

## CHAPTER 17

# ROTARY-WING AIRCRAFT

*Rotary-wing aircraft can be used for airdrop operations when special missions are conducted to deploy small-unit forces. The aviation unit supporting the airdrop is responsible for preparing the aircraft for equipment and personnel drops to include seat and door removal (if required) and installation or rearrangement of seat belts. The installation of the field-expedient anchor line cable(s) is the JM's responsibility. Aircraft preparation is usually accomplished jointly by the crew chief and JM.*

### Section I

## SAFETY CONSIDERATIONS

Although safety considerations for each aircraft are discussed, the requirements below apply to all Army aircraft (unless otherwise indicated).

### 17-1. GROUND TRAINING

Unit commanders require all personnel to participate in ground training immediately before the jump. The parachutists are shown the correct movement procedures inside the aircraft and the exit procedures. Parachutists are required to practice and demonstrate these procedures to JM satisfaction before the jump. Different techniques are involved in jumping from Army aircraft; failure to conduct ground training may result in a serious jump accident.

### 17-2. 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 parachutists.

### 17-3. RESERVE PARACHUTE

Crowded conditions inside the cargo compartment could cause accidental activation of a reserve parachute, creating an extremely hazardous situation. During movement, the rip cord grip of the reserve parachute is protected by placing the right hand and forearm over the front of the reserve. This method allows the parachutist to control the pilot chute and canopy in case of accidental activation.

**17-4. SPACE LIMITATIONS**

The total number of parachutists and air delivery containers must conform to the weight and space limitations of the specific aircraft involved.

**17-5. 6-SECOND COUNT**

Due to the slow forward speed of helicopters and the downward rotor wash, the time interval between exit and full deployment of T-10B or MC1-1B/C parachutes requires about 100 feet more altitude. Due to the longer opening time, the parachutist extends the normal 4000-count to a 6000-count.

**17-6. STATIC LINES AND DEPLOYMENT BAGS**

Static lines and deployment bags are retrieved by the JM or crew chief immediately after the last parachutist is clear. The static lines and deployment bags are secured as soon as they are retrieved inside the aircraft. If the door on the aircraft can be closed, the static lines can be removed from the anchor cable or attaching point; otherwise, the static lines are not detached until the aircraft is on the ground.

**17-7. CROWDED CONDITIONS**

Crowded conditions inside these aircraft dictate that caution be used to prevent entanglement or misrouting of static lines during the parachutist's exit. Each parachutist is cautioned to watch the static line of the preceding parachutist and to observe all the static lines trailing from the lower aft corner of the cargo or personnel door. This precaution ensures that succeeding parachutists do not jump until the parachute of the preceding parachutist has deployed, and that the deployment bag has trailed to the rear of the aircraft.

**17-8. CONTAINER LOADS**

If container loads are to be airdropped from bomb shackles (wing load), helicopter door, bomb bay, or the doors of utility airplanes, they must be rigged using parachutes equipped with breakaway static lines. Container loads using breakaway static lines may be airdropped from the ramp or rear end (tailgate) of cargo and transport-type aircraft. Container loads with breakaway static lines are not rigged for airdrop from the troop door (side door) of cargo and transport-type aircraft. These parachutes are equipped with a drogue device if parachutists follow the door bundles. Parachutists are not dropped at the same time as bundles that are rigged for release from bomb shackles.

**17-9. HOOKUP PROCEDURES**

When using Army aircraft for airborne operations, parachutists might use different hookup procedures from the standard hookup procedures used in USAF troop

carrier aircraft. This difference is due to the location of the anchor cables. Also, the JM may hook up the individual jumper. Unless otherwise specified in the hookup procedures for specific aircraft, the rule is to hook the open portion of the snap hook to the front of the aircraft with all static line snap hooks facing the same direction. This permits rapid, visual inspection before the jump and easy removal of the static lines after the jump.

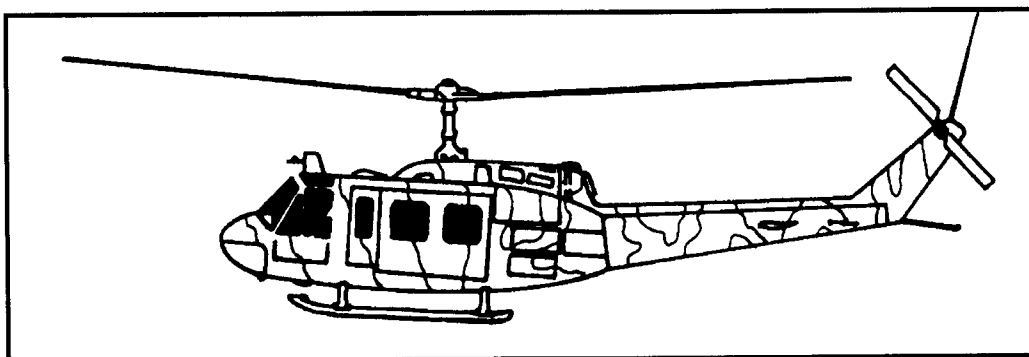
### **17-10. TOWED PARACHUTIST PROCEDURES**

The JM notifies the pilot that a parachutist is being towed. The JM recovers and stores all other deployed static lines and deployment bags. The pilot slowly descends to the DZ or other appropriate site and brings the aircraft to a hover. The JM unhooks the towed parachutist's static line, deplanes, and frees the towed parachutist.

## **Section II**

### **UH-1H IROQUOIS/UH-1N HUEY**

The Army's UH-1H is powered by a single gas turbine engine; the USMC UH-1N has two gas turbine engines. Eight combat-equipped parachutists can jump from the UH-1H (Figure 17-1). Up to 10 parachutists can jump from the UH-1N consistent with weight limitations. The JM is a static JM.



**Figure 17-1. UH-1H Iroquois/UH-1N Huey.**

### **17-11. PREPARATION AND INSPECTION**

Prepare and inspect the UH-1H as follows:

a. Preparation. The following steps prepare the UH-1H for jumping:

(1) Both cargo compartment doors are locked in the open position. If the doors cannot be locked, they are removed.

(2) All troop seats are removed except one seat on each side (located to the rear of the pilot and copilot seats). These two seats are installed so they are facing to the rear of the aircraft. If the parachutists are equipped with combat equipment and eight parachutists are to jump, all seats in the cargo compartment are removed.

(3) The door and frame are inspected to ensure there are no sharp edges that could cut or fray static lines. If these are determined to be hazardous, corrective action is taken before the helicopter is jumped.

(4) Under field conditions, the door and frame can be padded and taped to preclude a mission abort. Otherwise, the aircraft is returned to maintenance for correction of the deficiency.

(5) Safety belts are attached to the tie-down rings on each side of the compartment for floor-seated parachutists.

(6) The door gunner/crew chief foot-operated radio switch may be unscrewed (by hand) before jumping. The exposed radio switch wires are taped to prevent an electrical short. If the switch is not removed, it is padded and taped. The ground-handling wheel-mount brackets on both landing skids are padded with cellulose wadding and taped (Figure 17-2). Some aviation units have fabricated special covers that may be used to cover the wheel-mount brackets.

**b. Anchor Line Systems.** Two anchor line systems are available with the UH-1H aircraft for airdrop of personnel. They are the *standard overhead system* and the *expedient system* (Figure 17-3). The expedient system (A-7A anchor line cable assembly) consists of a cotton A-7A strap, four D-rings, and four connector snaps (TM 10-1670-240-20/TO 13C7-49-11 authorized the fabrication of the A-7A strap from Type X cotton webbing). Nylon A-7A straps may be used with cotton buffers on the D-rings and connector snaps.

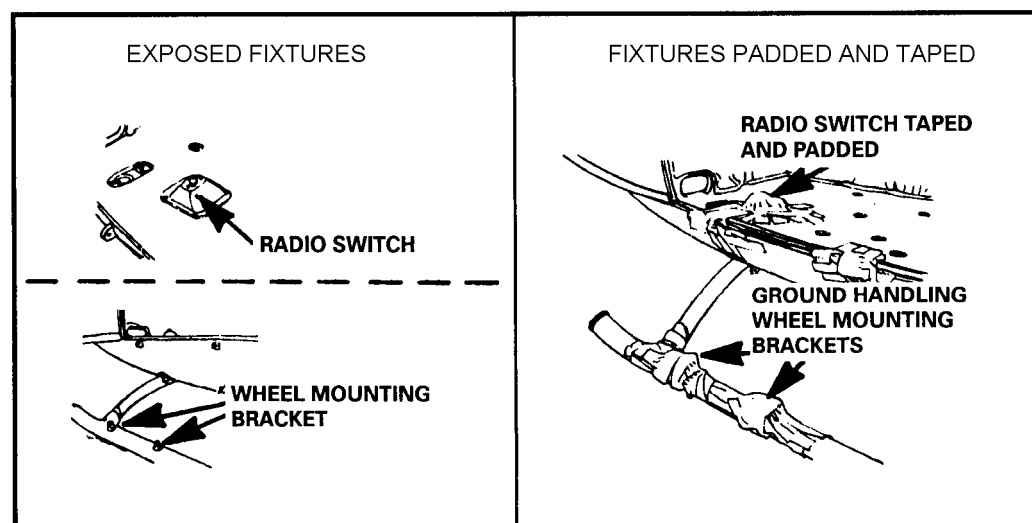


Figure 17-2. UH-1 exposed fixtures padded.

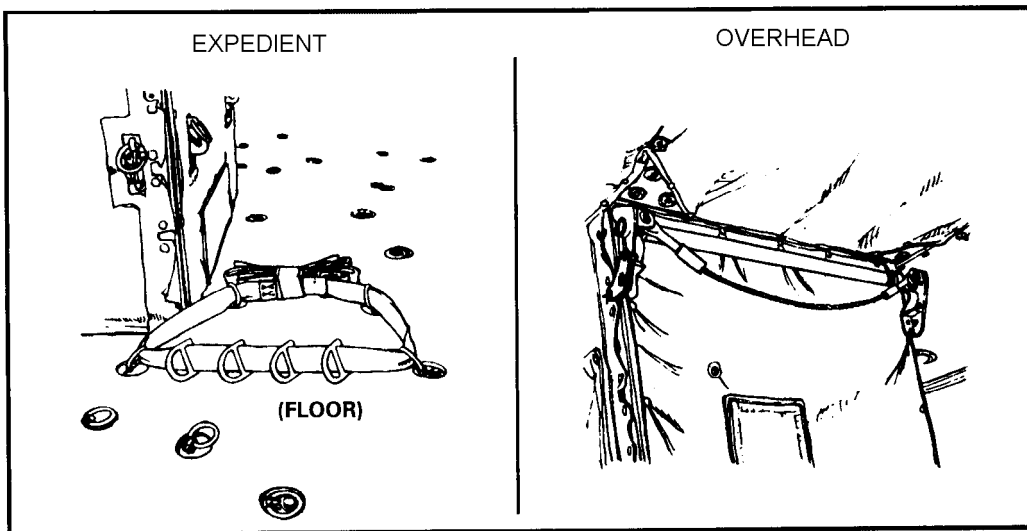


Figure 17-3. UH-1 anchor line system.

### c. Anchor Line Assembly Installation.

An anchor line assembly is installed on each side of the aircraft. It can be installed quickly by means of four tie-down rings located on the floor on the right and left sides of the aircraft compartment. The A-7A strap is threaded through the D-rings, which are used for attachment of the static line snap hooks (Figure 17-4).

(1) **Left door.** For the left door, one connector snap on the A-7A strap is attached to the tie-down ring number G2. The strap is connected to the tie-down ring number F4. Four D-rings are on the strap with the round part of the rings facing outboard (of aircraft). The strap is then connected to tie-down ring number K3 and tie-down ring number J4. The free end of the strap is secured to the strap fastener, and any excess between tie-down rings number J4 and number G2 is taped.

(2) **Right door.** The same procedures apply to the right door as the left except that the A-7A strap is attached to tie-down ring

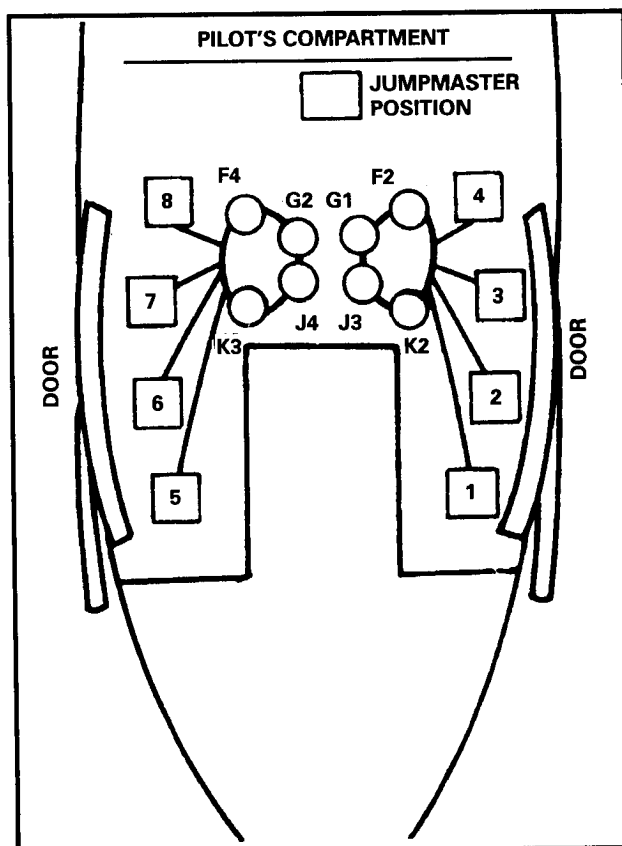


Figure 17-4. UH-1 seating configuration, expedient anchor line system.

number G1, then to F2. Four D-rings are on the strap with the round part of the rings facing outboard (of aircraft). The free end of the strap is secured to tie-down rings number K2 and number J3, and the strap fastener is secured. Excess strap between tie-down rings number J3 and number G1 is taped.

d. **Inspection.** Before enplaning, the JM and pilot, or pilot's representative, jointly inspect the aircraft to determine the following:

- (1) All protruding objects near the cargo compartment doors are removed or taped.
- (2) The lower right and left aft edges of both the cargo compartment doors are padded and taped.
- (3) The anchor line cable/field-expedient anchor line system is secure, serviceable, and properly installed.
- (4) A safety belt is available for each parachutist.
- (5) A headset is available for the jumpmaster to effect coordination among the jumpmaster, the pilot, and the ground.

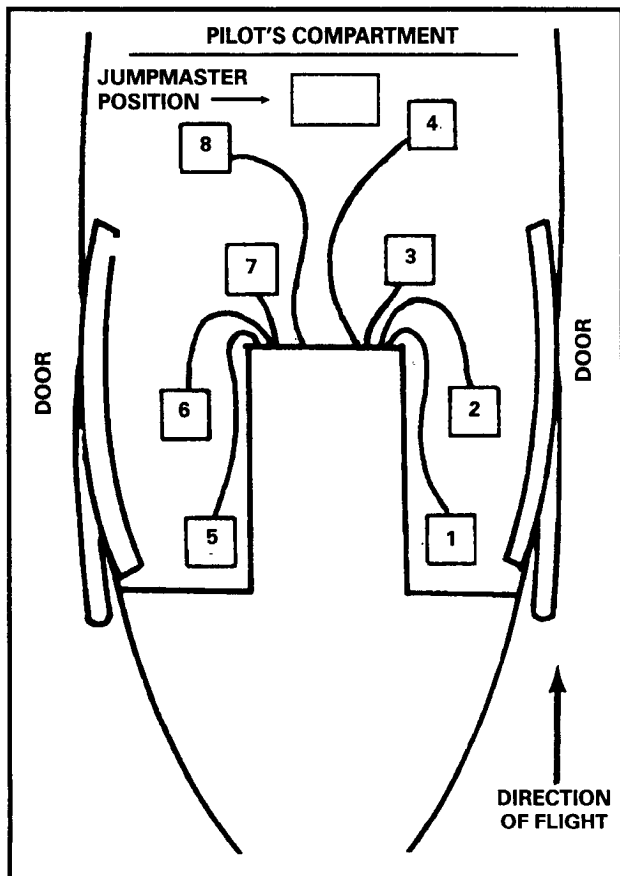


Figure 17-5. UH-1 seating configuration, overhead anchor line system.

## 17-12. LOADING TECHNIQUES AND SEATING CONFIGURATION

Jumpers 1 through 4 enter the cargo compartment through the right door, are hooked up by the JM in numerical order, and seat themselves (Figures 17-4 and 17-5). Jumpers 5 through 8 enter the cargo compartment through the left door, are hooked up by the JM in numerical order, and seat themselves.

a. The JM ensures excess static line is stowed as he hooks up each parachutist.

b. The open portion of the static line snap hook faces the front of the aircraft.

c. For flights less than 25 minutes long, jumpers may sit in the door with their feet outside the cargo compartment.

## 17-13. JUMP COMMANDS

The JM issues the following commands:

a. **GET READY.** This command is given 4 minutes or less from drop time, and the aircraft is level for final approach. All seat belts are unlatched and moved to the rear of the parachutists. The JM visually inspects each safety belt to ensure that it is clear of the parachutist and the equipment.

b. **CHECK STATIC LINES.** The JM rises and checks the routing of static lines from the point of attachment to the pack tray to ensure they are properly routed and hooked up.

c. **CHECK EQUIPMENT.** All parachutists check their equipment.

d. **SOUND OFF FOR EQUIPMENT CHECK.** On this command, number 1 parachutist orally indicates "Okay" to the JM. The remaining parachutists follow in order.

e. **SIT IN THE DOOR.** This command is given by the JM 30 seconds from drop time. Numbers 1 and 2 swing their legs to the right and take sitting positions in the door with feet together outside the cargo compartment. (Numbers 3 and 4 extend their legs outside and move to sitting positions.) They place both hands, palms down, on the floor alongside their thighs, turn their heads toward the JM, and wait. Numbers 5 and 6 swing their legs to the left, take sitting positions in the left door, and follow the same procedure as numbers 1 and 2. (Numbers 7 and 8 extend their legs outside and move to sitting positions.) (This command is omitted if the parachutists are already sitting in the door on a short flight.)

f. **STAND BY.** This command is given 8 to 10 seconds before the command GO.

g. **GO.** At this command, the following occurs:

(1) **Personnel.** The JM 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.

(2) **Air delivery containers.** When an air delivery container is being released from the cargo hook, the pilot releases the container and informs the JM when the load has cleared the aircraft. The jumpers exit as explained above.

## 17-14. ARCTIC OPERATIONS

If the helicopter has skis, the ski attaching bolts and the sharp edges of the skis are padded and taped on the outboard side of the landing skids aft of the leading edge of the cargo door. Due to the bulk and weight of arctic clothing, individual equipment is not worn. The equipment is dropped either as an internal or external load.

## 17-15. SAFETY PRECAUTIONS

Safety precautions on the UH-1H are as follows:

a. **Parachutists.** During movement inside the aircraft, the parachutist protects the rip cord grip. Crowded conditions inside the cargo compartment and the open doors on both sides of the fuselage pose a hazardous situation regarding accidental activation of the reserve parachute.

b. **Jumpmaster.** The JM ensures all parachutists remain secured by their safety belts until the command GET READY is given. The JM prevents (or corrects) excessive static line from flopping about the aircraft. (The JM does not jump from this aircraft.) The JM wears a safety harness.

c. **Equipment.** Equipment prescribed in Chapter 12 can be worn by parachutists when jumping this aircraft.

(1) Standard air delivery containers rigged with G-13 or G-14 cargo parachutes can be delivered from the cargo hook, using the breakaway static line (TM 10-500-6). The snap hooks of the static lines are hooked to the anchor line system before lift-off. Door bundles reduce the number of parachutists that can be carried, depending on the size and number of bundles.

(2) When CWIEs are jumped (two per load maximum), they are attached to number 3 and number 7 parachutists (one for each door). The DMJP may not be jumped from aircraft that require parachutists to sit on the floor.

d. **Aircraft.** The indicated airspeed of the aircraft during jumps is not less than 50 knots or more than 70 knots. The minimum drop altitude is 1,500 feet AGL. After the last parachutist has cleared the aircraft, the static lines are retrieved inside the aircraft and secured in an aviator's kit bag 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.

### Section III

#### UH-60A BLACK HAWK

The UH-60A is a twin-turbine, medium-speed, single-main-rotor helicopter (Figure 17-6). Eight combat-equipped parachutists can jump from this aircraft.

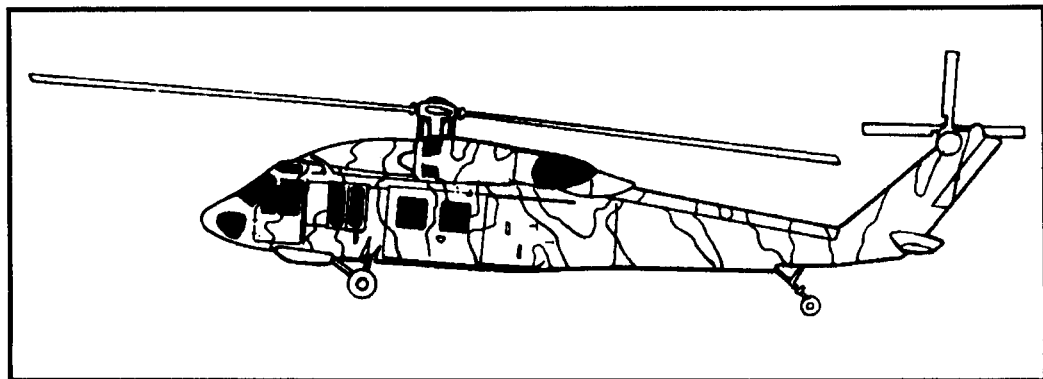


Figure 17-6. UH-60A Black Hawk.

NOTE: On missions requiring a window gunner, the maximum number of parachutists is reduced to six. Static line parachute operations require a static JM.

## 17-16. PREPARATION AND INSPECTION

The JM prepares and inspects the UH-60A as follows:

a. **Preparation.** To prepare the UH-60A for jumping, adhere to the following procedure (Figure 17-7):

- (1) Lock both cargo doors in the open position.

NOTE: 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.

- (2) Remove seats in the cargo department (except as required by aircraft crew).

- (3) Tape cargo floor troop seat and tie-down fitting wells in front of the cargo doors.

- (4) Tape sharp edges and tie-down fitting wells on the cargo floor and door jambs that could cut or fray static lines or snag parachutists' equipment.

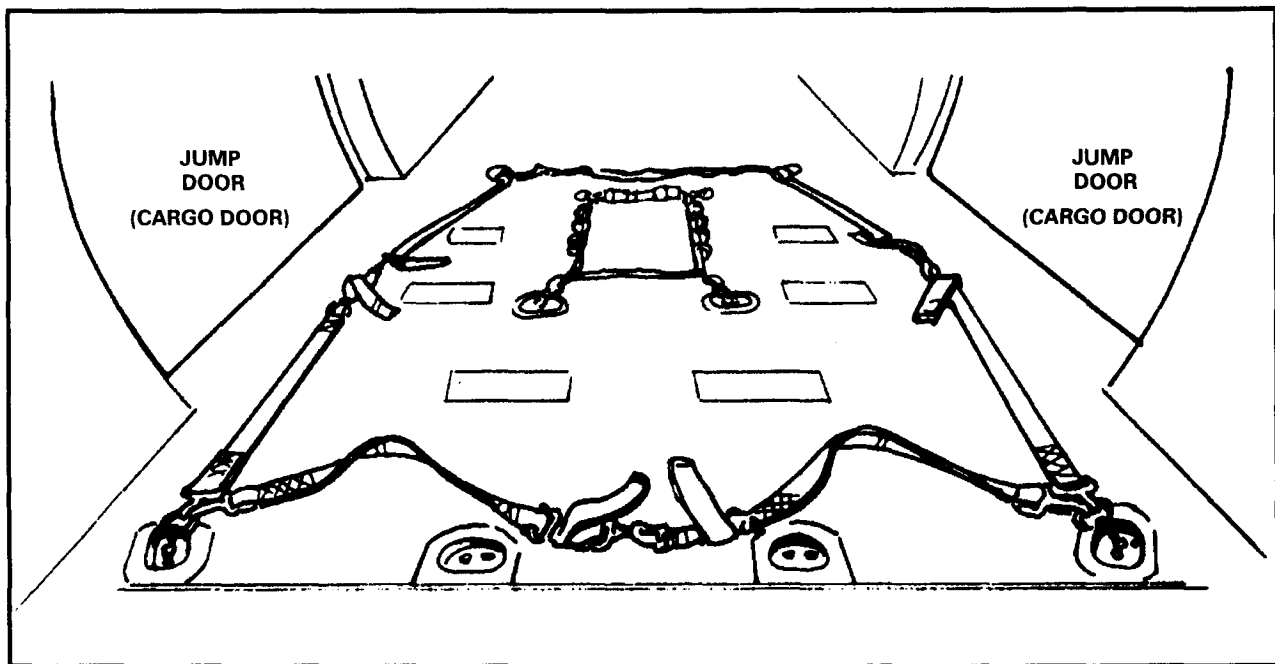


Figure 17-7. UH-60A compartment prepared for jumping.

(5) Tape the weather stripping on cargo doors below the door catch (Figure 17-8).

NOTE: Tape must not interfere with closing, locking or unlocking, and 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.

**b. Modified Anchor Line System.**

Install a floor-mounted anchor line system (Figure 17-9), using a modified STABO extraction system anchoring strap assembly (NSN 1670-00-999-3544; TM 10-1670-262-12 and TM 10-1670-251-12). To modify the STABO, remove two of the connector snaps (leaving four) and add two D-rings (MN 1670-00-360-0466). The cotton buffers may be locally manufactured.

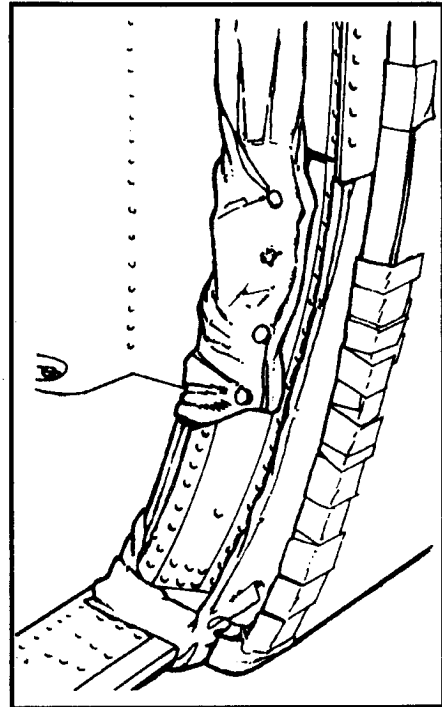


Figure 17-8. UH-60A door edge padded and taped.

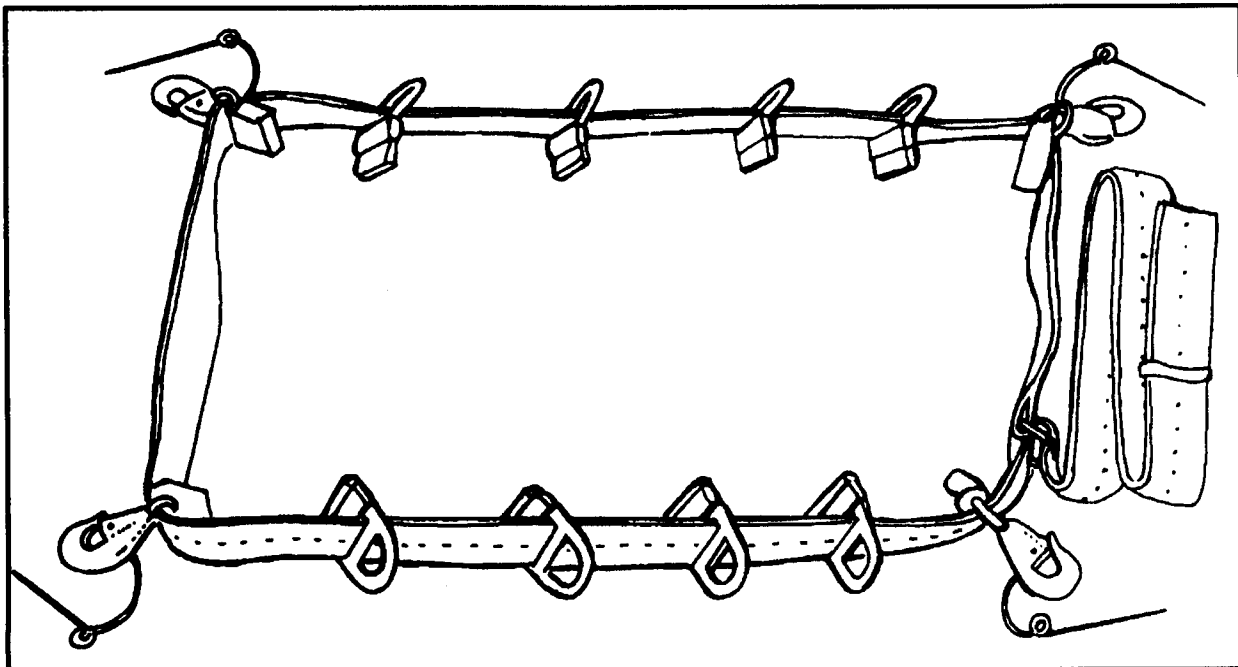


Figure 17-9. UH-60A modified anchor line.

(1) Install four snap hooks with safety wires and eight D-rings with cotton buffers on the anchor web loop, with the snap hooks and D-rings facing out in the following order: one snap hook, four D-rings; two snap hooks, four D-rings; and one snap hook (Figure 17-10).

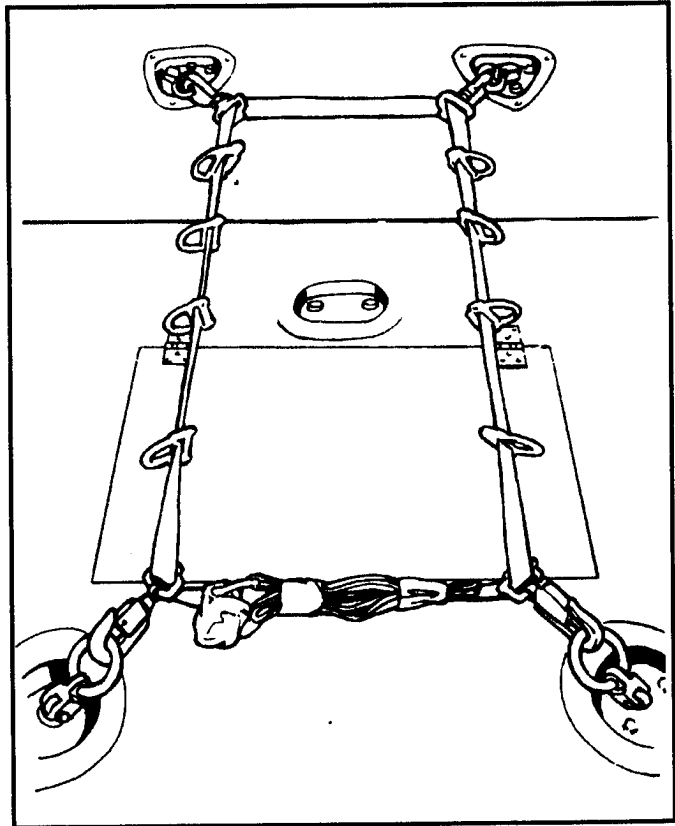
(2) Insert about 30 inches of the web loop running end into the quick-fit adapter to secure the loop.

(3) Center the anchor line system on the cargo floor with the quick-fit adapter to the rear. Attach the snap hooks to tie-down fittings 3B, 3C, 4B, and 4C. Insert the safety wires and tape the snap hooks.

(4) Center the quick-fit adapter between tie-down fittings 4B and 4C, and tighten the web loop by pulling on the loop running end. Secure the web loop running end with an overhand knot. Fold and tape excess webbing to the web loop.

**c. Safety Belt Installation.** Install three floor-mounted safety belts.

(1) Attach a standard safety belt to tie-down fittings 5A and 5C for the JM. (This is not necessary unless a seat has not been left for the JM.)



**Figure 17-10. UH-60A modified anchor line secured to floor.**

**NOTE:** The UH-60A cargo compartment configuration and floor tie-down fitting pattern preclude use of standard (individual) safety belts. Therefore, parachutists are restrained in groups of two and three, using modified safety belts.

(2) Attach an 86-inch-long (extended) safety belt to forward tie-down fittings 1A and 1D.

(3) Attach a 112-inch-long (extended) safety belt to tie-down fittings 1A and 5A, left door.

(4) Attach a 112-inch-long (extended) safety belt to tie-down fittings 1D and 5C, right door.

(5) Ensure that a serviceable safety harness is available for the JM (and the crew chief, when required). The JM's safety line is attached to tie-down fitting 5B. The crew chief's safety line is attached to tie-down fitting 1A or 1D, as required. If safety harnesses are not available, a backpack-type parachute may be used.

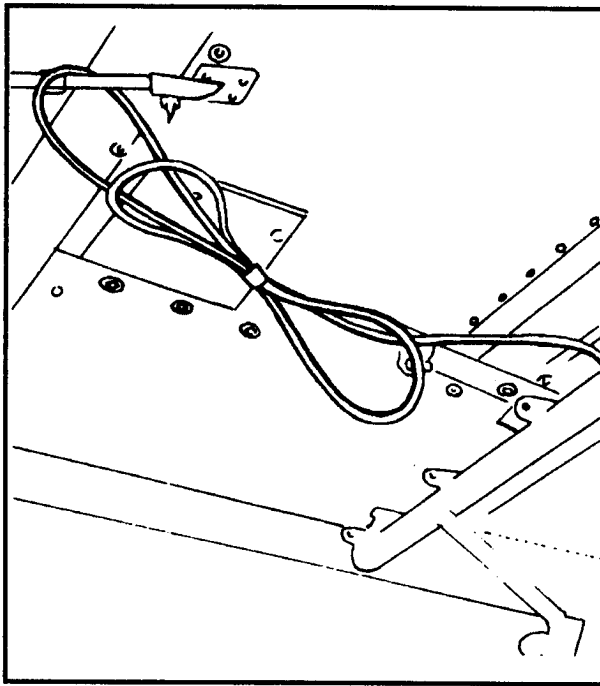
**WARNING**

MOVEMENT IN THE CARGO COMPARTMENT MUST BE MINIMIZED TO PRECLUDE INADVERTENT PARACHUTE ACTIVATION.

d. **Inspection.** Before enplaning, the JM and pilot, or pilot's representative, jointly inspect the aircraft to determine the following.

- (1) All loose objects in the cargo compartment are removed or secured forward.
- (2) Sharp edges and tie-down fitting wells on the cargo floor and doorjamb (or anything that could cut or fray static lines or snag the parachutists' equipment) are padded and taped.

NOTE: Door catches and handles are not taped.



**Figure 17-11. UH-60A JM's intercomm extension cord stowed overhead.**

(3) Cargo doors are locked in the open position and cleared for closing, depending on mission requirements.

(4) The anchor line system is complete, serviceable, and properly installed.

(5) Three serviceable safety belts (modified) are installed on the cargo floor.

(6) A headset/helmet and intercommunications (intercomm) jack for the JM are available and operational, and the intercomm extension cord is secured overhead. The JM's intercomm cord is extended to the rear, over the aft utility drain line, and taped to the overhead troop seat support tube (Figure 17-11).

(7) Safety harnesses and backpack-type emergency parachutes are available for the JM and the crew chief, as required.

## 17-17. LOADING TECHNIQUES AND SEATING CONFIGURATION

Personnel are organized into a stick of eight parachutists. They approach the aircraft from the left front or right front side at a 45-degree angle in reverse order: numbers 8, 7, 6, 5, 4, 3, 2, 1 (Figure 17-12).

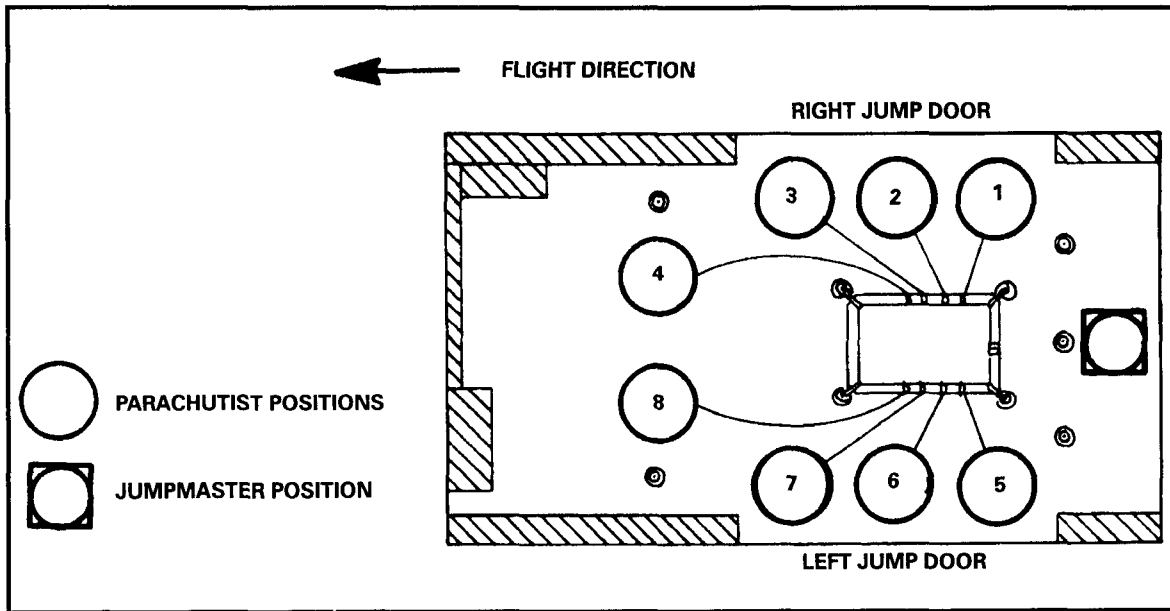


Figure 17-12. UH-60A seating and static line routing.

### WARNING

DO NOT APPROACH THE AIRCRAFT DIRECTLY FROM THE FRONT BECAUSE THE LOWEST ARC OF THE TURNING ROTOR BLADES OCCURS AT THAT POINT.

a. Number 8, followed by numbers 7, 6, and 5, enter the left door on command from the static JM. Numbers 4, 3, 2, and 1 enter the right door on command from the static JM. They are seated and hooked up by the JM in reverse numerical sequence, beginning with parachutist number 8, as they enter the aircraft. The open portion of static line snap hooks face the front of the aircraft.

b. Numbers 4 and 8 hold their static lines with a reverse bight: number 4 with the right hand and number 8 with the left hand. The static lines of the remaining parachutists, seated in the left and right doors, are routed directly behind them and down to the anchor line.

c. The JM ensures that any excess static line is stowed in the pack tray retainer band and that numbers 4 and 8 have correctly routed their static lines with the proper reverse bight.

NOTE: To preclude binding during exit, excess static lines of numbers 1, 2, 3, 5, 6, and 7 are stowed through the static line slack retainer on the parachutist's backpack.



Figure 17-13. Numbers 4 and 8 with static line bight and safety belt secured.

d. When the JM commands FASTEN SAFETY BELTS, parachutists do the following:

(1) Numbers 4 and 8 pass the running ends of their safety belt to the center, fasten the belt, and remove excess slack (Figure 17-13).

(2) Numbers 5 and 7 pass the running ends of their safety belt to number 6, who fastens the belt and removes excess slack (Figure 17-14).

(3) Numbers 1 and 3 pass the running ends of their safety belt to number 2, who fastens the belt and removes excess slack (Figure 17-15).

e. The JM inspects all safety belts to ensure that they are securely fastened and properly fitted. He is seated aft with his safety belt fastened for lift-off and landing. (One seat should have been left in place for the JM.)

f. For airdrop operations requiring the crew chief and window gunner (seat installed), the number of combat-equipped parachutists is reduced to six. The seating configuration is modified—positions 4 and 8 are deleted, and positions 5, 6, and 7 are renumbered 4, 5, and 6.

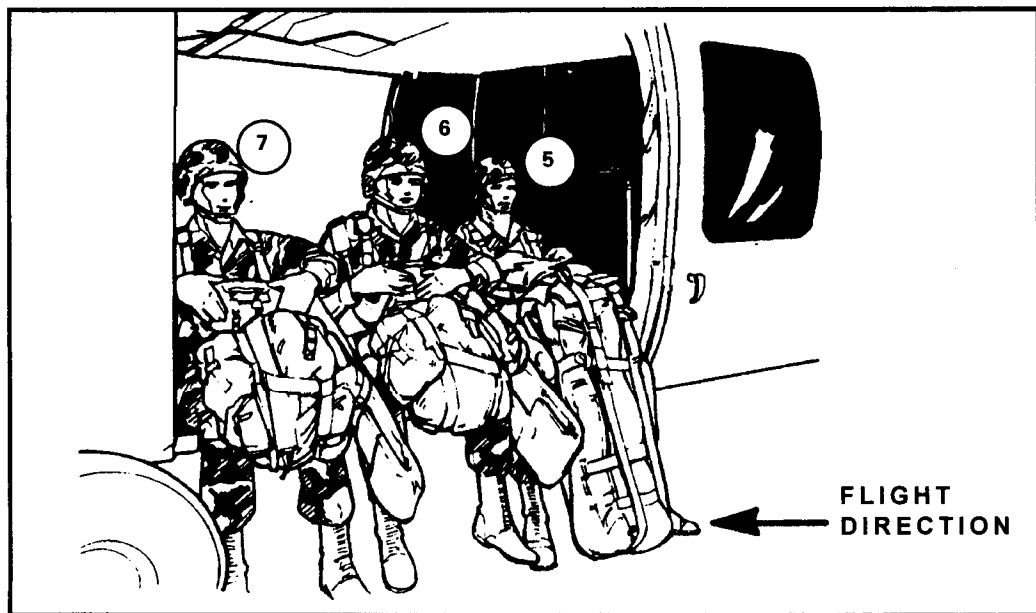
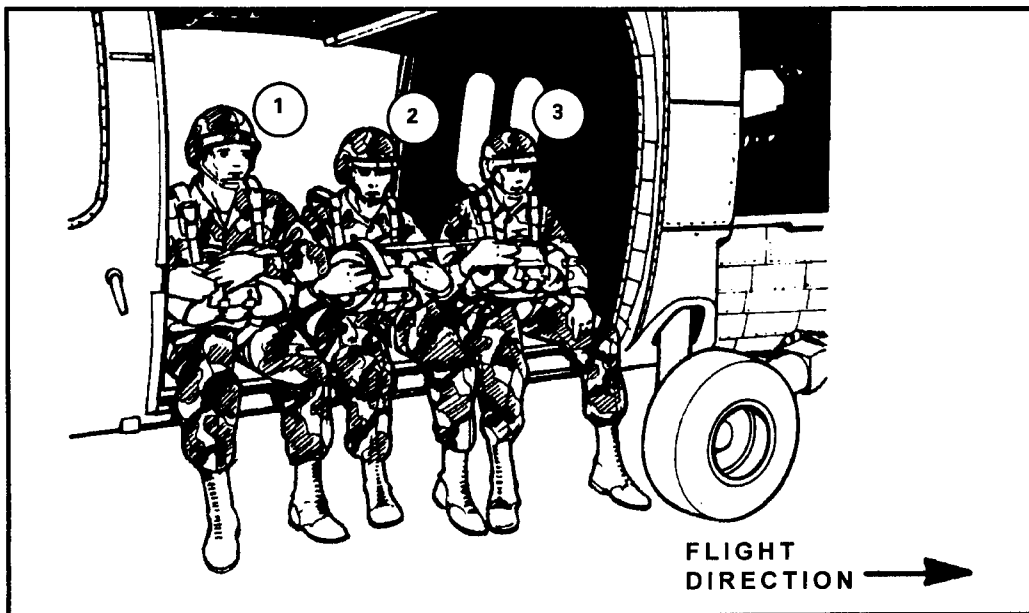


Figure 17-14. Parachutists (left door) with safety belt secured.



**Figure 17-15. Parachutists (right door) with safety belt secured.**

### **17-18. JUMP PROCEDURES**

If the cargo doors are to be closed en route to the drop zone, the JM briefs numbers 3 and 7 on door opening procedures before loading. At 6 minutes before the drop, the pilot either lands or brings the aircraft to a hover (near the ground) and notifies the JM to open the cargo doors. The JM directs numbers 3 and 7 to open them. He ensures that the cargo doors are opened and locked. A 4-minute, a 30-second, and an 8- to 10-second warning are relayed to the JM by the pilot through the intercomm system.

### **17-19. JUMP COMMANDS**

The JM issues the following commands:

- a. **GET READY.** This command is given at the 4-minute warning to alert the parachutists. All safety belts are removed.

NOTE: Safety belts are removed when directed by the JM. They are released by numbers 2, 6, and 8. The running ends are stowed forward and aft to clear the static lines and the exit path.

- b. **CHECK STATIC LINES.** The JM checks the routing of all static lines (from pack trays to anchor cable) to ensure they are correctly routed and hooked up. He ensures excess static line is stowed through the slack retainer on the backpacks of numbers 1, 2, 3, 5, 6, and 7, and that numbers 4 and 8 have the prescribed reverse bight in their static lines.

c. **CHECK EQUIPMENT.** All parachutists check their equipment.

d. **SOUND OFF FOR EQUIPMENT CHECK.** Number 1 indicates orally (and with a hand signal) to the JM the status of his equipment, followed by the remaining parachutists in numerical order.

e. **SIT IN THE DOOR.** This command is given by the JM at the 30-second warning. Numbers 1, 2, 3, 5, 6, and 7 assume door positions (Figure 17-16) with feet together outside the cargo compartment. Numbers 4 and 8 remain in place, ensuring that their feet are clear of their static lines. (This command is omitted if the parachutists are already sitting in the door.)

f. **STAND BY.** This command is given at the 8- to 10-second warning. The JM ensures that all parachutists hear and understand this command, particularly number 1, who places both hands, palms down, on the cargo floor alongside his thighs and awaits the next command. Numbers 2, 3, 5, 6, and 7 place both hands, palms down, on the cargo floor and await the next command; numbers 4 and 8 remain in place.

g. **GO.** The JM gives this command by an oral GO and a sharp tap on the rear of the parachutist's helmet. Each parachutist is tapped out. The jump sequence is in numerical order, 1 through 8. As soon as number 3 clears the door, number 4 moves into the door and assumes the door position before being tapped out. The static JM assumes control of number 4 jumper's static line as the parachutist begins moving to the door. The sequence is repeated in the left door by numbers 5, 6, 7, and 8. Numbers 2, 3, 6, and 7 slide as far forward as possible to provide clearance for numbers 1 and 5 to exit, particularly when wearing combat equipment.

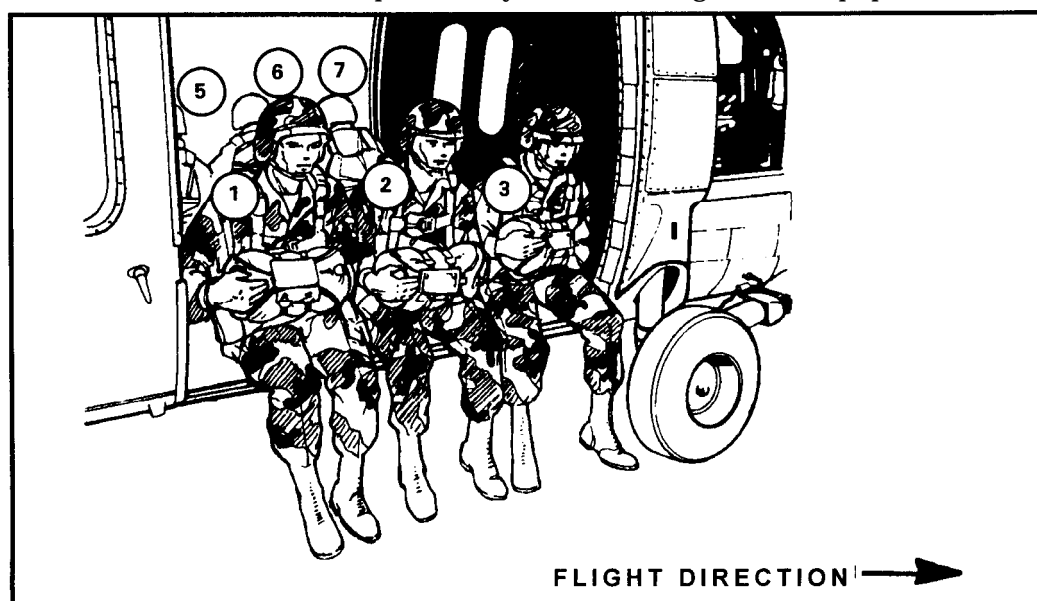


Figure 17-16. Numbers 1, 2, 3, 5, 6, and 7 exit positions.

## 17-20. SAFETY PRECAUTIONS

Safety precautions on the UH-60A are as follows:

a. **Parachutists.** If CWIEs will be jumped, they may be attached to numbers 1 or 5 parachutists, or both. No more than two CWIEs, one for each door, can be jumped. DMJPs may not be jumped from aircraft that require parachutists to sit on the floor. (Procedures for towed parachutists are in paragraph 17-10.) Crowded conditions inside the cargo compartment make accidental activation of the reserve parachute more likely. During movement inside the aircraft, parachutists must protect the rip cord grip.

b. **JM.** The static JM wears a safety harness that is attached to the aft cargo floor tie-down fitting (5B). Backpack-type emergency parachutes may be used if a safety harness is not available. The JM is equipped with a headset or flight helmet that allows direct communications with the aircraft crew. The static JM immediately notifies the pilot of a towed parachutist.

c. **Equipment.** Combat equipment can be worn by parachutists when jumping this aircraft. Without detaching the static lines, the JM retrieves static lines and D-bags, places them inside an aviator's kit bag, and secures the kit bag until the aircraft has landed. The static line snap hooks are then removed from the anchor line attaching points. The UH-60A is not used for static line parachute operations with the cargo doors removed. The static line anchor line cable is never rigged to the cargo door or overhead tie-down rappelling rings, since trailing D-bags might foul the main rotor system (due to the high position in which the bags would trail).

d. **Aircraft.** The indicated airdrop speed of the aircraft should not be less than 65 knots or more than 75 knots. The minimum jump altitude is 1,500 feet AGL.

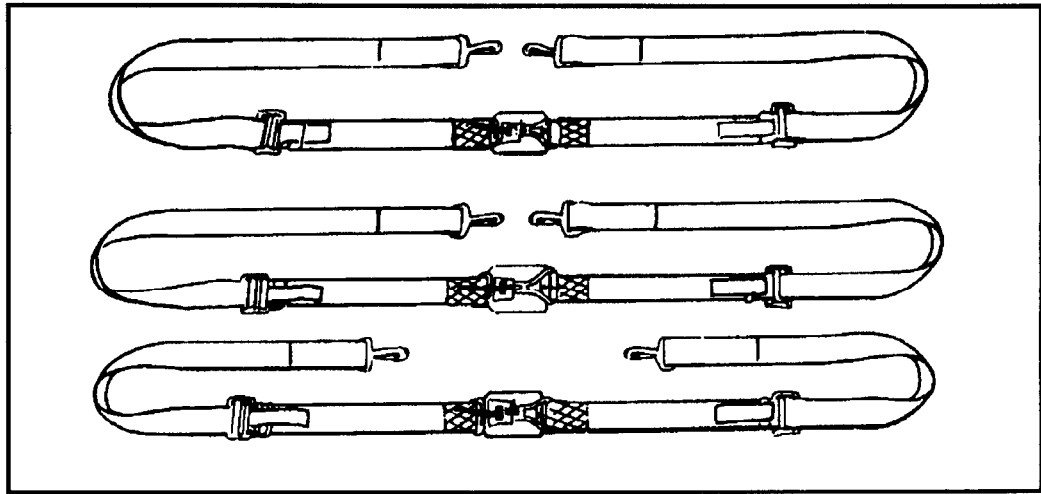
NOTE: The pilot must maintain level flight and airdrop speed during D-bag retrieval to preclude D-bag entanglement with the cargo doors.

## 17-21. SAFETY BELT MODIFICATION

The UH-60A cargo compartment floor configuration does not provide a specific design of tie-down fittings for restraining personnel when personnel are 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.

a. The three modified C-3A troop-type safety belts, using the cargo floor tie-down fittings, restrain parachutists in groups of two and three by a single safety belt (Figure 17-17, page 17-18).

b. Two safety belts, 112 inches long and adjustable to 86 inches, restrain parachutists numbers 1 through 3 and 5 through 7, who are seated in the left and right cargo doors.



**Figure 17-17. Modified C-3A troop safety belts.**

c. One safety belt, 86 inches long and adjustable to 60 inches, restrains numbers 4 and 8 seated in the cargo compartment. Belt modifications are as follows:

(1) Place three standard C-3A troop-type safety belts (NSN 1670-00-447-9504) on a flat surface with hardware facing up.

(2) Remove the 8-inch lengths of webbing located between the end snap hooks and the quick-fit adapters of each belt.

(3) Cut two 32-inch and four 46-inch lengths of number 3 nylon webbing and heat-sear the ends.

(4) Reassemble one belt using the two 32-inch lengths of webbing.

(5) Thread the running ends of the webbing up through the bar of the snap hooks and quick-fit adapters. Make a 5-inch foldback and tack in place.

(6) Sew a 4-inch, 4-point, WW stitch formation on each foldback using number 3 nylon thread and a medium-duty machine (TM 10-1670-240-20, Chapter 1, Section III).

(7) Reassemble the other two belts as indicated, using the 4-inch lengths of webbing.

## Section IV

### CH-47 CHINOOK

The CH-47 is a tandem-rotor, medium-transport helicopter. Twenty-eight combat-equipped parachutists can jump from this aircraft (Figure 17-18). The jumpmaster may be a jumping JM or a static JM.

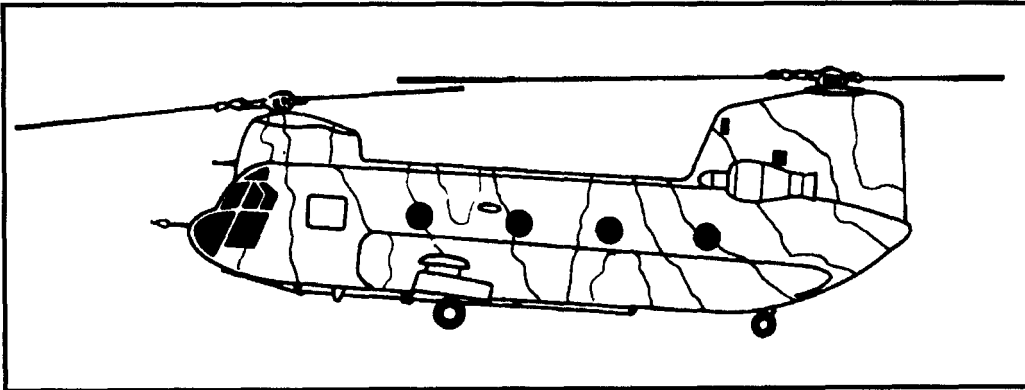


Figure 17-18. CH-47 Chinook.

## 17-22. PREPARATION AND INSPECTION

The JM prepares and inspects the CH-47 as follows:

a. **Preparation.** The following steps prepare the CH-47 for jumping.

- (1) Install safety belts for each parachutist and extend all the way out to ensure positive hookup while seated.
- (2) Secure the permanently installed anchor line cable to the attachment points on the starboard side of the aircraft (Figure 17-19).

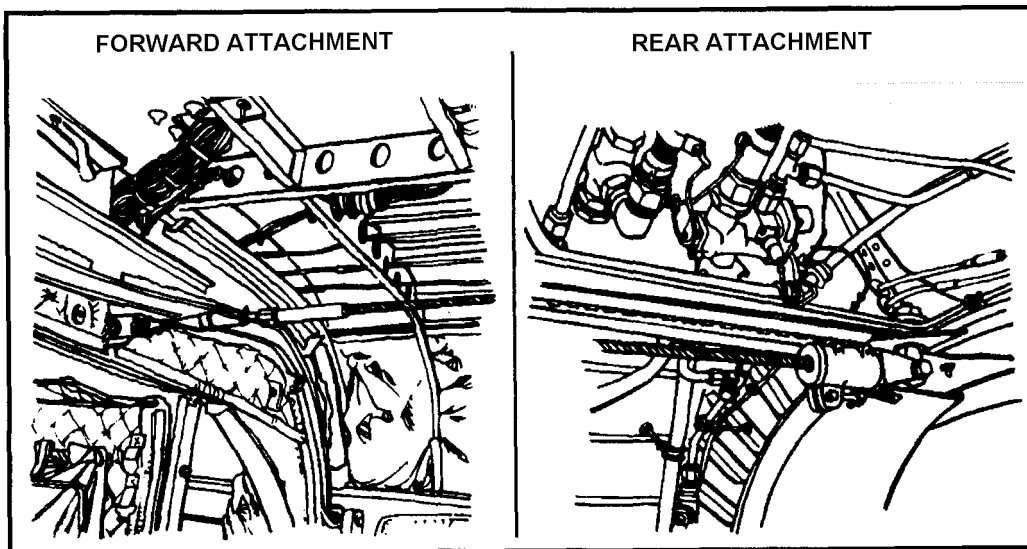


Figure 17-19. CH-47 anchor line cable attachment.

- (3) Incline the ramp for personnel parachute drops during flight.

NOTE: The best incline is 3 degrees below the horizontal. Scribe marks may be placed on the ramp to show this degree of incline.

b. **Inspection.** Before enplaning, the JM and the pilot, or pilot's representative, jointly inspect the aircraft to determine the following:

- (1) Troop seats can be easily lifted and secured before jumping.
- (2) The ramp is clean and free of oil and water.
- (3) Seats are securely fastened in the down position.
- (4) Sufficient seat belts are available.
- (5) The anchor line cable is not frayed or worn and is secured to the attachment points.
- (6) The crew chief's headphones are available and function properly.

### 17-23. SEATING CONFIGURATION

The odd-numbered jumpers are seated on the starboard side, and the even-numbered jumpers are seated on the port side (Figure 17-20).

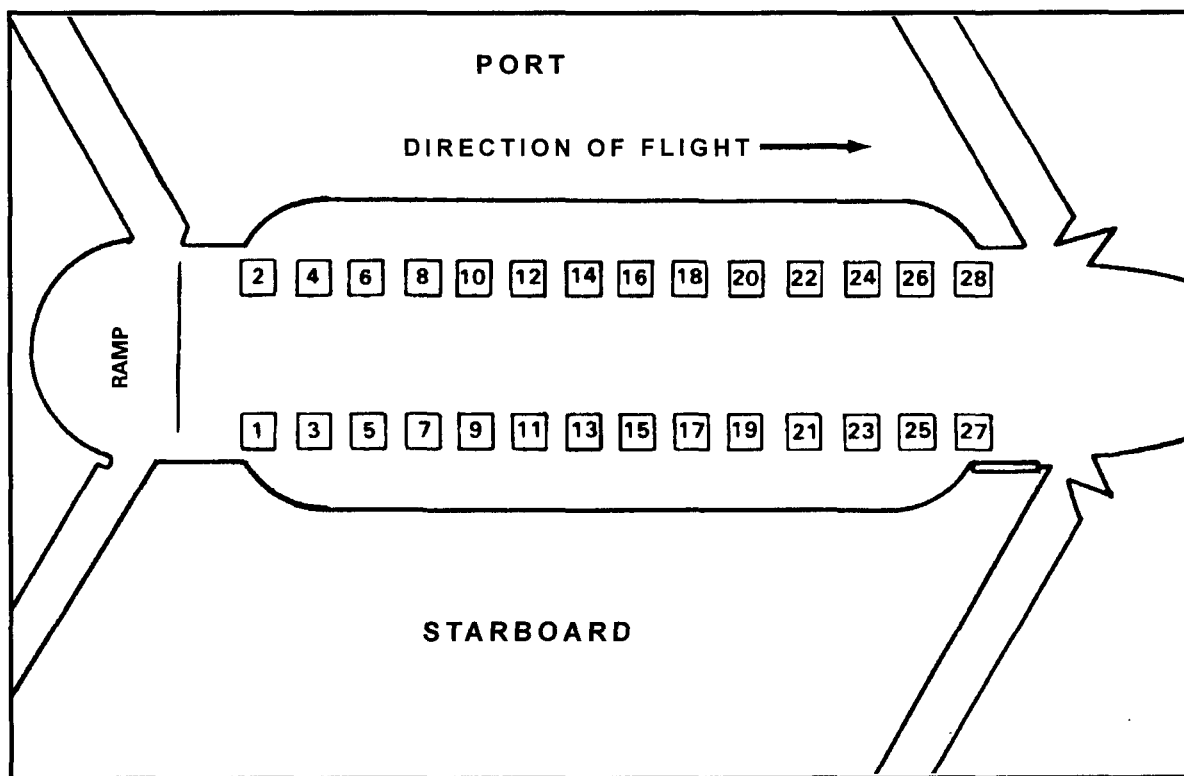


Figure 17-20. CH-47 seating configuration.

### 17-24. JUMP PROCEDURES

The 6-minute and 1-minute warnings are given by the pilot to the crew chief, who then relays them orally and by hand signals to the JM. If the JM jumps, he is number 1; this requires a nonjumping safety to control the flow of parachutists.

## 17-25. JUMP COMMANDS

The JM issues the following commands:

- a. **GET READY.** This command is given at the 4-minute warning to alert parachutists.
- b. **PORT SIDE PERSONNEL, STAND UP.** Parachutists seated on the port side of the aircraft stand up and secure their seats in the up position.
- c. **STARBOARD SIDE PERSONNEL, STAND UP.** Parachutists seated on the starboard side of the aircraft stand up and secure their seats in the up position.
- d. **HOOK UP.** On this command, odd-numbered personnel hook up, followed by the even-numbered personnel, who hookup (the open portion of the snap hook facing starboard) between the odd-numbered personnel to form one continuous stick of 28 parachutists.

NOTE: After hooking up, each parachutist controls the static line in a reverse bight at waist-level (left hand).

- e. **CHECK STATIC LINES.** The JM or safety checks the routing of all static lines.
- f. **CHECK EQUIPMENT.** All parachutists check their equipment.
- g. **SOUND OFF FOR EQUIPMENT CHECK.** Beginning with number 28, the jumpers pass the status of their equipment toward the aft end of the aircraft. Number 1 orally (and with a hand signal) indicates to the JM the status of his and all other jumpers' equipment by stating, "All OK, jumpmaster."
- h. **STANDBY.** The command is given 8 to 10 seconds before the command GO. Number 1 assumes a standing position at the ramp hinge (near center) of the aircraft. The remaining personnel close up interval behind the first parachutist.
- i. **GO.** Number 1 walks off the port side rear corner of the ramp. The remaining parachutists follow at 1-second intervals.

NOTE: The JM or safety controls the flow from his position on the port side near the ramp hinge. Less than a 1-second interval between parachutists may result in entanglement of parachutists and static lines.

## 17-26. SAFETY PRECAUTIONS

Safety precautions on the CH-47 are as follows:

- a. **Parachutists.** Parachutists ensure that seats are secured in the up position with seat legs rotated inside the seats. When following internal drop loads, parachutists exit between the ramp roller conveyor sections, staying as close to the port side section as possible. The parachutists jumping after external load drops, who are forward of the open floor hatch (used to check a load drop), remain clear of the opening until the load leaves the aircraft and the hatch is closed by the crew chief.

b. **Jumpmaster.** The JM or safety personnel ensure that parachutists are hooked up consecutively, 1 through 28 (Figure 17-21). If the JM does not jump, he wears a safety harness or back emergency parachute. He checks each parachutist after they hook up and controls the flow of parachutists. When an external load is delivered, the JM ensures the external load is clear and the aircraft has accelerated to a safe airdrop speed before dropping cargo bundles from inside the aircraft or before permitting parachutists to exit.

c. **Safety Personnel.** If the JM jumps, one nonjumping safety is required; the safety wears an emergency parachute.

d. **Equipment.** When cargo bundles are delivered, JMs use 15-foot breakaway static lines with cargo parachutes. The ramp roller conveyor section is installed on the starboard side of the ramp and is used to help eject the bundles from the cargo ramp; numbers 1 and 2 push the bundles out.

e. **Aircraft.** Aircraft safety requires that the speed during jumps is not less than 80 knots or more than 110 knots, with 90 knots being optimum speed. No special preparation is required if the aircraft has skis. Minimum jump altitude is 1,500 feet AGL. After the last parachutist has cleared the aircraft, the static lines are retrieved (using the static line retriever) inside the aircraft and secured in an aviator's kit bag. The ramp must not be lowered until all jumpers have hooked up to the anchor line cable.

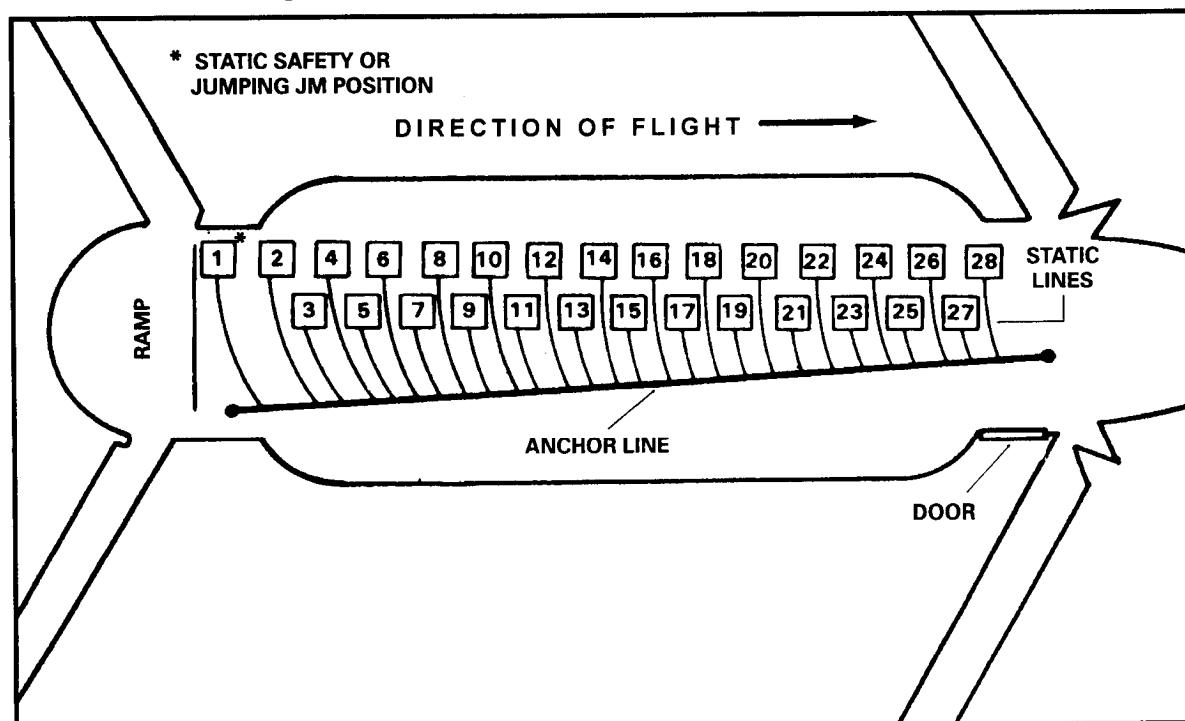


Figure 17-21. CH-47 static line routing.