



# **U. S. ARMY PATHFINDER SCHOOL**

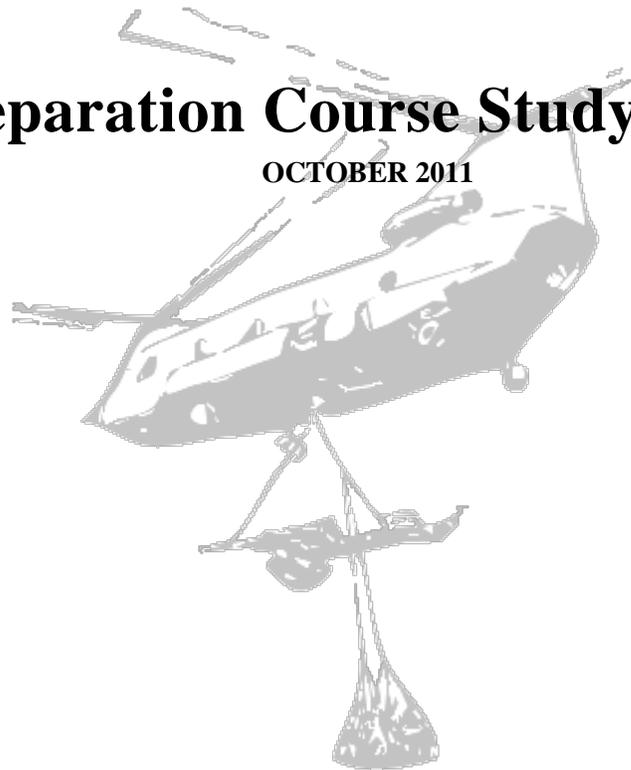
## **1/507<sup>th</sup> Parachute Infantry Regiment**

**2593 Indianhead Rd  
Ft Benning, GA 31808**



# **Preparation Course Study Guide**

**OCTOBER 2011**



**AIR TRAFFIC CONTROL ..... 5**  
Definition Of Pathfinder Air Traffic Procedures .....  
The Four Purposes Of Pathfinder Air Traffic Control Procedures .....  
The Three Qualities Of A Pathfinder Air Traffic Controller .....  
Six Communication Techniques .....  
Flight Information.....  
Traffic Patterns.....  
Aircraft Landing Priority .....  
Cardinal Rules.....

**AEROMEDEVAC ..... 11**  
Definitions.....  
Army Aircraft Designed For Medevac .....  
The Mission Of Aeromedevac .....  
Advantages Of Aeromedevac .....  
Disadvantages Of Aeromedevac.....  
Responsibilities Of The Requesting Unit.....  
The Standardized Nine-Line Medevac Request.....  
Guidelines For Loading Patients.....  
Loading And Securing Patients .....

**SLINGLOADS ..... 18**  
Unit Responsibilities.....  
Equipment Characteristics And Capabilities .....  
UH-1 Iroquois .....  
UH-60 Blackhawk .....  
CH-47.....  
CH-53E Super Stallion .....  
CH-46 A/D/E Sea Knight .....  
Aerial Delivery Slings (ADS):.....  
Nylon Flat-Web Slings .....  
Type IV Connector Link.....  
Two Point Link Assemblies.....  
Clevis Assemblies.....  
Cargo Tie-Down Equipment.....  
10,000 And 25,000 Pound Capacity Sling Sets .....  
Nets And Containers .....  
11,000- And 25,000-Pound Capacity Reach Pendants .....  
Polyester Roundslings.....  
Hand Signals .....

**HELICOPTER LANDING ZONES ..... 51**  
Helicopter Landing Zone Operations.....

Aircraft Touchdown Point Sizes .....  
Landing Formation and Number Of Aircraft .....  
Surface Conditions at The Site .....  
Obstacles at or Near The Site.....  
Approach and Departure Routes .....  
Atmospheric Conditions .....  
Type of Load.....  
Crows Foot.....

**AIR ASSAULT PLANNING AND PATHFINDER EMPLOYMENT ..... 57**

Air Assault Task Force .....  
Introduction.....  
Employment.....  
Air Assault Planning .....  
Ground Tactical Plan .....  
The Landing Plan.....  
Air Movement Plan.....  
Loading Plan .....  
Staging Plan .....  
Pathfinder Planning.....  
Air Mission Briefing .....  
Terms - Lifts, Serials and Loads .....  
Duties And Responsibilities Of Key Positions During A Company Air Assault .....

**DROP ZONE OPERATIONS ..... 66**

Definition of a drop zone .....  
The Eight Drop Zone Selection Factors.....  
Airdrop Airspeeds.....  
Drop Altitude .....  
Types Of Airdrop.....  
Methods of Airdrop.....  
Obstacles .....  
Access .....  
Adequate Approach And Departure Routes.....  
Size Of The Drop Zone.....  
VIRS Transmission.....

**HANDOUTS..... 75**

VIRS Transmission.....  
CCP Transmission .....  
MEDEVAC Request Transmission .....  
Sling Load Deficiencies.....

**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**



**Do not proceed to sections until covered by the formal block of instruction. You may review any previously covered sections throughout this handout for reference.**

## AIR TRAFFIC CONTROL

### REFERENCES:

FM 3-21.38

FAA 7110.65 P

FM 3-04.120

**INSTRUCTIONAL INTENT:** TO FAMILIARIZE THE PROSPECTIVE PATHFINDER STUDENT WITH THE BASIC CONCEPTS OF HOW TO ORGANIZE, PREPARE AND ISSUE LANDING, TAKEOFF AND EN-ROUTE AIR TRAFFIC INFORMATION TO AIRCRAFT OPERATING AT OR NEAR A LANDING SITE OR DROP ZONE.

## AIR TRAFFIC CONTROL

### DEFINITION OF PATHFINDER AIR TRAFFIC PROCEDURES

Procedures used by a pathfinder element to promote the safe and expeditious flow of air traffic in and around a Tactical Operation Site.

### THE FOUR PURPOSES OF PATHFINDER AIR TRAFFIC CONTROL PROCEDURES

- PREVENT COLLISIONS
- EXPEDITE TRAFFIC
- PROVIDE FLIGHT INFORMATION
- AID IN SEARCH AND RESCUE

### THE THREE QUALITIES OF A PATHFINDER AIR TRAFFIC CONTROLLER

- ACCURACY
- SPEED
- KNOWLEDGE

### SIX COMMUNICATION TECHNIQUES

- SPEAK DIRECTLY INTO THE MICROPHONE
- SPEAK IN A NORMAL CONVERSATIONAL TONE
- AVOID A MONOTONOUS PITCH
- AVOID A TOO SLOW OR TOO FAST RATE OF SPEECH
- AVOID ANY DISPLAY OF EMOTION, NERVOUSNESS, INDECISION OR EXCITEMENT
- SPEAK WITH CONFIDENCE

### FLIGHT INFORMATION

1. PERTINENT INFORMATION: Information pertaining directly to your landing site.
  - SIGNAL ON CALL
  - DESCRIPTION OF THE LANDING SITE
  - CONDITIONS AT THE LANDING SITE
  - FIELD ELEVATION OF THE LANDING SITE (Night operations only)
2. ADVISORY INFORMATION: Advisory information is information that the pilot must know in order to avoid a potentially hazardous situation.
  - TURBULENCE AT OR NEAR THE SITE
  - OBSTACLES/HAZARDS
  - ARTILLERY/MORTAR FIRE (weapon system range, maximum ordinate, weapon location, weapons direction)
  - ENEMY SITUATION
  - WEATHER

## AIR TRAFFIC CONTROL

- OTHER A/C AT OR NEAR THE SITE

### TRAFFIC PATTERNS

Primarily, the traffic pattern is used to control aircraft around a landing sites, drop zones, and pick-up zones in order to ensure aircraft separation. Aircraft may enter from any point or direction as long as it is consistent with safety requirements. The altitude is determined by height of the obstacles or the aircraft requirements and may be adjusted as the situation dictates.

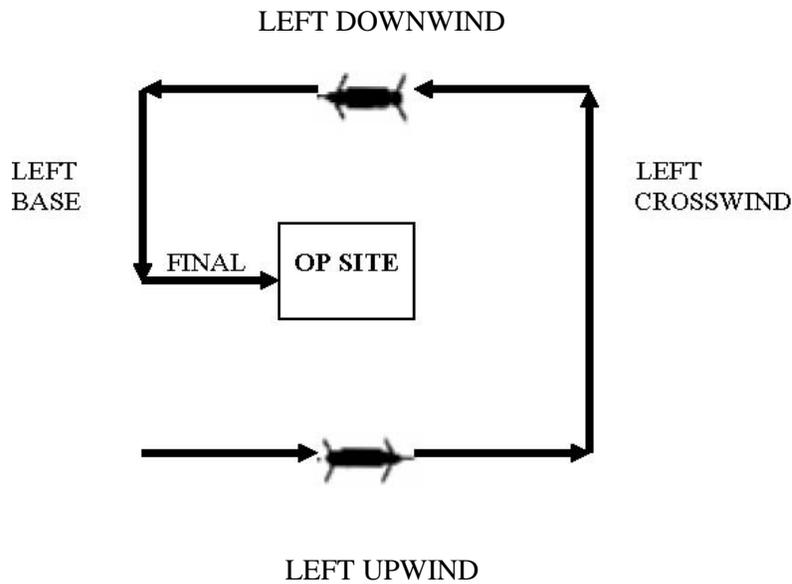
Traffic Pattern: The standard traffic pattern extends in all directions for a distance of one statute mile from the center line of the landing site for forward areas primarily using rotary wing and small fixed wing aircraft. The normal altitude that a pilot will fly will be METT-TC dependant and should be planned and brief prior to the mission.

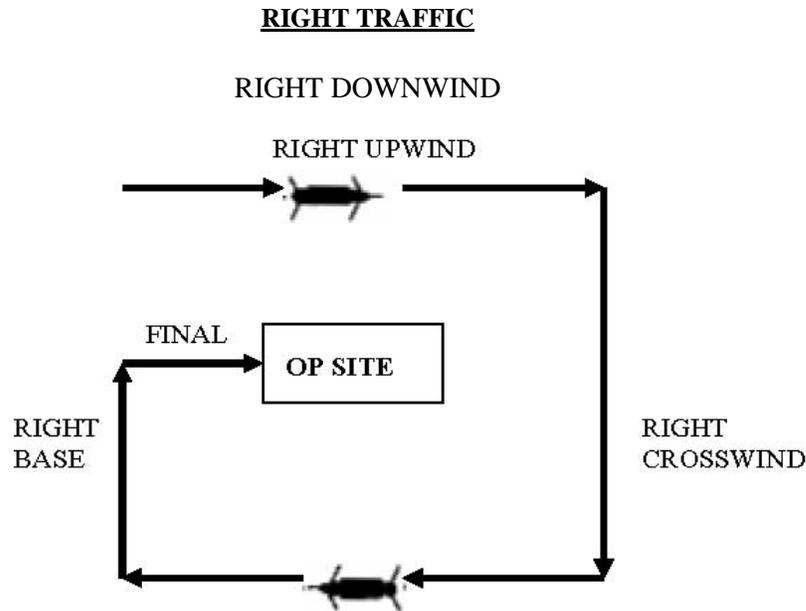
The standard traffic pattern consists of five legs:

- THE UPWIND LEG
- THE CROSSWIND LEG
- THE DOWNWIND LEG
- THE BASE LEG
- THE FINAL APPROACH LEG

### STANDARD TRAFFIC PATTERNS

#### LEFT TRAFFIC





- When an aircraft is within 30 degrees of the final approach leg, the aircraft can be cleared for a straight in approach. A straight in approach may be expeditious to a pilot as long as it is within safety requirements.
- The minimum pattern that can be flown is the Final Approach Leg. Regardless of what type of approach is made, the Final Approach Leg must always be flown.
- Left traffic is when the aircraft makes all left turns. Right traffic is when the aircraft makes all right turns. Normally, right traffic is best suited for rotary wing aircraft because the pilot sits in the right seat of rotary wing aircraft; however, the most expeditious pattern should be used.
- A modified traffic pattern is any traffic pattern consisting of either two or three legs.
- Rotary wing aircraft can enter anywhere in the traffic pattern as long as it is consistent with safety requirements.

A situation may arise where additional airspace between aircraft in the traffic pattern is needed.

There are two primary methods:

- The 360-degree turnout: When this command is given to the slower aircraft, it will immediately bank away from the site and execute a standard two-minute turnout, thus preventing collision. An aircraft cannot execute the 360-degree turnout while on the final approach leg.
- Extending one or more legs of the traffic pattern: will provide the desired spacing and is also used to prevent collisions.
  - The normal length of the extension is one statute mile.
  - The base and final approach legs cannot be extended.

## AIR TRAFFIC CONTROL

The type of approach most commonly encountered by the Pathfinder will be the circling approach. A circular approach can be conducted when a pilot is unfamiliar with the site. He may enter the final leg as long as it will not conflict with the normal flow of traffic.

The closed traffic pattern: The aircraft in a closed traffic pattern will continue to orbit the site at the specified altitude. There are two closed traffic patterns: Right and Left closed traffic. Closed traffic is required when the aircraft does not land on the first approach or during drop zone operations when an aircraft is required to make more than one pass over a drop zone.

### AIRCRAFT LANDING PRIORITY

There are six priorities for landing aircraft at your site.

- AIRCRAFT WITH AN IN-FLIGHT EMERGENCY
- MEDEVAC AIRCRAFT WITH GROUND MEDEVAC
- CODED AIRCRAFT (1 -8)
- FLIGHT OF TWO OR MORE AIRCRAFT
- AIRCRAFT WITH AN EXTERNAL LOAD
- SINGLE AIRCRAFT

### CARDINAL RULES

There are three cardinal rules for arriving and departing aircraft.

- Arriving aircraft will not be given clearance to land at a landing point until all preceding aircraft have taxied from or flown forward of the designated landing point.
- Departing aircraft will not be cleared for departure until all preceding aircraft have flown clear of the forward landing point. This is to prevent one aircraft from over-flying another. Departing aircraft will normally depart on the same heading as landing or as close to it as possible, depending ultimately upon the wind direction. When the aircraft's destination is not in the direction of departure, the aircraft may fly a portion of the traffic pattern. The GTA's responsibility is to ensure that arriving and departing aircraft do not conflict.
- Never allow a sling load aircraft to fly over personnel, equipment or another aircraft at any time.
- NOTE: If an aircraft has already been given clearance for landing and a situation arises where it is unsafe to land, the pilot must be instructed to "GO AROUND."

**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**



**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**

## AEROMEDEVAC

### REFERENCES:

FM 3-21.38

FM 4-02.2

FM 8-10-6

**INSTRUCTIONAL INTENT:** TO FAMILIARIZE THE PROSPECTIVE PATHFINDER STUDENT WITH AIRCRAFT CONFIGURATIONS, CAPABILITIES, AND EQUIPMENT NEEDED FOR MEDEVAC OPERATIONS, AS WELL AS THE NINE-LINE AERO MEDEVAC REQUEST.

DEFINITIONS

- MEDEVAC- The movement and en route care by medical personnel of wounded, injured or ill persons from the battlefield and/or other locations to a Medical treatment facility.
- CASEVAC- Is the movement of casualties aboard non-medical vehicles or aircraft. Casualties transported in this manner do not receive en route medical care.

ARMY AIRCRAFT DESIGNED FOR MEDEVAC

- UH-1V: Crew of 2 pilots, 1 crew chief and 1 medic. Standard configuration is 3 litters and 4 ambulatory. The maximum configuration is 6 litters or 9 ambulatory. Red Cross Markings: 4 one on the nose, belly, and each cargo door.
- UH-72A: Crew of 2 pilots, 1 medic. Standard configuration is 1 litter and 3 ambulatory. Max configuration is 2 litters or 1 litter and 4 ambulatory. Red Cross Markings 4 one on the forward portion of the nose, one on each cargo door, one on the top. UH-72A is utilized for garrison MEDEVAC missions only. I.E. humanitarian aid and training.
- UH-60Q: Same crew as the UH-1V. Standard configuration is 4 litters and 4 ambulatory. The maximum configuration is 6 litters and 1 ambulatory or 7 ambulatory or some configuration thereof. Red Cross Markings: 5 one on the nose, belly, one on each cargo door and one on top.
- CH-47: Crew of 2 pilots, 2 crew chiefs and 1 medic for every 6 litter patients. The standard configuration is 16 ambulatory and 12 litters. The maximum configuration is 31 ambulatory or 1 ambulatory and 24 litters. This aircraft has no Red Cross markings. The primary mission of this aircraft is Mass casualty evacuation.

CH-47 CONFIGURATION

AMBULATORY	LITTER
31	0
25	4
19	8
16	12 Standard configuration
10	16
4	20
1	24

**\*NOTE:** The capacity of all aircraft may be reduced because of temperature, humidity and altitude of the aircraft. Any aircraft may be used for CASEVAC.

### THE MISSION OF AEROMEDEVAC

- The primary mission of AEROMEDEVAC is to move casualties to an area where they can receive proper medical care.
- MEDEVAC aircraft may be used to move personnel and equipment.
- Because of the specialized equipment on board a MEDEVAC aircraft, it may be used for crash rescue.

### ADVANTAGES OF AEROMEDEVAC

- En route treatment
- Speed
- Flexibility

### DISADVANTAGES OF AEROMEDEVAC

- Weather and limited visibility
- Enemy situation
- Limited / priority aircraft

### RESPONSIBILITIES OF THE REQUESTING UNIT

- Lighting and marking the pick-up site
- Tactical support and security
- Patient preparation and consolidation
- Assignment of litter teams to load the aircraft
- Brief the pilot of the enemy situation and any other units in your area of operations if asked
- Mark friendly positions when an armed escort is required
- Have an English speaking representative present for non U.S. personnel
- Guide in aircraft (GTA / Signalman)

### THE STANDARDIZED NINE-LINE MEDEVAC REQUEST

1. **Line #1:** 6 digit grid coordinate of the pick-up site to include the grid zone identifier.
2. **Line #2:** Radio frequency, call sign and suffix of the requesting unit.
3. **Line #3:** Number of patients by precedence.
  - a. The purpose of classifying patients by precedence is so that the MEDEVAC element can establish a priority as to which patients are to be evacuated first. Normally, time is a factor, which determines the categories of precedence.
  - b. There are four priorities of precedence:
    - Urgent: Is assigned to emergency cases that should be evacuated as soon as possible and within a maximum of 2 hours to save life, limb or eyesight, to prevent complication of serious illness, or to avoid permanent disability.

- Urgent-Surgical: Is assigned to patients who must receive far forward surgical intervention to SAVE LIFE and stabilize for permanent evacuation. These patients need to be evacuated within a maximum of 2 hours.
- Priority: Is assigned to sick and wounded personnel requiring prompt medical care. This precedence is used when the individual should be evacuated within 4 hours or his/her condition could deteriorate to such a degree that he will become an Urgent precedence, or whose requirements for special treatment are not readily available locally, or who will suffer unnecessary pain or disability.
- Routine: Is assigned to sick and wounded personnel requiring evacuation but whose condition is not expected to deteriorate significantly. The sick and wounded in this category should be evacuated within 24 hours.
- Convenience: Is assigned to patients for whom evacuation by medical vehicle is a matter of medical convenience rather than necessity.

4. **Line #4:** Special equipment needed:

- a. Aircraft Rescue Hoist: Utilized on the UH1V, UH-60 and the CH47D. The cable is 256 feet long with 250 feet of usable cable, with a tensile strength of 600 pounds. The hoist has two settings. A fast and a slow setting; the fast setting can lift 300 pounds at 250 feet per minute, the slow setting can lift 600 pounds at 125 feet per minute.
- b. Goodrich External Mounted Hoist: Utilized on the UH-72A. The cable is 300 feet long with 295 feet of useable cable. It can lift 600 pounds. The hoist has two settings. Setting 1 will lift 600 pound at 150 feet per min. Setting 2 will lift 300 pounds at 150 feet per min.
  - To prepare a patient for rescue via either of the rescue hoist, the ground personnel must:
  - Allow the hoist hook to touch the ground to discharge any built up static electricity.
  - Hook the litter to the helicopter.
  - Provide tag line personnel to stabilize litter until it reaches the helicopter cargo door and the medic takes positive control of the patient.
- c. Jungle / Forest Penetrator: When a landing zone is not available or vegetation is too dense, a Jungle/Forest penetrator can be attached to the rescue hoist. The Penetrator is limited to three (3) casualties or 600 pounds. The Jungle/Forest Penetrator weighs 21 1/2 lb., is 34 in. long and 8 in. in diameter. The three legs are 11 1/2 in. long and 4 3/4 in. wide.
  - Allow the penetrator to touch the ground to discharge any built up static electricity.
  - Fold down only wing seats necessary and snap into place.
  - Unzip one of the protective covers containing a safety strap, remove the strap, placing it around the patient's back and under their armpits.
  - Signal the aircrew when the patient is ready to be lifted.
- d. Semi-Rigid Litter: Used for evacuating casualties with other than back injuries. Limited to one 1 casualty or 400 pounds.
- e. Stokes Basic Litter: Used for casualties with injuries to include neck and back requiring immobilization. Is constructed of aluminum or steel framed basket and is 84 in. long 23

in. wide and weighs 31.5 lbs. It is limited to 1 casualty or 400 lbs. To prepare a patient for rescue via either of the rescue hoist, the ground personnel must:

- Allow the SBL to touch the ground to discharge any built up static electricity.
  - Unhook the litter(s) from the helicopter.
  - Move the suspension cables to the sides of the litter and unfasten the restraining straps
  - Place the patient in the litter and fasten the restraining straps.
  - CAUTION: PATIENT MUST BE REMOVED FROM THE STANDARD OR IMPROVISED LITTER PRIOR TO BEING PLACED IN THE STOKES BASIC LITTER.
  - Bring the lift rings to the center position and fasten them to the helicopter rescue hoist hook.
  - Signal the hoist operator when ready to lift. Be prepared to steady the litter to prevent oscillation until it is out of reach.
- f. Kendrick Extrication Device (KED): Semi-rigid support used to immobilize casualties with minor neck and back injuries, same limitations as the Stokes Basic Litter.

5. **Line #5:** Number of patients by type:

- Litter patients
- Ambulatory patients

6. **Line #6:** Line #6 is broken into two (2) situations; wartime and peacetime.

- a. Wartime Situation: Security of the Pickup Zone
- No enemy troops in the area
  - Possible enemy troops in the area
  - Enemy in the area, approach with caution
  - Enemy troops in the area, armed escort required
- b. Peacetime Situation: Type of injury
- Gunshot, shrapnel
  - Broken bones
  - Illness

7. **Line #7:** Method of marking the site.

8. **Line #8:** Patient nationality and status

- U.S. Military
- U.S. Civilian
- Non U.S. Military
- Non U.S. Civilian
- Prisoner of War

9. **Line #9:** Like line #6, line #9 has two (2) situations; wartime and peacetime.

- Wartime Situation: NBC contamination - Report RADS/Hour or type agent used, if known, in the area of the pick-up site.
- Peacetime Situation: Description of the terrain in and around the pick-up site to aide the pilot in locating your site.

#### GUIDELINES FOR LOADING PATIENTS

- Patients are normally loaded from the top tier to the bottom tier with the most seriously injured loaded last.
- Litter patients should be positioned in the helicopter according to the nature of their injuries or conditions. Personnel aboard the helicopter supervise the loading and positioning of the patients.
- The most seriously injured patients must be on the bottom tiers to permit the onboard medical personnel to provide the necessary in-flight care.
- Litter patients requiring IV fluids should be positioned as low as possible on the litter rack.
- Patients in Thomas Leg Splint support and footrest must be loaded last and placed directly on the floor.

#### LOADING AND SECURING PATIENTS

##### LOADING PATIENTS:

- In loading six litter patients with a 4-man litter squad, the litters are loaded from both sides of the aircraft and from top to bottom.
- When the helicopter is equipped for mixed loading, 3 litters are loaded crosswise and 4 ambulatory patients are loaded in the side seats.
- When loading from the left, the litter squad moves to the left side of the helicopter with the litter perpendicular to the cargo compartment, then the squad moves onto the post litter carry. Numbers 1 and 3 give their litter handles to the aircrew that place the handles in the litter support brackets on the far left side of the aircraft. Numbers 2 and 4 secure the foot of the litter.
- After the first litter is loaded, the squad leaves the helicopter as a team to obtain another litter patient. The second and third litters are loaded in the same way as the first one. After the three litter patients are loaded, the ambulatory patients are loaded. The ambulatory patients are taken to the aircraft and placed in their seats.

##### UNLOADING PATIENTS:

- The aircraft is unloaded in the reverse order of the loading process. The tiers are unloaded from the bottom to the top on one side and then the other. At the unloading command, the litter squad moves to the helicopter and the bearers take their proper place at the litter. Then each member of the squad then performs his duties in reverse order of the loading sequence.

**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**



**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**

## SLINGLOADS

### REFERENCES:

FM 4-20.197/198/199

FM 3-21.38

FM 4-20.102

**INSTRUCTIONAL INTENT:** TO FAMILIARIZE THE PROSPECTIVE PATHFINDER STUDENT WITH THE RESPONSIBILITIES INVOLVED IN SLING LOAD OPERATIONS, THE CAPABILITIES OF THE EQUIPMENT USED, SLING LOAD NOMENCLATURE, AND THE ASSOCIATED HAND AND ARM SIGNALS.

## UNIT RESPONSIBILITIES

There are three elements involved in sling load operations: The supported unit (the unit whose equipment will be moved), the supporting unit (the aviation unit that will fly the loads) and a Receiving element (normally an internal element of the supported unit). The responsibilities of these units and element are outlined below.

**1. Supported Unit:**

- Advance coordination with the supporting unit no later than 24 hours prior to the mission.
- Actual rigging of the loads.
- Furnishing slings, straps, clevises and any other sling load equipment required for the move.
- Assuring that the loads are properly rigged and do not exceed the Allowable Cargo Load (ACL) of the aircraft.

**2. Supporting Unit:**

- Ensure that the loads fall within the transporting aircraft's ACL.
- Provides assistance in the recovery and return of sling-load equipment.
- Advises the supported unit on load limitations.
- Advise the supported and receiving units on the suitability of selected LZ/PZ's.
- Establish coordination with the supported and receiving units.

**3. Receiving unit:**

- Selecting, preparing and controlling the landing site to include communications.
- Receiving and derigging the load.
- Ensure proper supervision of the derigging.
- Provide the return of lifting equipment and or personal.

**4. Pathfinder Unit**

- Provide advice and aid to the supported, aviation, and receiving units.
- Provide expertise in the planning and execution of both PZ and HLZ operations.
- Supervise the rigging and inspection of all the loads.
- Provide ground guidance and air traffic control during the slingload.
- Ensure that the loads fall under the transporting aircraft's ACL.

## EQUIPMENT CHARACTERISTICS AND CAPABILITIES

1. **Types of Loads:** All external loads fall under one of three types: high density, low density, or Aerodynamic. Each exhibits unique characteristics in flight. Pathfinders determine the type, size, and weight of the load during the planning phase of the operation.
  - a. High Density- The high density load offers the best stability.  
(Example: HMMWV)
  - b. Low Density- The low density load offers the least stability.  
(Example: A22 Cargo Bag)
  - c. Aerodynamic- The aerodynamic load is unstable until the load is streamlined then it becomes stable (Example: Downed Aircraft)
    - Maximum external load capabilities will vary due to the environmental conditions and the helicopter performance. Check with the aviation unit as to the aircraft maximum load capacity for a particular mission.
    - The Allowable Cargo Load (ACL): The maximum load capacity for a particular mission determines what the helicopter can lift. The ACL is based on the type of aircraft, age of the airframe, pilot experience, altitude above sea level, temperature, humidity and the aviation unit's SOP.

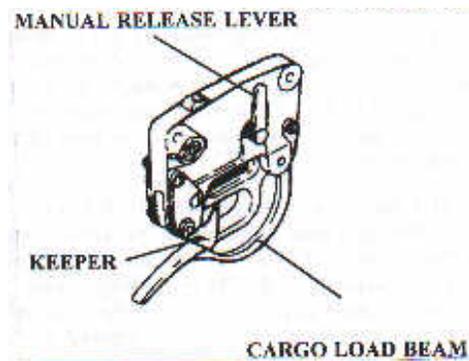
2. **Helicopter:**

## UH-1 IROQUOIS



**APEX Requirements:** A nylon point of attachment, such as a 3 ft apex ring or a basket hitch must be used to attach the load to the aircraft. In addition the 11k cargo hook reach pendant or a polyester round sling can be used as the point of attachment to the A/C to a UH-1 series Aircraft.

## SLINGLOADS

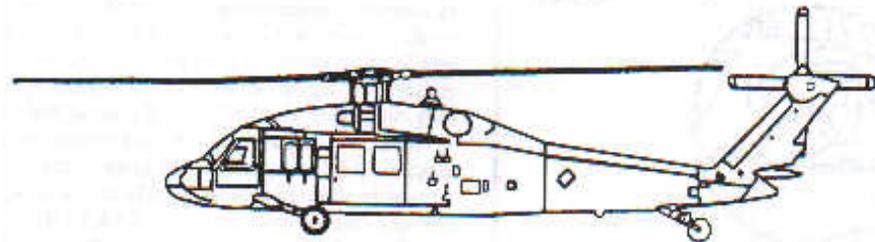


### CARGO HOOK TENSILE STRENGTH:

UH-1N - 5,000 LBS

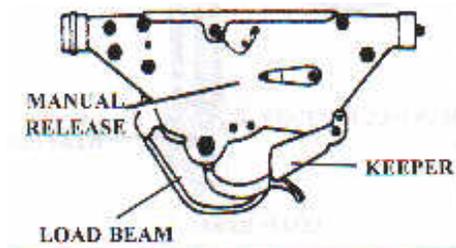
UH-1Y - 5,000 LBS

### UH-60 BLACKHAWK



**APEX Requirements:** When using the 10k apex to secure an external load to the UH-60, the aluminum apex spacer **MUST** be used. This will center the apex on the cargo hook and prevent the apex from lifting the keeper during oscillation of the load, which would result in the load being jettisoned from the cargo hook. If the 25k apex is used, the spacer is not required. If the 25k apex spacer is used, the air crew cannot jettison the load if required and the cargo hook must be manually operated by the crew chief or ground crew on the LZ. **NEVER** use a nylon point of attachment such as a donut/web ring on a UH-60. The web ring will bind on the load beam of the cargo hook and prevent the crew from releasing the load in an emergency situation.

## SLINGLOADS



### UH-60 CARGO HOOK SYSTEM

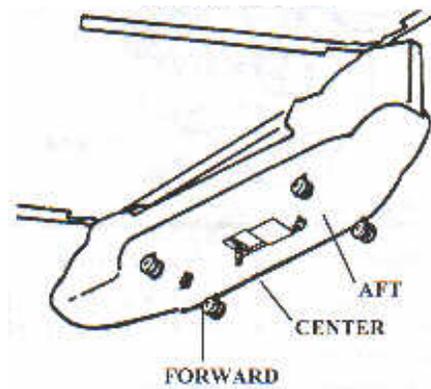
TENSILE STRENGTH:

A MODEL - 8,000 LBS

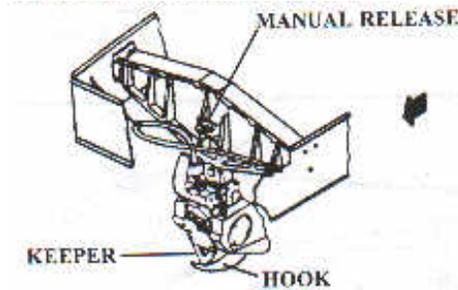
L MODEL - 9,000 LBS

M MODEL-9,000 LBS

### CH-47



## SLINGLOADS



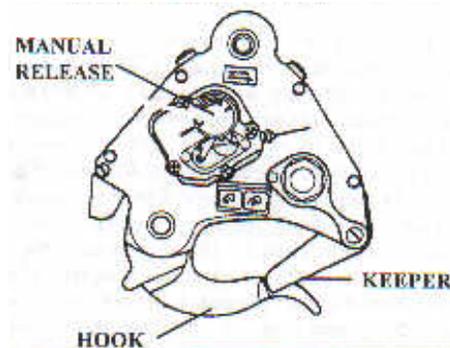
### CH-47 MAIN CARGO HOOKS

#### LOCATION & TENSILE STRENGTH

#### CH-47 CENTER CARGO HOOK

D MODEL - 26,000 LBS

F MODEL – 26,000 LBS



#### CH-47D/F FORE AND AFT CARGO HOOKS

EACH - 17,000 LBS

COMBINED - 25,000 LBS

**APEX Requirements:** The CH-47 requires no special apex preparation and may accept all configurations to include 10K Apex with spacer & 25K apex with and without spacers and any nylon apex configuration, and field expedient attachments to include large clevises.

## SLINGLOADS

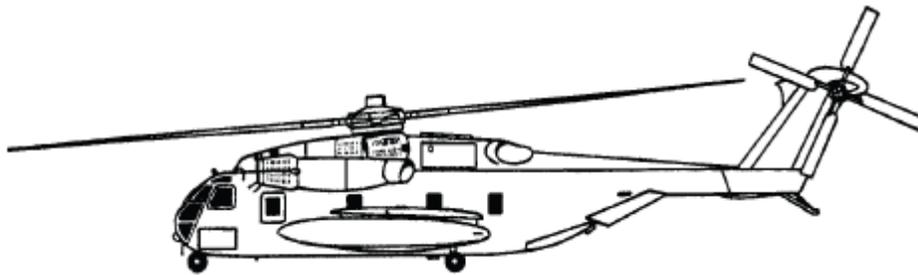
When attaching loads of different weights to multiple cargo hooks on the CH-47, such as attaching three cargo nets, attach them in the following manner:

- Heaviest load on the center hook
- Next heaviest (mid-weight) load on the forward cargo hook
- Lightest load on the aft cargo hook.

When attaching loads that are being flown to different destinations to multiple cargo hooks on the CH-47, such as attaching three cargo nets with re-supply loads for spread out units, attach them in the following manner:

- First to be delivered and lightest load on the forward cargo hook.
- Second to be delivered and next heaviest (mid-weight) load on the aft cargo hook
- Last to be delivered and heaviest load on the center hook

## CH-53E SUPER STALLION

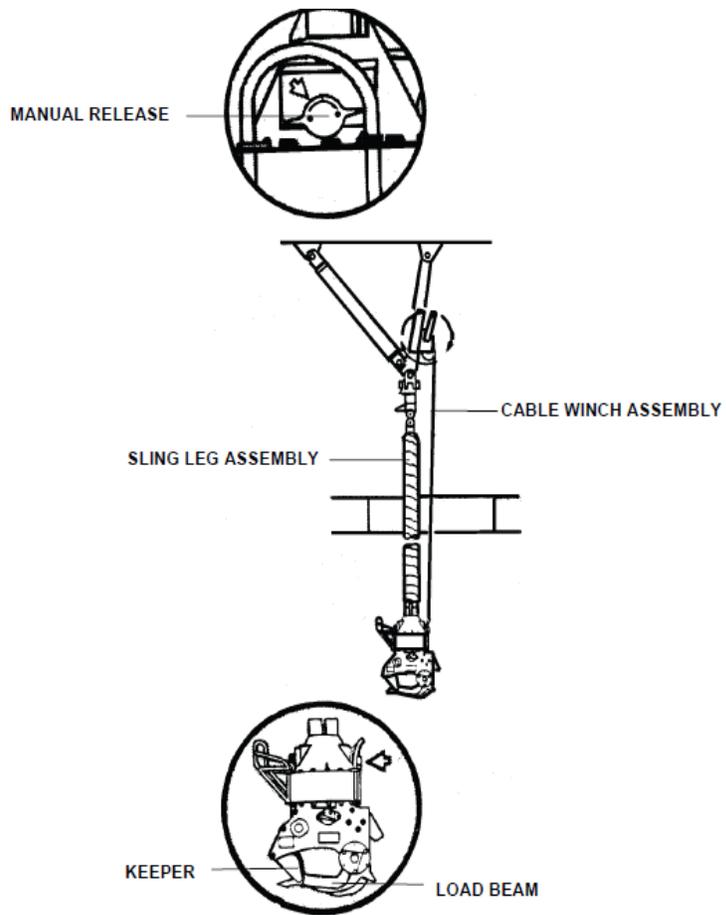


CENTER CARGO HOOK FOR CH-53E

RATED CAPACITY-36,000 LBS

The center cargo hook, suspended on the end of a pendant below the fuselage near the centerline, is used for single-point loads. Even though the hook capacity is greater (36,000 lbs.), the aircraft maximum lift capacity is 32,000 pounds. Loads under 6,000 lbs. may not jettison when needed. Therefore it is recommended you never carry less than 6,000 lbs. externally on this aircraft. The aircrew can open the cargo hook manually or electrically. A manual release knob is located on a side of the top part of the hook. In an emergency, a ground crewman can open the cargo hook by rotating the knob clockwise.

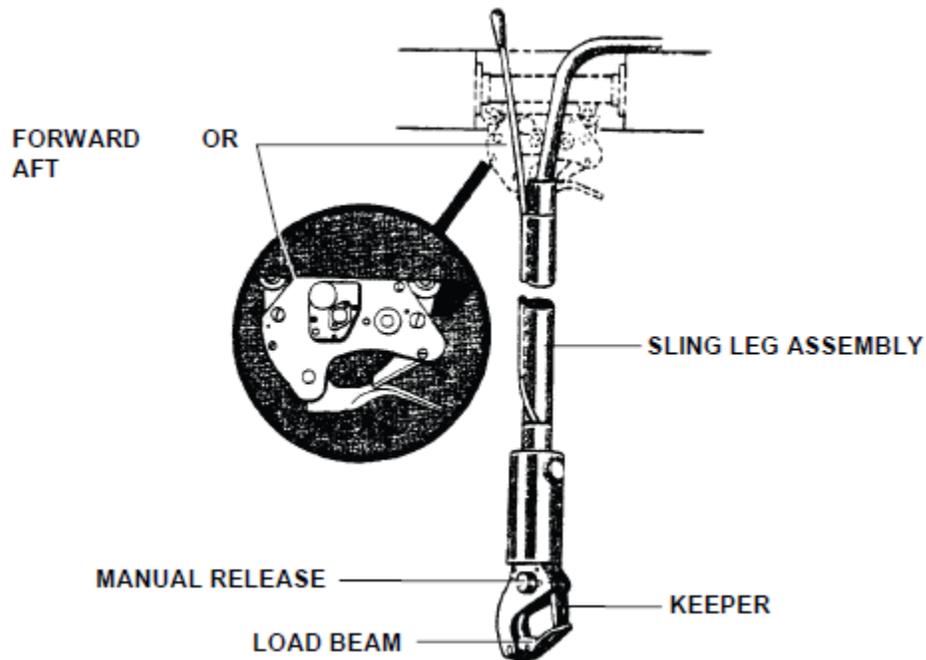
SLINGLOADS



FORE AND AFT CARGO HOOK FOR CH-53E

RATED CAPACITY COMBINED: 32,000 LBS

## SLINGLOADS



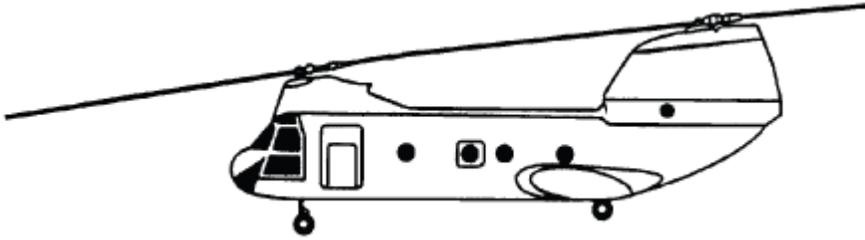
A dual-point suspension system, similar to the CH-47D, uses a forward and aft cargo hook. These two cargo hooks, located 10 feet apart, must be used for dual-point loads. The aircraft maximum lift capacity, when carrying a dual-point load, is 32,000 pounds with a maximum of 60 percent of the sling load on either the forward or aft hook. A pendant specifically designed for the H-53E is used with the dual-point system to provide additional clearance between the helicopter and the hookup team. The aircrew can open the forward or aft cargo hook electrically or manually. A manual release lever is located on the left side of the cargo hook. In an emergency, the ground crew can open the hook by moving the manual release lever up.

- The pendant cargo hook is not opened electrically. The aircrew member opens the pendant cargo hook by pulling on the lanyard inside the aircraft. The ground crew can rotate the manual release knob on the side of the cargo hook to open the hook. The ground crew must also re-latch the pendant cargo hook after it is opened each time.

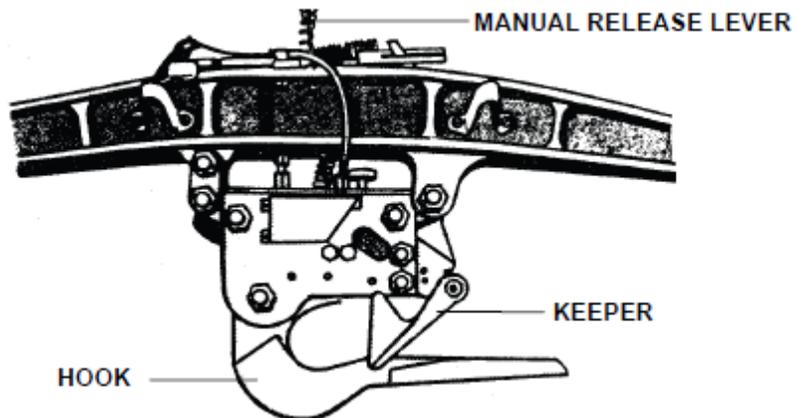
\*NOTE: When attaching dual point loads to the CH-53E and **NOT** using Cargo Hook Reach Pendants, each hook being utilized must have its own static discharge man.

## SLINGLOADS

### CH-46 A/D/E SEA KNIGHT



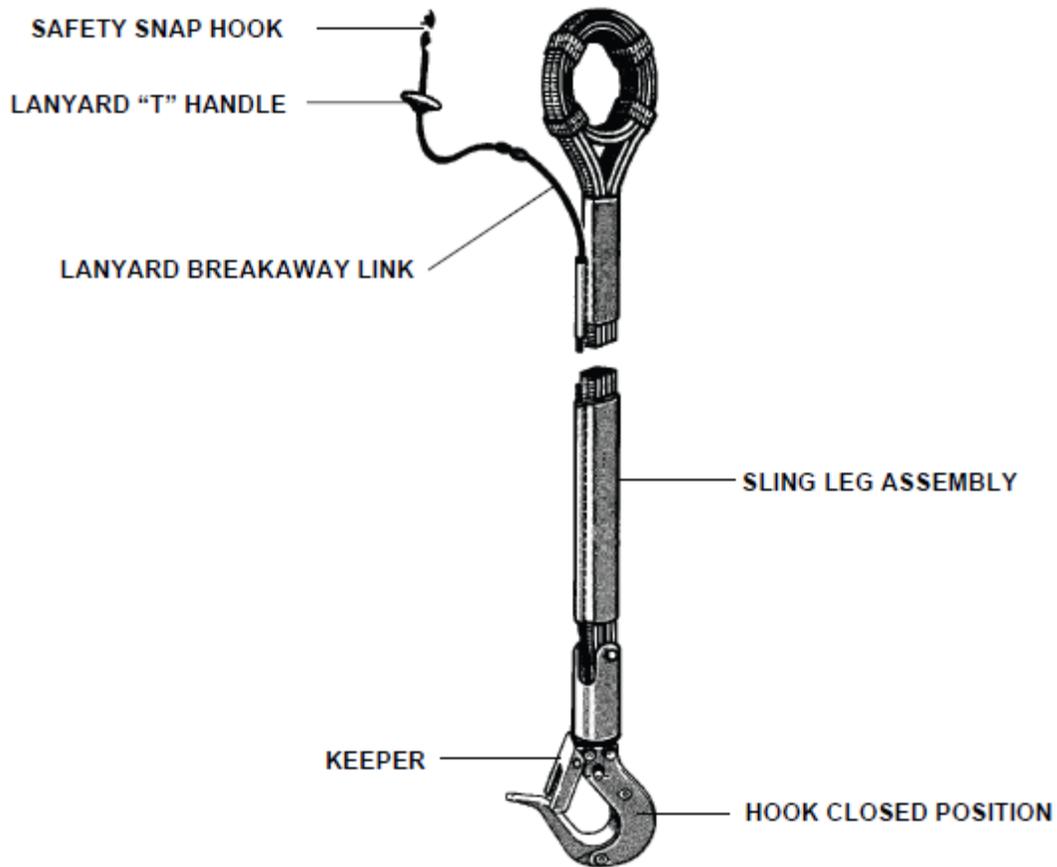
The CH-46A/D/E Sea Knight is a twin engine, tandem rotor helicopter. The cargo hook maximum capacity is 10,000 pounds. The AC6000500 Mod-1 pendant may be used with this helicopter. The cargo hook is normally opened electrically or manually by the aircrew. The manual release cable is mounted on top of the cargo hook and is only accessible to the aircrew.



CH-46 CARGO HOOK ASSEMBLY

RATED CAPACITY: 10,000 LBS

## SLINGLOADS



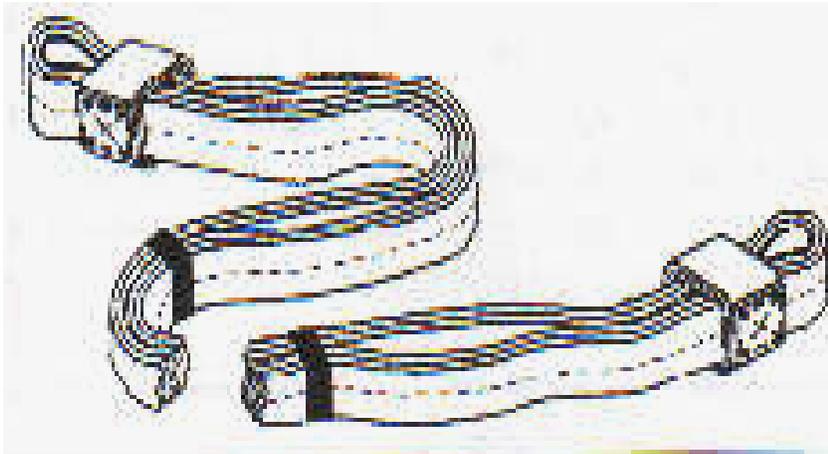
AC6000500 Mod 1 Pendant

RATED CAPACITY: 12,000 LBS

3. Equipment: There is currently a variety of equipment in the Army's inventory either adapted or designed for use in sling load operations.

SLINGLOADS

AERIAL DELIVERY SLINGS (ADS):



**TYPE XXVI MULTI-LOOP LINE**

MAXIMUM RATED CAPACITY

NUMBER OF LOOPS	PENDANT	LIFTING PROVISION
2	8,900 LB	5,600 LB
3	13,500 LB	8,500 LB
4	17,800 LB	11,200 LB
6	27,000 LB	17,000 LB

LENGTHS

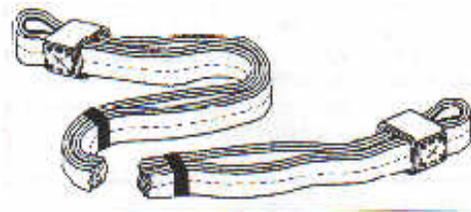
NUMBER OF LOOPS	LENGTHS AVAILABLE
2	3', 9', 11', 12', 16', 20', 120'
3	60', 140'
4	3', 9', 11', 12', 16', 20', 28'
6	60', 120'

## NYLON FLAT-WEB SLINGS

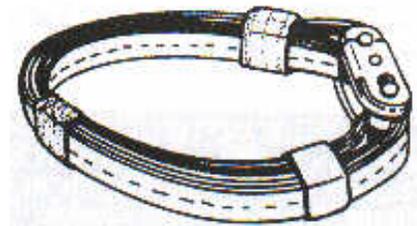
Currently there is only one type of nylon flat-web sling authorized for rigging external loads, the Type XXVI nylon multiloop lines.

- A yellow thread stitched lengthwise along the middle of the strap identifies the sling as a Type XXVI nylon multiloop line. A nylon or cotton buffer must be present on the inside of the nylon web strap to help prevent damage to the sling
- Multiloop lines that do not have a colored lengthwise stitch are Type X nylon Aerial Delivery Slings and are NOT authorized for the rigging of external loads.

**Three Foot Apex Ring (Donut Ring):** The Apex Ring (Donut Ring) is primarily used to attach the slings to the helicopter cargo hook. The Apex Ring is made by joining the two ends of a 3 foot, (2 Loop) ADS with a Type IV Connector Link. An Apex Ring has a maximum capacity of 10,000 lbs. When two Apex Rings are used together, the two Apex Rings have a maximum capacity of 17,500 lbs.



TYPE XXVI MULTI-LOOP LINE



THREE FOOT APEX RING

## SLINGLOADS

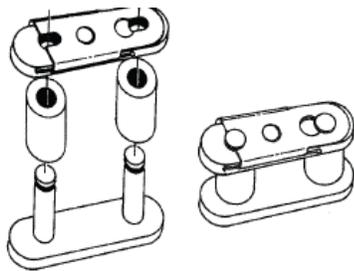
### TYPE IV CONNECTOR LINK

Used in the construction of the 2 or 3 loop, 3-foot Apex Ring or to connect one ADS to another.

- Rated capacity of 12,500 lbs.
- NSN 1670-00-783-5988.

When inspecting the Type IV link assembly look for the following deficiencies:

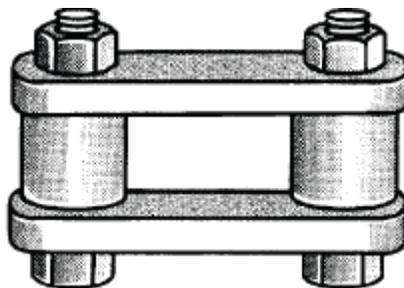
- Aluminum buffers not rotating freely or missing
- Posts that is bent or cracked.
- Bent slide connectors, No metallic "click" when locked.



### TWO POINT LINK ASSEMBLIES

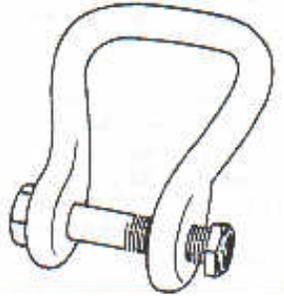
Is used to join to ends of a four or six loop multi loop line ADS Sling together.

It has a rated capacity of 25,000 lbs

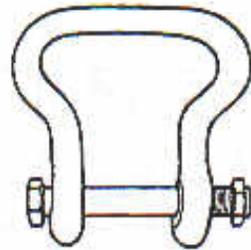


**Large Suspension Clevis:**

Rated capacity of 12,500-lbs (pendant)(If 2 clevis are used as attachment points -15,750-lbs, for 3 as attachment points - 23,625-lbs, for 4 as attachment points - 31,500-lbs); 7,875-lbs (lifting provision). (NSN 1670-00-090-5354)

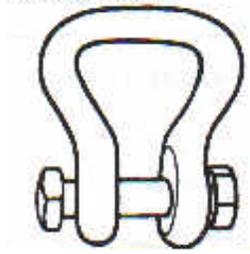
**Medium Suspension Clevis:**

Rated capacity of 6,250-lbs (pendant) 3,750-lbs (lifting provision). 2 attachment points - 7,500-lbs, for 3 attachment points - 11,250-lbs, for 4 attachment points - 15,000-lbs). (NSN 1670-00-678-8562)

**Small Suspension Clevis:**

Rated capacity of 6,250 lbs (pendant) 3,750-lbs (lifting provision). 2 attachment points - 7,500-lbs, for 3 attachment points - 11,250-lbs, for 4 attachment points - 15,000-lbs). (NSN 1670-00-360-0304)

## SLINGLOADS



\*NOTE: When using any clevis assembly, the nut will only be tightened **HAND TIGHT**. Both ends of the nut and bolt will then be taped to prevent slippage during use. Use only case hardened nuts and bolts and **NEVER** mix items. Case hardened marks include (ticks and/or numbers / letters) and will be located on the bolt head.

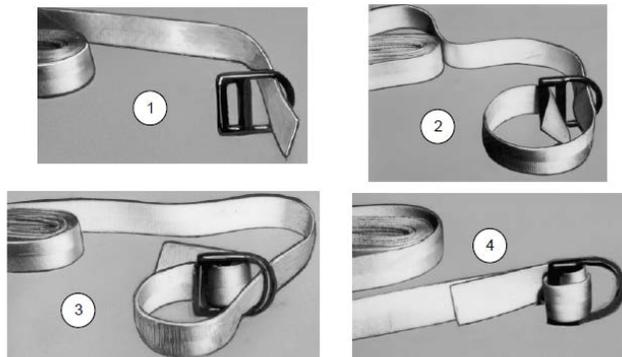
## CARGO TIE-DOWN EQUIPMENT

### CGU-1B Cargo Tie-down Device:

- Rated capacity of 5,000 lbs
- Length is adjustable

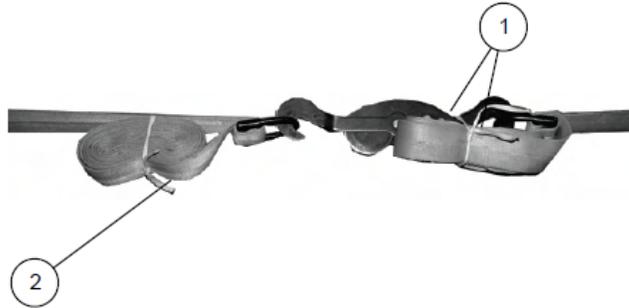
### 15 Foot Cargo Tie-down Strap/15' Dacron Lashing with Quick Fit Strap Fastener:

- Rated capacity of 10,000 lbs
- Length is 15 feet
- Proper routing and securing of the 15' Cargo Tie Down Strap/Dacron Lashing. REF. FM 4-20.102 Rigging Airdrop Platforms.



- ① Run the free end of the tiedown strap through the large opening in the D-ring.
- ② Run the strap around and through the small opening in the D-ring.
- ③ Run the strap back through the large opening in the D-ring.
- ④ Pull the strap taut.

## SLINGLOADS



- ① After the handle of the load binder has been closed, roll any excess tiedown strap and place the folds alongside the load binder handle. Tie the rolled webbing to the binder and the binder handle closed with a single length of type I, 1/4-inch cotton webbing.
- ② Roll any excess from the opposite tiedown strap and place on top of the lashing. Tie the rolled webbing to the lashing with a single length of type I, 1/4-inch cotton webbing.

### SAFETY TYING LOAD BINDER HANDLES

#### Silver or Black Load Binder:

- Silver Max Rated Capacity 5,000 lbs
- Black Max Capacity 10,000 lbs
- Rated capacity of these items is stamped on the side

#### A7A/188" STRAP:

- A cotton or nylon cargo strap rated capacity of 500 lbs and is 188 inches in length.
- Located on one end of the strap is a friction adapter with a thick lipped floating metal bar.
- The strap is issued with one metal "D" ring. Inspect this piece of equipment for cuts or frays.

\*NOTE: When sewn into the A22 Cargo Bag, it is referred to as a 188" strap

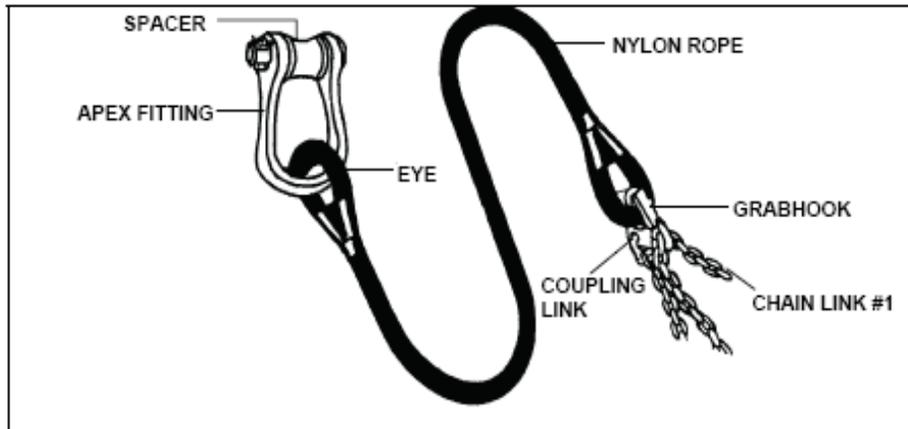
### 10,000 AND 25,000 POUND CAPACITY SLING SETS

Both Sling Sets are similar, except for a few minor differences. Each set consists of four legs. Each of the legs has a rated capacity of 1/4th of the total capacity of the set. It is common to use up to six legs on some loads. The extra legs **DO NOT** increase the rated capacity of the entire set. The nylon rope assembly for each set has an interwoven eye at each end that is covered with polyurethane coating to protect the eye from abrasion. Each rope is of double braided construction and is connected to a grab

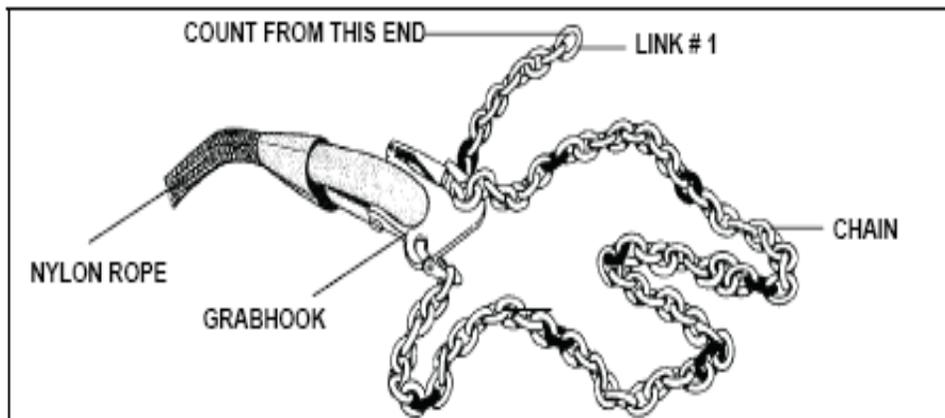
## SLINGLOADS

hook assembly. The grab hooks for the two sets look similar but are not interchangeable due to their different ratings.

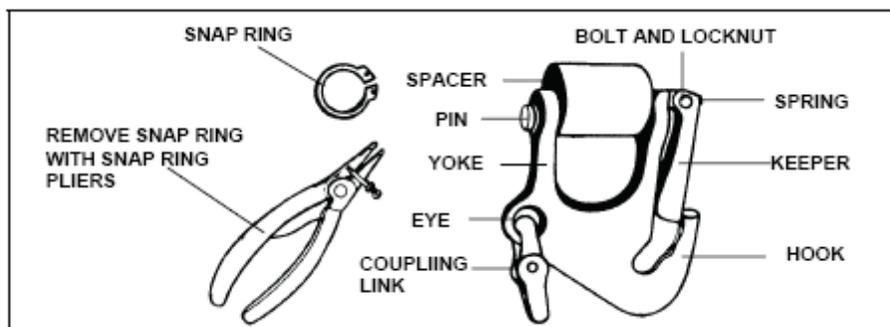
### 10,000 AND 25,000 POUND CAPACITY SLING SET COMPONENTS



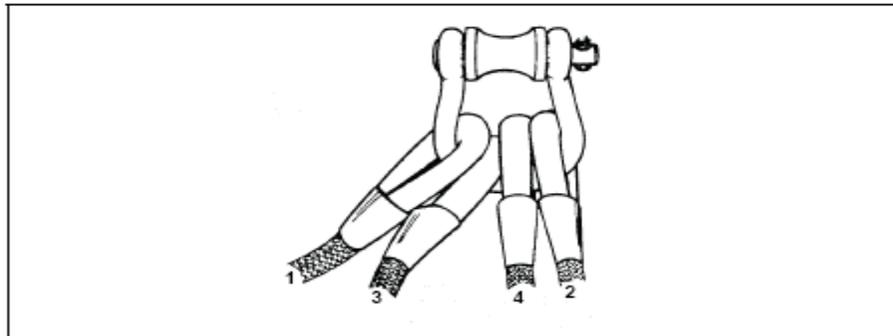
### CHAIN ATTACHED TO GRAB HOOK BY COUPLING LINK



### GRAB HOOK ASSEMBLY

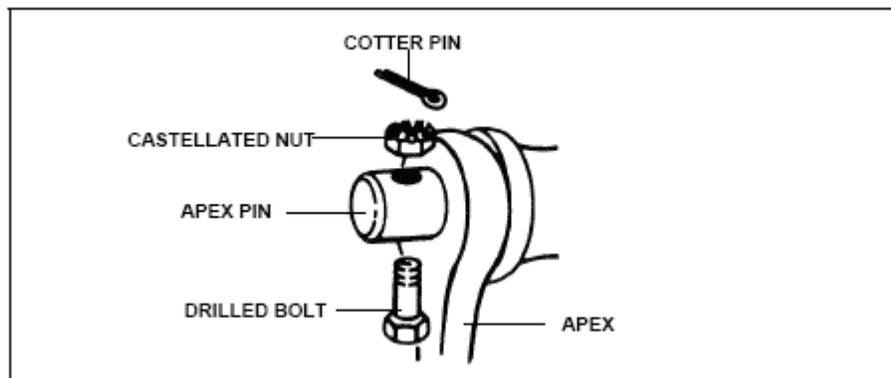


### SLING LEG NUMBERING SEQUENCE



### 6 Component parts of the Apex fitting (10k and 25k)

The pin on both apex fittings is secured with a 3/8 inch bolt and, a castellated nut and cotter pin. When using the dome shaped nut, ensure that the nut is secured to the apex wrench tight.



- Apex Shackle
- Apex Fitting Pin
- Apex Spacer
- Drilled Bolt
- Castellated Nut
- Cotter Pin

SLINGLOADS

**SLING SET CHARACTERISTICS**

	<u>10,000 LB</u>	<u>25,000 LB</u>
<i>APEX FITTING</i>		
<b>Material</b>	aluminum	alloy steel
<b>Pin size</b>	1 1/8 inch diameter	1 1/2 inch diameter
<b>Weight</b>	4 1/2 lbs	10 lbs
<i>NYLON ROPE</i>		
<b>Rope color</b>	olive drab	black
<b>Length</b>	12 feet	12 feet
<b>Rope diameter</b>	7/8 inch	1 1/4 inch
<i>CHAIN</i>		
<b>Links</b>	110 - 115	84 - 88
<b>Length</b>	8 feet	8 feet
<b>TOTAL WEIGHT</b>	52 lbs	114 lbs

\*NOTE: Reference for these slings is FM 4-20.197/198/199

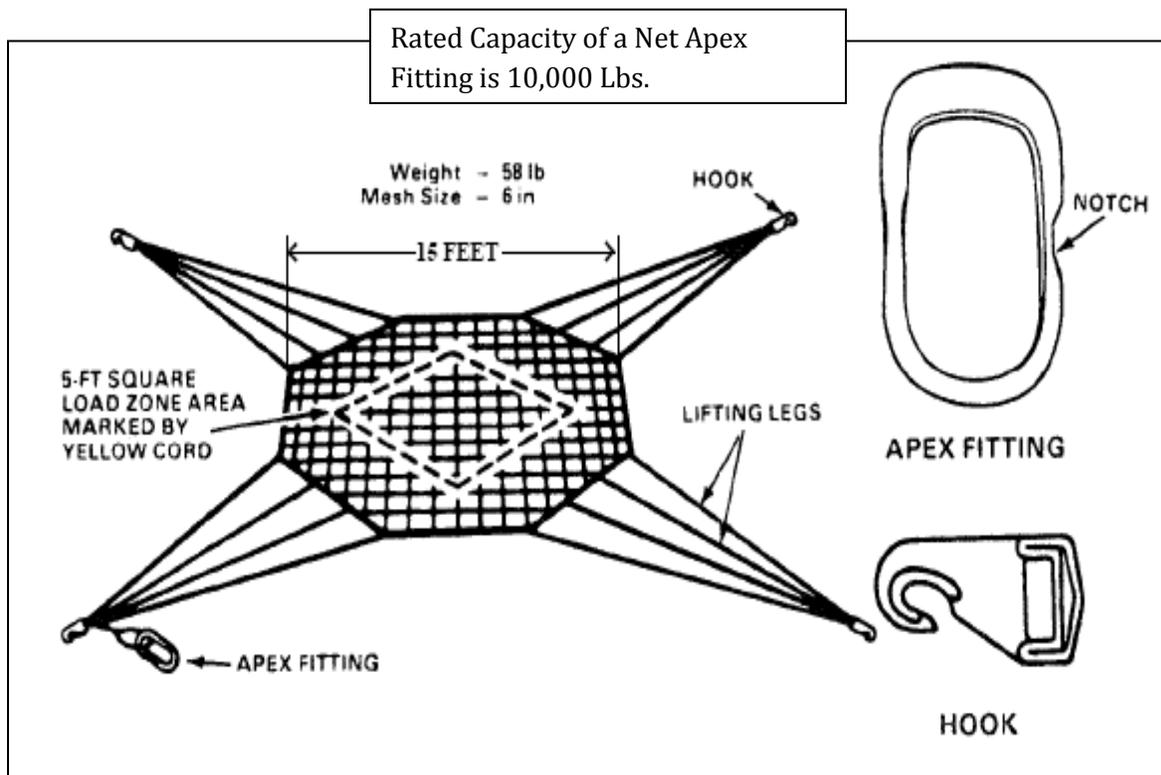
\*NOTE: For link count conversion tables, refer to FM 4-20.197/198/199

5,000 lb and 10,000 lb capacity octagon shaped cargo nets are constructed from interwoven nylon cord. Each set of four lifting legs has a hook that attaches to the apex fitting that is connected directly to the aircraft cargo hook. The apex fitting is attached by a tether cord to the set of lifting legs with the net identification tag. The other ends of the lifting legs are attached to the net's outer border cord. A square-shaped load zone area is marked by a yellow cord interlaced with the mesh. This zone marks the center of the net and is used as a guide to place the load. When positioning the load, the sides of the load can extend beyond the load zone, but the overhang should be the same on each side.

- The olive drab body of the 5,000 lb capacity cargo net is 15 feet wide.
- The 10,000 lb capacity cargo net is black and the body is 18 feet wide.

### 5000 lb Capacity Cargo Net

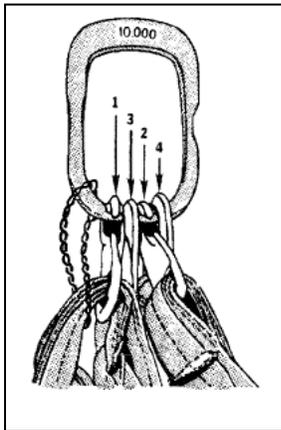
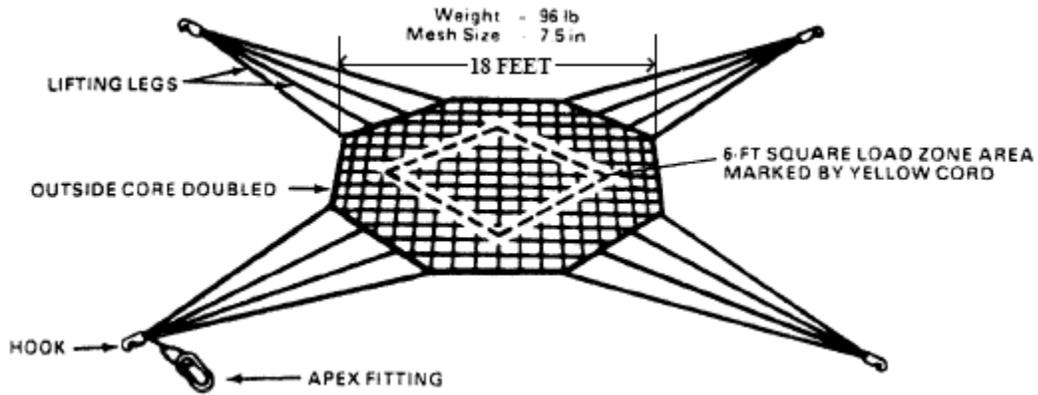
VOLUME = 125 CUBIC FEET



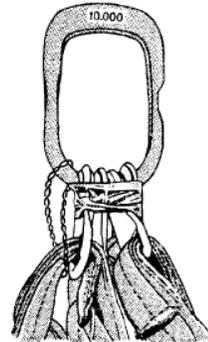
SLINGLOADS

10,000 lb Capacity Cargo Net

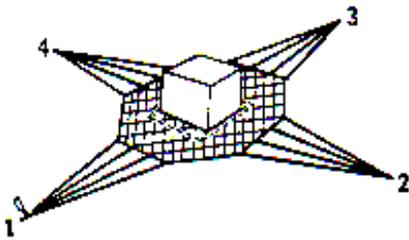
VOLUME = 380 CUBIC FEET



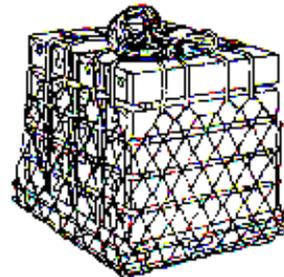
*Legs Hooked in Sequence*



*Taped Hooks*



ALIGNED LOAD



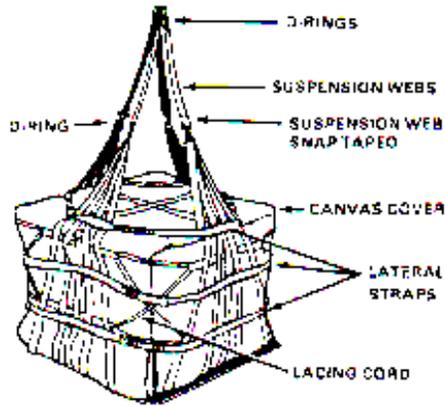
LIFTING LEGS COILED ON  
TOP OF LOAD

# SLINGLOADS

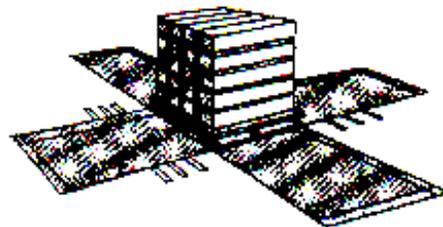
## A-22 CARGO BAG

The A-22 Cargo Bag is an adjustable cotton duck cloth/nylon webbing container consisting of a sling assembly, cover and four suspension webs. The bag is used to transport palletized loads, loose cargo, ammunition, drums, and other general cargo. Maximum weight capacity is 2,200 pounds. You may rig the cargo in the bag with or without the cover.

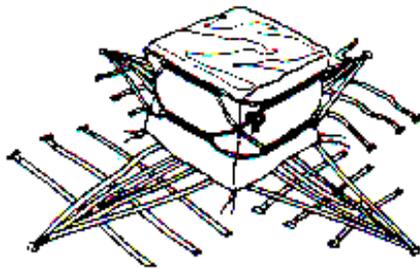
\*NOTE: Reference: FM 4-20.197/198/199



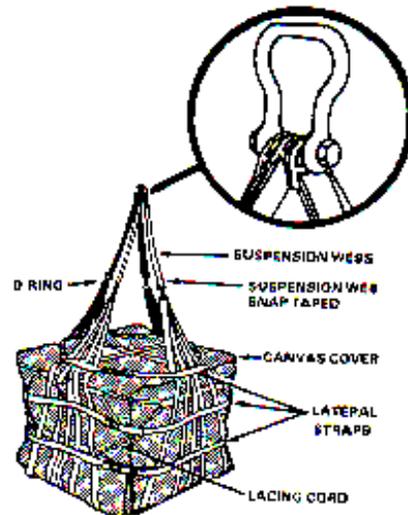
A-22 CARGO BAG



CENTERED LOAD



SECURING THE COVER  
WITH LACING CORD



UPPER SLING AND  
MEDIUM CLEVIS

11,000- AND 25,000-POUND CAPACITY REACH PENDANTS

A reach pendant is a synthetic rope assembly with an attached stiffened tube and a loop on each end. The built-in reach tube enables the hookup man to place the pendant's top eye on the helicopter cargo hook while the helicopter hovers at a higher distance over the load.

There are two authorized reach pendants for use on sling loads:

- The 11,000-pound capacity Reach Pendant: The 11-k pendant is approximately 5 feet long with an 11,000-pound safe working load capacity. The top eye is black and has a smaller loop, while the bottom eye is green or black with a larger diameter. The safe working capacity is stamped on the reach tube. (NSN 4020-01-365-3115, part no. DSG-5-11K)
- The 25,000-pound capacity Reach Pendant: The 25-k pendant is approximately 5 feet long with a 25,000-pound safe working load capacity. The top eye is black with a smaller loop, while the bottom eye is green or black with a larger loop. The safe working load capacity is stamped on the reach tube. (NSN 4020-01-337-3185, part no. BOS-14-K7)

To use the 11-k or 25-k reach pendants, remove the sling apex fitting pin; place the pendant lower eye in the apex fitting; and reinstall the apex fitting pin to use the pendant with a sling set.

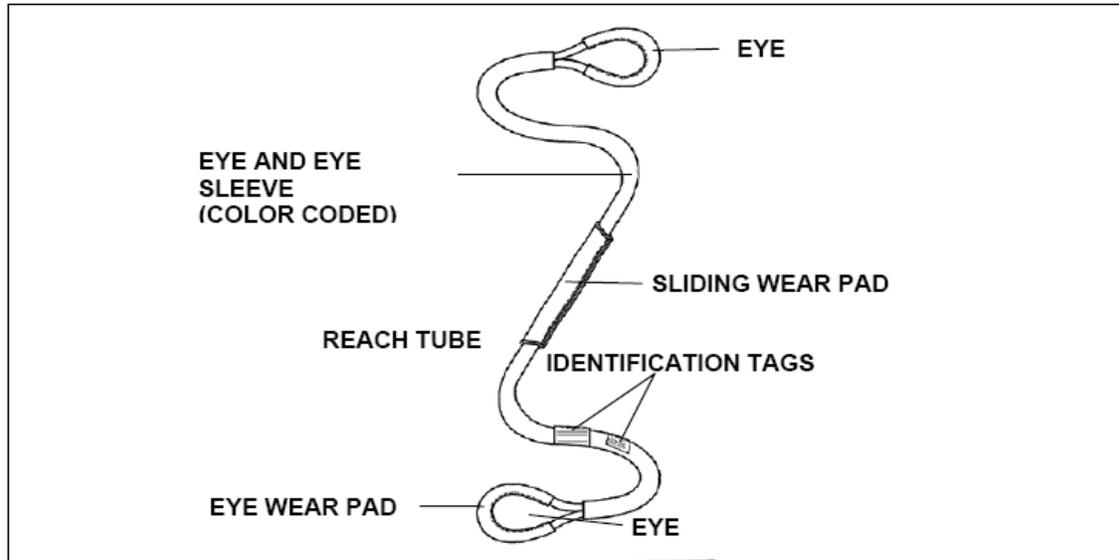
**Advantage of using the cargo hook reach pendant is there is no need for a static probe man.**



## SLINGLOADS

### POLYESTER ROUNDSLINGS

Polyester round slings are used primarily as a vertical pendant. The lifting capacity of polyester round slings vary with the size of the sling and the type of hitch used to attach the load. Each sling has two tags permanently sewn to the eye and eye sleeve identifying the size and capacity, as well as other important information necessary for the safe use of round slings. These slings are also color coded to designate the size of the sling.



### POLYESTER ROUNDSLINGS

#### LIFT CAPACITY BY HITCH TYPE

LENGTH IN FEET	COLOR	CHOKED	V ERTICAL	BASKET	WEIGHT
8	GREEN	4,200	5,300	10,600	4
17	GREEN	4,200	5,300	10,600	10
8	YELLOW	6,700	8,400	16,800	5
17	YELLOW	6,700	8,400	16,800	11
30	RED	10,600	13,200	26,400	26
65	BLUE	17,000	21,200	42,400	75
70	BLUE	17,000	21,200	42,400	81

\*NOTE: When attaching to an item by a choker hitch to an item of equipment there is no minimum circumference or diameter needed.

HAND AND ARM SIGNALS



ASSUME GUIDANCE

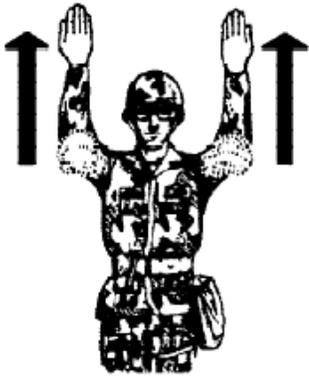
ARMS EXTENDED VERTICALLY STRAIGHT UP, PALMS FORWARD



HOVER

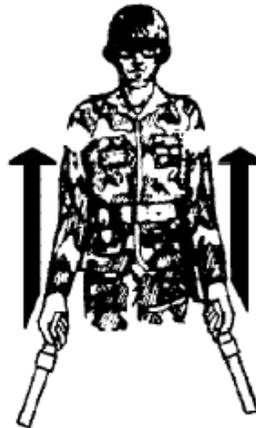
ARMS EXTENDED HORIZONTALLY SIDEWAYS, PALMS DOWNWARD

SLINGLOADS



**MOVE FORWARD**

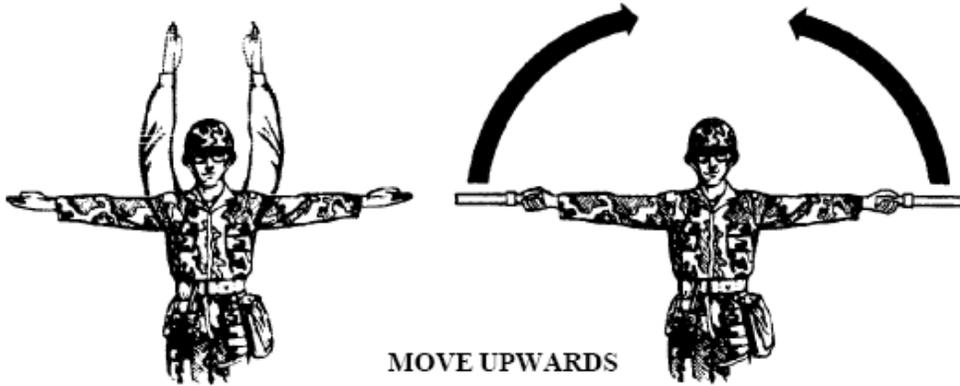
**ARMS A LITTLE ASIDE, PALMS FACING BACKWARDS AND REPEATEDLY MOVE UPWARD-BACKWARD FROM SHOULDER HEIGHT**



**MOVE BACKWARD**

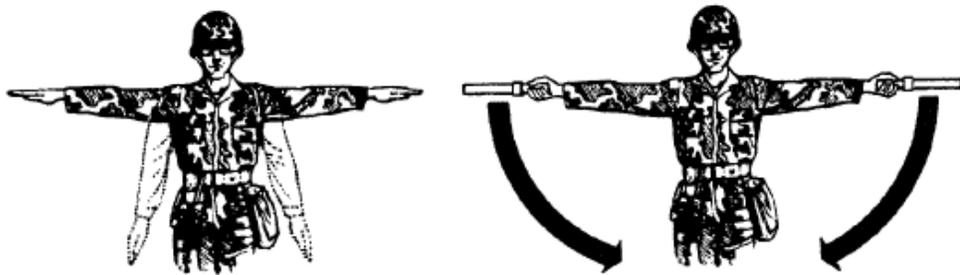
**ARMS BY SIDE, PALMS FACING FORWARD, ARMS SWEEPED FORWARD AND UPWARD REPEATEDLY TO SHOULDER HEIGHT**

SLINGLOADS



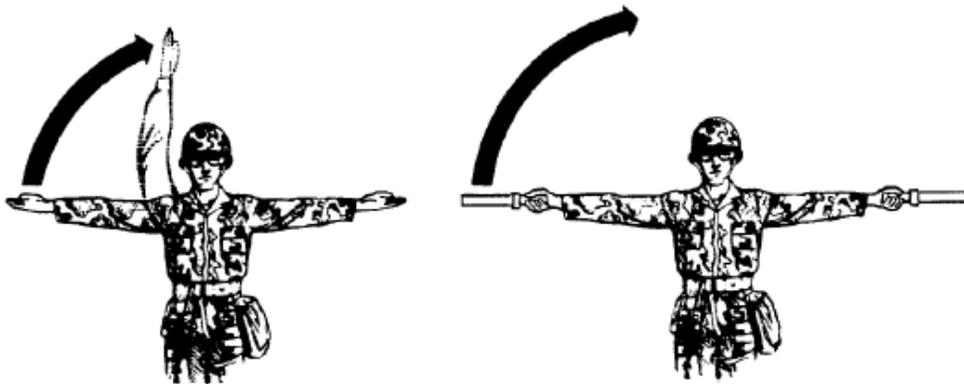
**MOVE UPWARDS**

**ARMS EXTENDED HORIZONTALLY SIDeways,  
BECKONING UPWARDS, WITH PALMS UP**



**MOVE DOWNWARDS**

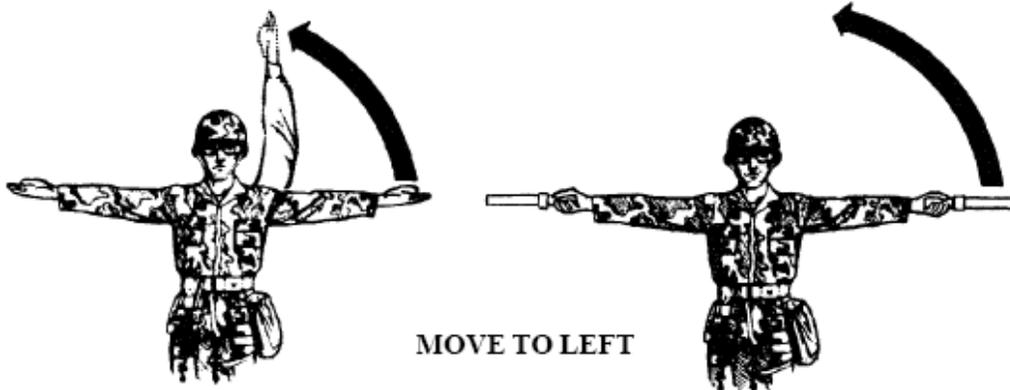
**ARMS EXTENDED HORIZONTALLY SIDeways, BECKONING  
DOWNWARDS, WITH PALMS TURNED DOWN**



**MOVE TO RIGHT**

**LEFT ARM EXTENDED HORIZONTALLY SIDeways IN DIRECTION  
OF MOVEMENT AND OTHER ARM SWUNG OVERHEAD IN SAME  
DIRECTION, IN A REPEATING MOVEMENT**

SLINGLOADS



MOVE TO LEFT

RIGHT ARM EXTENDED HORIZONTALLY SIDEWAYS IN DIRECTION OF MOVEMENT AND OTHER ARM SWUNG OVERHEAD IN SAME DIRECTION IN A REPEATING MOVEMENT



HOOKUP

RAISE HANDS ALTERNATELY ABOVE THE HEAD IN A "ROPE CLIMBING" MOTION TO TAKE UP SLACK



AFFIRMATIVE SIGNAL

HAND RAISED, THUMB UP



SLINGLOADS



**NEGATIVE SIGNAL**  
**HAND RAISED, THUMB DOWN**



**TAKEOFF**

**MAKE A CIRCULAR MOTION WITH RIGHT HAND OVERHEAD  
ENDING IN A THROWING MOTION IN THE DIRECTION OF  
TAKEOFF ALSO MEANS LOAD CLEAR, HOOKUP GOOD**



**LAND**



**ARMS CROSSED AND EXTENDED DOWNWARDS IN FRONT OF THE BODY**

SLINGLOADS



**STOP**

**HOLD ARMS CROSSED OVERHEAD, DO NOT MOVE**



**WAVE OFF - DO NOT LAND**

**CROSS ARMS REPEATEDLY OVERHEAD**

SLINGLOADS

**RELEASE SLING LOAD**



LEFT ARM EXTENDED FORWARD HORIZONTALLY, FIST CLENCHED, RIGHT HAND MAKING

HORIZONTAL SLICING MOVEMENT BELOW THE LEFT FIST, PALM DOWNWARD

**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**



**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**

## HELICOPTER LANDING ZONES

### REFERENCES:

FM 3-21.38

**INSTRUCTIONAL INTENT:** TO ENABLE THE PATHFINDER STUDENT TO PLAN FOR AND OPERATE DAY OR NIGHT AIR ASSAULT OPERATIONS. THE STUDENT WILL LEARN HOW TO PLAN, ORGANIZE AND OPERATE A **HLZ**; COORDINATE WITH GROUND UNIT COMMANDERS AND THE DUTIES AND RESPONSIBILITIES OF THE DIFFERENT ELEMENTS INVOLVED IN THE OPERATION OF AN **HLZ**.

### HELICOPTER LANDING ZONE OPERATIONS

#### Consideration Factors:

The factors that contribute to the process of HLZ site selection are grouped into two main categories:

1. **Tactical Considerations:** The considerations that pertain to the actual mission of the unit being moved. These considerations are the responsibility of the ground unit commander (GUC), and his staff and include the following:
  - The estimate of the situation using METT-TC (Mission, Enemy and friendly situations, Troops, Terrain and weather, Time available, and Civilians on the Battlefield).
  - Location of the objective from the tentative HLS.
  - Size of the element being moved.
  
2. **Technical Considerations:** The considerations that pertain to the technical aspect of selection and operation of a day or night HLS. These are the responsibility of the Pathfinder and are subdivided into the seven selection factors:
  - Size of the HLP
    - i. Size of HLP (Helicopter Landing Point): The size of the landing point will be decided by the aviation unit commander based on size/ type of aircraft, pilot/unit proficiency, whether the operation will take place during the day or at night, and atmospheric conditions.
  - Landing formations
  - Surface conditions
  - Obstacles
  - Approach and departure routes
  - Atmospheric conditions
  - Type of load

# HELICOPTER LANDING ZONES

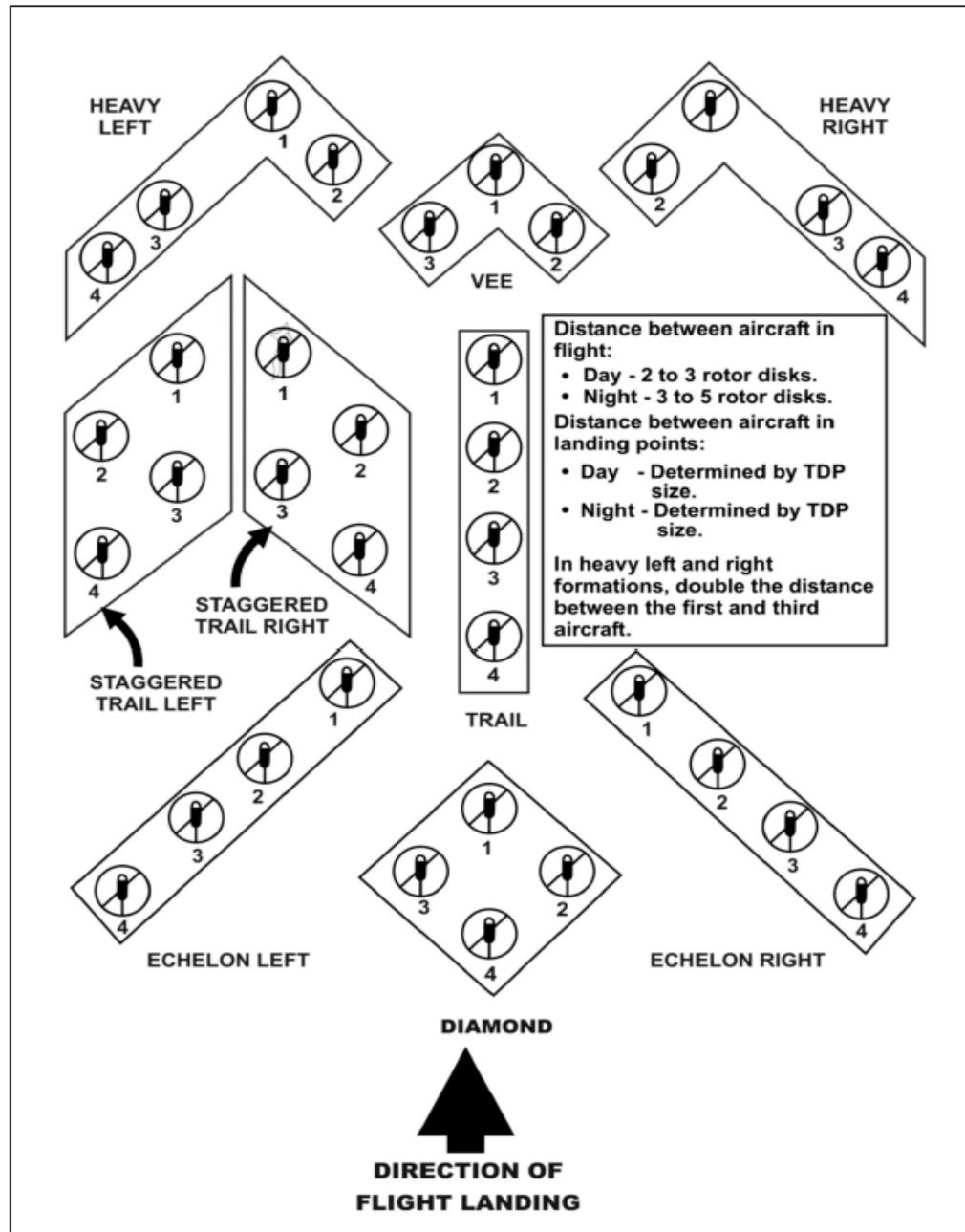
## AIRCRAFT TOUCHDOWN POINT SIZES

	Type of AC:	Diameter of TDP
1	MH-6 / AH-6	10 Meters
2	UH-72A / OH-58D	15 Meters
3	AH-1W / AH-1Z / AH-64 / UH-1Y / UH-1N	20 Meters
4	UH-60A / UH-60L / UH-60M / SH-60	25 Meters
5	MV-22B / CV-22B	30 Meters
6	CH-47(D/F) / CH-53(E/K)	35 Meters
7	Desert/Snow Landing Zones	100 Meters
	Sling Load Aircraft(Day)	100 Meters
8	Sling Load long lines	125 Meters
9	Sling Load Aircraft (Night)	150 Meters

LANDING FORMATION AND NUMBER OF AIRCRAFT

There are nine standard aircraft formations:

- Trail
- Staggered trail left
- Staggered trail right
- Echelon left
- Echelon right
- Heavy left
- Heavy right
- Diamond (Most Secure)
- Vee



## HELICOPTER LANDING ZONES

### SURFACE CONDITIONS AT THE SITE

Firm enough to support the weight of the aircraft and free of loose sand, snow, or debris (brown-out or white-out conditions).

NOTE: Add Environmental considerations for Cold Weather, desert, and mountains.

### OBSTACLES AT OR NEAR THE SITE

All obstacles will be removed, reduced or marked. A landing point will never contain an obstacle. (Obstacles are anything that is 18" high, wide or deep)

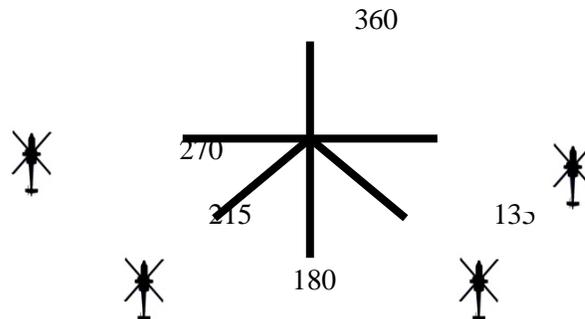
Ground slope can be considered an obstacle. The table below shows slope restrictions for each aircraft.

Type of AC	UH-1 (N/Y)	UH-60 (A/L/M)	CH-47(D/F)	CH-53	MV-22 CV-22	OH-58D	MH-6 AH-6
Max Slope	6	15	15	6	9	8	8

Always attempt to land the aircraft up-slope or side-slope. NEVER land an aircraft down-slope if at all possible!

### CROWS FOOT

Land Heading- 360



**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**



**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**

## AIR ASSAULT PLANNING AND PATHFINDER EMPLOYMENT

### REFERENCES:

FM 3-21.38

**INSTRUCTIONAL INTENT:** TO ENABLE THE PATHFINDER STUDENT TO PLAN FOR AND OPERATE DAY OR NIGHT AIR ASSAULT OPERATIONS AND TO ACTUALLY EMPLOY A PATHFINDER TEAM. THE STUDENT WILL LEARN COORDINATE WITH THE GROUND UNIT COMMANDER; AND THE DUTIES AND RESPONSIBILITIES OF THE DIFFERENT ELEMENTS INVOLVED IN THE OPERATION OF A PZ.



## AIR ASSAULT TASK FORCE

It provides commanders with truly unique capabilities. They can extend the battlefield, move and rapidly concentrate combat power like no other available forces. An air assault operation is designed to capitalize on the speed and mobility of the helicopters to achieve surprise.

## INTRODUCTION

Pathfinders mainly provide navigational aid and advisory services to military aircraft in areas designated by supported unit commanders. The pathfinders' secondary missions include providing advice and limited aid to units planning air assault or airdrop operations.

## EMPLOYMENT

The pathfinders provide navigational aid and air [traffic](#) advisories for aircraft assigned to the specific mission. This occurs at any phase of an air assault or ground operation that requires sustained support by military aircraft. The commander employs pathfinders on a short-term basis for some missions. He can redeploy the pathfinders after they complete a major troop lift or airdrop.

### **Primary Employment:**

- Ideally, the commander assigns a pathfinder team to each combat aviation battalion. This enhances the relationship between aviators and pathfinders, who have to work well together and understand each other in order to successfully complete a mission. Aviators and pathfinders must maintain a good working relationship, because of the ever increasing amount of pathfinder units and the assignment of pathfinder-coded positions to ground units.
- Even though the pathfinder- coded positions are rising, many units might have no trained pathfinder assets. In this case, higher headquarters must temporarily assign pathfinder assets from an external source to train supported unit personnel and oversee the conduct of pathfinder operations.
- Non-pathfinder-qualified soldiers receive training from the pathfinders and form into a company-level pathfinder team. Once trained, the team provides navigational aid, air traffic advisories, and any other relevant information. Around the clock, the pathfinder team supports any type of air movement or resupply operation conducted by or for the ground unit and supported by an aviation unit.
- Trained, equipped pathfinders select, mark, improve, and control landing sites. Engineers in direct support (DS) of lifted ground units may help pathfinders improve landing zones (LZs). In most situations, pathfinders perform two or more of these jobs at the same time. In each case,

## AIR ASSAULT PLANNING / PATHFINDER EMPLOYMENT

they start out by setting up ground-to-air radio communications. Also, combat lifesaver-qualified pathfinders supplement internal medical support.

### **Secondary Employment:**

- When not performing duties for supported units, pathfinders remain with their equipment, near and in communication with the supported ground unit CP. While pathfinders await further missions, the parent or supported CP may task them to help control the aviation unit base airfield, to perform minor demolition work, or, in staff sections, to perform map and aerial photographic work. However, before the pathfinders perform secondary missions, they must first train and perform routine maintenance on their equipment.

## AIR ASSAULT PLANNING

Successful air assault execution is based on a careful analysis of METT-T, and a detailed, precise reverse planning. Five basic plans that comprise the reverse planning sequence are developed for each air assault operation. They are:

- The Ground Tactical Plan
- The Landing Plan
- The Air Movement Plan
- The Loading Plan
- The Staging Plan

These plans should be developed concurrently by the Air Assault Task Force staff to make the best use of available time. The ground tactical plan is normally developed first and is the basis from which the other plans are derived.

Planning for air assault operations requires time; time to plan, time to prepare and time to brief (the 1/3; 2/3 rule). Planning for air assault operations is as detailed as time permits and should include completion of written orders and plans.

There are no existing units below division level that are capable of unilaterally conducting effective air assault operations. Pure units simply do not have adequate organic assets to ensure successful air assault missions accomplishment. Task organizing or mission-specific tailoring of forces is the norm for air assault operations, however; the battalion is the lowest level that has sufficient personnel to plan, coordinate and control an air assault operation. When company size operations are conducted, the bulk of the planning takes place at battalion or higher headquarters.

## GROUND TACTICAL PLAN

The foundation of a successful air assault operation is the ground unit commander's tactical plan, around which subsequent planning is based. The ground tactical plan specifies actions in the objective area to ultimately accomplish the mission and address subsequent operations.

### THE LANDING PLAN

The landing plan must support the ground tactical plan. This plan sequences elements into the area of operations, ensuring that units arrive at designated locations and times prepared to execute the ground tactical plan.

### AIR MOVEMENT PLAN

The air movement plan is based on the ground tactical plan and the landing plan. It specifies the schedule and provides instructions for air movement of troops, equipment and supplies from PZ's to LZ's. It also provides coordinating instructions regarding air routes, air control points, and aircraft speeds, altitudes and formations. The planned use of attack helicopters, to include security and link-up locations (if different from PZ), should be included in the air movement plan (when operations involve multiple lifts from the same PZ, a lift table is prepared to ensure lifts are properly organized).

The air movement plan is normally developed in coordination with the Air Movement Commander, or the aviation liaison officer, who provides technical assistance and recommendations.

### LOADING PLAN

The loading plan is based on the air movement plan and the ground tactical plan. It ensures that troops, equipment and supplies are loaded on the correct aircraft. Unit integrity is maintained when aircraft loads are planned. However, assault forces and equipment may be cross-loaded so that command and control assets, all types of combat power and a mix of weapons arrive at the LZ ready to fight. Aircraft loads are also placed in priority to establish a bump plan. A bump plan ensures that essential troops and equipment are loaded ahead of less critical loads in case of aircraft breakdown or other problems. Below brigade level, SOP's establishes loading plans. In any case, planning must cover the organization and operation of the PZ including load positions, day and night markings, and communications. The loading plan is most important when mixing internal and external loads and/or when mixing aircraft types (lift and medium sized helicopters)

### STAGING PLAN

The staging plan is based on the loading plan and prescribes the arrival time of ground units (troops, equipment and supplies) at the PZ in the proper order of movement.

### PATHFINDER PLANNING

To ensure success of the ground mission, pathfinders plan their own missions in detail. The more time they have to plan, the more detailed a plan they can make.

1. **Warning Order:** As soon as he receives word of a pending operation, the senior pathfinder issues a mission alert. He immediately follows with a warning order. He includes just enough information to allow the other pathfinders to start preparing for the operation
2. **Initial Preparation:** On receiving the alert or warning order, pathfinders inspect and, as needed, augment personnel and equipment. Pathfinders prepare equipment in the following order, from the most to the least important:
  - Radios
  - Navigation aids (electronic and visual).
  - Weapons
  - Essential individual equipment.
  - Assembly aids.
  - Other items as needed (mission specific)
3. The pathfinder element leader (or his representative) and the air mission commander begin coordinating with the supported aviation unit(s), ground unit(s), or both.
4. As the pathfinders receive more information, they reorganize personnel and equipment to better accomplish the mission. If time permits, they rehearse. They use available briefing aids, and they rehearse on terrain that most nearly resembles the AO.
5. To succeed, an operation must have security. So, each person receives only the information he must have to complete each phase of the operation. For example, the commander isolates any soldiers who know the details of the operation. The situation dictates the extent of security requirements.
6. **Coordination-** Ground and aviation commanders work together to coordinate and plan the details of operations for which they require pathfinder assistance.
7. In any type of operation (combat assault, reinforcement, artillery displacement, resupply, or evacuation), the pathfinders might have to recommend
  - Exact locations for DZs or LZs.
  - A time schedule.
  - Landing formations
  - Employment techniques.

### AIR MISSION BRIEFING

The Air mission briefing (AMB) is the last coordination meeting of key participants in an air assault mission and ensures that key aviation personnel are briefed and that the details of each plan are finalized.

## TERMS - LIFTS, SERIALS AND LOADS

To maximize operational control, aviation assets are designed to lifts, serials and loads.

1. **Loads:** Within each lift, there are also a specific number of loads. A load is personnel and/or equipment that are designated to be moved, by a specific aircraft. When planning the air movement, each aircraft within the lift is termed a load. For example, within a lift of 10 aircraft, there are aircraft one through ten. For each lift thereafter, there will also be loads one through ten. Each aircraft is accounted for within each lift.
  - An aircraft load may also be referred to as a "chalk," "chalk number," or "chalk load." Loads also must be designated within serials just as they are within lifts. Counting within the serials is continuous up to the total of aircraft within the lift. For example, in a lift a 16 aircraft, in lift one; serial one; there may be loads one through four. In lift one; serial four; there may be loads 13 through 16.
2. **Serials:** There may be times when a lift is too large to fly in one formation. In such cases the lift is organized into a number of serials. A serial is a tactical group of two or more aircraft under the control of a serial commander (aviator) and separated from other tactical groupings within the lift by time or space. The use of serials may be necessary to maintain effective control of aviation assets. For example, if a Nap-of-the-Earth flight were used, it would be difficult to control 16 aircraft as a single increment. However, a 16 aircraft lift made up of four serials of four aircraft each could be more easily controlled.
  - Serials may also be required when the capacity of available PZ's or LZ's is limited. If there is a lift of 16 aircraft and the available PZ's and/or LZ's will accommodate only four aircraft; it is best to organize into four serials of four aircraft each.
  - Serials are employed to take advantage of available flight routes. If there are several acceptable flight routes, the AATFC may choose to avoid concentrating his force along one flight route. If the commander wants all of his forces to land simultaneously on a single LZ, he does so by having all the serials converge at a common RP before landing. With a lift of 16 aircraft and four available flight routes, the AATFC could use four serials of four aircraft each. Each serial would use a different flight route. Each time there is a new lift; a new serial begins. For example, in lift one, there are serials one through four. In lift two, serials start again with one.
3. **Lifts:** A lift is one sortie of all utility and cargo aircraft assigned to a mission. That is, each time all assigned aircraft pick up troops and/or equipment and set them down on the LZ, one lift is completed. The second lift is completed when all aircraft place their second load on the LZ.
4. **Sequence of Departure:** The sequence of departure from PZ's is based upon the mission to be accomplished by each subordinate unit upon landing. Unit priorities are based on the sequence of arrival at their LZ's; Units are scheduled to depart (in order) based on flight route time to the LZ. For example, If Company A is to land first (at H-hour) and Company B second (at H+5), and Company B is 15 minutes farther (in flight time) from the LZ, it may depart the PZ before Company A.

DUTIES AND RESPONSIBILITIES OF KEY POSITIONS DURING A COMPANY AIR ASSAULT

- **COMPANY COMMANDER:** Has overall responsibility for the Air Assault operation. He plans the operation, briefs subordinate leaders, issues the OPORD, and conducts rehearsals. He rides in the AMC's Aircraft to ensure better command and control.
  - **PZ CONTROL OFFICER:** He may be the XO, 1SG, or a Platoon Leader.
  - **PZ CONTROL NCOIC:** Is the 1SG, a PLT SGT, Section SGT, or a Squad Leader.
  - **RTO:** With two radios: one on Combat Aviation Net and one on Company Command Net, sometimes called a PZ Control Net.
  - **CHALK-LINKUP GUIDES:** One per chalk. Their primary duties are to assist in link-up and movement of chawks from the unit AA to the chalk AA.
  - **#1 TDP SIGNALMAN:** Provides visual guidance for the A/C. He should have a seat on the lead A/C.
  - **SLINGLOAD TEAM:** A signalman, a hook-up man, and a static probe man.
1. **Aircraft Troop Commander/ Chalk Leader** - Each load has a designated troop commander. The aircraft troop commander is responsible for inspecting his load. He briefs his personnel on:
    - Seating arrangement
    - Loading procedures
    - Use of safety belts
    - In-flight procedures
    - Offloading procedures
  2. **Pickup Zone Control Officer:** Pickup zone control officer organizes, controls and coordinates operations in PZ's selected by the AATFC (S-4 selects and controls logistical PZ's).
    - The PZCO accomplishes the following:
      - Forms the control group: To manage operations, the PZCO forms a control group to assist him. It may include air traffic control, subordinate units and support personnel (manpower to clear the PZ, security). The PZCO selects a central location to position the group. The PZCO is designated by the AATFC, usually the S-3 Air. For battalion air assault operations, each company commander appoints a PZCO who operates a company PZ for the battalion.
      - Establishes communications: The PZCO should communicate on two primary radio frequencies; one to control movement and loading units and one to control aviation elements (combat aviation net). Alternate frequencies are provided as necessary.
      - Plans and initiates fire support: He plans fires near PZ's to provide all around protection (from available support) without endangering the arrival and departure of troops or aircraft.
      - Plans and initiates security: The PZCO ensures that adequate security is provided. Security protects the main body as it assembles, moves to the PZ, and is lifted out. Other forces should provide security elements if the PZ is within a

friendly area. Security comes from AATF resources if it is to be extracted from the objective area.

- Clears the PZ of obstacles.

**3. Pathfinder Team Responsibilities:**

- Ground to air communications:
- Inspect loads / sling loads:
- Prepare / mark site:
- Assist PZCO:

4. **Site Team Leader:** The site team leader reconnoiters, establishes, and operates the landing site. He supervises it and, at any time, might supervise the GTA radio operator. Some of his responsibilities include the following.

- Organizing at an objective rally point
- Reconnoitering to determine –
  - Long axis.
  - Usable area.
  - Ground slope (compute).
  - Land heading.
  - Best landing formation.
- Designating sling-load point(s)
- Emplacing and briefing the GTA radio operator.
- Clearing touchdown and sling load points.
- Organizing personnel and loads for air movement
- Clearing or marking obstacles.
- Preparing for day or night operations.
- Continuing to improve the site.

5. **Extra Pathfinders:** These Soldiers operate the GTA radio and the pathfinder internal radio net (if established), position and operate navigation and assembly aids, and clear or mark obstacles.

Four factors dictate the number of extra pathfinders employed.

- The size of landing site.
- The expected density of air traffic.
- The number and type of visual and electronic aids used.
- The tactical situation

**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**



**DO NOT PROCEED UNTIL DIRECTED  
BY AN INSTRUCTOR**

## DROP ZONE OPERATIONS

### REFERENCES:

AFI 13-217

AFI 11-231

FM 3-21.38

FM 3-21.220

USASOC REG. 350-2

**INSTRUCTIONAL INTENT:** TO FAMILIARIZE THE PROSPECTIVE PATHFINDER STUDENT WITH THE PLANNING AND EXECUTION OF DAY NIGHT AIRBORNE OPERATIONS, INCLUDING DROP ZONE SELECTION FACTORS, AIRDROP AIRSPEEDS, AIRDROP ALTITUDES, TYPES AND METHODS OF AIRDROP AND OBSTACLES.

## DROP ZONE OPERATIONS

### DEFINITION OF A DROP ZONE

A designated area where personnel and/or equipment are delivered by means of a parachute or in the case of certain items, by free drop. The ground unit commander is responsible for designating the drop zone location. All drop zones must be on government owned for government leased land with a current survey or tactical assessment.

### THE EIGHT DROP ZONE SELECTION FACTORS

There are eight drop zone selection factors considered when determining the suitability of a drop zone. The Drop Zone Support Team Leader (DZSTL) must be able to advise the ground unit commander on the suitability of the drop zone. There is no selection factor of more importance than the others. They all must be taken into consideration equally.

- Airdrop Airspeed
- Drop Altitude
- Type of Airdrop
- Method of Airdrop
- Obstacles
- Access
- Adequate Approach and Departure Routes
- Size of Drop Zone

### AIRDROP AIRSPEEDS

The aircraft airspeed will determine the amount of time the aircraft will fly over the drop zone. The slower the aircraft flies, the greater the number of jumpers or amount of equipment the aircraft can deliver. Airdrop airspeeds are measured in knots indicated airspeed or KIAS.

<b>AIRDROP AIRSPEEDS (KIAS)</b>	
<b>TYPE OF AIRCRAFT</b>	<b>DROP SPEED</b>
UH-60 Blackhawk	65 to 90 knots (Planning 70 knots)
CH-47	75 to 110 knots (Planning 90 knots)
C-23 Sherpa	90 to 110 knots (Planning 105 knots)
C-130/C-17 (personnel/door bundles)	130-135 knots (Planning 130 knots)
C-130 (CDS/Equipment/Combination)	130-140 knots (Planning 140 knots)
C-17 (CDS/Equipment/Combination)	140-150 knots (Planning/Optimum 140 knots)
C-17 Heavy Equipment	Planning 150 knots

## DROP ZONE OPERATIONS

USAF Fixed Wing Airdrop Airspeeds Personnel/Equipment (KIAS)		
TYPE OF LOAD	C-130	C-17
Personnel & Door Bundle Static Line	130	(130-135) 130
CDS/Combination & Equipment/Combination	130-140*	145-+/-5
Heavy Equipment	140	150
Free Fall (Free Drop)	140	145-+/-5
High Velocity CDS	130-140*	145-+/-5
Wedge	130-140*	145-+/-5
Ahkio Sled	130-140*	145-+/-5
CRRC (Combat Rubber Raiding Craft)	130-140*	145-+/-5
HSLADS	In Route Airspeed	

NOTE 1: \* Used when gross weight is above 120,000 pounds. For combination drops, use the higher airspeed KIAS. A combination drop exist when different aircraft in a formation are dropping different types loads during the same pass over the drop zone or when different types of loads are exiting the same aircraft during the same pass over the drop zone.

### DROP ALTITUDE

Drop Altitude is measured from Above Ground Level (AGL). This is from the highest field elevation on the drop zone to the drop aircraft. However, some drop aircraft may request the drop altitude in Mean Sea Level (MSL) as measured from sea level. To calculate, take the field elevation and round it up to the nearest 50 feet. (e.g. 537 feet becomes 550 feet), then add the drop altitude in feet AGL. To convert map altitude in meters to feet multiply by 3.28.

550 ft. field elevation

EXAMPLE: Field Elevation = 537 feet roundup to 550 feet

+ 800 ft. drop altitude AGL

1350 MSL

## DROP ZONE OPERATIONS

Drop Altitudes		
Rotary Wing & STOL Delivery Altitudes:		
Personnel	Day or Night	1500 Feet AGL (Planning)
Bundles	Day	300 Feet AGL (Planning)
	Night	500 Feet AGL (Planning)
LCLA	Day	150 Feet AGL (Planning)
	Night	150 Feet AGL (Planning)
NOTE: If the rotary wing aircraft is flying 90 KIAS or faster the aircraft can drop personnel at 1250 Feet AGL. (Minimum)		

USAF Fixed Wing Delivery Altitudes Personnel:		Planning Drop Altitude	1000 Feet AGL
Combat Operations (War)	Determined Jointly by Airborne and Airlift Commanders		
Tactical Training	800 Feet AGL (Planning for Tactical Training)		
Basic Airborne Training	1250 Feet AGL (Planning for BAC)		
SATB-P	500 Feet AGL (Planning for SATB-P)		

USAF Fixed Wing Delivery Altitudes Door Bundles:		Planning Drop Altitude	1000 Feet AGL
Type of Parachute	Altitude C-17 (Minimums)	Altitude C-130 (Minimums)	
G-14	300 Feet AGL	300 Feet AGL	
T-10 Cargo	300 Feet AGL	400 Feet AGL	

CDS Delivery Altitudes for C-17:		Planning Drop Altitude	600 Feet AGL
Type of Parachute	Number Parachutes or Containers	Airdrop Altitude	
G-14	1 or 2 Containers	300 Feet AGL (Minimum)	

CDS Delivery Altitudes for C-130:		Planning Drop Altitude	600 Feet AGL
Type of Parachute	Number Parachutes or Containers	Airdrop Altitude	
G-14	1 or 2 Containers	400 Feet AGL (Minimum)	

## DROP ZONE OPERATIONS

USAF Fixed Wing Delivery Altitudes Heavy Equipment:		Planning Drop Altitude	1100 Feet AGL
Type of Parachute	Altitude C-17 (Minimum)	Altitude C-130 (Minimum)	
G-12E	550 Feet AGL	550 Feet AGL	

USAF C17 Dual Row Delivery Altitudes Heavy		Planning Drop Altitude	1200 Feet AGL
Type of Parachute	Altitude C-17 (Minimum)		
G-12E	550 Feet AGL		

USAF Fixed Wing Delivery Altitudes JPADS:		Planning Drop Altitude	10,000 Feet AGL
		MINIMUM DROP ALTITUDE	3500 Feet AGL

\*NOTE 1: Combination drops will use the highest airdrop altitude. A combination drop exist when different aircraft in a formation are dropping different types loads during the same pass over the drop zone or when different types of loads are exiting the same aircraft during the same pass over the drop zone.

\*NOTE 2: Minimum airdrop altitude for heavy equipment using the 5000-pound parachute release is 1000 feet AGL or by parachute type (whichever is higher).

### TYPES OF AIRDROP

There are three types of delivery for airdrop items. They are low velocity, high velocity, and free drop. The type of delivery will normally determine the location of the control center. The primary difference between the types of delivery is the type of parachute used or the lack of a parachute, and the loads being delivered.

- **Low Velocity:** Utilized for sensitive equipment and personnel drops. The canopy attached is used to slow the rate of decent to prevent damage to equipment or injury to the jumper.
- **High Velocity:** The chute is designed to stabilize the load and reduce the rate of descent to a magnitude, which ensures acceptable landing shock.
- **Free Drop:** Used for non-sensitive items only. No parachute is attached to the load

## DROP ZONE OPERATIONS

\*NOTE 1: When determining the suitability of the drop zone and considering method of delivery, caution should be taken when using high velocity or free drop around built up areas or airfields because risk of damage to buildings or airstrips.

### METHODS OF AIRDROP

The type of load and the method it exits the aircraft will determine the amount of time it takes for the load to exit that aircraft based on drop zone type.

1. **Personnel and Door Bundles:** This type of airdrop load self-exits, is pushed, or is skidded from the paratroop/aircraft door or aircraft ramp.
2. **Gravity:** The aircraft maintains a “nose-high” attitude (if required) and in-flight release of load restraint allows the load to roll out of the aircraft. A rigging system may be used to initiate and accelerate load movement.
3. **Extraction:** An extraction parachute pulls the load from the cargo compartment.

### OBSTACLES

The DZSTL is responsible for conducting a reconnaissance and declaring obstacles on and near the drop zone.

- Obstacles to personnel: Any feature, either natural or man-made that would pose a hazard to the jumper or prevent the jumper from accomplishing his or her mission.
- Obstacles to equipment: Any feature, either natural or man-made that may hinder the recovery of the load or cause damage to a load.

#### Three Primary Obstacles:

1. TREES: 35 feet or higher impeding recovery of personnel or equipment. (35 feet is the distance from the top of a personnel parachute to the harness.)
2. WATER: 4 feet deep or deeper AND 40 feet wide at the widest point, within 1000 meters of any edge of the DZ. The DZSTL can declare any body of water a water obstacle.
3. POWER LINES: For the purpose of this publication, all restrictions apply to aerial power lines operating at 50 volts or greater.
  - a. Power lines present a significant hazard to jumpers. Jumpers can sustain life threatening injuries from electric shock and/or falls from a collapsed canopy.
  - a. To reduce this hazard, first attempt to site DZ so no power lines are located within 1000 meters of any DZ boundary.
  - b. If power lines are located within 1,000 meters of any boundary, coordinate with the Power Company to shut off power NLT 15 minutes prior to TOT.
  - c. If power cannot be interrupted, the flying mission commander, aircrew, and jumpmaster must conduct a risk assessment of the mission. Include as a minimum; type jump, jumper experience, aircrew experience, ceiling, and surface/altitude wind limits required to approve, suspend, or cancel the operation. To further minimize risks, consider altering the mission profile to raise/lower drop altitudes, change DZ run-in/escape headings, or remove inexperienced jumpers from the stick. If possible, mark power lines with visual markings (lights, smoke, or VS-17 panels).

**WARNING:** At no time will military personnel attempt to climb power line poles to position or affix markings to wires or poles.

### ACCESS

Avoid major obstacles to personnel and equipment between the drop zone and the objective. Ensure that adequate routes are available for equipment recovery.

## DROP ZONE OPERATIONS

### ADEQUATE APPROACH AND DEPARTURE ROUTES

Routes for the aircraft both into and away from the drop zone must be considered.

- No-Fly areas.
- Obstacles to the aircraft, e.g. TV towers, high-tension lines, etc.
- Terrain higher than the drop zone.
- Enemy situation and location.

### SIZE OF THE DROP ZONE

- Verbally Initiated Release System (VIRS) size dictated by FM 3-21.38
- Ground Marked Release System (GMRS) size dictated by USASOC Reg. 350-2
- Computed Air Release Point (CARP) size dictated by AFI 13-217

### VIRS TRANSMISSION

Instructions transmitted to the aircraft must be concise. Example: "Steer right", "On course", etc.

- "STEER LEFT/RIGHT" will be given to align the aircraft on desired inbound heading.
- "ON COURSE" will be given when the aircraft is on course.
- "STAND-BY" will be given to the aircraft at approximately 8 - 10 seconds to release or as briefed.
- "EXECUTE" will be transmitted three times minimum when the aircraft reaches the predetermined RP on the ground

This example pertains to a non-tactical scenario after all information pertaining to the drop has been coordinated for with the aircrew such as drop heading, drop altitude, etc.

GTA Transmission	Pilot Transmission
	A1L16 this is Raven 11 – over
Raven 11 this is A1L16 – over	
	L16 this is Raven 11, CCP inbound – over
Raven 11 this is L16, State Number, Type and Intentions - over	
	L16 this is Raven 11, I am a single UH-60 with paradrop, inbound to your location - over
Raven 11 this is L16, Heading ___ degrees, Distance __ kilometers, Drop heading ___ degrees, signal on call, I can accept your aircraft at my location with __ jumpers per pass. Be advised all no fly areas are in effect. Continue approach for visual identification.– over	
	L16 this is Raven 11, Roger – over
Raven 11 this is L16, I am at your ___ o'clock ___ meters. Signal out, can you identify? – over	
	L16 this is Raven 11, I identify orange VS-17 panel – over
Raven 11 this is L16, Visual contact. Enter (Right / Left / Up /	

## DROP ZONE OPERATIONS

Cross / Down Wind), and report base – over	
	L16 this is Raven 11, on base – over
Raven 11 this is L16, Roger – over	
<b>ONCE AIRCRAFT IS IN POSITIONED ON BASE</b>	
Raven 11 this is L16, turn drop heading ___ ___ ___ degrees – over	
	L16 this is Raven 11, turning drop heading ___ ___ ___ - over
Steer Left/Right; on course	
	Steering Left/Right; on coarse
<b>8 to 10 seconds out;</b> with one jumper, stand by	
	Standing by
With one jumper, execute, execute, execute – over	
Raven 11 this is L16, I observe one jumper clear and away. State intentions. Report when clear of my control zone. Be advised all no fly areas are in effect – over	
	A1L16 this is Raven 11, intention classified. Clear of your control zone – over
Raven 11 this is A1L16, out	

\*NOTE: If the drop aircraft is going to land on the drop zone, the DZSTL will advise the pilot when all jumpers are on the ground and are clear of the landing area prior to giving clearance to land.

## HANDOUTS

VIRS TRANSMISSION

**GTA Transmission**

Raven 11 this is A1L16 – over

Raven 11 this is L16, State Number, Type and Intentions - over

Raven 11 this is L16, Heading \_\_\_ degrees, Distance \_\_ kilometers, Drop heading \_\_\_ degrees, signal on call, I can accept \_\_ jumpers at my location. Be advised all no fly areas are in effect. Continue approach for visual identification.– over

Raven 11 this is L16, I am at your \_\_\_ o'clock \_\_\_ meters. Signal out, can you identify? – over

Raven 11 this is L16, Visual contact. Enter (Right / Left / Down Wind), and report base – over

Raven 11 this is L16, Roger – over

**ONCE AIRCRAFT IS POSITIONED FOR FINAL ON DROP HEADING**

Raven 11 this is L16, turn drop heading \_\_\_ degrees – over

Raven 11 this is L16, Steer Left/Right; on course

**8 TO 10 SECONDS OUT**

Raven 11 this is L16, with one jumper, stand by - over

Raven 11 this is L16, with one jumper, execute, execute, execute – over

Raven 11 this is L16, I observe one jumper clear and away. State intentions. Report when clear of my control zone. Be advised all no fly areas are in effect – over

Raven 11 this is A1L16, out

**Pilot Transmission**

A1L16 this is Raven 11 – over

L16 this is Raven 11, CCP inbound – over

L16 this is Raven 11, I am a single UH-60 with paradrop, inbound to your location - over

L16 this is Raven 11, Roger – over

L16 this is Raven 11, I identify orange VS-17 panel – over

L16 this is Raven 11, on base – over

L16 this is Raven 11, turning drop heading \_\_\_ - over

L16 this is Raven 11, standing by – over

A1L16 this is Raven 11, intention classified. Clear of your control zone – over

CCP TRANSMISSION

**GTA Transmission**

Raven 11 this is A1L16 – over

Raven 11 this is L16, state number, type and intention – over

Raven 11 this is L16, Heading \_\_\_ degrees, Distance \_\_ kilometers, Land heading \_\_\_ degrees, signal on call, I can accept your aircraft at my location. Be advised all no fly areas are in effect. Continue approach for visual identification. – over

Raven 11 this is L16, I am at your \_\_ o'clock \_\_\_ meters, signal out, can you identify? – over

Raven 11 this is L16, visual contact. Form you own approach and report final – over

Raven 11 this is L16, wind \_\_\_ degrees at \_\_ knots. You are clear to approach (land). Take all further commands from the signalman on the ground – over

Raven 11 this is L16, wind \_\_\_ degrees at \_\_ knots. You are cleared to depart. State intention. Report when clear of my control zone. Be advised all no fly areas are in effect – over

Raven 11 this is A1L16 - out

**Pilot Transmission**

A1L16 this is Raven 11 – over

L16 this is Raven 11, CCP inbound – over

L16 this is Raven 11, single UH-60 with slingload inbound for your location – over

L16 this is Raven 11, roger – over

L16 this is Raven 11, identify orange VS-17 panel – over

L16 this is Raven 11, on final – over

L16 this is Raven 11, request departure instructions – over

A1L16 this is Raven 11, intentions classified. Clear of you control zone – over

MEDEVAC REQUEST TRANSMISSION

**GTA Transmission**

**Pilot Transmission**

**CHANGE FREQUENCY**

Medevac Control this is A1L16 – over

A1L16 this is Medevac Control – over

Medevac Control this is L16, Request Medevac – over

L16 this is Medevac Control, Send Request – Over

Medevac Control this is L16, Request as follows:

Line 1: (Grid Coordinates to your site)

Line 2: (Your Call Sign and Primary / Alternate Frequency)

Line 3: (# of patients by precedents)

Line 4: (Special Equipment)

Line 5: (# of patients by type)

Medevac Control this is L16, End request, Read back – over

A1L16 this is Medevac Control, Have all pertinent information – over

Medevac Control this is A1L16 – out

**CHANGE FREQUENCY**

Raven 11 this is A1L16 – over

A1L16 this is Raven 11 – over

Raven 11 this is L16, State Number, Type and Intention – over

L16 this is Raven 11, 6 kilometers S.W. of your location – over

Raven 11 this is L16, Heading \_\_\_ degrees, Distance \_\_\_ kilometers, Land heading \_\_\_ degrees, signal on call, I can accept your aircraft at my location. Be advised all no fly areas are in effect. Continue approach for visual identification. – over

L16 this is Raven 11, Single UH-60 inbound for casualty pickup – over

Raven 11 this is L16, I am at your \_\_\_ o'clock, \_\_\_ meters. Signal out, can you identify? – over

L16 this is Raven 11, Roger – over

Raven 11 this is L16, Visual contact. Form your own approach and report final – over

L16 this is Raven 11, Identify orange VS-17 panel – over

Raven 11 this is L16, Wind at \_\_\_ degrees at \_\_\_ knots. You are cleared to approach (land). Take all further commands from the signalman on the ground – over

L16 this is Raven 11, on final – over

Raven 11 this is L16, Wind \_\_\_ degrees at \_\_\_ knots. You are clear to depart. State intention. Report when clear of my control zone. Be advised all no fly areas are in effect – over

L16 this is Raven 11, Request departure instructions – over

Raven 11 this is A1L16 – out

A1L16 this is Raven 11, Intentions classified. Clear of your control zone – over

U.S. ARMY PATHFINDER SCHOOL

\*\*\* NOTE: For transmissions with a single, non-MEDEVAC aircraft, enter them in the closest and quickest leg of traffic, and have them report base.

\*\*\* NOTE: For any type of situation with a traffic pattern all ready established, with aircraft in it, all aircraft must enter the traffic pattern.

**Sling Load Deficiencies**  
**Major -32 / Minor -16**

**HMMWV**

**MAJOR**

WRONG FUEL LEVEL  
PARKING BRAKE NOT ENGAGED  
TURRET BRAKE NOT ENGAGED

**CARGO NET / FUEL DRUM**

**MAJOR**

HOOKS NOT TAPED  
WRONG POA TO LOAD  
CLEVIS NOT TAPED

**A-22 CARGO BAG**

**MAJOR**

CLEVIS NOT TAPED  
WRONG POA TO LOAD

**HIGH MOBILITY TRAILER**

**MAJOR**

PARKING BRAKE NOT ENGAGED  
LOAD NOT SECURED  
CHAINS NOT PADDED

**HMMWV**

**MINOR**

HOOD LATCH NOT SECURED  
MIRRORS NOT SECURED  
STEERING WHEEL NOT SECURED  
TRANSMISSION NOT IN NEUTRAL  
WRONG WHEEL ALIGNMENT  
FUEL CAP NOT SECURED  
DOORS NOT SECURED  
GLASS / PLASTIC NOT SHATTERPROOFED  
KEY MISSING FROM LOCK  
TURRET NOT IN THE 6 O'CLOCK POSITION  
HATCH COVER NOT SECURED

**CARGO NET / FUEL DRUM**

**MINOR**

APEX TETHER CORD MISSING  
WRONG LEG SEQUENCE  
LEGS MISROUTED THROUGH NET  
HOOKS NOT ALTERNATING  
QUICK DISCONNECT ADAPTER NOT TAPED  
SHACKLE MISSING COTTER PIN  
CLEVIS NOT HAND TIGHT

**A-22 CARGO BAG**

**MINOR**

BUTTERFLY SNAP FACING UP  
BUTTERFLY SNAP NOT TAPED  
LACING CORD MISROUTED  
WRONG LACING CORD  
CLEVIS NOT HAND TIGHT  
EXCESS LACING CORD NOT TAPED  
24" SUSPENSION WEB TWISTED  
LATERAL STRAP TWISTED  
EXCESS LATERAL STRAP NOT SECURED  
EXCESS LATERAL STRAP SECURED OVER FA  
EXCESS LATER STRAP ROLLED WRONG  
EXCESS 188" STRAP NOT SECURED  
EXCESS 188" STRAP SECURED OVER FA  
EXCESS 188" STRAP ROLLED WRONG  
188" STRAP MISROUTED

**HIGH MOBILITY TRAILER**

**MINOR**

LIGHT CABLE NOT SECURED  
SAFETY CHAINS NOT SECURED  
REAR JACKS NOT SECURED  
TAILGATE NOT SECURED  
GLASS / PLASTIC NOT SHATTERPROOFED  
REAR JACKS NOT FULLY EXTENDED  
EXCESS CGU-1/B NOT SECURED

**WATER TRAILER**

**MAJOR**

BUFFER MISSING  
PARKING BRAKE NOT ENGAGED

**HOWIZTER**

**MAJOR**

WHEEL KNOCK OFF HUB NOT HORIZONTAL  
CHAINS NOT SECURED ON HUB  
PARKING BRAKE NOT ENGAGED

COMMON TO ALL

MAJOR

CASTELLATED NUT MISSING  
SNAP RING MISSING  
GRAB HOOK INVERTED  
LOCKNUT MISSING  
WRONG WEIGHT OF LOAD  
F.O.D.  
SLING LEGS MISROUTED  
WRONG LICK COUNT  
CARGO HOOK REACH PENDANT INVERTED  
WRONG APEX ON SLING SET  
WRONG POA TO A/C  
WEIGHT OF LOAD EXCEEDS A/C CARGO HOOK  
CAPACITY  
WEIGHT OF LOAD EXCEEDS SLING SET CAPACITY

**WATER TRAILER**

**MINOR**

MANHOLE NOT SECURED  
HOSES NOT SECURED  
FAUCET BOX NOT SECURED  
JACK HANDLE NOT SECURED  
SAFETY CHAINS NOT SECURED  
GLASS / PLASTIC NOT SHATTERPROOFED

**HOWITZER**

**MINOR**

MUZZLE PLUG MISSING  
CGU-1/B STRAP MISROUTED  
SIGHT COVER NOT SECURED  
EXCESS CGU-1/B NOT SECURED

COMMON TO ALL

MINOR

CASTELLATED NUT INVERTED  
WRONG SPACER ON APEX  
APEX MISSING COTTER PIN  
PERMANENT TIE V.S. BREAKAWAY TIE  
BUFFER MISSING OUT OF DONUT  
CLUSTER BREAKAWAY TIE MISSING  
TYPE IV CONNECTOR LINK MISSING ALUMINUM  
BUFFER  
EXCESS A7A SECURED OVER FA  
EXCESS A7A NOT SECURED  
EXCESS A7A ROLLED WRONG  
A7A STRAP MISROUTED

**PAGE INTENTIONALLY LEFT BLANK**

