PJM begins jump commands.
  - The 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 to allow the PJM to perform air safety checks and verify approach into the intended DZ.
- SLOWDOWN WARNING—about 3 minutes from drop time:
  - Jumpers are moved to the hinge of the ramp.
  - The AJM or safety makes the final inspection of the routing and grip of the USLMs by the jumpers.
- ONE-MINUTE TIME WARNING—the crew chief gives the jumpmasters a visual 1-minute time warning; the PJM alerts the jumpers and performs safety checks from ramp.

- THIRTY-SECOND TIME WARNING—the crew chief gives the jumpmasters a visual 30-second time warning:
  - The PJM gives the command, STAND ON THE RAMP.
  - Door bundles 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.
  - The AJM or safety maintains control of the stick and verifies 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 jumpmasters are jumping, the command is FOLLOW ME from the PJM with the AJM as the last jumper in the stick.
  - The onboard safety performs and announces, CLEAR TO THE REAR, and assists the crew chief with the recovery of the static lines.

JUMPMASTER AIRCRAFT INSPECTION

17-35. With the following exceptions, the same procedures for inspecting the C-130 for static line operations are used for the 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 installs the anchor line cable according to the V-22 interactive electronic technical manual.
  - The jumpmaster or safety must inspect both anchor lines for serviceability.
  - The jumpmaster or safety inspects to ensure that the anchor line cable is not worn or frayed and is secured to the attachment points per the V-22.
  - The jumpmaster or safety inspects to ensure that 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 3 to 5 inches of overall play when properly rigged.
  - The aft attaching point is safety wired and 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 CE) 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 takeoff?
  - 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 the flight, the internal communications system must be checked to ensure it is 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 jumpmaster been briefed on ramp operations for all flights?
  - Has the jumpmaster been briefed on locations of light switches?
  - Are emergency lights operational?
  - Ensure the crew chief briefs the participating jumpers on emergencies within the aircraft along with emergency egress procedures.

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Chapter 18

Nonstandard Aircraft

This chapter contains aircraft descriptions, jumpmaster 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. Installing a field expedient anchor line cable is the jumpmaster's responsibility. Aircraft preparation is usually accomplished jointly by the loadmaster or crew chief and jumpmaster. These aircraft are service tested and approved for personnel airdrop operations.

PROCEDURE MODIFICATIONS IN NONSTANDARD AIRCRAFT

18-1. 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 STANDBY.

18-2. The control movement technique is a method of moving to the paratroop door without losing balance or tripping. As each jumper begins moving, 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.

18-3. 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 2 inches over the edge of the doorsill or jump platform, and their trail foot is about 6 inches to the rear.

18-4. 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.

18-5. 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 behind the preceding jumper, using the control movement technique position to maintain balance.

18-6. At the command, GO, the No. 1 jumper makes a vigorous jump up 6 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.

18-7. The No. 2 jumper and all following jumpers use a control movement technique towards the paratroop door. The safety takes control of 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 1-second interval between jumpers.

C-212

18-8. The C-212 is a twin-engine, high-wing, multipurpose light transport designed for operations involving short, rough airfields. (See figure 18-1 on page 340.) The aircraft can transport 15 combat-equipped jumpers in the airdrop mode using the port door. Troops are loaded over the ramp.

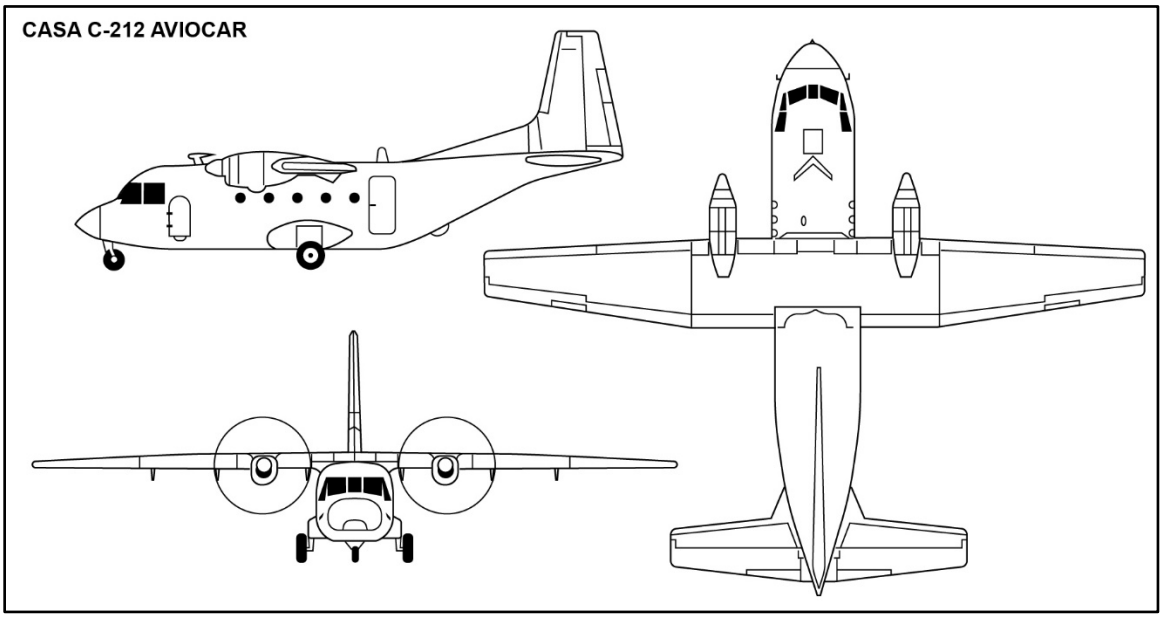


Figure 18-1. C-212

18-9. Fifteen jumpers sit in two sticks of jumpers. (See figure 18-2.) The odd-numbered personnel (eight) are seated on the starboard side and the even-numbered personnel (seven) are seated on the port side.

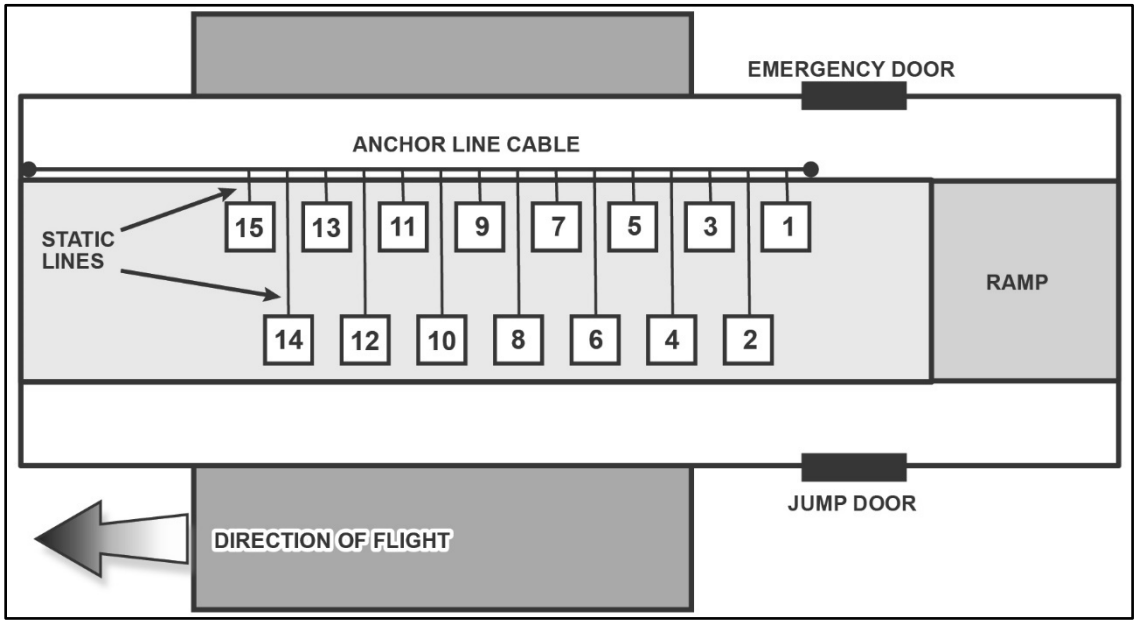


Figure 18-2. C-212 seating configuration

18-10. 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.

18-11. The supervisory personnel required for the C-212 are:

- The jumpmaster who performs standard aircraft check procedures.
- A nonjumping safety.

- A loadmaster or crew chief who is responsible for all operations in the cabin (aircrew member and nonjumpmaster qualified).

JUMP COMMANDS AND SAFETY PRECAUTIONS

18-12. 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:
  - They hook the open portion of the USL 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 STANDBY (if an over-the-ramp exit)—a proper exit position is taken by the jumper.
- GO—personnel exit the aircraft at 1-second intervals.

18-13. Safety precautions for the C-212 include the actions described:

- 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 USLM to steady themselves.
- Jumpers remain off the ramp while it is being lowered for over-the-ramp operations.

Note. To assist the jumpmaster 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.

18-14. The jumpmaster or safety ensures all personnel hook up properly. If the jumpmaster 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 jumpmaster to look at the jump light or communicate with the cockpit.

18-15. 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.

18-16. 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 jumpmaster and safety or loadmaster push the bundles out.

18-17. 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.

18-18. When conducting bundle operations from the ramp, the jumpmaster 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.

18-19. Towed jumper procedures outlined in chapter 11 are 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.

18-20. The aircraft is configured for a static line personnel airdrop. The flight engineer ensures one of each of the following items of equipment are present:

- Hand winch.
- Static line deflector block.
- Retrieval bar.
- Retrieval strap.
- Extended interphone cord.
- A 2,500-pound tie-down strap.
- A 5,000-pound tie-down strap.
- One 3-foot length of 1-inch tubular nylon.
- Cloth-backed adhesive tape.
- Anchor cable.
- Two restraint harnesses.

18-21. The flight engineer installs and preflight inspects the following equipment:

- Attaches a hand winch to the right tie-down row in zone 1 and checks for security.
- Inspects cable for broken wires or kinks and checks for operation.
- Ensures the static line deflector block is attached to the right side of the ramp and covers the bolt head with tape.
- Inspects the onboard retrieval base and attaching brackets.
- Installs and checks the extended interphone cord for operation.
- Fits and adjusts restraint harnesses.
- Ensures that the 3-foot length of 1-inch tubular nylon and the 5,000-pound tie-down strap are secured and available for immediate use.

18-22. The jumpmaster or safety follows the checklist for the C-212:

- 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:
  - The nonskid surface covering is in good condition.
  - The 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 the doorframe.
  - The door opens and closes easily.
  - The door sits in the ramp recess properly.
- Jump lights (two sets):
  - Set 1—above the port aft jump door.
  - Set 2—above the starboard aft emergency door.
  - Check the alarm bell; it is the signal for exiting.
- Static line anchor cable system:
  - The forward support beam 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 the anchor line tension indicator—the red line indicator should not be seen.
  - The anchor line cable includes inspecting that the cable has no breaks, frays, or kinks.
  - 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 travels).
- The cable is clean and free of rust.
- Swage is present.
- The 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).
  - The alarm system is operational.
  - Sufficient emergency parachutes are available.
- Miscellaneous:
  - The lighting system is operational.
  - Airsickness bags are available.
  - The jumpmaster or safety kit (extra equipment) is onboard.
  - Earplugs are available.

Note. Loose equipment and the paratroop door (removed) are lashed to the cargo ramp or to the rear of the forward bulkhead.

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Chapter 19
Airdrop Procedures

This chapter explains drop altitudes, airdrop methods, airdrop release methods, and personnel.

DROP ALTITUDES AND AIRDROP PROCEDURES

19-1. The DZSTL measures drop altitude in feet AGL from the highest point on the DZ (the highest field elevation) to the aircraft. (See table 19-1.) In the case of combat (wartime) operations, airborne and airlift commanders jointly determine drop altitudes.

Table 19-1. Calculation of drop altitude in feet, example

DROP ALTITUDE	*DISTANCE*
Distance from the highest field elevation in the drop zone to the desired altitude of the aircraft, in feet.	1,000 feet AGL
The highest field elevation in feet above sea level, rounded up to the next 50 (for example, round 505 to 550).	+550 feet field elevation
Drop altitude in feet indicated.	1,350 feet MSL
Legend: AGL—above ground level; MSL—mean sea level	

19-2. For airdrop altitudes by load and aircraft type for different types of training missions, see table 19-2 on page 346. For minimum aerial delivery altitudes personnel, A-series containers, and heavy equipment drops, see table 19-3 on pages 346 and 347.

19-3. 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 DZ (field elevation) to the desired altitude of the aircraft, for example, drop altitude equals 1,000 feet.
- Obtain the highest field elevation in feet above sea level:
  - Round this number up to the nearest multiple of 50 (for example, round 537 up to 550).
  - For purposes of obtaining the drop altitude in feet indicated, use this number for field elevation.
- Total the two numbers obtained to yield drop altitude in feet indicated.

Table 19-2. Airdrop altitude for rotary-wing and fixed-wing aircraft

AIRCRAFT	*DAY OR NIGHT AGL (IN FEET)*
Rotary Wing (All Services, Rotary Wing)	
Personnel	1,500
>90 KTs (N/A for UH aircraft)	1,250 minimum
Door bundles	300 (day) 500 (night)
Fixed Wing (Troop Carrier)	
Personnel	1,250 maximum
Basic airborne training	1,250
Training	1,000
Tactical	1,000
Heavy equipment	1,100
Door bundles	300 minimum
IMC/SKE. Drop altitude is 500 feet above the highest obstacle that falls within 3 miles on either side of the drop zone run-in. CDS using G-13 or any other parachute, the minimum drop altitude is 400 feet AGL. CDS using a G-14 parachute can drop from 300 feet AGL.	
Legend: >—more than; AGL—above ground level; CDS—container delivery system; IMC/SKE—instrument meteorological conditions/station keeping equipment; KTs—knots; N/A—not applicable; UH—utility helicopter	

Table 19-3. Minimum aerial delivery altitudes (in feet)

PERSONNEL	*FEET*
Tactical training	1,000
Basic airborne trainees	1,250
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)	300
Door bundles, T-10 (C-17)	400
Door bundles, LCLA (C-130)	150

Table 19-3. 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	600
G-12E: Single parachute	400
Cluster of two	550
G-13: Single parachute or cluster of two	400
Cluster of three	500
G-14: Single parachute or cluster of two	300
Cluster of three	400
12-foot-high velocity	400
26-foot-high velocity	500
LCLA single parachute	150
SATB-C/TTB (see parachute load to be simulated)	N/A
HEAVY EQUIPMENT	***FEET***
G-12E	550
G-11B: Single parachute	900
Cluster of two to seven	1,100
Cluster of eight	1,300
G-11C: Cluster of eight	1,300
SATB-H/TTB (see parachute load to be simulated)	N/A
ROTARY-WING AERIAL DELIVERY	***FEET***
Personnel: Day or night	—
Below 90 KIAS	1,500
90 KIAS or greater (CH aircraft)	1,250
Maximum altitude for static line jump bundles	2,999
Day	300
Night	500

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; N/A—not applicable; SATB—simulated airdrop training bundle; TTB—tactical training bundle

TYPES AND METHODS OF AIRDROPS

19-4. The type of load determines the type of airdrop. The three airdrop types 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—cargo that has no device to stabilize or slow the rate of descent (for example, durable items such as clothing bundles).

19-5. 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:
  - Allowing 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 velocity followed by personnel), there must be a 3-second interval between the exit of equipment and the exit of jumpers 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.

19-6. To ensure that the airdrop is safe, and that equipment and personnel can be recovered or employed to accomplish the mission, the DZ and adjacent areas should be free of obstacles. Examples of obstacles are—

- Trees 35 feet or higher impeding recovery of personnel or equipment.
- Water 4-feet deep and 40-feet wide within 1,000 meters from any portion of the surveyed DZ.
- A high-tension wire that is carrying an active current of 50 volts or greater (which should be turned off prior to the drop).
- Any other conditions that may injure jumpers or damage equipment, such as inactive electric wires, barbed wire fences, swamps, ditches, and gullies.

19-7. The DZ should be sited at least 1,000 meters from a power line. If this is impractical and a power line is within 1,000 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 NLT 15 minutes prior to TOT. If this is impossible, then the flying mission commander, aircrew, and jumpmaster 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.

19-8. To minimize risks further, the DZSO and jumpmaster 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. If possible, they should clearly mark power lines with lights, high visual panel markers or any other conspicuous marking.

Note. See appendix A for DZ risk assessment.

DROP ZONES

19-9. The unit must have access to and from the DZ to recover personnel, equipment, or both, or to conduct troop movement. DZs with no roads leading to them or those next to a river with no bridges are examples of impeded access to areas.

19-10. Air routes to and from the DZ should not conflict with other air operations or restrictive terrain, or with man-made objects such as television or radio towers. Other considerations are—

- No-fly areas (restricted operations zones).
- Obstacles to the aircraft (man-made items).
- The terrain above the DZ.
- The enemy situation.

19-11. The following information provides minimum peacetime DZ 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).

19-12. The distance required for personnel and door bundles for GMRS/VIRS DZs is determined using the formula D=RT. The minimum size is 275 meters by 275 meters for a single shipment for USASOC and other service missions. See table 19-4 through page 352 for the CARP to determine size requirements for all CARP DZs and GMRS/VIRS equipment drops.

Table 19-4. 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 to 2	400 yards/355 meters
		2	3 to 4	450 yards/412 meters
		3	5 to 6	500 yards/457 meters
		4	7 to 8	550 yards/503 meters
		5 to 8	9 to 16	700 yards/640 meters
		9 to 12	17 to 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 the end of the DZ.			

Table 19-4. Computed air release point chart (continued)

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 to 2	400 yards/355 meters
		2	3 to 4	450 yards/412 meters
		3	5 to 6	500 yards/457 meters
		4	7 to 8	550 yards/503 meters
		5 to 8	9 to 16	700 yards/640 meters
		9 to 12	17 to 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.			
High Velocity CDS/HV-LCADS (using 12-foot, 22-foot, or 26-foot ring slot parachutes)				
To 3,000 feet	580 yards/530 meters		660 yards/604 meters	
			Add 50 yards/46 meters to the trailing edge for each additional row of containers.	
Above 3,000 feet	Add 25 yards/23 meters to each side and 100 yards/91 meters to each end for every 1,000-foot increase in drop altitude.			
High Altitude Airdrop Resupply System CDS				
To 3,000 feet	500 yards/457 meters	1 to 8 containers		1,200 yards/1,098 meters
		9 or more containers		1,900 yards/1,739 meters
Above 3,000 feet	Add 25 yards/23 meters to each side and 50 yards/46 meters to each end for every 1,000-foot increase in drop altitude.			
High-Speed Low-Level Aerial Delivery System				
	300 yards/274 meters		600 yards/549 meters	
Personnel (Static Line)				
To 1,000 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 1,000 feet	Add 30 yards/28 meters to width and length for each 100 feet above 1,000 feet. Add 15 yards/14 meters to each side of the DZ, and 15 yards/14 meters to each end.			

Table 19-4. Computed air release point chart (continued)

ALTITUDE (FEET AGL)		*WIDTH (NOTES 1, 2, AND 4)*		*LENGTH (NOTES 3 AND 4)*
Heavy Equipment				
To 1,100 feet	600 yards/549 meters	One platform		1,000 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 1,100 feet		Add 30 yards/28 meters to width and length for each 100 feet above 1,100 feet. Add 15 yards/14 meters to each side and the end of the DZ.		
C-17 Dual Row Airdrop System				
To 1,200 feet		600 yards/549 meters	One platform	1,000 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 1,200 feet		Add 30 yards/28 meters to the width and length for each 100 feet above 1,200 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 DZ is determined by platform placement, and the number of platforms 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 require calculations based on five platforms. 463L pallet or 8-foot training platforms: the minimum DZ is 1,600 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 9,000 feet		328		300
9,000 to 15,000 feet		546		500
15,000 to 25,000 feet		765		700
More than 25,000 feet		No data		No data

Table 19-4. 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 [AFSOC] assigned/gained aircraft operational control to the United States Special Operations Command [USSOCOM] 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 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 1,240 yards for two-ship elements and 1,800 yards for three-ship elements. When using offset PIs, minimum basic width is 1,050 yards for two-ship elements and 1,300 yards for three-ship elements. Drop altitude adjustments from chart still apply.

Note 3. Length adjustments (N/A for AFSOC assigned or gained, aircraft OPCON 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 comply with AFI13-217_AFSOCSUP.

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: 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; OPCON—operational control; PI—point of impact; RQS—rescue squadron; SERE—survival evasion resistance escape (specialists); YPG—Yuma Proving Grounds; 463L pallet—88 inches (224 centimeters) wide, 108 inches (274 centimeters) long, and 2-1/4 inches (5.7 centimeters) high. The usable space is 84 inches (213 centimeters) by 104 inches (264 centimeters). It can hold up to 10,000 pounds (4,500 kilograms)

AIRDROP RELEASE METHODS AND PERSONNEL

19-13. The number and type of aircraft that delivers personnel and equipment usually dictates the type and composition of the DZ 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 (CCT and DZSO, DZST and DZSO).

19-14. To ensure accurate delivery on the DZ, jumpmasters use four different airdrop methods. Each method uses various input from the ground and air in the calculation formula.

19-15. The CARP is the method most often used in aerial delivery for conventional airborne operations. The CARP is computed by the aircrew (navigator) and it determines the release point (RP) from the air. The GMRS is computed by the DZSTL and it determines the RP from the ground.

19-16. The VIRS is one of the two methods used by services (USA and USMC) having rotary-wing and fixed-wing aircraft for small DZs, for dropping a specified number of personnel. VIRS is computed by the DZSTL; the RP is indicated by an oral command to the aircraft.

19-17. 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 RP is jumpmaster-directed and is the only method not requiring markings on the DZ.

19-18. JSJR is used by USMC, USN, USAF Special Warfare, and U.S. Special Operations Command units only. The JSJR RP computation or 'spotting' may be used from all types of aircraft.

19-19. To become operational, DZs require key personnel to be located on the DZ for controlling, marking, medical evacuating, wind readings, and malfunctions.

19-20. The CCT and DZSO personnel are normally used in joint airborne operations when more than four USAF aircraft are used. (See DAFMAN 13-217.)

19-21. 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 are used.

19-22. Acting alone, without CCT support, the DZSTL operates DZs 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

19-23. When the USAF CCT is supporting an airborne operation, the DZSO is the airborne commander's direct representative on the DZ 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 USAF CCT and USA DZSO have specific duties, which are discussed in paragraphs 19-24 to 19-26.

Note. The prerequisites to perform the duties of the DZSO are outlined in chapter 7.

19-24. When advised of the appointment as DZSO by the airborne commander or their representative, the DZSO should attend an air briefing for coordination and should be furnished with 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.
- DZ requirements (personnel and equipment).
- Unit SOP.
- Current AF 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 the DZSO party to linkup and convoy to DZ.

19-25. The duties of the DZSO are as follows:

- Coordinate with the USAF CCT.
- Ensure the appropriate personnel and equipment are in place to support the airborne operation.
- Ensure the DZ is fully operational 1 hour before drop time.
- Ensure the DZ 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 the USAF CCT and take initial wind readings 1 hour before the scheduled drop time.
- Establish communications with the DACO NLT 1 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 CCT (if present to relay to aircraft) 2 minutes before the scheduled drop.
- Monitor surface winds from the jumpers' PI and at the highest point of elevation on the DZ.

- 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 MEDEVACs.
  - Priority for airspace must be given to MEDEVACs.
  - 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 4-feet deep.
  - The water obstacle is more than 40-feet wide.
  - The water obstacle is within 1,000 meters of any portion of the surveyed DZ.
- Submit postmission 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 MALFO. The DACO immediately notifies the ALCE of a parachute malfunction.

CAUTION

Both the DZSO and the CCT have the authority and responsibility to declare a no drop if they believe an unsafe condition exists. A no-drop decision by either one is acted upon by the other without fail. It cannot be overruled.

Note. The CLEAR TO DROP or NO DROP that is relayed at 2 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.

19-26. A complete control group is required for airdrop operations involving multiple fixed-wing aircraft, for single aircraft operations on DZs more than 2,100 meters in length, or if there is at least 20 seconds of exit time (green light). If any three of these conditions apply, the following is required:

- The DZSO ensures the ground support team is in place on the DZ 1 hour before the drop.
- The assistant DZSO (not required for USN or USAF 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; USMC, USN, and USAF require one qualified support person.
- A senior medic, who should be positioned on the DZ for the best supervision of medical operations and must always have communications with the DZSO.
- A MALFO with still and video cameras (see chapter 24 for MALFO requirements).
- A parachute recovery detail with wood saw and tree climbing equipment.
- Parachute turn-in detail with vehicles.

DROP ZONE SAFETY OFFICER EQUIPMENT REQUIREMENTS

19-27. 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.
  - MALFO.
- Two compasses—one each for the DZSO and the assistant DZSO.

- Vehicles.
- Military map of the DZ 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 panel markers (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, ensuring 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 air movement brief) placed along the surveyed DZ centerline 1,000 meters from the PI or the trail edge of the DZ, whichever is closer to the PI (see DAFMAN 13-217).
  - White flanker lights—if used must be briefed in the DZSO or air mission brief 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 is briefed.
  - One red star cluster for every planned pass or other precoordinated no-drop signal.
  - NVD (DZSO, ADZSO, and MALFO).
  - Strobe light or other acquisition aid (only if prebriefed on the DZSO or aircrew mission briefing).
- Anemometers—services 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 and discard the one anemometer that does not read the same as the other two.

Types of Anemometers

19-28. The DIC-3 anemometer (NSN: 6660-01-699-8944) 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, and all component parts must be present and serviceable. 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, mph, 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.

19-29. The Turbometer anemometer 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, mph, 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.

19-30. 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)

19-31. A deliberate risk assessment conducted by the airborne commander dictates the required equipment needed for the airborne operation. For best results, equipment can be altered to 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) and all boat detail personnel should be strong swimmers.
- Spotlight or NVDs for nighttime operations.
- Recovery boat teams—each 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 flotation device for each boat detail member, and enough flotation devices for jumpers (not to exceed the maximum capacity of the boat).
  - One life ring with an attached rope.
  - One radio with a spare battery.
  - One shepherd's crook.
  - One grappling hook.
  - One long backboard to facilitate cardiopulmonary resuscitation.
  - One aid bag with resuscitation equipment.
  - One rope, 120-feet long.

Tree Recovery Detail Equipment (If Required)

19-32. A deliberate risk assessment conducted by the airborne commander dictates the required equipment needed for the airborne operation. For best results, equipment can be altered to 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 4-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, 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 1,000 meters of the DZ.

19-33. 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 2,100 meters of usable DZ. The composition of a partial control group includes the following:

- DZSO (DZSTL qualification is not required).
- Personnel to conduct 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); USMC and USN require one qualified Navy corpsman.
- MALFO with still and video cameras, binoculars, and NVDs for night operations.
- Parachute recovery detail.

19-34. The DZSO has operational responsibility for the DZ. In addition to the DZSO's duties for DZs, the DZSO must also—

- Be positioned at the personnel PI 15 minutes before drop time:
  - The assistant DZSO is at the highest point of the DZ or at a location determined by the DZSO if the DZSO is at the highest point of the DZ.
  - For combination airdrop operations, the DZSO or DZSTL must follow the procedures for heavy drop operations.
  - The DZSO or DZSTL relocate to the personnel PI 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 PI 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 2 minutes before the drop for each pass.
- During night drops—
  - Ensure all lights that are on or next to the DZ and are not a part of the DZ marking system are turned off 5 minutes before drop time.
  - Ensure lights remain off during the drop, except those lights that mark obstacles.
- Contact the pilot of the aircraft immediately after the drop:
  - Ask if any personnel or equipment did not drop.
  - The DZSO or DZSTL relays this information to the airborne commander or DACO for accountable purposes.

DROP ZONE SUPPORT TEAM LEADER DUTIES

19-35. In operations in which the CCT is not present, the DZSTL has overall responsibility for the conduct of operations on the DZ and represents the airborne and airlift commanders. The DZSTL assumes all the responsibilities normally associated with the USAF CCT and DZSO. The following 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:
  - Wartime force projection and sustainment of personnel, equipment, and CDS.
  - Peacetime airdrops under IMC and visual meteorological conditions formation drops with four or more aircraft.

- DZSTs consist of one or more individuals, but 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.
- Individuals assuming the duties of both the DZSO and the DZSTL are also responsible for the following:
  - Conducting pre-mission 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.

19-36. Once the DZSTL has been notified and assigned a mission, they conduct accurate pre-mission 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 (ATC) light gun, and smoke or flares.

19-37. During contingency or wartime operations, limited airdrop support equipment is available, and it is important for pre-mission 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 DZ.

19-38. A recommended DZST and aircrew mission briefing checklist includes:

- DZ name and location and joint airborne/air transportability training mission sequence number verified.
- TOTs block time (NO DROP procedures, for example, racetrack).
- Valid DZ survey (date) verified.
- Type drop—heavy equipment, CDS, personnel.
- Type of release—VIRS, CARP, GMRS, IMC, WSVC, and visual.
- Type of 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 verification.
  - Aircraft (mission) commander’s name, unit of assignment, and telephone number.
  - DZSTL name, rank, unit of assignment, and telephone number.
  - Drop score/incident/accident reporting procedure.

EQUIPMENT

19-39. The DZSTL should maintain an inventory of basic equipment (see paragraph 19-38) to support an airdrop mission; however, the DZSTL may need the following additional equipment:

- Smoke (red, yellow, and green).
- White omnidirectional or IR lights.
- ATC gun, SE-11 light gun, or four-cell extremely bright flashlight.

Note. The ATC 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 pre-mission coordination and mission complexity.

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PART FOUR

DROP ZONE SUPPORT TEAM LEADER FORMULAS FOR GMRS AND VIRS DROP ZONES

This part discusses parachute techniques and drop zone activity.

Chapter 20

Formulas and Computations

Once the composition of the ground party and the selection of a DZ 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 RP).

GROUND MARKING AND VERBALLY INITIATED RELEASE SYSTEMS

20-1. 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.

20-2. To find the aircraft ground speed, convert aircraft airspeed (expressed in knots) to ground speed (meters per second). Do this by multiplying knots times 0.51 (knots by 0.51) (1 knot equals 0.51 meters per second).

20-3. To determine the time over the DZ that is needed to release a jumper or equipment, use the following factors:

- Allow 1 second for each jumper to exit the aircraft; do not include the first jumper (10 jumpers require 9 seconds). Mathematically, this is represented as 9 x 1 second.
- Allow 3 seconds per bundle to exit the aircraft; do not include the first bundle (three bundles would require 6 seconds); mathematically, this is represented as 2 x 3 seconds.
- Personnel jumping T-11 ATPS parachutes may exit both doors simultaneously. The door with the most jumpers is used to calculate the time required.

20-4. 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 0.51 (90 knots by 0.51) = 45.90 meters per second.
- Step 2—solve for T (answer is expressed in seconds): number of jumpers by 1 second (8 by 1) = 7 seconds.
- Step 3—solve for D (answer is expressed in meters): 45.90 meters per second by 7 seconds = 321.30 meters:
  - Always round up to the nearest whole number.
  - Therefore, D = a length of 322 meters.
- 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 meters + 200 meters = 522 meters, the required DZ length.

20-5. 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.

20-6. 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 0.51). Round up the answer to the next whole number.

20-7. 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.

20-8. For example, how many jumpers from a CH-47 (drop speed of 90 knots) can land on a 750-meter DZ in each pass? To figure it out, use the following:

- T = Number of jumpers.
- D = DZ length is 750 meters (given).
- R = Airspeed is 46 meters per second (90 knots x .51 = 45.9; round up to 46).
- Solution: T = D/R (D divided by R).
- D/R = 750 meters - 200 meters = 550 divided by 46 meters per second = 11.9 seconds.
- T = 11 seconds (round down).
- 11 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

20-9. Two means of determining wind drift are the WSVC method and the distance x constant x velocity (D = KAV) formula. The WSVC method (see figure 20-1) is used when the RP is determined from the air. It is normally jumpmaster executed and does not require markings to be placed on the DZ. Below are the procedures for WSVC:

- Streamer drop—on the first aircraft pass over the desired PI, a streamer is dropped from the aircraft:
  - The aircraft then turns to allow the jumpmaster to keep the streamer in sight.
  - The pilot adjusts the 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 jumpmaster 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 RP for the first jumper.
- Aircraft flight adjustment—the pilot then maneuvers the aircraft to fly along the axis of the DZ and over the RP:
  - Slight adjustments may be made by observing the jumpers as they land on the DZ.
  - Table 20-1 on page 365 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.

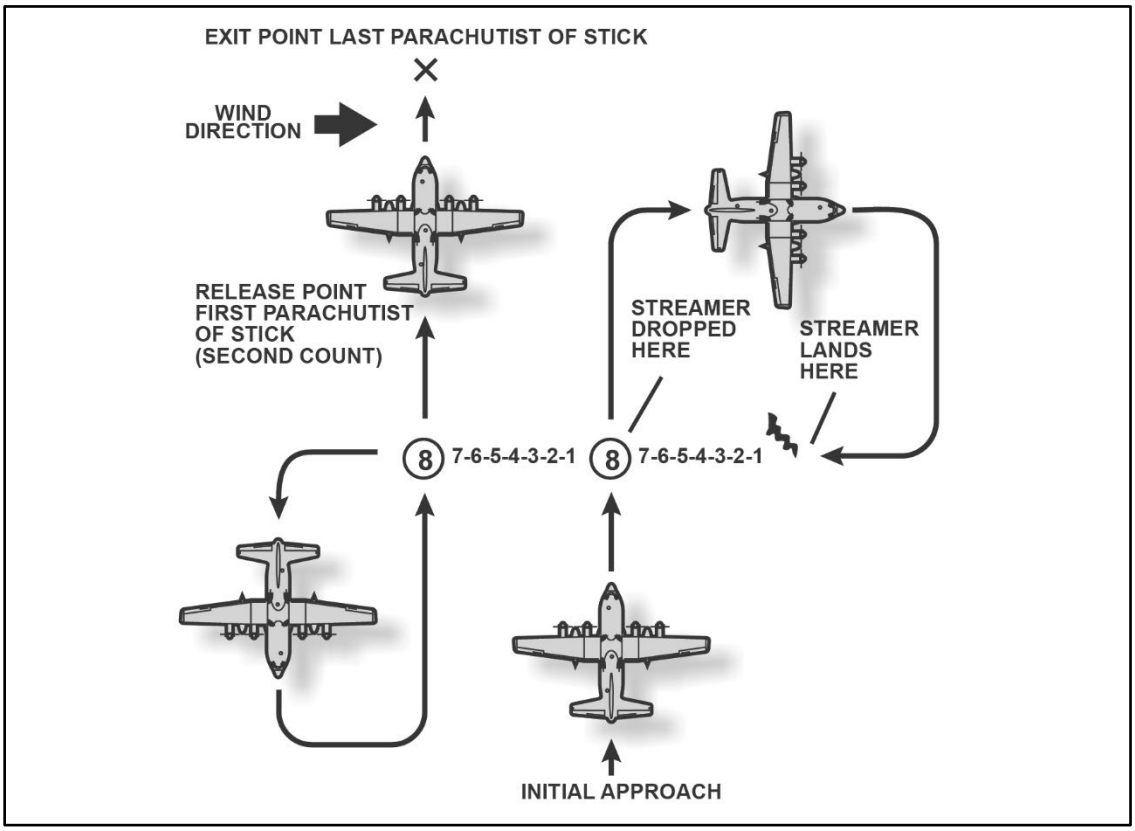


Figure 20-1. Determination of the release point by WSVC

20-10. 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 meters for cargo parachutes and heavy equipment.
- 3.0 meters for personnel parachutes.
- 2.4 meters for standardized airborne training bundles.
- 0 meters for high velocity and free drop items.

20-11. A = drop altitude (expressed in hundreds of feet AGL); and V = velocity of wind. The MEW must be used.

Note. If an aircraft must be shut down for a long period, a wind drift indicator should be thrown at the last RP to ensure the RP is still valid.

20-12. For example, an aircraft drops 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 heavy-equipment constant).
- Step 2: A = 5 (500 feet).
- Step 3: V = 10 (10 knots).
- Step 4: D = 1.5 by 5 = 75.0, or 75 meters of drift (any fractional answer is rounded up to the nearest whole number).

WIND VELOCITY

20-13. 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 19.

20-14. The equipment needed to compute the MEW by the PIBAL method is as follows:

- Helium source.
- PIBALs (10 or 30 grams).
- Clinometers or other devices for measuring from 0 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 20-1 and table 20-2 through page 366.
- Watch with a second hand.

20-15. The procedures for measuring MEW using the PIBAL are as follows:

- 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 20-1 and table 20-2 through page 366).
- 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.
- See 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 and 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.
- MEW becomes the variable V in the D = KAV formula to determine the amount of drift in meters.

Table 20-1. 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

ELEVATION ANGLE	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	01		
60	03	02	02	02	02	02	02	02	02	02	02	02		
55	03	03	03	03	03	03	03	03	03	03	03	03	TIME	ALT (FT)
50	04	04	03	03	03	03	03	03	03	03	03	03	0:10	80
45	05	04	04	04	04	04	04	04	04	04	04	04	0:20	170
40	06	05	05	05	05	05	05	04	04	04	04	04	0:30	250
35	07	06	06	06	06	05	05	05	05	05	05	05	0:40	330
30	08	07	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	08	1:02	500
24	11	10	09	09	09	09	08	08	08	08	08	08	1:10	540
23	11	10	10	09	09	09	09	08	08	08	08	08	1:20	610
22	12	11	10	10	10	10	09	09	09	09	09	09	1:23	670
21	12	11	11	10	10	10	10	10	10	10	10	10	1:43	750
20	13	12	11	11	11	11	11	10	10	10	10	10	1:50	790
19	14	13	12	12	11	11	11	11	11	11	11	11	2:25	1000
18	15	13	13	12	12	12	12	12	11	11	11	11	2:44	1100
17	16	14	13	13	13	13	12	12	12	12	12	12	3:05	1250
16	17	15	14	14	14	13	13	13	13	13	13	13	3:49	1500
15	18	16	15	15	14	14	14	14	14	14	14	14	4:30	1750
14	19	17	16	16	16	15	15	15	15	15	15	15	5:11	2000
13	21	19	18	17	17	17	17	16	16	16	16	16	6:34	2500
12	22	20	19	19	18	18	18	18	17	17	17	17	7:58	3000
11	24	22	21	21	20	20	20	19	19	19	19	19	9:22	3500
10	27	25	23	23	22	22	22	21	21	21	21	21	10:44	4000
09	30	27	26	26	25	24	24	24	23	23	23	23	12:08	4500

Legend: ALT—altitude; FT—feet

Table 20-2. 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

20-16. Forward throw is the effect that inertia has on a falling object. When an object leaves an aircraft, it travels 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.

20-17. 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 distances in table 20-3 apply.

Table 20-3. Fixed-wing forward throw data

EQUIPMENT	*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

20-18. 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 RP. (See figure 20-2 on page 368.)

20-19. 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 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.

20-20. The location selected where the first bundle or parachutist should land is 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 Form 3823.

20-21. 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.)

20-22. 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 RP.

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 (FM 4-20.142)/MCRP 4-11.3P/NAVSEA SS400-AD-MMO-010/TO 13C7-51-21, 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.

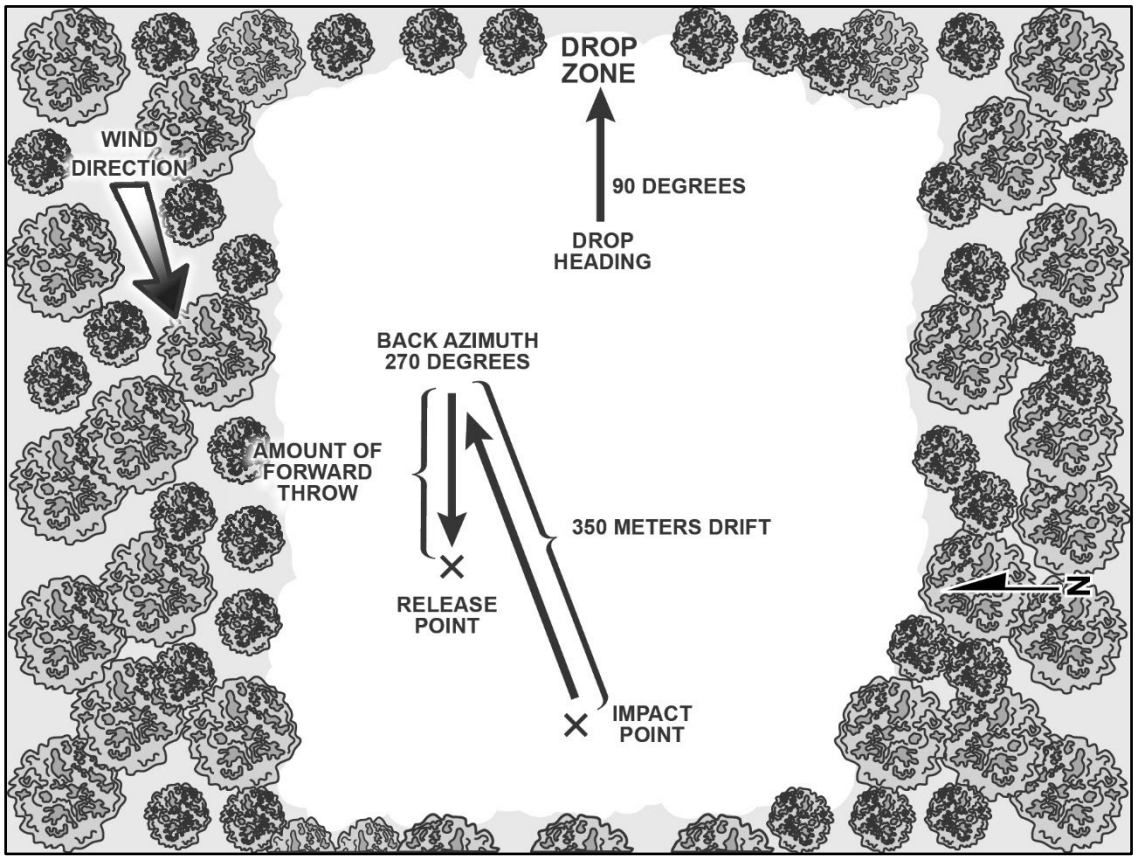


Figure 20-2. Release point location for verbally initiated release system and ground marking release system

Chapter 21

Drop Zone Establishment and Operation

Five methods may be used to establish or operate a DZ. Three of these require markings to be placed on the DZ through the employment of the CARP, GMRS, and VIRS. The WSVC and jumpmaster spotted jumpmaster directed methods do not require RP markings on the DZ.

COMPUTED AIR RELEASE POINT

21-1. The CARP is used only by fixed-wing aircraft in conjunction with a CCT or qualified DZSTL. CARP minimum points of impact are shown in figure 21-1 on page 370 and figure 21-2 on page 372, and are as follows:

- Personnel drops at the PI are—
  - 300 yards (C-130 day, C-17 day or night, IMC).
  - 350 yards (C-130 night or C-17 night pilot-directed airdrop) from the leading edge.
- CDS drops:
  - From a C-130, drops at the PI are 200 yards (day) or 250 yards (night) from the leading edge.
  - From a C-17, the PI is 225 yards (day or night, IMC) and 275 yards (night pilot-directed airdrop).
- Heavy equipment drops at the PI are—
  - 500 yards (C-130 day, C-17 day or night, IMC).
  - 550 yards (C-130 night or C-17 night pilot-directed airdrop) from the leading edge.

Note. On surveyed DZs, the PI for a particular type of load is predetermined. Its surveyed location can be found on AF Form 3823.

21-2. 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 pre-mission briefing.

21-3. Control center locations (location of the DZSTL) are the following:

- 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 from the 6 o'clock position of the PI.
- 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 non-personnel 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.

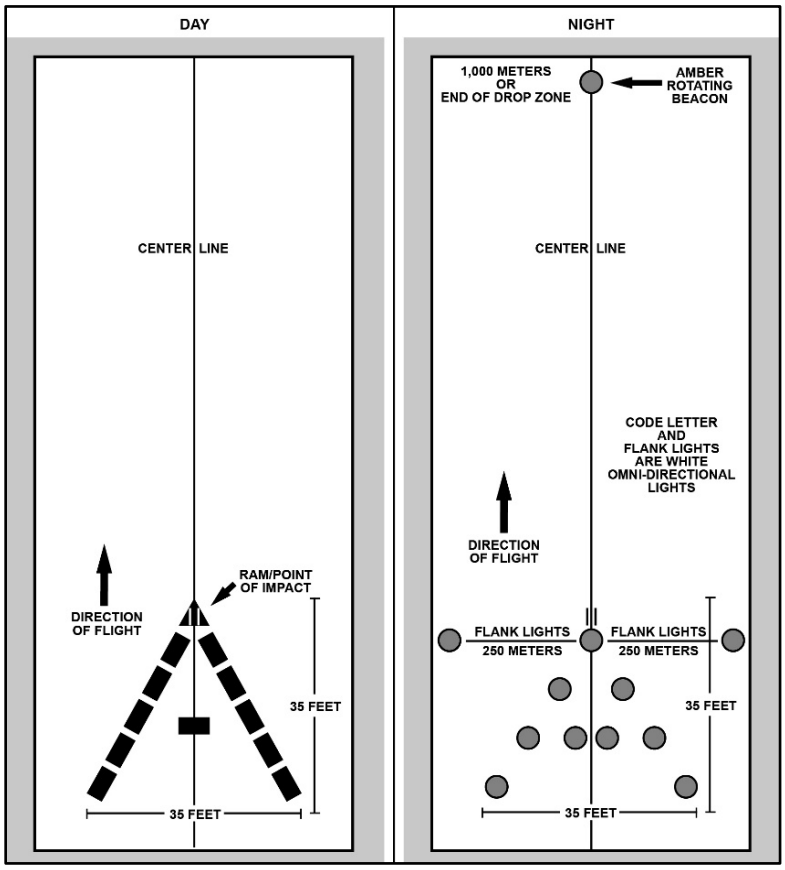


Figure 21-1. Day computed air release point drop zone markings (left) and night computed air release point drop zone markings (right)

MARKINGS

21-4. A marked DZ has a PI or RP 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), panel markers, 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 IR lighting systems. Electronic navigation aids markings may be used for day or night operations and are placed as directed by mission requirements.

21-5. During daytime CARP operations, the PI is marked with a RAM or block letter. All conventional Army units use the RAM as the minimum and required markings. If authentication is required, a block letter is 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.

21-6. 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 is 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 1,000 meters from the PI, or at the DZ trailing edge, whichever is closer to the PI. During pre-mission coordination for personnel drops, aircrews identify their trailing edge beacon requirements to CCT 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.

21-7. When mission requirements dictate and aircrews are qualified and equipped, IR lights may be substituted for overt lights using the DZ marking patterns specified earlier in this chapter.

GROUND MARKING RELEASE SYSTEM

21-8. 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 21-2 on page 372):

- From the RP:
  - Move 100 meters to the left (90 degrees) of drop heading for the location of the corner panel.
  - Emplace a panel marker 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 jumpmaster in visual identification of the DZ.
- From the corner panel—
  - Move in the same direction as above (from the RP) for 50 meters for the location of the alignment panel.
  - Emplace a panel marker 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 DZ) in the same direction as above (from the RP) for the location of the flanker panel.
  - Emplace a panel marker 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 panel marker 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 are shielded on three sides or placed in pits.
- The RP/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

21-9. Since the aircraft is required to fly along the DZ markings, 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 21-2 on page 376.) 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 the drop heading where it can best be observed by aircraft. This only applies to static line jumps.

21-10. 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 online with the corner panel to allow the aircrew to begin alignment on the RP 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.

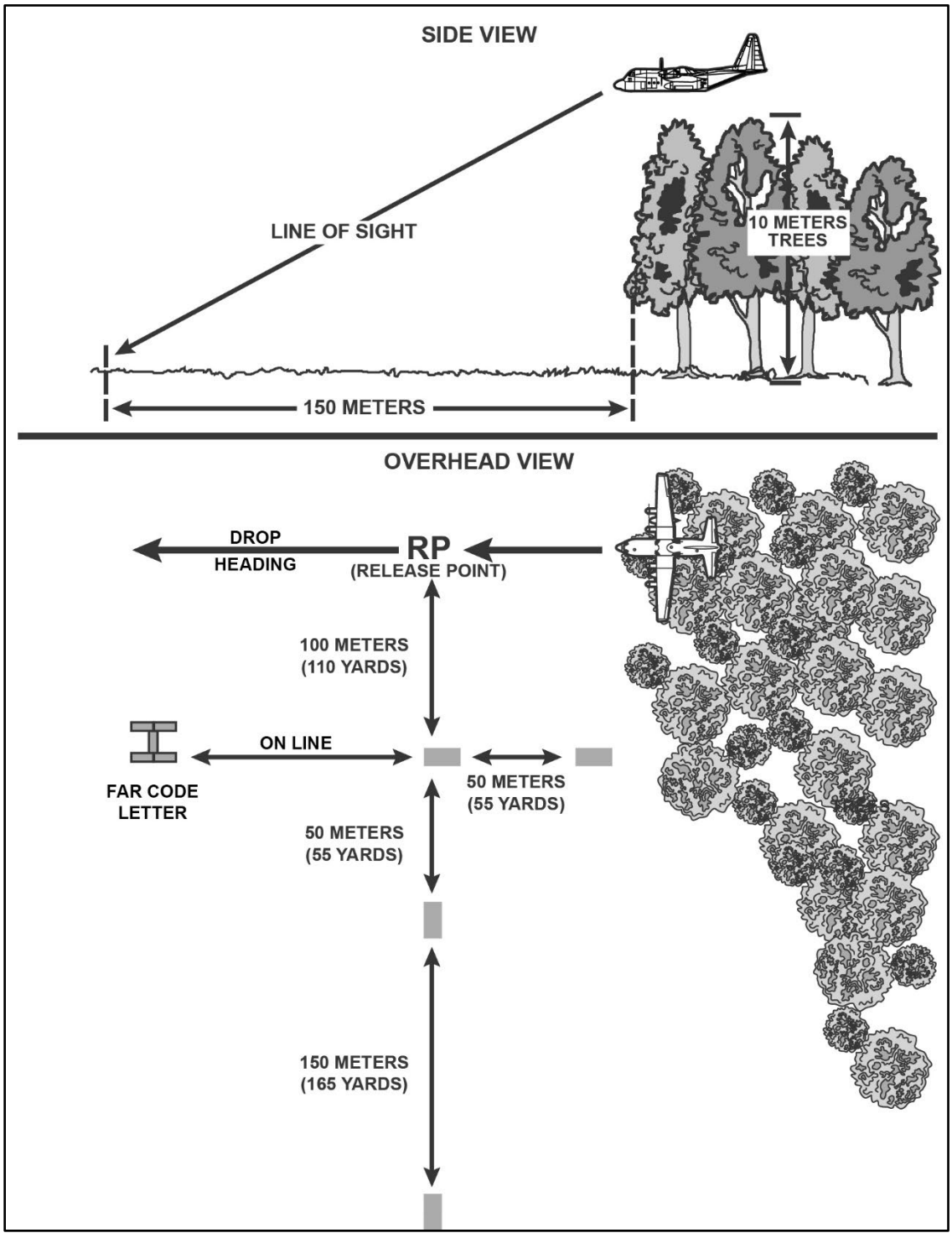


Figure 21-2. Marking placement for inverted L and 15:1 mask clearance ratio

21-11. Six-panel T and seven-panel H markings are illustrated in figures 21-3 and 21-4 through page 374.

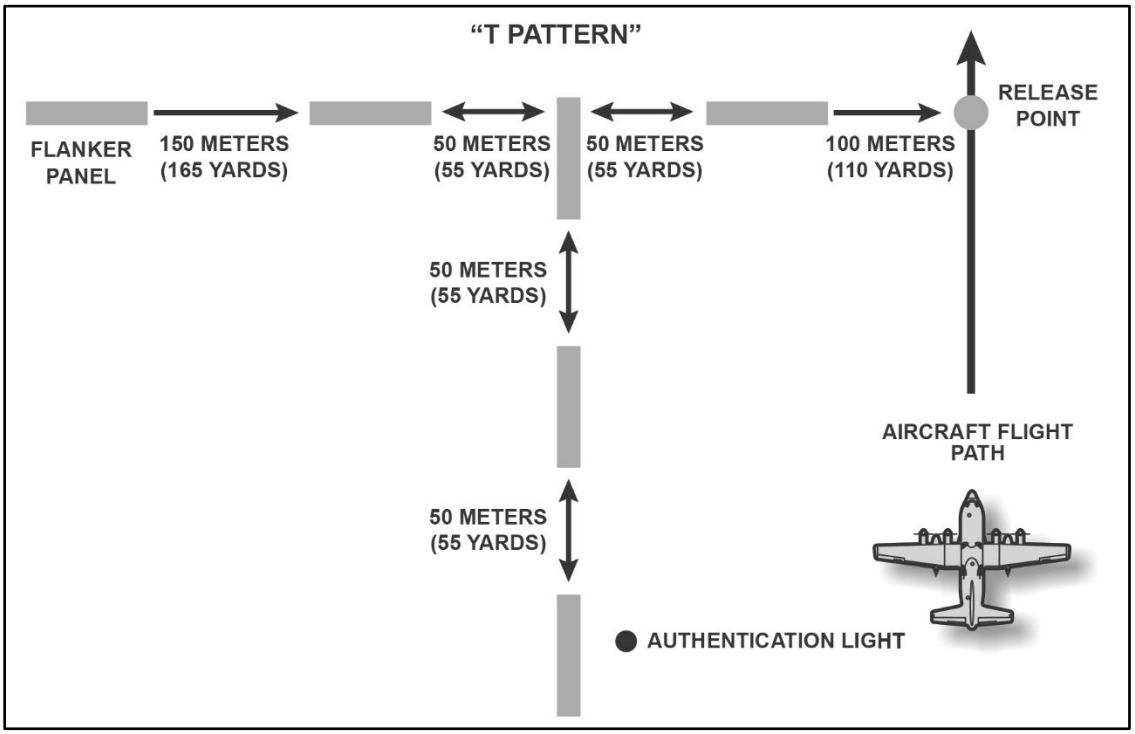


Figure 21-3. Ground marking release system panel emplacement for T pattern

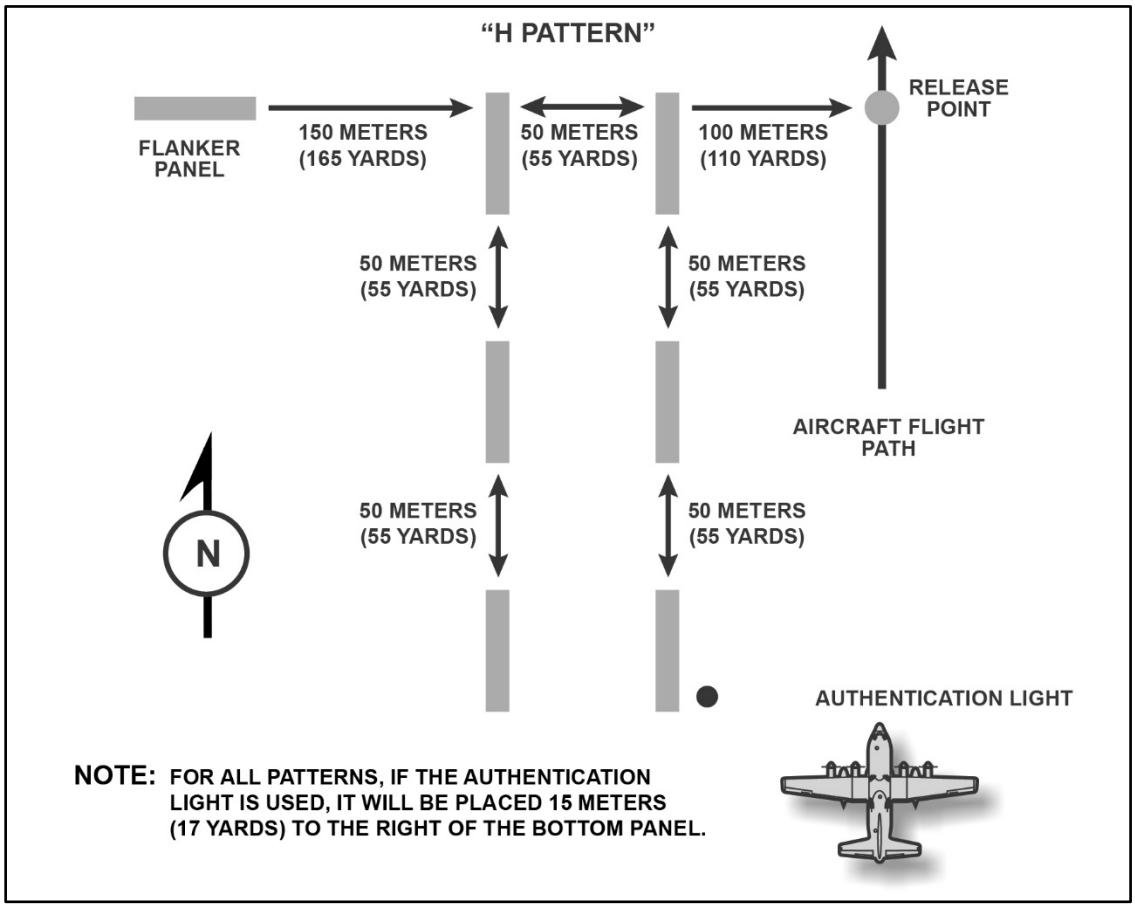


Figure 21-4. Ground marking release system panel emplacement for H pattern

21-12. VIRS is used to execute a drop over the RP by ground-to-air (GTA) verbal command. This method allows the conduct of the operation with a minimum amount of prior DZ information and coordination. The aircraft flies in the given direction until spotted by the DZSTL. Only one aircraft is on any one given leg at any one given time. 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 21-5.)

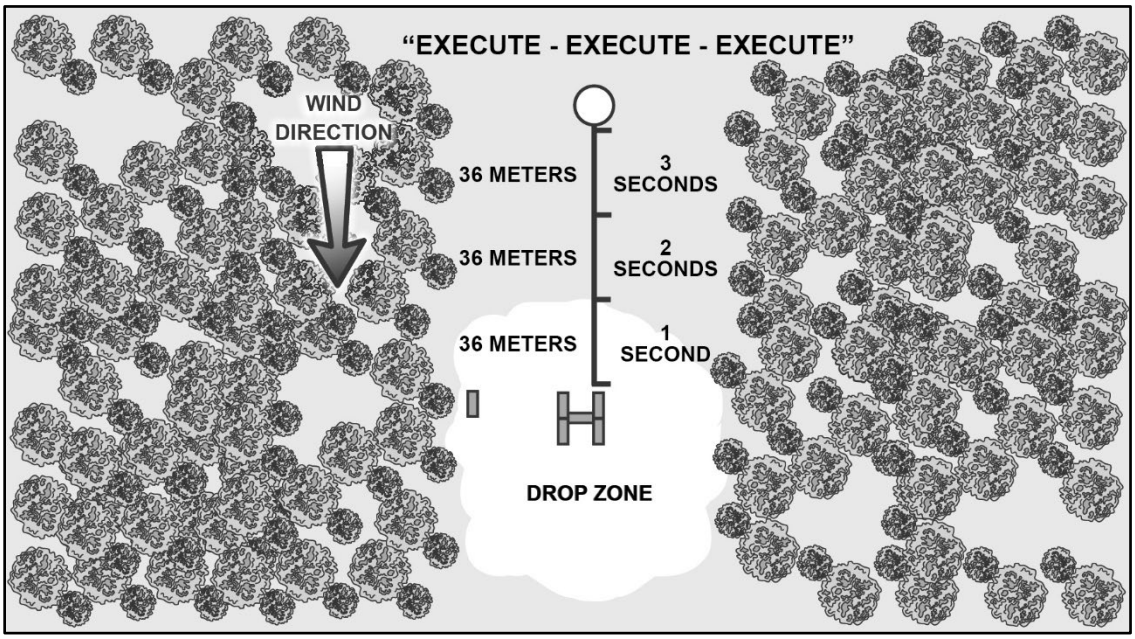


Figure 21-5. Army verbally initiated release system offset

CAUTION

When conducting a VIRS jump while using Army aircraft, only one aircraft is on any one given leg at any one given time.

DAY AND NIGHT DROP ZONE MARKINGS

21-13. 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 RP. The code letter is formed by panel markers placed together. Each letter is two panels high and one panel wide.

21-14. 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 RP. 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 online with the drop heading oriented lengthwise on drop heading and elevated 45 degrees towards the RP. Both the far and flank panels consist of a single panel marker. These panels must also be elevated at a 45-degree angle towards the RP to improve visibility.

21-15. 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 with five meters between each light. The far and flank lights are signal lights. A white-and-red lens ATC (SE 11) light should also be located at the RP. Lights must be shielded on three sides or placed in pits to prevent enemy ground observation.

GUIDANCE PROCEDURES

21-16. During Army DZ operations, the GTA operator 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 RP.

21-17. Once the jumpers have exited the aircraft, the GTA operator 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-60, over."
- GTA: "A22, this is D36:"
  - "Heading [180] distance (from communications checkpoint)."
  - "Drop heading [180]."
  - "Drop altitude [1,500] (feet indicated)."
  - "Drop speed."
  - "Number jumpers/bundles that can be accepted."
- The GTA controller reads the 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 8-to-10 seconds out from RP: GTA: "A22, this is D36, with six jumpers, standby, over."
- Pilot: "D36, this is A22, standing by, over."
- When the aircraft is directly over the RP: 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."
  - The GTA must place aircraft into a closed traffic pattern with a reporting point if more than one pass is required.

JUMPMASTER SPOTTED AND JUMPMASTER RELEASE

21-18. JSJR is used by USMC, USN, USAF Special Warfare, and U.S. Special Operations Command units only. The JSJR RP 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 jumpmaster for spotting and determining the RP from the aircraft. A map of the DZ 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 following procedures:

- Step 1—determine what effect the wind has on the canopy using the wind drift formula D=KAV, as outlined in chapter 20.
- 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 20.
- 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 RP.

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, use 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 RP on the ground using the time/distance formula T = D/R.
- Step 7—the jumpmaster starts spotting by guiding the aircraft to the intended RP by giving the pilot flight corrections:
  - The jumpmaster gives the GO when the aircraft is over the RP.
  - If a terrain feature reference point is used, the jumpmaster guides the aircraft to the terrain feature and starts to count.
  - The aircraft maintains heading, and the jumpmaster 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 takes effect, and the first jumper lands on the impact point.

21-19. 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 1,500 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 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 = 4 seconds past the terrain feature.
- Step 7—check to ensure everything is properly calculated and plotted on the map and using all the information from the example, the jumpers exit, and land as shown in figure 21-6 on page 378.

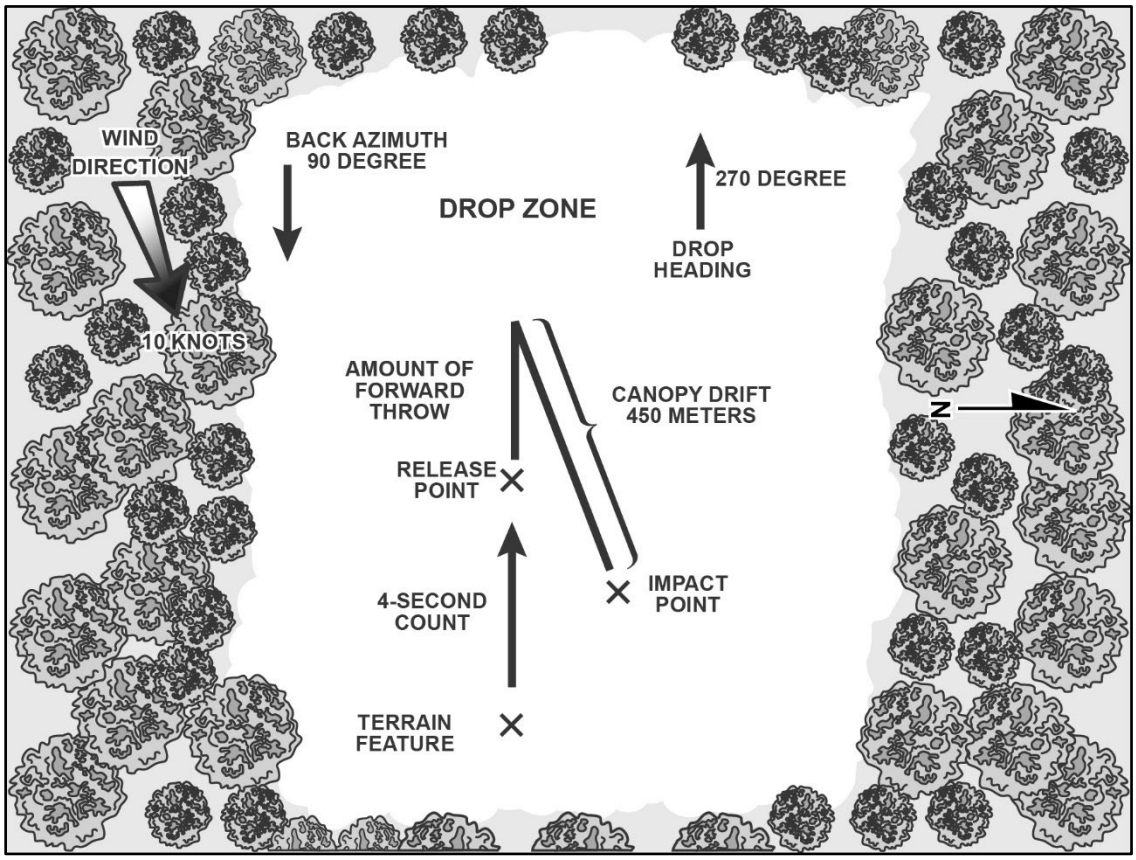


Figure 21-6. Release point location for jumpmaster spotted and jumpmaster released

ACCEPTABLE WIND LIMITATIONS

21-20. Maximum allowable surface wind for static line parachute personnel airdrops is 13 knots (17 knots for a 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 CDSs. The airborne commander is responsible for ensuring winds on the DZ do not exceed 13 knots during static line personnel airdrops.

21-21. Services only use approved anemometers to measure surface winds during all personnel and cargo parachute operations. The approved anemometers are the DIC anemometer, DIC-3 anemometer, Turbometer, and the AN/ML433A/PM. 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-3 anemometer, 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 and discard the one anemometer that does not read the same as the other two.

21-22. The Turbometer must be held within 20 degrees of the wind line with the wind entering the rear of the meter to ensure accurate readings.

TEN-MINUTE WINDOW

21-23. On multiple aircraft operations or in single aircraft operations using more than 2,100 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 2,100 meters of DZ, the wind is measured from only one location, normally the control center. Beginning 1 minute before TOT, the DZSO begins a constant monitoring of the surface wind using an anemometer.

21-24. 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.

POST-MISSION REQUIREMENTS

21-25. 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 21-7 on page 380) is used to record strike report information. All services complete DD Form 1748-2 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 OPNAV M-5102.1 (see figure 21-8 on page 381 for a suggested format for incident reporting).

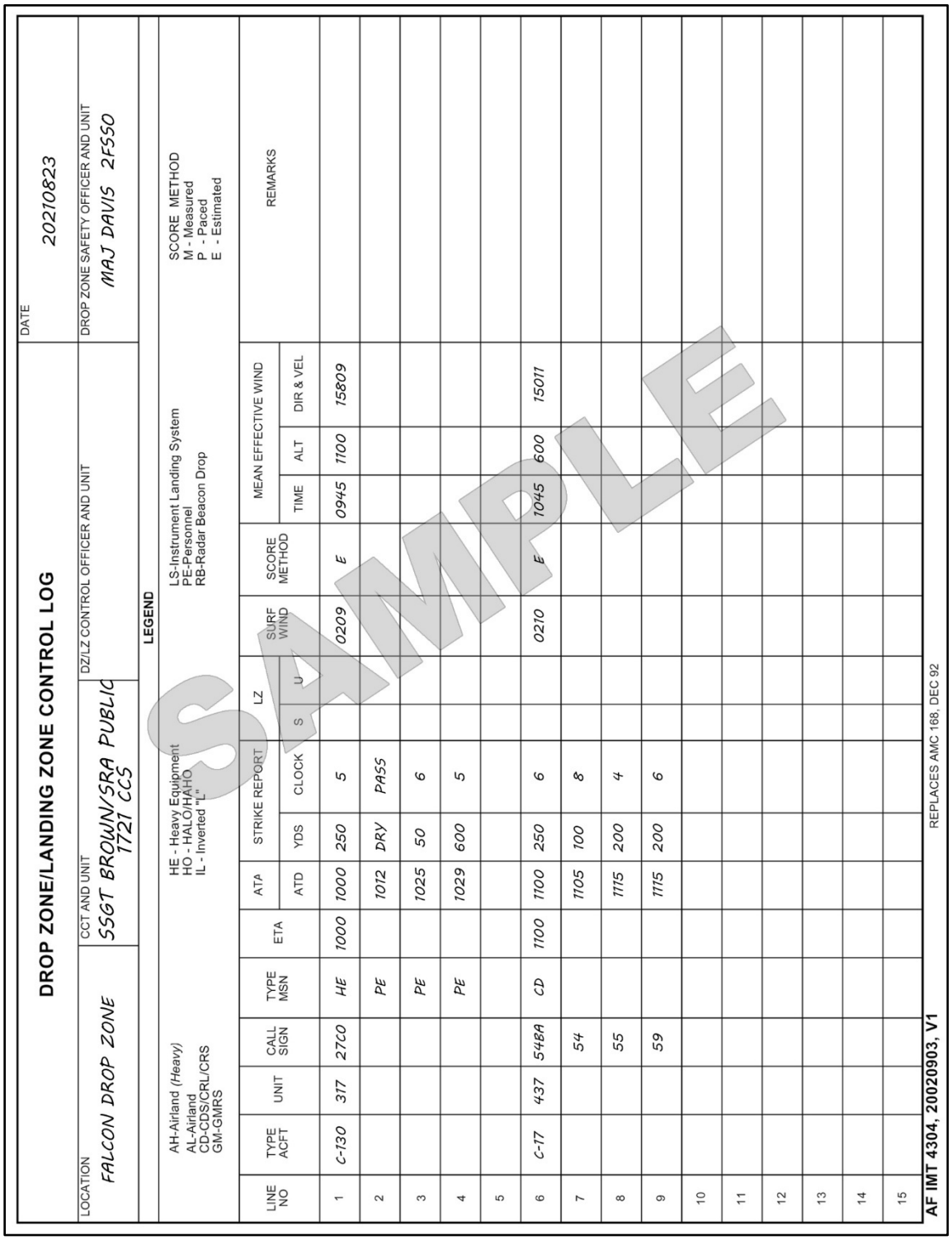
21-26. Complete the AF IMT Form 4304 as follows:

- DATE—date of airdrop.
- LOCATION—name of the DZ.
- Special tactics squadron (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 the LINE NO column). Subsequent passes by that same aircraft are 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; see LEGEND for abbreviations.
- ETA—estimated time of arrival, estimated TOT, battalion or brigade operations staff officer air brief.
- ETA—actual arrival time of every pass.
- STRIKE REPORT.
- YDS—distance the 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—see 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.

21-27. The DZSTL forwards the completed AF IMT Form 4304 to the air operations officer, who submits it through the chain of command to the USAF representative.



DROP ZONE/LANDING ZONE CONTROL LOG

DATE: 20210823

LOCATION: FALCON DROP ZONE

CCT AND UNIT: SSGT BROWN/SRA PUBLIC 1721 CCS

DZ/LZ CONTROL OFFICER AND UNIT:

DROP ZONE SAFETY OFFICER AND UNIT: MAJ DAVIS 2FSSO

LEGEND

AH-Airland *(Heavy)*
AL-Airland
CD-CDS/CRL/CRS
GM-GMRS

HE - Heavy Equipment
HO - HALO/HAHO
IL - Inverted "L"

LS-Instrument Landing System
PE-Personnel
RB-Radar Beacon Drop

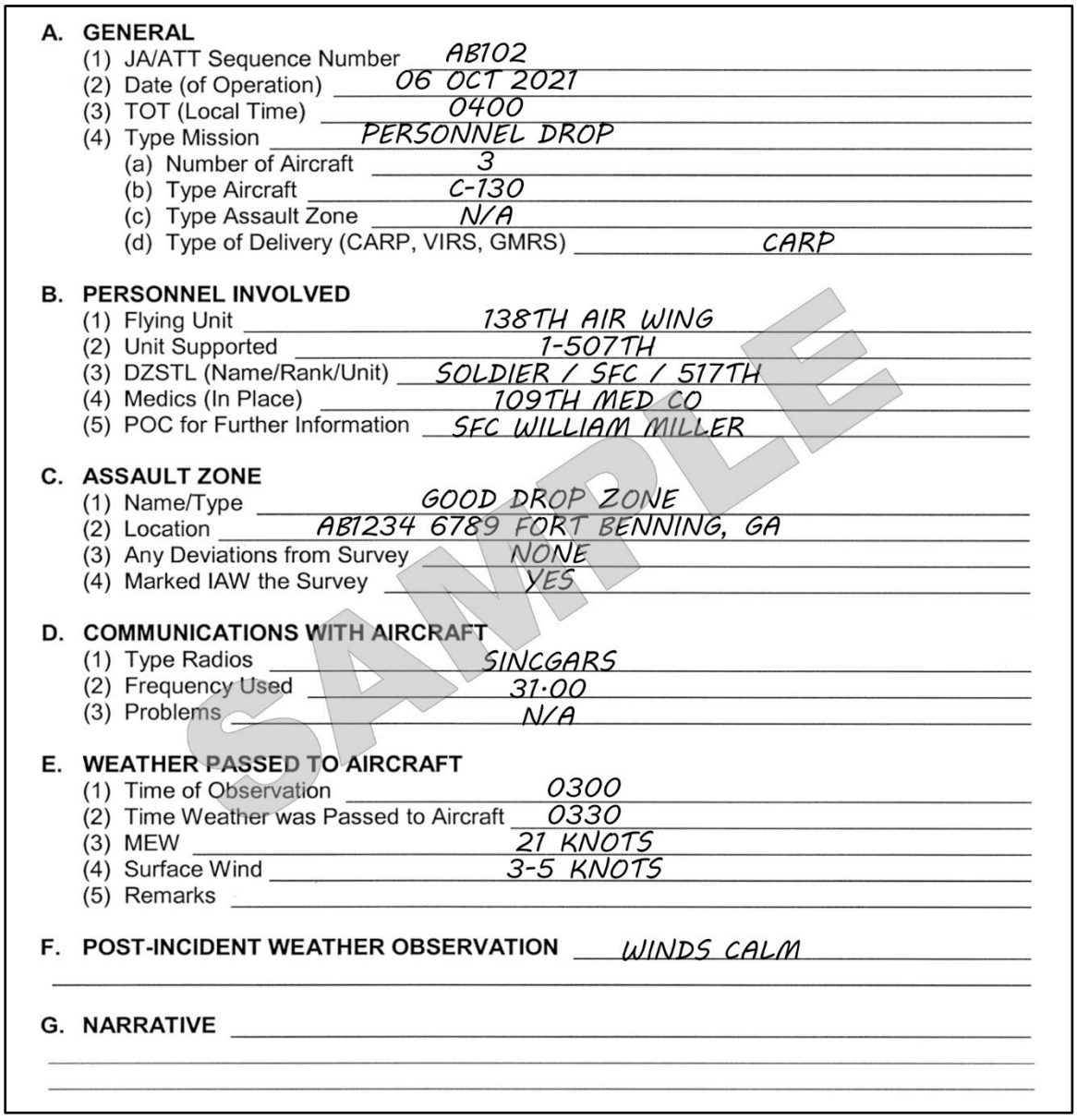
SCORE METHOD
M - Measured
P - Paced
E - Estimated

LINE NO	TYPE ACFT	UNIT	CALL SIGN	TYPE MSN	ETA	ATA	STRIKE REPORT		LZ		SURF WIND	SCORE METHOD	MEAN EFFECTIVE WIND			REMARKS
						ATD	YDS	CLOCK	S	U			TIME	ALT	DIR & VEL	
1	C-130	317	27CO	HE	1000	1000	250	5			0209	E	0945	1100	15809	
2				PE		1012	DRY	PASS								
3				PE		1025	50	6								
4				PE		1029	600	5								
5																
6	C-17	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																

SAMPLE

AF IMT 4304, 20020903, V1 REPLACES AMC 168, DEC 92

Figure 21-7. AF IMT Form 4304 (Drop Zone/Landing Zone Control Log)



A. GENERAL
(1) JA/ATT Sequence Number AB102
(2) Date (of Operation) 06 OCT 2021
(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 1-507TH
(3) DZSTL (Name/Rank/Unit) SOLDIER / SFC / 517TH
(4) Medics (In Place) 109TH MED CO
(5) POC for Further Information SFC WILLIAM MILLER

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

SAMPLE

Figure 21-8. Sample of a suggested format for incident reporting

SURVEYS

21-28. USAF DZs are surveyed by a qualified combat controller, DZSTL (for special operations forces only: jumpmaster qualified at a minimum). However, CCTs are not required to be jumpmaster qualified. All DZs are surveyed or tactically assessed by qualified CCT/DZSTL/Pathfinder personnel prior to use. Procedures can be found in DAFMAN 13-217. All information concerning the DZ is placed on AF Form 3823. (See figure 21-9 on page 383 and figure 21-10 on page 384.) The form mentioned in this paragraph provides 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 DZ surveys are recorded on an AF Form 3823.

21-29. 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.

21-30. All services 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 USAF aircraft are forwarded to the USAF for inclusion in the zone availability report. This is accomplished using the DAFMAN 13-217 checklist. The jumpmaster/DZSTL ensures all DZ requirements are within standards for the type of personnel, parachutes, and equipment airdropped. Once a DZ is tactically assessed, it must be approved using AF Form 3823. To complete an AF Form 3823 properly, this information must be completed:

- DZ name or intended call sign.
- Topographical map series and sheet number.
- Recommended approach axis magnetic course.
- PI 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 DZ.

21-31. 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, and a memorandum of understanding has been established with the landowner.
- The supported service accepts responsibility for any damage that occurs because 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 Form 3823 and is approved by the 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	1B. ZAR INDEX NO.	2A. COUNTRY	2B. STATE
FRYAR DZ	88	USA	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	4A2. TYPED NAME AND GRADE OF SURVEYOR	4A3. PHONE NUMBER (DSN)	4A4. UNIT
20140801	AVA BROWN, TSGT, USAF	999-9999	HHC 1/507TH PIR

4B. DROP ZONE APPROVAL/DISAPPROVAL (A = APPROVED, D = DISAPPROVED)

FOR	CDS/CRL/CRS	PER	HE	MFF	SATB	CRRC	HSLLADS	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	PHONE NUMBER (DSN)	SIGNATURE
	LIAM SMITH, CPT, USAF	888-8888	Liam Smith
	UNIT AND LOCATION: 15 STS/DO POPE AFB, NC 12345		

4D. DATE SAFETY OF FLIGHT REVIEW APPROVED	NAME AND GRADE OF REVIEWING OFFICER	PHONE NUMBER (DSN)	SIGNATURE
20140131	NOAH WILLIAMS, MAJ, USAF	777-7777	Noah Williams
	UNIT AND LOCATION: 300 OSS /OSK CHARLESTON AFB, SC 54321		

4E. DATE OF MAJCOM APPROVAL	NAME AND GRADE OF APPROVING AUTHORITY	PHONE NUMBER (DSN)	SIGNATURE
	JAMES WILSON, COL, USAF	666-6666	James Wilson
	UNIT AND LOCATION: 666 OG/CC CHARLESTON AFB, SC 54321		

5. COORDINATING ACTIVITIES

A. DZ CONTROLLING AGENCY OR UNIT	B. MEMORANDUM OF UNDERSTANDING/LAND USE	C. PHONE NUMBER (DSN)
LAWSON ARMY AIRFIELD, FT BENNIN, GA	YES ☐ NO ☑ ATTACHED ☐	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	B. WIDTH	C. RADIUS
2500 YDS	1300 YDS	N/A

POINT OF IMPACT DISTANCES FROM DZ LEADING EDGE	D. CDS PI	E. PE PI	F. HE PI
	275 YDS	350 YDS	550 YDS

7. DZ AXIS DATA *(OPTIONAL FOR CIRCULAR DZ)*

A. MAGNETIC	B. GRID (MGRS)	C. TRUE	D. SOURCE/DATE OF VARIATION DATA
350.5	347.2	348	

8. GROUND POINT ELEVATION	A. CDS PI	B. HE PI	C. PE PI	D. HIGHEST
	300'	300'	300'	323'

9. DZ COORDINATES

A. SPHEROID	B. DATUM	C. GRID ZONE	D. EASTING	E. NORTHING
1866 CLARKE	1927 NA	16 S	6	35

F. GPS DERIVED COORDINATES: YES ☑ NO ☐

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	RIGHT LEADING EDGE
FL 91855 70958	FL 93017 71207
LEFT TRAILING EDGE	**RIGHT TRAILING EDGE**
FL 91240 73150	FL 92538 73442

AF IMT 3823, 20021001, V2 PREVIOUS EDITIONS ARE OBSOLETE.

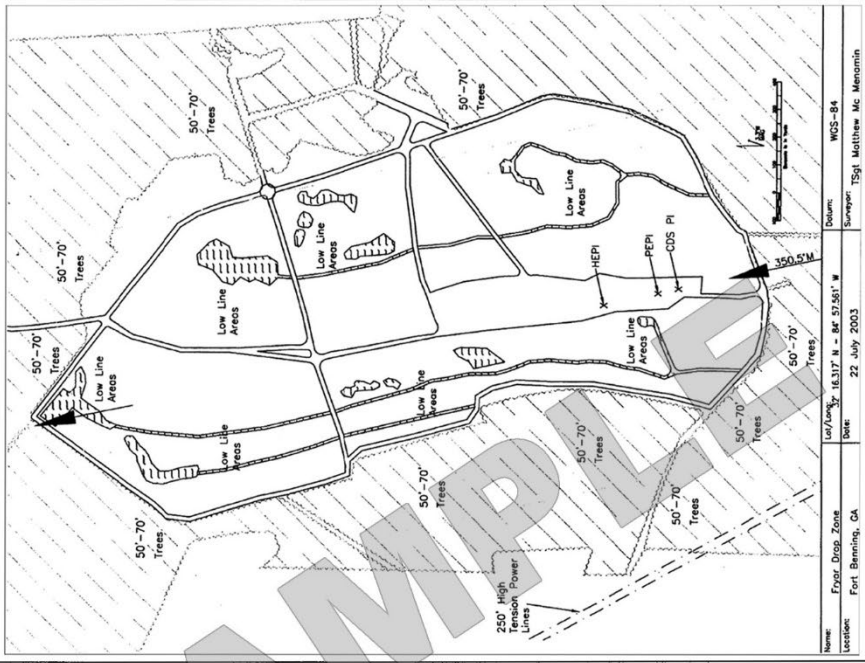
SAMPLE

Figure 21-9. Sample of a completed AF Form 3823 (Drop Zone Survey) (front)

DZ NAME

FRYAR DZ

10. DZ DIAGRAM



SAMPLE

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	LOW LEVEL ROUTES
YES ☐ NO ☐	☐ NONE AVAILABLE ☐ ROUTE NAME/DESIGNATOR

AF IMT 3823, 20021001, V2 *(REVERSE)*

Figure 21-10. Sample of a completed AF Form 3823 (Drop Zone Survey) (back)

Chapter 22
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

22-1. Units can execute a parachute assault without a pre-positioned USAF CCT or a USA 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. USAF CCTs are introduced with the assault elements and assist the ground unit commander with additional CDS, air-land, or heavy drop load missions.

22-2. 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 IMC, 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 DAFMAN 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 1/2-mile visibility. During operational missions, ceiling and visibility minimums are at the discretion of the supported forces commander. For joint exercises, USAF personnel are authorized to USA minimums. When the ceiling is less than 600 feet AGL, clear all personnel from the DZ NLT 5 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 IMC operation. Planning considerations should include a minimum ceiling of at least 500 feet AGL for peacetime IMC airborne operations 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.

22-3. Operating under IMC demands detailed planning, rehearsal, training, and coordination between USAF and USA 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

22-4. The jumpmaster relies on the loadmaster to obtain and relay en route information. Under IMC, the jumpmaster still attempts to perform the required checks. They may not be able to observe safety hazards beyond the immediate area of the door.

JUMPER ACTIONS

22-5. 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

22-6. 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.
  - Immediately compare the rate of descent with fellow jumpers.
- Prepare to land:
  - Do not release equipment until the ground can be seen and it is clear below.
  - Immediately after lowering CE, slip into the wind and prepare to land.
- Land and execute a proper PLF.

MC-6 SERIES POINTS OF PERFORMANCE

22-7. 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 and 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 the canopy:
  - Perform a thorough canopy inspection after breaking through the clouds and immediately compare the rate of descent with fellow jumpers.
  - Do not release equipment until the ground can be seen and it is clear below.
  - Transfer one toggle to the other hand, lower the CE, and immediately regain toggle control.
- Prepare to land by turning into the wind immediately after lowering CE.
- Land and execute a proper PLF.

Chapter 23

Deliberate Water Drop Zone Operations

Units conducting WDZ operations should use the procedures in this chapter as a guide to ensure the mission is conducted safely.

JUMP (SAFE) CONDITIONS

23-1. Ensure all WDZ parachute jumps are conducted using the following items and within the following conditions for all services:

- During daylight and warm weather conditions (the USN 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.
  - The 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 (see MCRP 2-10A.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.
  - NVDs are used on the WDZ for all night drops.

23-2. The DZSO guarantees the following:

- Drop control visual marking systems consist of mirrors, smoke, and panel markers.
- The release method is CARP or VIRS.
- Helicopter or fixed-wing aircraft fly under visual flight conditions.
- Only one-to-three jumpers for each recovery boat for each pass (USN operations have one boat for five jumpers):
  - The 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.
- A sufficient number of boats are properly manned with the engines running during all live passes.
- CLEAR TO DROP is issued by radio, signaled by the boats driving in one big circle, or the boats arranged in another agreed upon configuration.
- ABORT THE PASS is issued by radio, by the boats being scrambled, or the boats arranged in another agreed upon configuration.
- All CE is waterproofed and float-checked.
- All flotation devices are approved, serviceable, and properly maintained.

23-3. The airborne commander is responsible for the following:

- All personnel scheduled for a water jump are not less than a—
  - Class 3 basic water survival swimmer qualified in compliance with ATP 7-22.01.
  - USMC combat water survival-1.
  - USN second class swimmer or qualified SEAL.
  - Special warfare combatant-craft crewman (SWCC).
  - EOD or USN diver.
- All jumpers and safety swimmers have completed wet silk training within the past 6 months (12 months for USN personnel).
- All equipment has been waterproofed and float-checked.
- All jumpers are using approved serviceable flotation devices.
- All jumpers have completed the required prejump training.

23-4. Jumpers meet the following requirements:

- All jumpers are not less than a—
  - Class 3 basic water survival swimmer qualified in accordance with ATP 7-22.01.
  - USMC combat water survival-1 or higher.
  - USN second class swimmer, qualified SEAL, SWCC, EOD, or USN diver.
- All jumpers have completed drown-proofing training within the preceding 12 months.
- All jumpers have been trained in 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 CE is float-checked.
- Jumpers jumping in cold water (60 degrees or lower) wear wetsuits or dry suits.
- Drop control is a visual marking system.
- The helicopter is flying under visual flight conditions.
- A briefing is held for WDZ operations by the 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.

23-5. Safety swimmers have the following obligations:

- They must be USMC combat water survival-1 or higher qualified, a USN second class swimmer, a qualified SEAL, SWCC, EOD, USN diver, or lifeguard-certified.
- All safety swimmers have completed wet silk training in the past 6 months (12 months for USN personnel).
- All safety swimmers have been trained in activation procedures for the life preserver in their use to include manual inflation procedures.

Note. The airborne commander or air shop briefs jumpers, aircrew, jumpmaster, 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

23-6. 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 USA Class 1 advanced survival swimmer (in compliance with ATP 7-22.01), USMC combat water survival-1 qualified, a USN first class swimmer, a qualified SEAL, SWCC, EOD, a USN diver, or lifeguard certified. The safety swimmer has the following items:

- Fins.
- Face mask.
- Knife.
- Inflatable life preserver.

23-7. The following personnel are also required to be either on board or on the DZ for recovery:

- Jumpmaster, AJM, and safety personnel as required for the type of aircraft used.
- Key personnel are qualified and current. (See chapter 7.)
- Medic or corpsman with resuscitator.
- Safety vehicle driver.
- Boat commander or coxswain for each boat.
- MALFO.

23-8. See 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 frequency modulation radio (complete) communications equipment for each boat:
  - 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.
- One bailing cup per boat.
- Motor tie-down rope per boat.
- Sheath knife (boat commander and safety swimmer) per boat and all jumpers must have a sheath knife.
- A pair of 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.
- A wet suit is optional.

JUMPER REQUIREMENTS

23-9. Jumpers, at a minimum, must be classified as a USA Class 3 basic survival swimmer, USMC combat water survival-1 qualified, a USN second class swimmer, a qualified SEAL, SWCC and EOD qualified, or a USN diver before making a water parachute drop. Jumpers are current static line jumpers before making water jumps. Wet silk training for intentional water jumps is conducted at least once every 6 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 CE.
- 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 ATP 7-22.01.
- Wet silk training is conducted at the unit level by jumpmaster-certified personnel:
  - An unserviceable parachute is placed in a pool, in a controlled environment, with safety swimmers.
  - The jumpers, one at a time, demonstrate the actions taken during a water landing.
- Jumpers jump into the water and swim under the canopy to experience what it is like to be under a parachute in the water.
- Jumpers demonstrate 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 is available during this training.
  - A standby scuba diver is also recommended.

WARNING

When conducting a deliberate WDZ 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

23-10. 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 are on station with required personnel and the engines running before the release of jumpers.

23-11. 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.
- Use jumpers as the recovery personnel:
  - Jumpers assist 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 and 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 are 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.

23-12. 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 3 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.

23-13. The following 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 (communicates with command boat).
- The DZSO 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.
- The jumpmaster keeps jumpers under observation and does not release the next pass until all jumpers have been recovered and the DZ is ready to receive jumpers for the next pass.
- The 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 the safety swimmer.
  - Ensures all personnel are trained and rehearsed in their duties.
- The safety swimmer—
  - Maintains visual observation of jumpers from the time of exit to safe recovery.
  - Is always alert for jumpers in trouble and is prepared to enter to water to assist if needed.
  - Enters the water (on order of boat commander) and assists jumper recovery.

- The 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 MEDEVAC.

JUMP RECOVERY PROCEDURES

23-14. After jumpers enter the water and if the jumpers experience 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.

23-15. 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.

23-16. The DZSO command boat (boat No. 1) is located so the DZSO can observe the landing of jumpers, reinforcing 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, pull alongside, and then the engines are put 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.

23-17. On instruction from the boat commander or coxswain, the safety swimmer enters the water alongside the jumper to assist the jumper and 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 and all other activities cease.
  - A red smoke grenade may be activated and dropped in an ammunition can bolted to a wood plate.
  - A smoke machine may also be used.
- The safety swimmer dives to recover the jumper and cuts themselves free of equipment, as required.
- DZSOs move their boat to the scene, and the medic or corpsman prepares to use the resuscitator and backboard.

23-18. 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 MEDEVAC 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

23-19. Prejump training for water jumps is conducted within 24 hours before the scheduled jump. If it is over 24 hours, a colonel/O-6 must give approval. This training includes demonstrations and practical exercises for all jumpers; use of the suspended harness is recommended.

23-20. Prejump training includes, but is not limited to, the situations described. The following points of performance for water jumps must be accomplished:

- Checking body position and count.
- Checking the canopy and gaining canopy control.
- Keeping a sharp lookout during descent and maneuvering to the indicated impact area.
- Preparing to land by turning and facing into the wind, maintaining position until just before landing.
- Preparing to land with a life preserver.
- Preparing to make a PLF (if water is shallow or ground contact is made).
- PLFs must be conducted during SAT.
- Emergencies in the air.
- Emergencies in the water include taking the following actions:
  - Ensuring 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 breathe, then cuts a hole in the canopy material (if the jumper lifts their hand too quickly, they create a suction, and the canopy sticks to their face and arm).
- Wet silk training is completed and documented within 6 months prior to the jump (12 months for USN personnel).

23-21. 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.

23-22. Additional information on approved life preservers can be found in chapter 6. The procedures for deliberate water landings with a life preserver include the following:

- Jumpers may wear CE only after it has been waterproofed and float-checked:
  - To waterproof equipment, use bags and rigger tape inside equipment containers.
  - Float-check by submerging the equipment in a tank of water until saturated and ensure the equipment is neutral or positively 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 which are closed-toe shoes.
- Jumpers may follow equipment such as door bundles and combat rubber raiding craft on a single ship operation:
  - There are 3 seconds between the cargo exit and the first jumper's exit.
  - This ensures 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

23-23. The B-7 life preserver is worn under the parachute harness with the inflatable portions under the jumper's armpits. At 200 feet AGL, the jumper releases all equipment tie downs and lowers and jettisons their equipment.

23-24. During the descent, the jumper inflates the life preserver by discharging the attached CO_2 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.

23-25. 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 proceeds to assist the jumper from the water.

UNDERWATER DEMOLITION TEAM LIFE PRESERVER

23-26. 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.

23-27. 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. Jumpers rotate the reserve to the right side of the parachute harness and seat themselves well into the saddle.

23-28. The jumper activates the quick release on the chest strap and inflates their life preserver by blowing into the inflation tube or activating the CO_2 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.

23-29. 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

23-30. The LPU 10/P (NSN: 4220-00-850-8655) is a standard USAF CO_2 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 USAF standards.

23-31. During the descent, the jumper inflates the life preserver by discharging the attached CO_2 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 proceeds to assist the jumper from the water.

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

23-32. The TFSS-5326 is worn under the parachute harness with the inflatable portions fastened to an individual's waist belt. At 100 feet AGL, jumpers release all equipment tie-downs, lower, and jettison their equipment.

23-33. Jumpers activate the quick release on the waistband and unsnap the left connector snap on the reserve parachute. Jumpers rotate the reserve to the right side of the parachute harness, sit well into the saddle, and inflate the life preservers by activating the CO_2 cartridge. (In the event of CO_2 cartridge failure, blow into the inflation tubes.) They activate the quick release on the chest strap.

23-34. 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.

23-35. 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 not to 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 proceeds to assist the jumper from the water.

Chapter 24
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 MALFO is a member of the DZST. Any assistance required by the MALFO must pass through the DZSO or DZSTL, who controls the DZ. The MALFO discusses as much data as allowable with the DZSO or DZSTL prior to transmitting it to the control group. The MALFO and the DZSO or DZSTL normally discuss this feeder information immediately after the jump is complete.

Note. AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 governs the duties and responsibilities of the MALFO and reference DA Pam 59-4.

MULTISERVICE MALFUNCTION OFFICER QUALIFICATION AND DUTIES

24-1. MALFOs 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 complete the required and unit specific training conducted by the unit-designated MALFO trainer. Individuals are retrained and recertified annually. Training and certification records are maintained on file at the unit level. See AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 and DA Pam 59-4.

24-2. The organization that provides the parachutes provides the MALFO. USAF MALFOs are a minimum grade of E-4 and hold an Air Force specialty code of 1A2X1 (Loadmaster), 1A9X1, or 2T2X1. For Air National Guard units, Air Force specialty code 1C2X1 (Combat Control) and 1T2X1 (Pararescue) personnel may also perform MALFO duties. USAF MALFOs are designated in writing by the applicable group commander or equivalent. Depending on the type of airdrop, the MALFO must be qualified at a minimum for conducted airborne or air delivery operations. See AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 and DA Pam 59-4.

24-3. A USN MALFO is a commissioned officer, warrant officer, or petty officer with a minimum grade of E-5. The MALFO is a USAQMS trained parachute rigger with USN enlisted classification 7353 (Special Operations Parachute Rigger) who is technically proficient with airdrop, parachute recovery, and personnel and cargo parachute systems. Depending on the type of airdrop, the MALFO must be qualified at a minimum for the static line personnel parachutes (not including Ram-Air Personnel Parachute Systems). (See AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 and DA Pam 59-4.)

24-4. A USMC MALFO is a parachute rigger with a military occupational specialty of 0451 (Airborne and Air Delivery Specialist), E-4 or above; or jumpmaster 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 in MCO 3120.11A. The MALFO 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 MALFO. (See AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 and DA Pam 59-4.)

INVESTIGATING MALFUNCTIONS

24-5. The onsite investigation of personnel parachutes and equipment malfunctions or incidents 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. (See AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 and DA Pam 59-4.)

Note. The MALFO and unit subject matter expert (if available), conduct and assist with any subsequent investigation, as required.

24-6. Safety investigations may be initiated according to the joint safety memorandum of understanding among the USA, USAF, USMC, and USN. All mishaps that meet the following criteria are reported and investigated in compliance with DODI 6055.07, AR 385-10, OPNAV M-5102.1, or DAFI 91-204. The four classifications can be found in AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 and DA Pam 59-4.

Note. See service regulations in paragraph 24-6 and the unit safety office for reporting investigation requirements and instructions of all class mishaps.

REPORTING MALFUNCTIONS AND INCIDENTS

24-7. DD Form 1748-2 is used to report all airdrop malfunctions and incidents. The MALFO 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 (see AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1), whether the equipment failed because of human error or emergency procedures used. (See DA Pam 59-4.)

24-8. An airdrop incident is defined as any procedure that prevented the successful completion of any planned airdrop operation (see AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1). 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 CDS bundle must be reported. A completed DD Form 1748-2 is reviewed by a unit subject matter expert prior to submission to the USAQMS. USN and USMC malfunctions and incidents are reported through the Naval Safety Command. The Naval Safety Command submits a DD Form 1748-2 to the USA.

Note. Injuries related to PLFs are not to be reported via DD Form 1748-2 to the USAQMS. All services follow the procedures in their appropriate publications.

INVESTIGATIONS BY THE MALFUNCTION OFFICER

24-9. 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 (see AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1 and DA Pam 59-4).

GENERAL REPORTING REQUIREMENTS

24-10. All malfunctions, incidents, or damage to airdropped equipment or aircraft are immediately reported through the command channels of the owning unit. USAF 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. USAF aircraft participating in an operation without a chain of command notify their respective command headquarters of the incident, with follow-up reports, as required.

24-11. For the USA and USAF, all parachute and aerial delivery operation malfunctions or incidents for all standard and nonstandard equipment are 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 DSN 687-3084 or (804) 734-3084. All reports are reported to the Airdrop Manual and Malfunction Office, USAQMS, ADFSD, 710 A Avenue, Fort Gregg-Adams, Virginia 23801.

24-12. For the USN and USMC, all parachute and aerial delivery operation malfunctions or incidents for all standard and nonstandard equipment are reported to the Naval Safety Command. Reporting is conducted by downloading the malfunction or incident report format from the Naval Safety Command website. The report format can be located at the Ashore, Parachuting Division section of the website. 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 Gregg-Adams, Virginia. In addition, USN 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, and Commander, Naval Air Warfare Center Weapons Division, China Lake, California (Code 466200D).

24-13. 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.

24-14. The MALFO or service DZSO initiates the report for malfunctions or incidents occurring during the deployment or recovery phase of any airdrop load or jumper. Malfunctions or incidents believed to have been caused by aircrew procedures, that is, low altitudes or DZ offset, are coordinated with the aircrew to deliver the most accurate information.

Note. The MALFO uses DD Form 1748-2 to report all airdrop personnel malfunctions in compliance with AR 59-4/OPNAVINST 4630.24E/AFMAN 13-210 Volume 1/MCO 13480.1E Volume 1.

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PART FIVE

TRAINING EQUIPMENT FOR JUMP REFRESHER AND BASIC AIRBORNE COURSE

This part discusses parachuting training.

Chapter 25

Training Apparatuses

The techniques and apparatuses described in this chapter are used in basic airborne training and at unit areas to facilitate BAR. They allow the student or Soldier to demonstrate proficiency in the tasks necessary to complete the static line operation.

PARACHUTE LANDING FALL DEVICES

25-1. This section provides instructor or jumpmaster critiques for PLFs from the 2-foot high-platform. The 2-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 or Soldier feels when contacting the ground during a parachute jump.

INSTRUCTOR CRITIQUES

25-2. Instructor or jumpmaster PLF critiques should be brief and clear and should emphasize the following points to students (see figure 25-1 on page 402). Table 25-1 on page 403 lists common PLF errors, their causes, and ways to correct them.

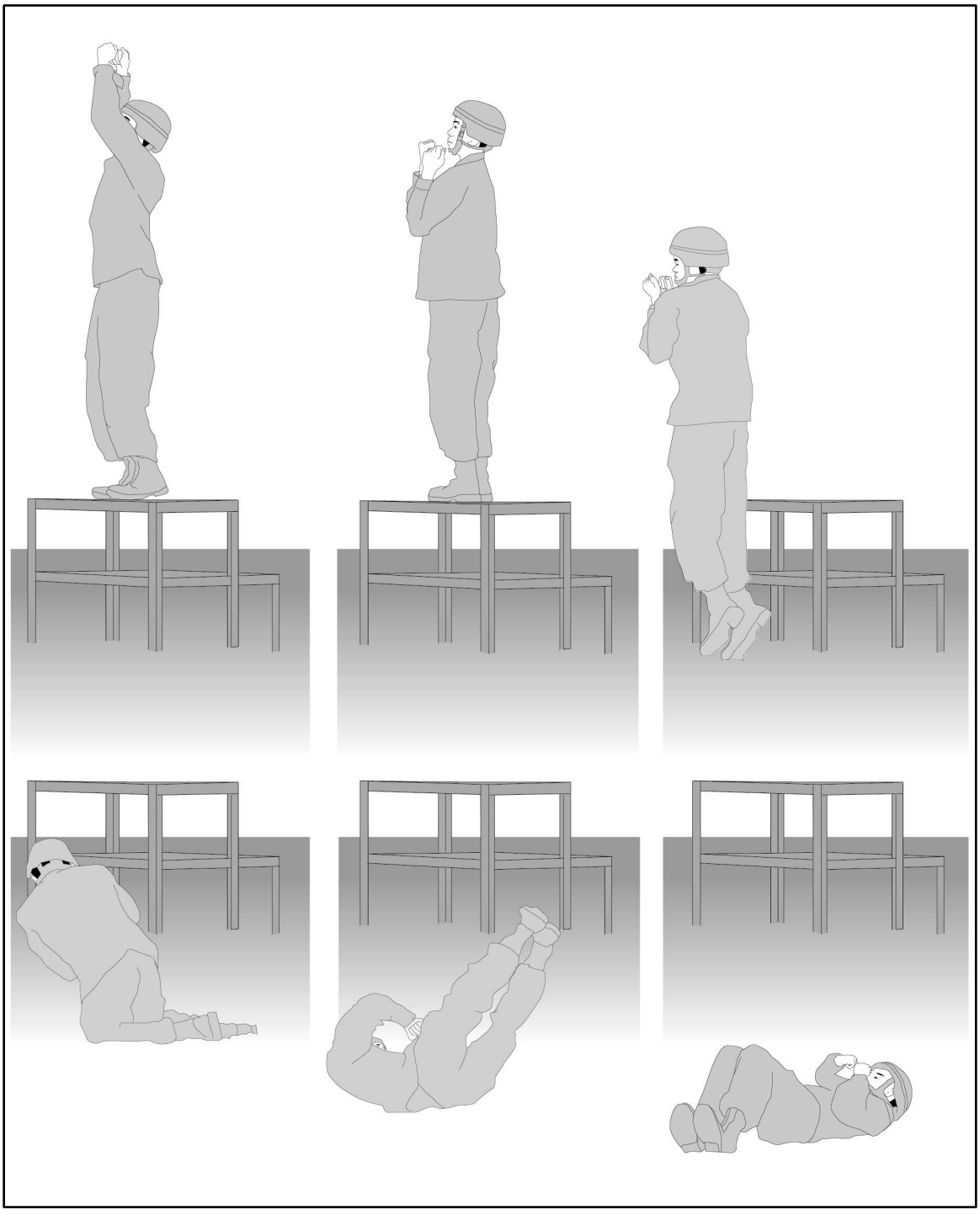


Figure 25-1. Parachute landing fall sequence

Table 25-1. Common parachute landing fall errors

ERROR	*CAUSE*	*CORRECTION*
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.	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.	Exaggeration of the bend in the knees. Pulling feet up upon landing.	Bend the knees slightly. Keep feet and knees together. Shift and bend the knees throughout the fall.
Knees into the ground.	Feet and knees apart. Straightening the legs. Failure to shift the knees.	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.	Hesitation upon landing. Pushing knees forward toward ground. Excessive bend in knees. Turning the feet toward the direction of drift.	Rotate upper body away from the ground with elbows up and in front of face.
Head strikes the ground.	Leaning forward toward ground. Failure to rotate upper body away from ground. Breaking fall with elbows.	Keep chin on chest. Tense neck muscles throughout the PLF. Assume proper prepare-to-land attitude. Rotate upper body away from the ground.

Legend: PLF—parachute landing fall

TWO-FOOT-HIGH PLATFORM

25-3. Each platform is divided into dismount points. One instructor or jumpmaster controls each point where the following occurs:

- On the command, GET READY, the student or Soldier:
  - 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 or Soldier:
  - Assumes a landing attitude by simulating the grasping of a set of risers opposite the direction of drift.
  - Pulls 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 PLFs, 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 or Soldier jumps straight off the platform, executes the PLF, and makes a quick recovery.
- The instructor or jumpmaster critiques each PLF immediately, emphasizing the significance of the five points of contact.

MOCK DOOR TRAINING

25-4. 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 25-2.)

25-5. 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.

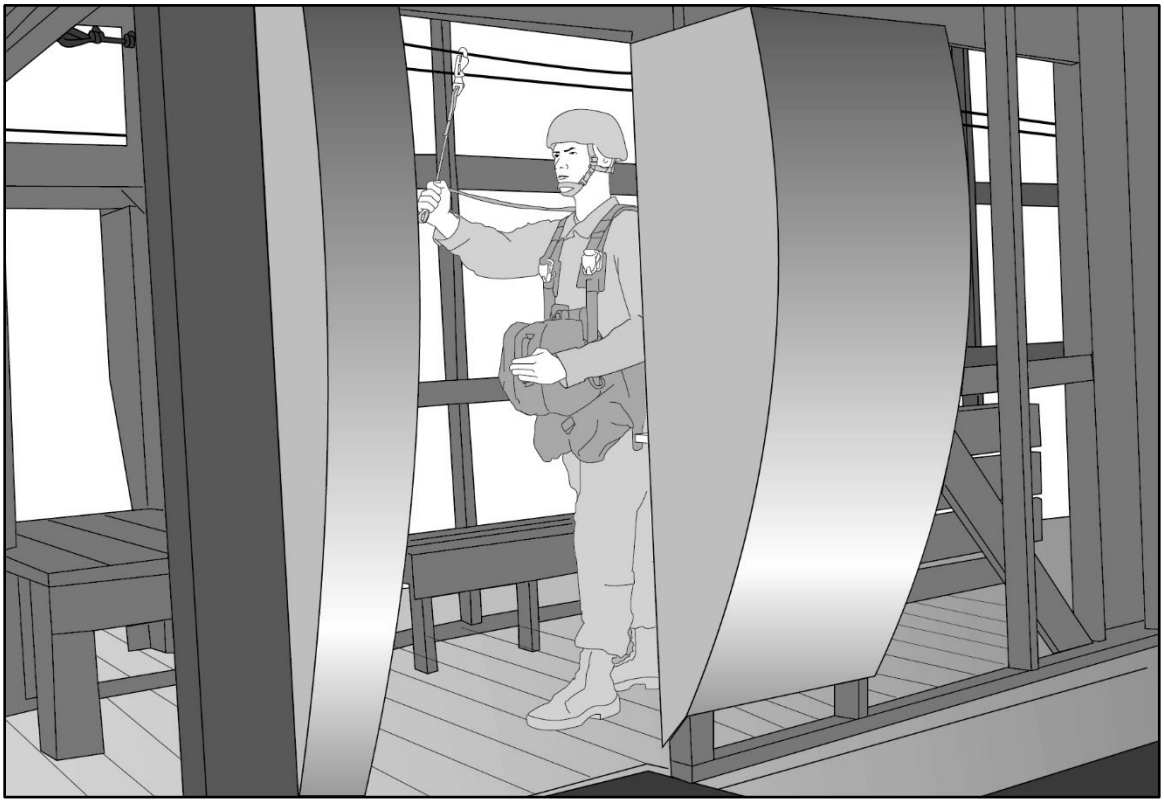


Figure 25-2. Mock door apparatus

BASIC PHASE

25-6. Students or Soldiers 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 STANDBY position, the exit and body positions, the 6,000 count with T-11 ATPS or the 4,000 count with an MC-6 series parachute.

25-7. One instructor or jumpmaster is required for each mock door in use. One section of static line (about 4-feet long and not attached to the parachute assembly) is required for each student or Soldier. Loudspeakers are needed if the class or facilities are large.

25-8. The initial instruction in the mock door apparatus includes a lecture and demonstration followed by practical exercises. Each student or Soldier is given the commands STANDBY and GO. Students or Soldiers are graded and corrected by the instructor on the movement to the door, their exit, their body position, and the 6,000 count with the T-11 ATPS.

25-9. 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

25-10. 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 6,000 count with the T-11 ATPS.
- Remains in the body position until commanded to RECOVER or until the student 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 then the command, RECOVER, is given.
- Receives instruction on the right and left paratroop doors of the mockup.

Terms

25-11. The following terms are important in mock door training. Each term is explained during the initial phase of instruction.

Left and Right Paratroop Door

25-12. 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

25-13. 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 USL snap hook and to initiate parachute deployment.

Stick of Jumpers

25-14. 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

25-15. This is a designated area where personnel or equipment is delivered by means of parachute.

CONTROLLED MOVEMENT TECHNIQUE

25-16. This is a method of moving toward the paratroop door (see figure 25-3 on page 406) which consists of the following:

- The nonstatic-line hand covers the ripcord 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 ripcord handle and the other hand controlling the USLM.

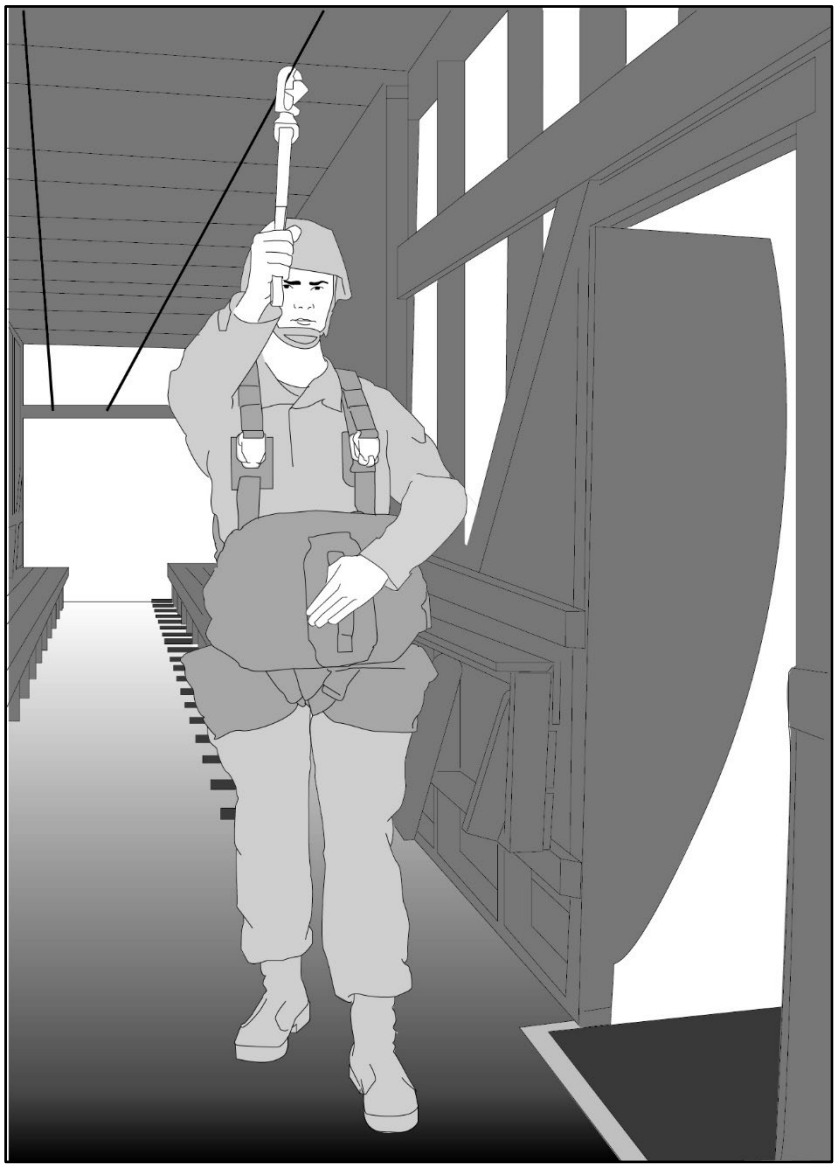


Figure 25-3. Controlled movement technique

BIGHT, JUMP COMMANDS, AND BODY POSITION

25-17. Jumpers grasp their USLMs approximately 6 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 4 inches inside the hand and 2 inches below the hand. (See figure 25-4.) The remainder of the USLM is routed over the shoulder. The free hand is used to protect the ripcord handle while moving toward the paratroop door.



Figure 25-4. Static line bight

25-18. The last two jump commands, STANDBY and GO, are used for each student when practicing exits as follows:

- On the command, STANDBY, jumpers use a controlled movement technique towards the paratroop door.
- Jumpers make eye-to-eye contact with the safety and the safety takes the USLM from the jumper.
- When the first jumpers are perpendicular to the jump door, they take one more step and halt their movement about 2 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.
- Jumpers do not turn into the door until they see the safety has positive control of the USLM:
  - Jumpers then execute a left or right face toward the open paratroop door and ensure their arm is not entangled with the USLM.
  - Holding their elbows firmly into their sides, they place the palms of their hands (fingers naturally spread) on the ends of the reserve parachute.
- At the command, STANDBY, No. 2 jumper positions themselves about even with the leading edge of the paratroop door, 2 feet from the skin of the aircraft:
  - Facing to the rear.
  - Feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close 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.
  - No. 1 jumper pushes off with either foot and vigorously jumps up 6 inches and out 36 inches from the jump platform, immediately snapping into a good, tight body position.

25-19. After the No. 1 jumper has exited the aircraft, the No. 2 jumper (and all following jumpers) perform the following actions:

- As jumpers begin 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, establishing 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, jumpers take one more step, make eye-to-eye contact with the safety, and the safety takes control of the USLM.
- Jumpers ensure the arm is not entangled with the USLM and hold their elbows firmly into their sides.
- Jumpers place the palms of their hands (fingers naturally spread) on the ends of the reserve parachute.
- The jumper executes a left or right face, facing the open paratroop door only when the safety has positive control of the USLM.
- Jumpers move 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) from the aircraft, immediately snapping into a good, tight body position.

25-20. The student or Soldier remains in the body position, is critiqued by the instructor or jumpmaster, and is told to RECOVER and waits for further instruction.

THIRTY-FOUR FOOT MOCK TOWER

25-21. The 34-foot mock tower supports a replica of a section of a troop carrier aircraft. (See figure 25-5.) 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.

25-22. The mock tower is a primary training apparatus to help teach the jump technique (control of the jumper’s body position from the moment they exit the door of the aircraft until they receive the opening shock of the main parachute canopy). The first point of performance is check body position and count, and the second point of performance is 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 while the advanced phase continues instruction on the mass exit technique, simulates parachute malfunctions, and familiarizes the students or Soldiers on jumping with CE.

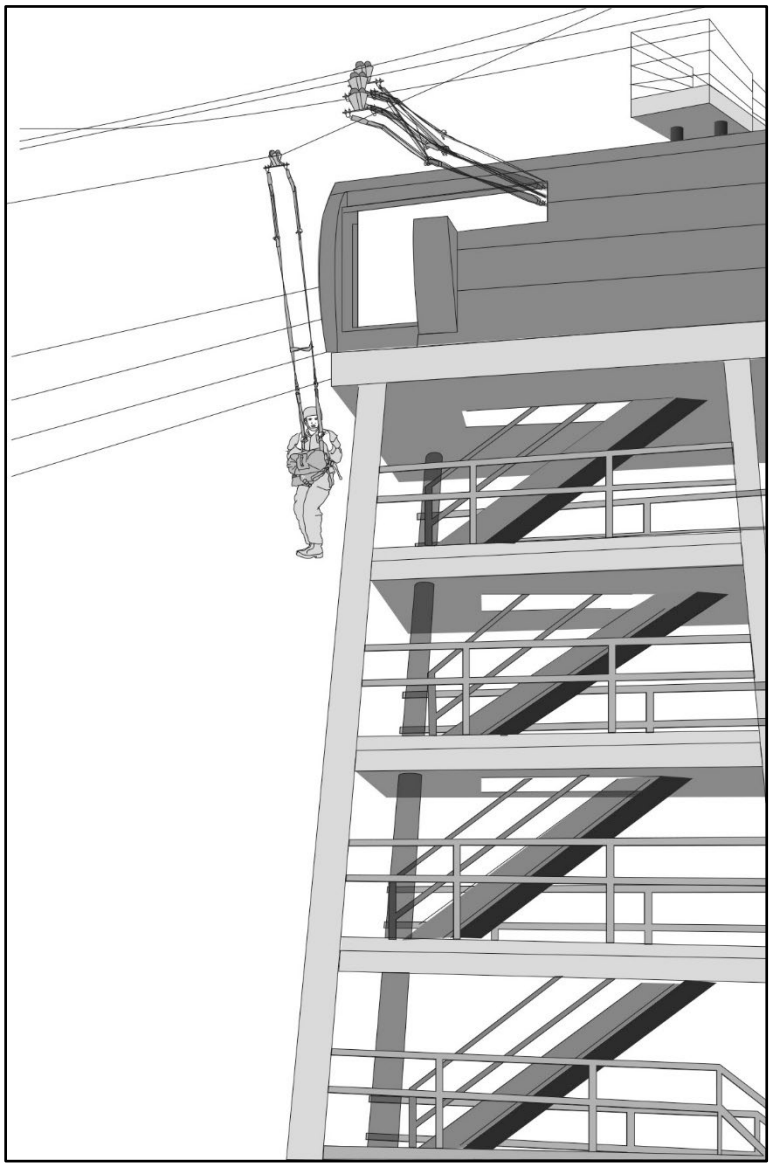


Figure 25-5. Thirty-four-foot mock tower

BASIC PHASE

25-23. Students or Soldiers practice the exit technique, the proper body position, and the 6,000 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.

25-24. The initial period of instruction on the mock tower includes an orientation and demonstration of the apparatus, duties of instructor personnel (graders, jumpmasters, harness checker), and duties of all detail personnel. Each student or Soldier is given the commands, STANDBY and GO, by the jumpmaster in the tower. The student's exit, body position, 6,000 count with the T-11 ATPS, and simulated canopy checks are critiqued and graded by the grader on the ground.

SAFETY

25-25. To prevent safety issues, all personnel must be safety conscious. The following measures are taken to prevent unsafe conditions:

- Tower jumpmasters 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 weekly inspections of the mock tower.
- Inspections must include trolley risers, cables, anchor points, trolleys, and jumpmaster safety belts.
- Risers are removed and stored when not in use.
- Parachute harnesses and risers are locally manufactured by a qualified parachute rigger according to the technical manual specifications for that item. Risers are 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 becomes bent, or any butterfly snap 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

25-26. A minimum of seven instructors or jumpmasters are required to manage, operate, and carry out the 34-foot mock tower training for at least 34 students or Soldiers. These positions include instructors or jumpmaster, mound safety officers, mound men, rope men, rope line safeties and relays, and base safety officers or NCOs.

25-27. Figure 25-6 indicates the positions for these instructors. At a minimum—

- Two jumpmasters 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.

25-28. A student or Soldier stands at parade rest on top of the mound between and slightly to the rear of the mound men assigned to their side of the mock tower. The student is responsible for the safety and conduct of the mound men and is also responsible for attaching the butterfly snaps on the risers to the harnesses D-rings. The student should be the most senior officer or NCO on the mound on each side (two total).

25-29. Two students or Soldiers 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 mound men unhook the jumper and then hook the rope to the trolley risers.

25-30. One student or Soldier at each point along the beaded path returns the trolley risers (with rope attached) to the mock tower after the jumper is detached. The rope men take commands from the rope man safety and rope line safety/relay. The rope men for each two points rotate, and there are always two additional rope men standing at the base of the pole supporting the tower (12 total).

25-31. One student (officer or NCO) or leader 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 or Soldier relays the commands of the jumpmaster to the rope men and ensures students do not pass under the safety ropes and anchor cables.

25-32. One student (officer or NCO) or leader 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 jumps.

25-33. The equipment includes one troop parachute harness assembly (with four risers) and a training reserve parachute for each student.

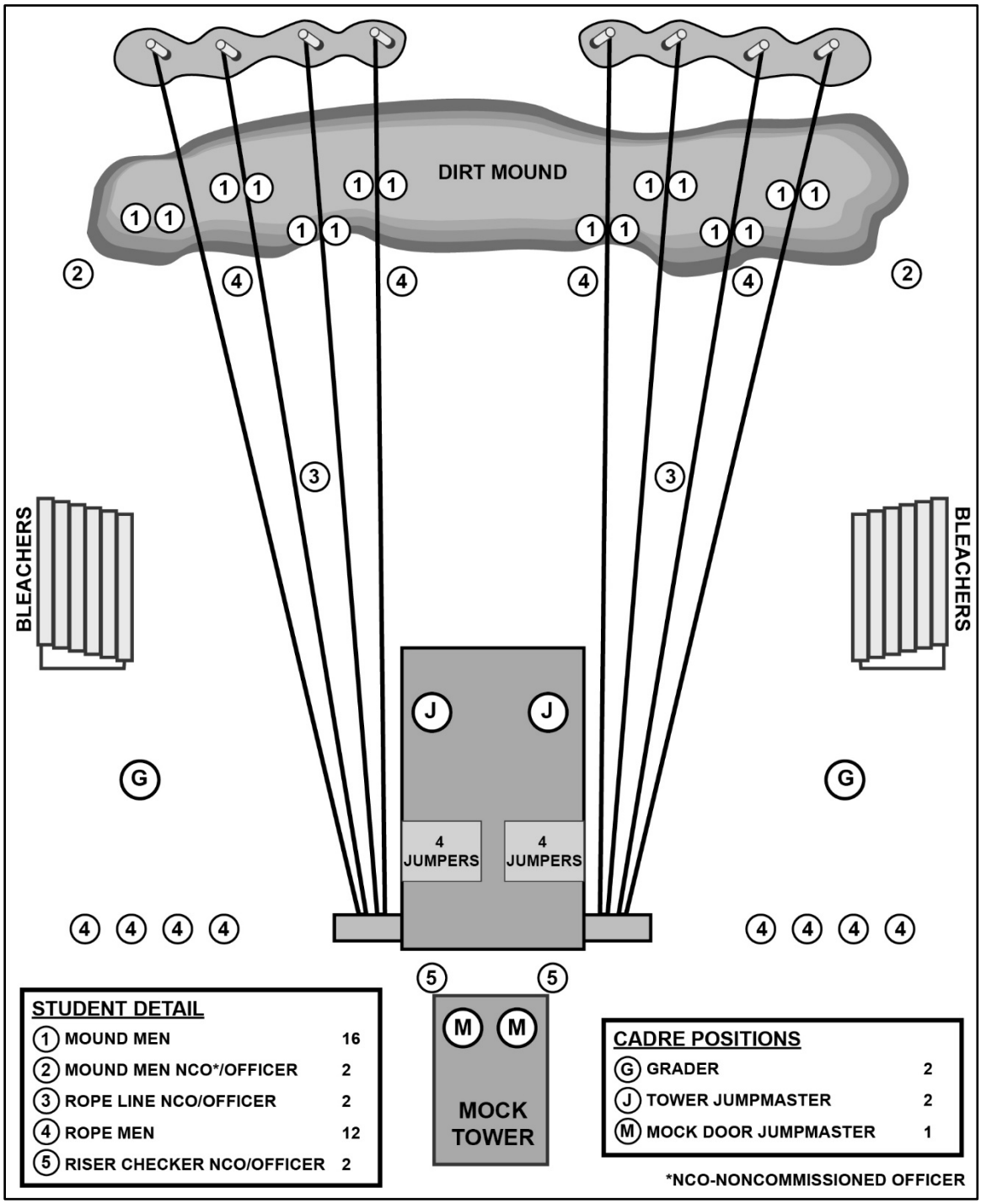


Figure 25-6. Thirty-four-foot mock tower personnel positions

ADVANCED PHASE

25-34. The advanced phase objectives have the student practice exits using the mass exit technique with and without CE. If exiting with CE, the student or Soldier must also practice lowering the equipment. The jumper must practice simulating the activation of the reserve parachute. The jumper must do this instantly when told a malfunction has occurred.

25-35. 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 1-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/T-11 Reserve Single Pin parachute.
- Failing to check the canopy.
- Failing to activate the reserve parachute or failing to activate the reserve properly.
- Failing to lower CE.

SAFETY, PERSONNEL, AND EQUIPMENT

25-36. 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 28: 16 mound men, 8 rope men, 2 mound safety officers, and 2 harness checker.

25-37. CE is required for the jumpers. Actual packed CE containers, or CE containers which approximate packed loads, can be used to train students in the techniques of exiting with this type of load.

METHODS OF RECOVERY

25-38. During methods of recovery training, jumpers learn 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 jumpers land on the DZ, they must quickly recover, correctly stow their air items, and quickly proceed to the unit assembly area.

25-39. This phase of training teaches the student to activate the canopy release assemblies properly 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 activating the canopy release assemblies using:
  - The hand-to-shoulder method.
  - The hand-assist method.
- Recovery of tactical and nontactical equipment.
- Recovery of individual equipment.

25-40. The personnel required are one instructor, one assistant for every two dismount points, and four detailed personnel for each dismount point. Sufficient harnesses and combat gear properly rigged to accommodate each student are also needed.

RECOVERY OF EQUIPMENT

25-41. Once the student removes the parachute harness, they remove all air items from the equipment rings. Unsnap and unzip the UPRB and turn right side out.

25-42. Place the parachute harness inside the UPRB with the smooth side facing up. Secure the risers and place them under the parachute harness.

25-43. For the nontactical method of recovery:

- Students or Soldiers elongate the suspension lines and canopy, removing all debris.
- Once students or Soldiers reach the bridle line, they—
  - Secure the drogue parachute and deployment sleeve in one hand.
  - Begin to figure-eight roll the canopy and suspension lines all the way to the UPRB.
  - Leave the drogue parachute, deployment sleeve, and bridle assembly on top of the main canopy.

- Students or Soldiers secure the equipment, conduct a 360-degree check of the area, and move out to the assembly area.

25-44. For the tactical method of recovery:

- Remain on a knee at the UPRB.
- Begin pulling the suspension lines and canopy towards the 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 UPRB.
- Place the reserve parachute in the reserve parachute stowage pocket.
- Secure the equipment, conduct a 360-degree check of the area, and move out to the assembly area.

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Chapter 26

Basic Airborne Refresher Training

BAR training is a requirement for all personnel who have not jumped the T-11 ATPS or MC-6 series parachute within a 6-month period (180 days) or for personnel who have not conducted an airborne operation with either parachute system. If a Soldier has been removed from a hazardous duty order (also called HDO), BAR must be conducted. Any current and qualified jumpmaster can conduct BAR 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 BAR training.

All jumpers who have not jumped the T-11 ATPS and MC-6 series parachutes within the last 6 months (180 days) meets the minimum requirements located in table 26-1 on page 416.

26-1. The length of training should not be dependent on the jumper's experience or proficiency but on the minimum requirements described in table 26-1 on page 420. The training is instructed and documented by a current and qualified jumpmaster.

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.

26-2. 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 26-1. Minimum requirements for basic airborne refresher training

PERIOD	*EVENT*	*LESSONS*	*TRAINING AIDS AND EQUIPMENT*
1	Ground training	• Identification card and tags, helmet check. • Sizing, donning, and fitting the T-11 and MC-6 parachutes. • RIGGEX: ▪ 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 the 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	• SERJ-TE briefing: ▪ 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	• Let up position—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, preparing to land attitude, entanglements, and emergency landings.	Suspended harness apparatus (if personnel conducting training and apparatus are available)
4 Prejump		• Prejump includes PLFs (front, sides, and rear). • Execute a parachute jump according to the unit's progression plan for individuals.	Two-foot PLF platform and PLF pit. 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; RIGGEX—rigging individual combat equipment exercise, 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 BAR training. Unit commanders take into consideration everyone's experience level with the T-11 and MC-6, and their ability to retain the crucial information they receive during BAR training. The 90-day waiver is submitted on a memorandum for record and placed with the individual's jump log.

Chapter 27
Jumpmaster Refresher Training

Jumpmaster refresher training is designed to update qualified jumpmasters who are not current (see chapter 7). It ensures standardization of jumpmaster duties across units and commands. The designated unit conducting this course ensures that equipment normally used is available for this training. A current and qualified jumpmaster instructs and documents the course. 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

27-1. Jumpmasters must conduct a jumpmaster duty within 180 days of their last jumpmaster duty to remain current. Jumpmasters who lose currency must complete jumpmaster refresher training prior to conducting their next jumpmaster duty.

27-2. Nonstandard aircraft and rotary-wing aircraft count towards a jumpmaster's currency if the previous jumpmaster 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 27-1.)

Table 27-1. Suggested training events

SUBJECT	*SCOPE*
Individual Equipment	For jumpmaster certification, provide training on new equipment, and provide training on all unit-specific and newly fielded equipment that jumpmasters must be certified on to execute jumpmaster duties. This includes but is not limited to weapons cases, jumpable packs, and helmets.
Jumpmaster Personnel Inspection	Each jumpmaster 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 jumpmaster receives the same amount of practice. Jumpmasters are evaluated on their ability to identify deficiencies rigged into the equipment as well as their sequence of inspection.
Prejump Training	In a classroom environment, the following are 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.
Drop Zone Control and Support Center	This includes discussion and familiarization of the duties as the DZSO and ADZSO and composition of the team for different airdrop scenarios
Duties of the Jumpmaster, SERJET/E Briefing, Mock Door Training, and Practical Work Inside the Aircraft	In a classroom environment, the execution of the duties of the jumpmaster and the safety throughout an airborne operation are discussed. Jumpmasters receive a SERJET/E briefing as well as complete the remainder of mock door training; and they receive a period of instruction about the time warnings, jump commands and actions in the aircraft of both the jumpmaster and the safety. Practical exercise requires each jumpmaster to be evaluated conducting PWAC as a jumpmaster and as a safety.

Legend: ADZSO—assistant drop zone safety officer; DZSO—drop zone safety officer; JMPI—jumpmaster personnel inspection, PWAC—practical work inside the aircraft; SARJET/E—static line control, exiting procedures, red light procedures, jump refusals, towed jumper procedures, emergency procedures

RECEPTION AND INTEGRATION

27-3. All airborne units are required to institute a jumpmaster 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 jumpmaster reception and integration programs. This includes the appointment of jumpmasters authorized to execute training.

27-4. Current and qualified jumpmasters, who are transferring from one hazardous duty position to another hazardous duty position after completing a permanent change of station or interpost transfer, retain currency and incentive pay entitlement at their new duty station until they fail to meet currency requirements. Actions are required by the losing and gaining units.

LOSING UNIT

27-5. The jumpmaster conducting the permanent change of station is provided with a continuity memorandum signed by the unit commander (lieutenant colonel/O-5 or above), their DA Form 1307 and their modified DA Form 1307. The memorandum contains the date and type of the last duties performed and provides a section for general comments regarding the individual's overall proficiency.

GAINING UNIT

27-6. The gaining unit is responsible for validating the incoming jumpmaster's 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 following:

- The gaining unit must have the losing commander's continuity memorandum, or the jumpmaster must attend jumpmaster refresher training prior to conducting duties.
- A designated current and qualified jumpmaster from the gaining unit must validate the JMPI sequence of the incoming jumpmaster.
- The incoming jumpmaster must receive training on all unit specific equipment and SOPs (such as arctic equipment if transferring to USA Alaska).
- The jumpmaster is evaluated on their understanding and the proper execution of the—
  - Static line control procedures.
  - Exiting procedures.
  - Red light procedures.
  - Jump refusals, towed jumper procedures, and emergency procedures briefings.
- The jumpmaster demonstrates proficiency in actions inside the aircraft for both jumpmaster 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 jumpmaster must be from a high-performance aircraft that includes the C-17, C-130 series, or C-27 Spartan aircraft.

Chapter 28

Sustained Airborne Training

The skills discussed during SAT are perishable and airborne operations are inherently high-risk training. SAT is performance-oriented training and must be performed by all personnel prior to conducting airborne operations. This appendix's purpose is assisting jumpmaster 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.

SAT consists of three phases. These 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 T.I. of the jumper's CE when applicable. The three phases of SAT are:

- Actions in the aircraft brief (static line control, exiting procedures, red light procedures, jump refusals, towed jumper procedures, emergency procedures) and mock door training.
- Prejump training.
- PLFs.

MOCK DOOR TRAINING

28-1. Information can always be added to the prejump brief—but never take away from the standard outline—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).

28-2. 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 the second half of the brief (emergency procedures) jumpers are placed in reverse chalk order and loaded into the mockup 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 guidelines to be followed include—

- Static line control:
  - Hook up.
  - Bight.
  - Arm position.
  - Control of static line.
- Exiting procedures:
  - STANDBY (actions of the No. 1 jumper and safety).
  - Movement to door or ramp.
  - Proper handoff of the static line to the safety.
  - Proper exit (first point of performance).
- Red light procedures:
  - Reasons for the red light.
  - Actions of the jumpmaster team.
  - Actions of the jumpers.
- Jump refusals:
  - Jumpmaster actions (repeat three times, physically and verbally).
  - The safety removes the jumper and gives a lawful order.
  - The jumpmaster controls the jump door.
  - Positive control and transfer of jump refusal is given to the DACO.
- Towed jumper procedures:

- Jumper actions (conscious and unconscious).
- Jumpmaster actions and identification (green/yellow).

Note. Jumpers are seated in mock doors in chalk order for performance-oriented training.

- Emergency situation procedures for—
  - 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

28-3. Static line control and exiting procedures are conducted by the jumpmaster 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 USL 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.

28-4. They then form a bight in the USLM making sure they have a good four in the hand and two below bight. They do not touch the double sewn portion as the double sewn portion is for the jumpmaster safety. Jumpers trace the USLM over the appropriate shoulder then cover their ripcord handle with their nonstatic-line hand. The first three jumpers have their arms in the elbow-lock position. This creates their 1-second interval. The remaining jumpers have their arms up high and stagger inboard and outboard.

28-5. 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 USLMs, 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 6 inches and out 36 inches), and count to 6,000.

RED LIGHT PROCEDURES AND JUMP REFUSALS

28-6. There are multiple reasons for a red light during flight. These reasons include being out of the DZ, obstacles on the DZ, low-flying aircraft, rotary-wing aircraft, and other situations. If a red light occurs during exit, the jumpmaster places their hand in the jumper's 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 proceed to exit out of the aircraft.

28-7. If jumpers refuse to jump, the jumpmaster gives 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.

28-8. The jumpmaster team then continues to exit jumpers if green light permits. Once the paratroop doors are closed, the safety unhooks the USL 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 their equipment receives a T.I. 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

28-9. All towed jumpers who are unconscious and are being towed by their USLM are retrieved and placed inside the aircraft. Towed jumpers who are conscious should maintain a good, tight body position with both hands covering their ripcord 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 ripcord handles.

28-10. If the jumper cannot be retrieved, their USLMs are cut. Once jumpers feel themselves falling free from the aircraft, they count to 6,000 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 is cut or jogged free, and the jumper's main canopy deploys.

EMERGENCY PROCEDURES

28-11. Emergency training procedures are conducted by the jumpmaster team with the jumpers inside the mock door. The jumpmaster team should explain the actions for each type of emergency and then have jumpers demonstrate the emergency actions. If there is an emergency, the following occurs:

- 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 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 exit the aircraft under the direction of the PJM.

28-12. 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

28-13. When possible, prejump training should be read from the manual.

28-14. 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 move through the formation easily.

28-15. 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.

28-16. Although prejump training can be given by anyone on the jumpmaster team, the PJM can delegate authority, but not responsibility. Holding, running, and other information can be inserted into the prejump training as the airborne commander sees fit.

28-17. 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.

28-18. 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 refer to their unit SOPs for additional guidance.

T-11 PREJUMP AND JUMPMASTER'S INSTRUCTIONS

28-19. The five points of performance are performance-oriented training and the 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.

28-20. 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 the sides, hands on the end of the reserve, with fingers spread. Bend forward at the waist, keeping feet and knees together, knees locked to the rear, and count to 6,000.

28-21. At the end of the 6,000 count, immediately go into the second point of performance, CHECK CANOPY AND GAIN CANOPY CONTROL AND IMMEDIATELY COMPARE YOUR RATE OF DESCENT WITH YOUR FELLOW JUMPERS. Reach up to the elbow-locked position and secure the front set of risers in each hand, simultaneously conducting a 360-degree check of the canopy. The slider is fully extended and begins to slide down the suspension lines. Move immediately into comparing the rate of descent with fellow jumpers. If you are falling faster than fellow jumpers or you cannot compare the rate of descent, activate the reserve parachute using the pull drop method. If, during the second point of performance, you find that you have twists and 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 the canopy and gain canopy control.

28-22. The 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 the rate of descent with fellow jumpers. During the third point of performance, release all appropriate equipment tie-downs.

28-23. This brings you to the fourth point of performance, which is PREPARE TO LAND. At approximately 200 feet AGL or treetop level, look below you to ensure there are no fellow jumpers and lower the equipment, then slip into the wind. Attempt to utilize the slip assist loops or slip assist tabs and execute a two-riser slip opposite the direction of drift. If the wind is blowing from the left, reach up with both hands and grasp the left set of risers and pull them deep into the chest until landing. If the wind is blowing from the front, reach up with both hands and grasp the front set of risers and pull them deep into your chest until you land. If the wind is blowing from your right, reach up with both hands and grasp the right set of risers and pull them deep into your chest until you land. If the wind is blowing from your rear, reach up with both hands and grasp the rear set of risers, and pull them deep into your chest until you land. After slipping into the wind, 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 until you land. If you decide to pull a one-riser slip, at approximately 200 feet AGL or treetop level, look below you to ensure there are no fellow jumpers and lower your equipment, then slip into the wind. At 100 feet AGL, execute a one riser slip by grabbing 1 to 3 arm lengths depending on the wind. After you have slipped into the wind, you 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 the chest and execute a proper PLF.

28-24. The fifth point of performance is LAND. You make a proper PLF 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 never attempt to make a standing landing.

28-25. 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 the 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 the head in the opposite direction and pull out and down on the cable loop. To activate the 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 the head in the opposite direction and pull out and down on the cable loop. Place the weapon into operation and remove the parachute harness.

28-26. 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 UPRB right side out. Place the parachute harness inside the UPRB with the smooth side facing up. Secure the risers and place them under the parachute harness."

28-27. 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 the 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.

28-28. Tactical: Remain on a knee at the UPRB. Begin pulling the suspension lines and canopy towards the UPRB, 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 UPRB. 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.

28-29. The next item I will cover is the ACTIVATION OF THE RESERVE PARACHUTE. To activate the reserve parachute, you will use the pull drop method. JUMPERS HIT IT, maintain a good, tight body position. Grasp the ripcord handle with either hand. Throw the head back and to the rear, pull out on the ripcord handle, and drop it. The reserve parachute will activate. Ensure neither hand is in front of the reserve parachute as it deploys. After you activate the reserve parachute, secure the reserve risers. At approximately 200 feet AGL, slip into the wind, and prepare to land.

28-30. The next item I will cover is TOWED JUMPER PROCEDURES. JUMPERS HIT IT. If becoming a towed jumper and being towed by the USLM 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 the ripcord 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 the ripcord handle. If you cannot be retrieved, the USLM will be cut. Once you feel yourself falling free from the aircraft, count to 6,000 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."

28-31. The next item I will cover is MALFUNCTIONS.

REMEMBER

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."

28-32. 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 ripcord 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 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.

28-33. 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 AGL, 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 are 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.

28-34. 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 ripcord assembly. With the opposite hand remove the top tuck tab. Maintain steady inward pressure and with the opposite hand insert it behind the ripcord assembly and apply inward pressure. Grasp the ripcord 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/single pin suspension lines because of the slippery coating applied to the suspension lines. When in doubt, stay where you are and wait for assistance.

28-35. 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 are hung up in the wires, do not attempt to lower yourself to the ground. Stay where you are and wait for assistance.

28-36. 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, lower and jettison your equipment, making a mental note of where it lands. Next, jettison your helmet, again 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.

28-37. 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 CE, activate your life preserver, then jettison your CE 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.

28-38. The next item I will cover is NIGHT JUMPS. When conducting night jumps, be sure to give your canopy an extra look and 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 5 to 10 seconds before you think you will.

28-39. The next item I will cover is IMC. 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 and immediately compare your rate of descent with fellow jumpers.

28-40. The final item I will cover is PLFs. We will now move to the PLF platform and conduct one satisfactory PLF in each of the four directions.

MC-6 PREJUMP AND JUMPMASTER'S INSTRUCTIONS

28-41. 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.

28-42. 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 4,000.

28-43. At the end of your 4,000 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 decent 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.

28-44. 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.

28-45. This brings you to your fourth point of performance which is PREPARE TO LAND. At approximately 250 feet AGL, determine your direction of drift. If the wind is blowing from your left, pull your left toggle down to the elbow-locked position. One 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 CE. 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 PLF.

28-46. The fifth point of performance is LAND. You will make a proper PLF 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.

28-47. 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.

28-48. 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 UPRB bag right side out. Place the parachute harness inside the UPRB with the smooth side facing up and leave the waistband exposed. Secure the risers and place them under the parachute harness.

28-49. 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 roll your canopy and suspension lines in a figure eight all the way to the UPRB. Route the waistband through the bridle loop, leaving 6 to 8 inches of the waistband exposed.

28-50. Tactical Remain on a knee at the UPRB. Begin pulling the suspension lines and canopy towards the UPRB, stuffing them in as you go. Route the waistband through the bridle loop leaving 6 to 8 inches of the waistband exposed.

28-51. Snap, do not zip, the UPRB. 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.

28-52. The next item I will cover is the ACTIVATION OF THE RESERVE PARACHUTE. To activate the reserve parachute, you will use the pull drop method. JUMPERS HIT IT. Maintain a good, tight body position. Grasp the ripcord handle with either hand. Throw your head back and to the rear, pull out on the ripcord 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 reserve parachute, secure the reserve risers. At approximately 100 feet AGL, slip into the wind, and prepare to land.

28-53. The next item I will cover is TOWED JUMPER PROCEDURES. JUMPERS HIT IT. If you are being towed by your USLM 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 ripcord 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 ripcord handle. If you cannot be retrieved, your USLM will be cut. Once you feel yourself falling free from the aircraft, count to 4,000 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.

28-54. The next item I will cover is MALFUNCTIONS.

> **REMEMBER**
>
> 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.

28-55. 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 ripcord 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.

28-56. 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 100 feet AGL, 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 are 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.

28-57. 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 ripcord assembly. With the opposite hand, remove the top tuck tab. Maintain steady inward pressure and with the opposite hand insert it behind the ripcord assembly and apply inward pressure. Grasp the ripcord 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/single pin suspension lines because of the slippery coating applied to the suspension lines. When in doubt, stay where you are and wait for assistance.

28-58. 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 are hung up in the wires, do not attempt to lower yourself to the ground. Stay where you are, and wait for assistance.

28-59. 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, lower and jettison your equipment, making a mental note of where it lands. Next, jettison your helmet, again 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.

28-60. 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 CE, activate your life preserver, then jettison your CE 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.

28-61. 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 5 to 10 seconds before you think you will.

28-62. 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 and immediately compare your rate of descent with fellow jumpers.

28-63. The final item I will cover is PLFs. We will now move to the PLF platform and conduct one satisfactory PLF in each of the four directions.

ACTIONS INSIDE THE AIRCRAFT, UH-60

28-64. The procedures through paragraph 28-75 and 2-81 through 2-83 are to be demonstrated.

STATIC LINE CONTROL

28-65. USL snap hooks are held in the right hand and with the spring opening gate facing towards the forward portion of the aircraft with the USLM routed over the right shoulder when jumpers are in pick-up zone posture. On arrival at the cargo door, each jumper in turn will hand their USL snap hook to the jumpmaster. They will watch the jumpmaster attach their USL snap hook to the modified anchor line system, turn away from the USLM, and assume a seated position, ending the jumper's static line control for the operation. Jumpers will then go ahead and connect the troop strap making sure to hold it in the palm of their hands with a thumbless grip.

EXITING PROCEDURES

28-66. During this portion you will receive three claps and a verbal command. At this point all jumpers give their attention to the jumpmaster keeping their eyes on him.

28-67. The first command you will receive is the command 6 MINUTES. At this command jumpers place their legs up in a 90-degree angle. Once the aircraft has reached treetop level, jumpers simply put their legs down.

28-68. The next command you will receive is GET READY. This command will be given once we have reached 1000 feet AGL. Jumpers will go ahead and release the troop strap, placing and tucking it away to where it does not hinder the door.

28-69. The next command will be CHECK STATIC LINES. At this command jumpers will go ahead and bend forward at the waist so the jumpmaster can check your USLM, making sure it is not misrouted and properly hooked to the modified anchor-line cable. Next the jumpmaster will physically pull you up in the upright position once he has checked you.

28-70. The next command will be CHECK EQUIPMENT. On this command jumpers check your own equipment (helmet, chinstrap, chest strap, left/right leg strap, and HPTLL) and then wait for the next command.

28-71. The next command will be SOUND OFF FOR EQUIPMENT CHECK. Jumpers will place their hand on top of their helmet with the thumbs up signaling they are good. The jumpmaster will then simply grab onto your hand closing the thumb. If you have a known deficiency, you will do the same procedure but with your thumbs facing down. The jumpmaster will come towards you and correct any deficiency you have. If the jumpmaster cannot fix the issue, we will return to PZ and correct the issue.

28-72. The next commands will be the two time commands of ONE MINUTE AND 30 SECONDS. At this command jumpers Nos.1 and 4 will give a little way for the jumpmaster to go ahead and clear the rear. Once complete jumpers can resume position.

28-73. The command “STAND BY is given at approximately 10 seconds out. The jumpers will place their hands on the aircraft floor along their sides and give their attention to the jumpmaster. Each jumper will receive a tap on their helmet, accompanied by a verbal command of GO. When a jumper receives the command GO, they will push out with their hands enough to have the pack tray of their main parachute clear the edge of the cargo door. As soon as they are clear, they will go into their first point of performance. All jumpers will get their own and physical and verbal cue of GO.

RED LIGHT PROCEDURES

28-74. There are no red lights on a UH-60 aircraft so all red light commands will be a verbal and physical command from the jumpmaster. The jumpmaster is in direct communication with the pathfinder on the ground, the pilot, and the crew chief who will notify the jumpmaster of any problems that would preclude a safe descent and landing. Jumpers should not anticipate the command GO so much that they inadvertently exit before their time. If the jumpmaster issues the command of RED LIGHT, RED LIGHT, RED LIGHT, the jumpers will secure the safety belt and the aircraft will land.

JUMP REFUSALS

28-75. If a jumper refuses to exit the aircraft, they will be given the tap and command of GO two more times. If at that point, the jumper still refuses to exit, they will be considered a jump refusal and given a lawful order to not touch their equipment. Any jumpers still onboard will remain on the aircraft. Any deployment bags that are still outside the aircraft will be retrieved and stowed. All remaining jumpers will be pulled inside the aircraft and the cargo doors will be closed, or the troop straps will be hooked back up. The aircraft will return to the pick-up zone, where the jumper in question will be handed over to the DACO/marshalling area control officer who is current and qualified for JMPI and a T.I. by a rigger.

TOWED JUMPER

28-76. If you become a towed jumper and are conscious, maintain ripcord handle awareness and a good tight body position. Once the jumpmaster notices that you are being towed, no other jumpers will exit and if there are deployment bags left the jumpmaster will pull them in. The jumpmaster will ascertain the nature of the problem. If it can be resolved by cutting or jogging equipment free, and without cutting the USLM, then they will attempt to do so. If it cannot be resolved, the jumper will be lowered to the DZ or safe location. Throughout the descent, the jumper must maintain proper ripcord handle awareness. Once your feet touch the ground go ahead and walk out and away as the aircraft lands. Once you feel resistance turn around and take a knee. The jumpmaster will then unhook your USLM snap hook and come towards you and see if you need any aid.

28-77. If you are unconscious the aircraft will find a good landing spot to slowly lower you to the ground. Once you have been lowered the aircraft will offset landing either right or left and land. The jumpmaster will then move to your location and render any aid needed.

Emergency Procedures

28-78. These are procedures to take in emergency situations.

Crash Landing

28-79. In the event of a malfunction of the aircraft in-flight, the jumpmaster will take all direction from the pilot. The jumpers will pull their legs inside the aircraft, move to the center, and brace themselves for landing by lying flat on their backs.

Ground Evacuation

28-80. If the aircraft needs to be evacuated while on the ground, you must ensure that your USLM is disconnected from the aircraft. Exit the aircraft once the rotor blades have stopped, or when directed to do so by the crew chief. Move away from the aircraft to the 3 o'clock or 9 o'clock position and stay away from the nose or tail of the aircraft. It is imperative that jumpers maintain ripcord handle awareness at all times as an inadvertent activation has catastrophic potential.

Activation of The Reserve Parachute

28-81. In the event of an activation of a reserve parachute when the safety belt is still attached, the jumper will attempt to stop the activation of the reserve parachute and sound off with RESERVE, RESERVE, RESERVE. If unable to stop the activation, the jumper will attempt to slide underneath the safety belt. Other jumpers will attempt to stay clear of that jumper's USLM as he exits by pulling their legs up and leaning back.

28-82. In the event of activation of the reserve parachute above 1000 feet AGL and the troop strap is down, the same procedures will apply and the only difference is that the jumpers in the front of aircraft have the option to exit the aircraft.

Fire During Flight

28-83. Jumpers will just pull yourself inside and away from the fire and the jumpmaster and crew chief will go ahead and extinguish the fire

Emergency Bailout

28-84. In the event of a malfunction of the aircraft in-flight, the jumpmaster will take all direction from the pilot. If we have enough altitude to exit jumpers and the pilots can stabilize the aircraft, the pilot will give the jumpmaster the command of EMERGENCY BAILOUT, EMERGENCY BAILOUT, EMERGENCY BAILOUT, which will be relayed to the jumpers. The only other command to be given will be GO. All jumpers will prepare to exit, and the jumpmaster will give each individual jumper the verbal and physical command of GO as previously discussed. It will look and sound like this.

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Appendix A

Drop Zone Risk Assessment Analysis

Conducting an airborne operation is an inherently high-risk mission. When water, wire, or tree hazards are on or near the intended DZ, the probability and severity of injuries is increased and the possibility of fatalities during airborne training operations is also present.

This appendix provides planning considerations for water, wire, and tree emergency landings. It also aids the commander in conducting DZ deliberate risk assessments and analysis, and provides the commander, DZSO or DZSTL, and jumpmaster 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 also follow their service risk assessment procedures and regulations.

CONSIDERATIONS AND WATER OBSTACLES

A-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 ATP 5-19 when completing DD Form 2977. When assessing hazards on a DZ, 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.
- All established risk criteria are initial risk and do not reflect mitigating factors and residual risk levels.

A-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 1,000 meters of any edge of the surveyed or tactically assessed DZ.

A-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. The following factors may also enter into the water hazard risk assessment:

- Condition of the water hazard bottom.
- Current of a free-flowing water hazard.
- Water temperature.
- Number of water hazards present.
- Recovery equipment available to retrieve a jumper.
- Jumper experience levels.
- Jump time (day or night and percent of illumination).
- The DZ is or is not critical to mission success.

A-4. The following are the minimum initial risk categories assigned to DZs with water obstacles:

- High-risk conditions exist if—
  - A water hazard is within 1,000 meters of any edge of the DZ.
  - The water depth is 4 feet or more and the 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 4-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 1,000 meters but less than 1,500 meters from any edge of the DZ.
  - The water depth is 4 feet or more, and the water is 40-feet wide or wider.
  - The boat detail may be used but is not required.
- Low-risk conditions exist if a water hazard is more than 1,500 meters from any edge of the DZ, the water depth is 4 feet or more, and water is 40-feet wide or wider.

A-5. The commander, DZSO or DZSTL, and jumpmaster personnel perform these actions described to reduce the risks associated with water obstacles. The commanders must—

- Ensure a risk assessment analysis has been conducted:
  - 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 to determine appropriate risk approval level.
- Ensure that key leaders, jumpmaster personnel, and jumpers have been informed of the water obstacle risks and the risk level (high, medium, or low).
- Ensure AF Form 3823 is current and available:
  - Ensure the DZSO or DZSTL and jumpmaster personnel have read it and completely understand the unintentional water landing risk level.
  - Ensure the DZSO or DZSTL and jumpmaster personnel understand 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 boat detail's OIC or NCOIC knows where and when the detail begins its duties.
  - Ensure the boat detail's OIC or NCOIC knows how to contact the DZSO or DZSTL.
- Ensure that approved life preservers are coordinated for, if needed.
- Ensure the DZSO or DZSTL, jumpmaster personnel, and jumpers are informed of all water obstacle risks and that the DZSO or DZSTL and jumpmaster complete their duties.

A-6. The DZSO or DZSTL must—

- Determine if a follow-on assessment of the DZ has been conducted to confirm its status.
- Ensure the OIC or NCOIC is fully briefed on the plan if the deliberate risk assessment worksheet indicates high risk, and if 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, ensuring copies are present throughout the mission.

A-7. 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:
  - Place special emphasis on unintentional water landings.
  - If prejump is over 24 hours, a colonel/O-6 must give approval.

A-8. 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 accomplish the mission effectively. 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:

- A boat (combat rubber raiding craft or solid bodied boat of comparable size) with an operable outboard motor.
- Fuel and oil sufficient to complete the mission.
- A life vest or flotation device for each boat detail member and additional flotation devices for jumpers.

- One life ring with an attached rope.
- One radio with a spare battery.
- One shepherd's crook.
- One grappling hook.
- One long backboard to facilitate cardiopulmonary resuscitation.
- One aid bag with resuscitation equipment.
- One rope, 120-feet long.
- Optional training, as required.

A-9. For night recovery operations, each recovery boat must have operational NVDs with two spare batteries for each boat.

A-10. The following optional training is suggested:

- Suspended harness training on the second through fifth points of performance may be given.
- Step-by-step training on the procedures jumpers 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 a parachute harness and B-7, LPU-10, and TFSS life preservers) into the water.
  - Familiarizing the jumpers with the proper emergency water landing procedures.

WIRE OBSTACLES

A-11. A wire obstacle is a wire or set of wires (regardless of height or type) located within 1,000 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. A 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 1,000 meters of any edge of the surveyed or tactically assessed DZ, the power should be cut off before using the DZ, if possible.

A-12. 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.
- 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.

A-13. 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 1,000 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 1,000 meters of any edge of the surveyed DZ.

- Medium risk—a medium-risk condition exists if—
  - A wire hazard is taller than 35 feet and more than 1,000 meters but less than 1,500 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 1,000 meters of any edge of the surveyed DZ.
- Low risk—a low-risk condition exists if—
  - A wire hazard is taller than 35 feet and more than 1,500 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 1,000 meters of any edge of the surveyed DZ.

A-14. The commander, DZSO or DZSTL, and jumpmaster perform these actions described to reduce the risks associated with wire obstacles. Commanders must—

- Ensure a risk assessment analysis has been conducted:
  - 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 to determine appropriate risk approval level.
- Ensure that key leaders, jumpmaster personnel, and jumpers have been informed of the wire obstacle risks and the risk level (high, medium, or low).
- Ensure AF Form 3823 is current and available.
- Ensure the DZSO or DZSTL and jumpmaster personnel have read AF 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 details 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.
  - How to contact the DZSO or DZSTL.
- Ensure the DZSO or DZSTL, jumpmaster personnel, and jumpers have been informed of all wire obstacle risks and complete their duties.

A-15. The 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 the necessary equipment available to them to conduct the mission.
- Ensure that coordination with the electric company has been made to cut off the power NLT 1 hour prior to drop time, if possible:
  - The DZSTL must have direct contact with whoever turns 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 and that copies are present throughout the mission.

A-16. The 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 takeoff, with special emphasis on unintentional wire landings.
  - If the prejump is over 24 hours, a colonel/O-6 must give approval.

A-17. Each wire obstacle may require different types of coverage. Equipment should be altered to accomplish the mission effectively. 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, which may need the following equipment:
  - Two radios with two spare batteries (one for the OIC or NCOIC and one for the recovery team).
  - One grappling hook.
  - One tree climbing kit.
  - One long backboard to facilitate cardiopulmonary resuscitation.
  - 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.
- Equipment for night recovery operations should be added:
  - NVDs (with spare batteries) for each team.
  - Operational flashlights (with spare batteries) for each team.
  - Optional training, as required.

A-18. 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

A-19. A tree obstacle is any tree or group of trees that are on, around, or within 1,000 meters of any edge of the DZ. 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 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 is within 1,000 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 1,000 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 1,000 meters of any edge of the DZ.

A-20. The commander, DZSO or DZSTL, and jumpmaster 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, jumpmasters, and jumpers have been informed of the tree obstacle risks and the risk level (high, medium, or low).
- Ensure AF Form 3823 is current and available:
  - Ensure that the DZSO or DZSTL and jumpmaster have read it.
  - Ensure that the DZSO or DZSTL and jumpmaster completely understand the tree landing risk level and the recovery measures to be used.
- Ensure that the DZSO or DZSTL and the unit providing the detail have properly conducted initial or refresher training if a recovery detail is used.

- Ensure that the recovery detail's OIC and NCOIC know where and when the detail begins its duties and how to contact the DZSO or DZSTL.
- Ensure that the DZSO and DZSTL, jumpmaster and AJM, and jumpers have been informed of all tree obstacle risks and that the DZSO or DZSTL and jumpmaster complete their duties.

A-21. The 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 and that copies are present throughout the mission.

A-22. Jumpmasters must—

- Ensure all personnel have been briefed on the tree obstacles.
- Ensure all personnel have—
  - Received prejump training no earlier than 24 hours prior to takeoff; with special emphasis on unintentional tree landings.
  - If the prejump is over 24 hours, a colonel/O-6 must give approval.

A-23. Each tree obstacle may require a different type of coverage. Equipment should be altered to accomplish the mission effectively. The following is an example composition of a recovery detail:

- OIC, NCOIC, and assistant.
- Sufficient personnel to recover jumpers who may become entangled in the tree obstacles.
- A recovery team, which may need the following equipment:
  - Two radios with two spare batteries (one for the 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.
- Equipment for night recovery operations should be added:
  - NVDs (with spare batteries) for each team.
  - Operational flashlights (with spare batteries) for each team.
  - Optional training as required.

A-24. 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 tree landings may be conducted.

DECISION MATRIX AND CHECKLISTS FOR LEADERS

A-25. This section provides four tables to aid the leader in assessing risk. Table A-1 shows the DZ risk assessment decision matrix.

Table A-1. Drop zone risk assessment decision matrix

	HIGH RISK	***MEDIUM RISK***	***LOW RISK***
Water	Within 1,000 meters of any edge of a DZ, more than 4-feet deep, and more than 40-feet wide.	More than 1,000 meters but less than 1,500 meters from any edge of DZ, more than 4-feet deep, and more than 40-feet wide.	More than 1,500 meters from any edge of DZ, more than 4-feet deep, and more than 40-feet wide.
Wire	Within 1,000 meters of any edge of the DZ.	More than 1,000 meters but less than 1,500 meters from any edge of the DZ.	More than 1,500 meters from any edge of the DZ.
Tree(s)	Within 1,000 meters of any edge of the DZ and 35 feet tall or taller.	Within 1,000 meters of any edge of the DZ and 20 to 35 feet.	Within 1,000 meters of any edge of the DZ, but less than 20-feet tall.
Obstacle Training Equipment	Required.	Within 1,000 meters of any edge of the DZ, but less than 20-feet tall.	Not required

Legend: DZ—drop zone

A-26. Table A-2 outlines a checklist for water landings. Table A-3 is a checklist for wire landings, and table A-4 on page 440 is a checklist for tree landings.

Table A-2. Leader's checklist for possible water landings

COMMANDER
A deliberate risk assessment and follow-on assessment have been conducted and approved at the appropriate level.
Key leaders, jumpmaster (JM) personnel, and jumpers have been informed of water obstacle risks and the risk level (high, medium, or low).
AF Form 3823 is current and available. The DZSO or DZSTL and jumpmaster 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, 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 the necessary equipment available to conduct the mission.
All applicable regulations, field manuals, and SOPs have been read.
The boat detail maintains communication throughout the mission. Communications are established 1 hour prior to drop time and checked 15 minutes prior to drop time.
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: AF—Air Force; DZSO—drop zone safety officer; DZSTL—drop zone support team leader; NCOIC—noncommissioned officer in charge, O-6—colonel or U.S. Navy captain; OIC—officer in charge; SOP—standard operating procedure

Table A-3. Leader's checklist for possible wire landings

COMMANDER
A 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 Form 3823 is current and available. The DZSO or DZSTL and jumpmaster 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, OIC, and NCOIC of the recovery detail have been briefed and understand their mission.
The DZSO or DZSTL, jumpmaster personnel, and jumpers have been informed of all wire obstacle risks.
The DZSTL or DZSO and jumpmaster personnel have completed their duties.
DZSO or DZSTL
A 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 the necessary equipment available to conduct the mission.
All applicable regulations, field manuals, and SOPs have been read.
The recovery detail maintains communication throughout the mission. Communications are established 1 hour prior to drop time and checked 15 minutes prior to drop time.
The DZSO or DZSTL has direct contact with those who 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 hazards.
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: AF—Air Force; DZSO—drop zone safety officer; DZSTL—drop zone support team leader; NCOIC—noncommissioned officer in charge, O-6—colonel or U.S. Navy captain; OIC—officer in charge; SOP—standard operating procedure

Table A-4. Leader's checklist for possible tree landings

COMMANDER
A 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 tree obstacle risks and the risk level (high, medium, or low).
AF Form 3823 is current and available. The DZSO or DZSTL and jumpmaster have read it and completely understand the tree landing risk level and the safety measures that are to be used.
The DZSO or DZSTL, OIC, and NCOIC of the recovery detail have been briefed and understand their mission.
The DZSO or DZSTL, jumpmaster personnel, and jumpers have been informed of all tree obstacle risks.
The DZSTL or DZSO and jumpmaster personnel have completed their duties.
DZSO or DZSTL
A 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 1 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 prejump training no earlier than 24 hours prior to take-off, with special emphasis on tree landings. If the prejump is over 24 hours, an O-6 must give approval.
Legend: AF—Air Force; DZSO—drop zone safety officer; DZSTL—drop zone support team leader; NCOIC-noncommissioned officer in charge, O-6—colonel or U.S. Navy captain; OIC—officer in charge; SOP—standard operating procedure

PART SIX

EMERGENCY SITUATION PROCEDURES

This part discusses parachuting training perils.

Appendix B

Collisions, Entanglements, and Center Panel Strike

Leaders at all levels must stress the importance of prevention regarding 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

B-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.

B-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.

B-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 the aircraft exit throughout full canopy deployment—the jumper performs 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—the jumper performs the second and third points of performance.
- Low altitude occurs from the preparation for landing altitude throughout descent to landing—the jumper performs the fourth point of performance.

T-11 PARACHUTE EMERGENCY PROCEDURES

B-4. In the event of an entanglement, the following actions should be taken:

- If a jumper is using 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 activate their reserve for a partial malfunction 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; the jumpers continue to observe both canopies and take one of the following actions:
  - If one canopy collapses, neither jumper activates their reserve parachute because one T-11 series parachute can safely deliver two combat-equipped jumpers to the ground.
  - If both canopies 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.
- Jumpers who find themselves on another jumper's canopy, without rolling, use whatever means necessary to get off the canopy:
  - They 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.
- Always try to stay away from the four corner vents located at the corners of the canopy.
- Jumpers who fall through the vent should stay in place and be prepared to execute a proper PLF.

CENTER PANEL STRIKE

B-5. A center panel strike occurs when jumpers find themselves 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.
  - They attempt 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 PLF.

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 reinflating and preventing the deployment of the reserve.

- Actions of the lower jumper:
  - At the end of the lower jumpers' 6,000 count, they immediately begin the second point of performance, check canopy, and gain canopy control and immediately compare your rate of descent with fellow jumpers.
  - 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 jumper 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 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 one-riser diagonal slip. If the higher jumper should fall through a corner vent, they should activate their reserve for a partial malfunction and be prepared to conduct a PLF.

MC-6 PARACHUTE EMERGENCY PROCEDURES

B-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.

B-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.

B-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.

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Glossary

The glossary lists acronyms and terms with Army or joint definitions. Where Army and joint definitions differ, (Army) precedes the definition. The proponent publication for other terms is listed in parentheses after the definition.

SECTION I – ACRONYMS AND ABBREVIATIONS

A-TAP	advanced tactical assault panel
A*TAP	tactical airdrop paratroop with armor
ACH	advanced combat helmet
ADEPT	alternate door exit procedures
ADZSO	assistant drop zone safety officer
AEBP	advanced emergency bailout parachute
AFI	Air Force instruction
AFMAN	Air Force manual
AGL	above ground level
AIRPAC	airborne pack
AJM	assistant jumpmaster
ALCE	airlift control element
ALICE	all-purpose lightweight individual carrying equipment
AR	Army regulation
ARC	accessory rail connector
AT4JP	antitank 84-millimeter unguided, antiarmor jump pack
ATC	air traffic control
ATP	Army techniques publication
ATPS	advanced tactical parachute system
BAR	basic airborne refresher
CARP	computed air release point
CCT	combat control team
CDS	container delivery system
CE	combat equipment
CO_2	carbon dioxide
DA	Department of the Army
DACO	departure airfield control officer
DA Pam	Department of the Army pamphlet
DD	Department of Defense (form)
DLAI	Defense Logistics Agency instruction
DNS	day/night sight
DOD	Department of Defense

DODI	Department of Defense instruction
DSN	Defense Switched Network
DZ	drop zone
DZSO	drop zone safety officer
DZST	drop zone support team
DZSTL	drop zone support team leader
ENVD	enhanced night-vision device
EOD	explosive ordnance disposal
FM	field manual
FS	framework support
GLM	grenade launcher module
GMRS	ground marking release system
GTA	ground-to-air
HPT	hook-pile tape
HPTLL	hook-pile tape lowering line
HSPR	harness, single-point release
IHPS	integrated head protection system
IHSPR	integrated harness, single-point release
IMC	instrument meteorological conditions
IR	infrared
IOTV	improved outer tactical vest
JMPI	jumpmaster personnel inspection
JP	joint publication
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/antipersonnel weapon system
MALFO	malfunction officer
MAP	modular lightweight load-carrying equipment assault pack
MAWC	modular airborne weapons case
MCO	Marine Corps order
MCRP	Marine Corps reference publication
MEDEVAC	medical evacuation
MEW	mean effective wind
mm	millimeter
M-MOLLE	medium modular lightweight load-carrying equipment
MOLLE	modular lightweight load-carrying equipment
mph	miles per hour
MSL	mean sea level

NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NLT	not later than
No.	number
NSN	national stock number
NVD	night-vision device
NVG	night-vision goggle
O-5	lieutenant colonel or United States Navy commander
O-6	colonel or United States Navy captain
OIC	officer in charge
OPNAV	Office of the Chief of Naval Operations
PBHC	paper board honeycomb
PI	point of impact
PIBAL	pilot balloon
PIE/R2	parachutist's individual equipment rapid release
PJM	primary jumpmaster
PLF	parachute landing fall
PTT	push-to-talk
PWAC	practical work inside the aircraft
RAC	rail attached communications
RAM	raised angle marker
RATS CAB	rapid access trauma system certified aid bag (medical)
RP	release point
SAT	sustained airborne training
SEAL	sea-air-land
SMAW-D	shoulder-launched multipurpose assault weapon-disposable
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 airdrop paratroop
TB	technical bulletin
TC	training circular
TFSS	tactical flotation support system
T.I.	technical inspection
TM	technical manual
TO	technical order

TOT	time on target
TPRS	towed parachutist retrieval system
UDT	underwater demolition team
UPRB	universal parachutist recovery bag
U.S.	United States
USA	United States Army
USAIS	U.S. Army Infantry School
USAQMS	U.S. Army Quartermaster School
USASOC	United States Army Special Operations Command
USAF	United States Air Force
USL	universal static line
USLM	universal static line modified
USMC	United States Marine Corps
USN	United States Navy
VIRS	verbally initiated release system
WAP	waistband adjuster panel
WAPES	waistband adjuster panel extension strap
WDZ	water drop zone
WES	waistband extension strap
WSVC	wind streamer vector count

SECTION II – TERMS

checkpoint

A predetermined point on the ground used to control movement, tactical maneuver, and orientation. (FM 3-90).

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30 May 2026

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