FM 21-60

Visual Signals

HEADQUARTERS, DEPARTMENT OF THE ARMY
SEPTEMBER 1987

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FIELD MANUAL
No. 21-60

*FM 21-60

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 30 September 1987

VISUAL SIGNALS

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*This publication supersedes FM 21-60, 10 December 1984.

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PREFACE

Efficient combat operations depend on clear, accurate, and secure communication among ground units, Army aviation, and supporting Air Force elements. Control and coordination are achieved by the most rapid means of communication available between men and units. When electrical means of communication are inadequate, or not available, a station-to-station system of visual communication is an alternate means for transmitting orders, information, or requests for aid and/or support.

Through the use of arm-and-hand signals, flags, pyrotechnics, and other visual aids, messages may be transmitted. Although many of these signals are widely used, incorporated into unit communications-electronics operating instructions and standing operating procedures, Army wide standardization will increase their effectiveness.

The purpose of this manual is to standardize visual signals and to serve as a training reference.

It is a guide. It does not cover all visual signals used in the Army, only those that are commonly used. Signals used with equipment (for example, mortar) or during operations (for example, pathfinder, jumpmaster) are in manuals that relate to such operations.

The proponent of this publication is HQ TRADOC. Submit changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward to Commandant, US Army Infantry School, ATTN: ATSH- B-ID, Fort Benning, GA 31905- 5410.

Unless otherwise stated, whenever the masculine gender is used, both men and women are included.

CHAPTER 1

INTRODUCTION

1-1. General

Visual signals are any means of communication that require sight and can be used to transmit prearranged messages rapidly over short distances. This includes the devices and means used for the recognition and identification of friendly forces.

1-2. Types of Visual Signals

The most common types of visual signals are arm-and-hand, flag, pyrotechnic, and ground-to-air signals. However, soldiers are not limited to the types of signals discussed and may use what is available. Chemical light sticks, flashlights, and other items can be used provided their use is standardized within a unit and understood by soldiers and units working in the area. The only limit is the soldier's initiative and imagination.

1-3. Limitations

Visual signals have certain limitations

a. The range and reliability of visual communications are significantly reduced during periods of poor visibility and when terrain restricts observation.

b. They may be misunderstood.

c. They are vulnerable to enemy interception and may be used for deception purposes.

CHAPTER 2

Arm-and-Hand Signals for Ground Forces

2-1. General

Signals illustrated with a single arrowhead indicate that the signal is not continuously repeated; however, it may be repeated at intervals until acknowledged or the desired action is executed. Signals illustrated with double arrowheads are repeated continuously until acknowledged or the desired action is taken. Signals are illustrated as normally seen by the viewer. Some signals are illustrated in oblique, right angle, or overhead views for clarity.

2-2. Signals to Control Vehicle Drivers and/or Crews

These are the arm-and-hand and light signals used to guide and direct vehicles. Flashlights are used at night to direct vehicles. Blue filters should be used whenever possible in order to preserve the driver's night vision. Chemical lights can also be used and have less effect on the driver's night vision (Figures 2-1 through 2-22).



Extend the arm sideways, slightly above the horizontal; palm to the front; wave the arm to and from the head several times.

Figure 2-1. ATTENTION.

Extend the arm toward the person being signaled; then raise the arm slightly above horizontal, palm outward.

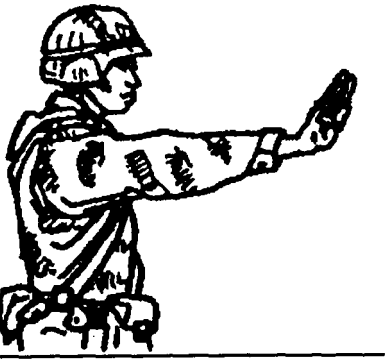


Figure 2-2. I AM READY, or READY TO MOVE, or ARE YOU READY?

Two or three movements upward with the open hand, palm uppermost.



Figure 2-3. MOUNT

Raise both arms and cross wrists above the head, palms to the front.

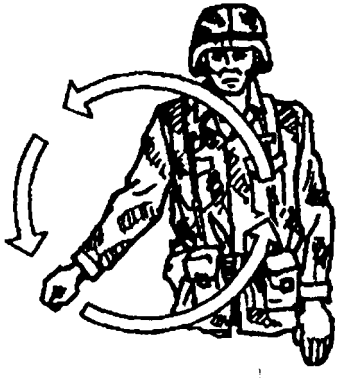


Figure 2-4. DISREGARD PREVIOUS COMMAND, or AS YOU WERE.



Raise both arms sideward to the horizontal; bend both arms at the elbows and place both hands across the face, palms to front.

Figure 2-5. I DO NOT UNDERSTAND.





DAY

Simulate cranking of engines by moving the arm, with the fist, in a circular motion at waist level.

NIGHT

Move a light to describe a horizontal figure 8 in a vertical plane in front of body.

Figure 2-6. START ENGINE, or PREPARE TO MOVE.





DAY

Raise the hand upward to the full extent of the arm, palm to the front. Hold that position until the signal is understood.

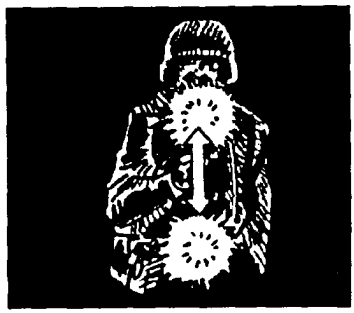
NIGHT

Move a light horizontally back and forth several times across the path of approaching traffic to stop vehicles. Use the same signal to stop engines.

NOTE: For alternate signal to stop vehicles, see Figure 2-17.

Figure 2-7. HALT, or STOP.





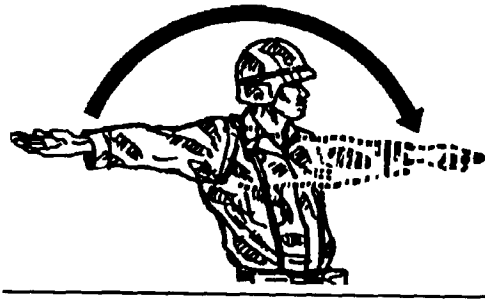
DAY

Raise the fist to shoulder level; thrust the fist upward to the full extent of the arm and back to shoulder level (rapidly) several times.

NIGHT

Move a light vertically several times in front of the body.

Figure 2-8. INCREASE SPEED.



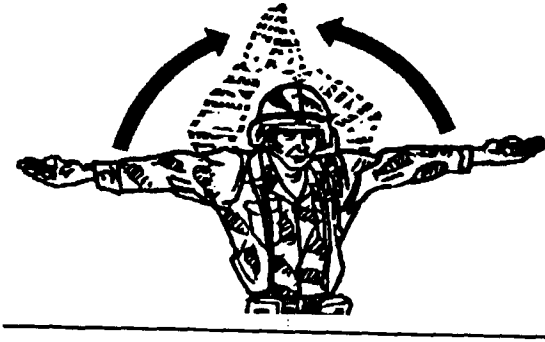
Face the direction of movement; hold the arm extended to the rear; swing the arm overhead and forward in the direction of movement (hold at the horizontal), palm down.

Figure 2-9. ADVANCE or MOVE OUT.



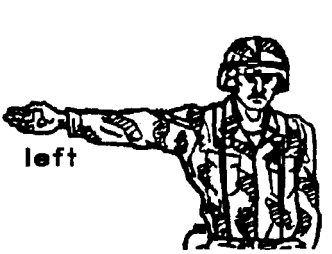
Extend the arms overhead, palms inward, then slowly lower arms to a horizontal position.

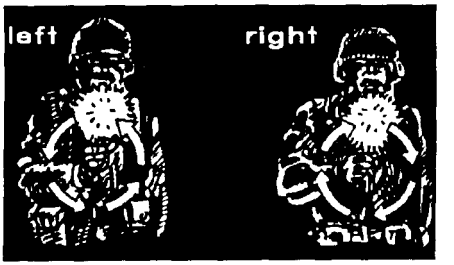
Figure 2-10. OPEN UP.



Extend both arms parallel to the ground, palms uppermost, then move the arms upward and inward toward the head.

Figure 2-11. CLOSE UP.





DAY

Extend the arm horizontally to side, palm outward.

NIGHT

Rotate a light to describe a circle 12 to 18 inches in diameter in the direction of the turn.

Figure 2-12. RIGHT or LEFT TURN.





DAY

Extend the arm horizontally sideward, palm to the front; wave the arm slightly downward several times, keeping the arm straight. Do not move arm above horizontal.

NIGHT

Hold a light at shoulder level; blink it several times toward the vehicle.

Figure 2-13. SLOW DOWN.



Move the hands and forearms backward and forward, palms toward the chest.

Figure 2-14. MOVE FORWARD.



DAY

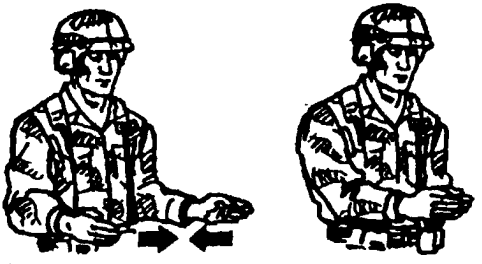
Face the vehicle(s) (unit) being signaled, raise the hands to shoulder level, palms to the front. Move the hands forward and backward.



NIGHT

Hold a light at shoulder level; blink it several times toward vehicle(s).

Figure 2-15. MOVE IN REVERSE (for stationary vehicles).



Face the vehicle(s) being signaled, extend the forearms to the front, palms inward and separated (width of the shoulders). Bring the palms together as the vehicle(s) approaches. The vehicle(s) must stop when the palms come together.

Figure 2-16. CLOSE DISTANCE BETWEEN VEHICLES AND STOP.

Extend the arm parallel to ground, hand open, and move the arm across the body, in a throat-cutting action.



Figure 2-17. STOP ENGINES.



Extend the arms, make two or three movements up and down, hands open toward ground.

Figure 2-18. DISMOUNT.

Cross the wrists at the throat; point the index finger in direction of steer. Make a fist of the other hand.



Figure 2-19. NEUTRAL STEER (track vehicles).

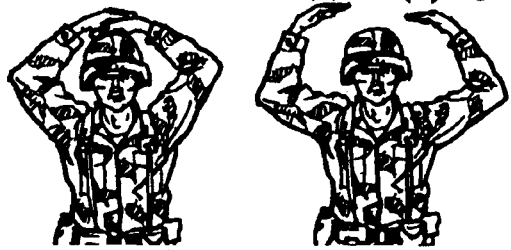


Clasp the hands together, palms facing, at chin level.

NOTE: Alternate signal to stop vehicles, see Figure 2-7.

Figure 2-20. STOP (alternate signal to stop track vehicle).

BUTTON UP **UNBUTTON**



For BUTTON UP, place both hands, one on top of the other, palms down, on top of the helmet. The arms are back and in same plane as the body. For UNBUTTON, give BUTTON UP signal, then separate the hands, moving them to each side in s slicing motion; repeat.

Figure 2-21. BUTTON UP or UNBUTTON

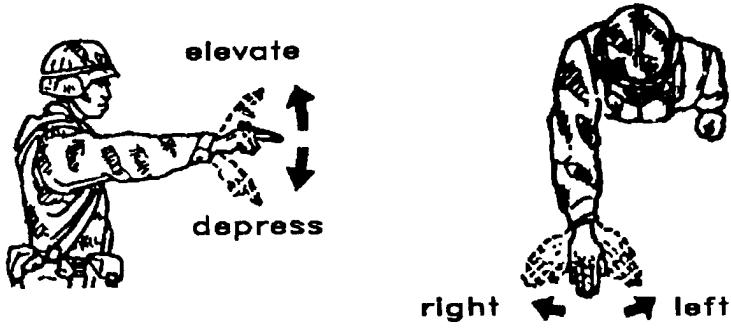


Hold the fist out with thumb up.

Figure 2-22. MESSAGE ACKNOWLEDGED.

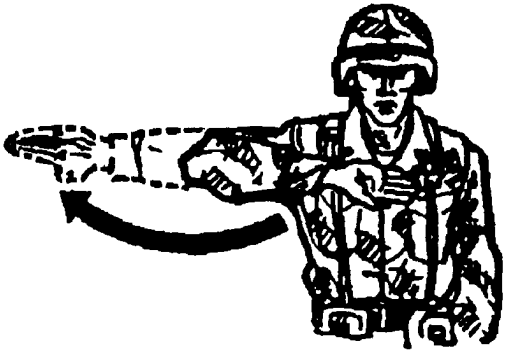
2-3. Signals for Crew-Served Weapons

Members of crew-served weapons must communicate. Often, this is in environments where visual signals are the best means of transmitting information (Figures 2-23 through 2-28).



Extend one arm in the direction of the gunner concerned. Move the hand vigorously in the direction of desired correction (elevate, depress, right, or left). Flex the arm at the wrist and extend one finger for each mil (or for each 100 meters of range) of desired correction. For machine guns, an extended finger indicates 1 mil for tripod guns and 1 meter for bipod guns.

Figure 2-23. TRAVERSE RIGHT (LEFT), or ELEVATE (DEPRESS).



Raise the hand (on the side toward the new direction) and move it across the body to the opposite shoulder, palm to the front; then swing the arm in a horizontal arc, extending the arm and hand to point in the new direction. For slight changes in direction, move the hand from the final position to the desired direction of movement.

Figure 2-24. MOVE OVER, or SHIFT FIRE.



Drop the arm sharply from the vertical position (usually from the ARE YOU READY signal position, Figure 2-2) to the side. When a single weapon (of a group) is to be fired, point, with the arm extended, to that particular weapon, and then drop the arm sharply to the side. The signal is usually used as a fire command for indirect fire weapons.

Figure 2-25. FIRE.



Extend the arm in front of the body, palm down, and move it through a wide horizontal arc several times. For machine guns, when giving the signal again, moving the arm faster means to change to the next higher rate of fire. To slow the rate of fire, move the arm slower. This signal is used primarily for direct fire weapons.

Figure 2-26. COMMENCE FIRING.



Raise the hand in front of the forehead, palm to the front, and swing the hand and forearm up and down several times in front of the face.

Figure 2-27. CEASE FIRING.



Strike the fist of one hand several times in rapid succession against the palm of the other hand.

Figure 2-28. OUT OF ACTION.

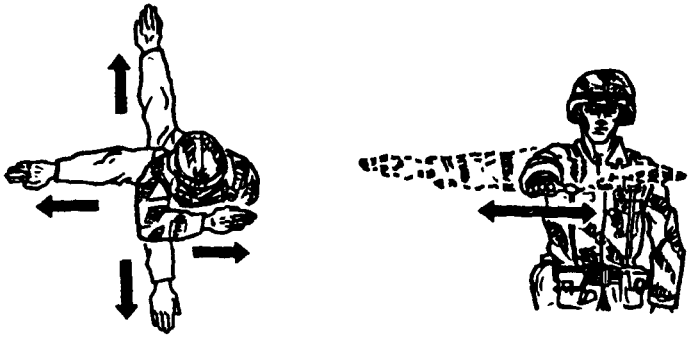
2-4. Signals for Combat Formations and Battle Drills

a. Signals, General (Figures 2-29 through 2-57).

(1) Leaders of dismounted units use arm-and-hand signals to control the movement of individuals, teams, and squads. These signals are used by infantry and also by combat support and combat service support elements organized for infantry missions (Figures 2-29 through 2-45).

(2) Leaders of mounted units use arm-and-hand signals to control individual vehicles and platoon movement. When distances between vehicles increase, flags (wrapped and tied) can be used as an extension of the arm to give the signals. From some vehicles (for example, Bradley, M2), the arm-and-hand signals will be distorted (Figures 2-46 through 2-50).

(3) Signals for drills are illustrated in Figures 2-51 through 2-57.



Extend either arm vertically overhead; wave the arm and hand to the front, left, right, and rear, with the palm toward the direction of each movement.

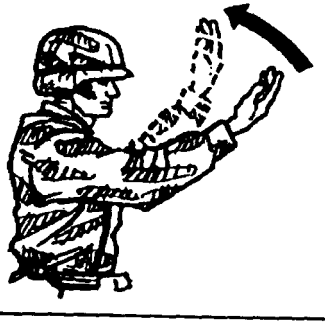
Figure 2-29. DISPERSE.



Raise the arm vertically overhead, palm to the front, and wave in large, horizontal circles.

NOTE: Signal is normally followed by the signaler pointing to the assembly or rally site.

Figure 2-30. ASSEMBLE or RALLY.



Point toward person(s) or unit(s); beckon by holding the arm horizontally to the front, palm up, and motioning toward the body.

Figure 2-31. JOIN ME, FOLLOW ME, or COME FORWARD.

Simulate the movement of the right hand in removing the bayonet from the scabbard and fixing it on the rifle.



Figure 2-32. FIX BAYONETS.

Raise the fist to the shoulder; thrust the fist upward to the full extent of the arm and back to shoulder level; do this rapidly several times.



Figure 2-33. INCREASE SPEED, DOUBLE TIME, or RUSH.

Extend the arm horizontally sideward, palm to the front, and wave the arm slightly downward several times, keeping the arm straight. Do not move the arm above the horizontal.

NOTE: This is the same signal as SLOW DOWN when directing vehicles (Figure 2-13). The difference in meaning must be unerstood from the context in which they are used.



Figure 2-34. QUICK TIME.



Hold the rifle in the ready position at shoulder level. Point the rifle in the direction of the enemy.

Figure 2-35. ENEMY IN SIGHT.



Extend the arm at a 45-degree angle from the side, above the horizontal, palm down, and then lower the arm to the side.

Figure 2-36. TAKE COVER.



Extend the arms downward and to the sides at an angle of 45-degrees below the horizontal, palms to the front.

Figure 2-37. WEDGE.

Raise the arms and extend them 45 degrees above the horizontal.



Figure 2-38. VEE.



Extend the arms parallel to the ground.

Figure 2-39. LINE.

Raise one arm above the head and rotate it in a small circle.



Figure 2-40. COIL.



Extend the right arm and raise it 45 degrees above the shoulder. Extend the left arm 45 degrees below the horizontal and point toward the ground.

Figure 2-41. ECHELON LEFT.



Extend the left arm and raise it 45 degrees above the shoulder. Extend the right arm 45 degrees below the horizontal and point toward the ground.

Figure 2-42. ECHELON RIGHT.



Extend the arms so that upper arms are parallel to the ground and the forearms are perpendicular. Raise the arms so they are fully extended above the head. Repeat.

Figure 2-43. STAGGERED COLUMN.

Raise and extend the arm overhead. Move it to the right and left. Continue until the formation is executed.

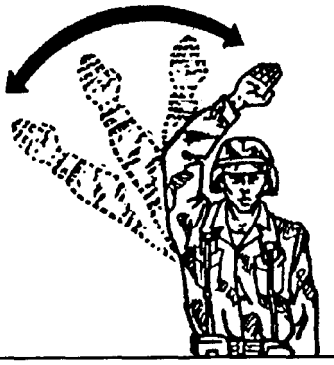


Figure 2-44. COLUMN.

Extend the arms parallel to ground. Bend the arms until the forearms are perpendicular. Repeat.



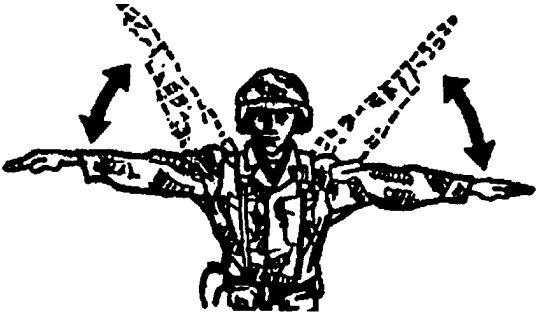
Figure 2-45 HERRINGBONE

b. Mechanized Movement Techniques. Signals for movement techniques are used by mechanized units to indicate which manner of traversing terrain will be used by a unit (Figures 2-46 through 2-50).

Extend the arm overhead and swing it in a circle from the shoulder.



Figure 2-46. TRAVELING.



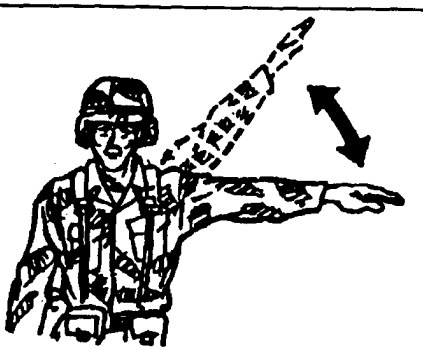
Extend both arms and raise them up and down.

Figure 2-47. TRAVELING OVERWATCH.



Extend one arm to a 45-degree angle. Bend the arm and tap the helmet. Repeat.

Figure 2-48. BOUNDING OVERWATCH. COVER MY MOVE.



Extend the arm to the left and raise it up and down.

Figure 2-49. MOVE TO LEFT.

Extend the arm to the right and raise it up and down.

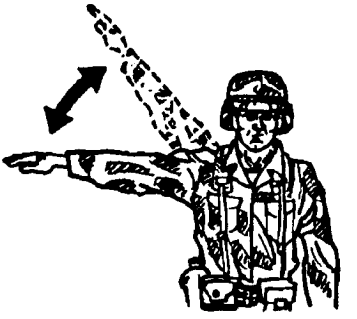


Figure 2-50 MOVE TO RIGHT

c. **Drills.** Drills are a rapid, reflexive response executed by a small unit. These signals are used to initiate drills (Figures 2-51 through 2-57).

Extend the left arm parallel to the ground. Bend the arm until the forearm is perpendicular. Repeat.

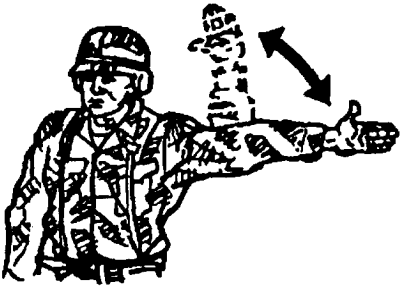


Figure 2-51. CONTACT LEFT.

Extend the right arm parallel to the ground. Bend the arm until the forearm is perpendicular. Repeat.

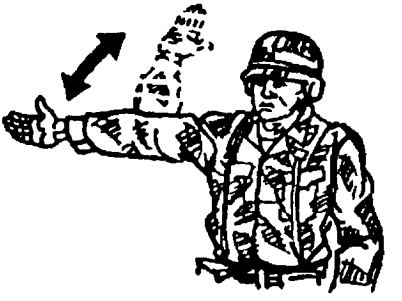
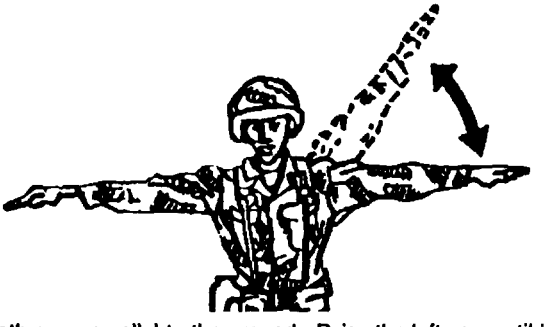


Figure 2-52. CONTACT RIGHT.



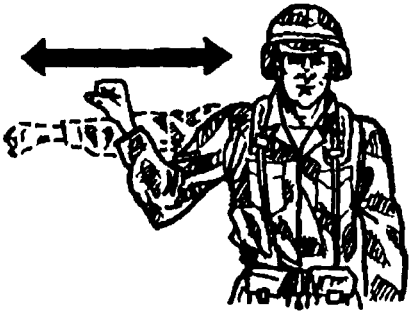
Extend both arms parallel to the ground. Raise the right arm until it is overhead. Repeat.

Figure 2-53. ACTION LEFT.



Extend both arms parallel to the ground. Raise the left arm until it is overhead. Repeat.

Figure 2-54. ACTION RIGHT.



Raise the fist to shoulder level and thrust it several times in the desired direction of action.

Figure 2-55. ACTION FRONT (RIGHT, LEFT or REAR), FIGHT ON FOOT, or ASSAULT FIRE (DISMOUNTED TROOPS).

Bend the arms with forearms at a 45-degree angle. The forearms are crossed. Repeat.



Figure 2-56. AIR ATTACK.



Extend the arms and fists. Bend the arms to the shoulders. Repeat.

Figure 2-57. NUCLEAR, BIOLOGICAL, CHEMICAL ATTACK.

2-5. Patrolling Arm-and-Hand Signals

Patrolling is conducted by many type units. Infantry units patrol in order to conduct combat operations. Other units patrol for reconnaissance and security. Successful patrols require clearly understood communication signals among members of a patrol (Figures 2-58 through 2-63).



Point at the palm of one hand with the index finger of the other hand.

Figure 2-58. MAP CHECK.



Tap the heel of boot repeatedly with an open hand.

Figure 2-59. PACE COUNT.



Raise the hand to the ear with the thumb and little finger extended.

Figure 2-60. RADIOTELEPHONE OPERATOR FORWARD.

Tap the back of the helmet repeatedly with an open hand.



Figure 2-61. HEAD COUNT.

Draw the right hand, palm down, across the neck in a throat-cutting motion from left to right.

NOTE: This movement is the same as Figure 2-17, STOP ENGINES. The difference in meanings is understood from the context in which it is used.



Figure 2-62. DANGER AREA.

Raise the fist to head level.



Figure 2-63. FREEZE.

2-6. Signals to Control Convoys

a. Traffic Control. These signals are normally used by authorized officials (civilian and military police, and personnel at traffic control points) to direct traffic. At night, these signals are given with a flashlight or a lighted wand (Figures 2-64 through 2-68).



Stand facing traffic with the arms raised, palms open, in the same plane as the shoulders.

Figure 2-64. LEFT AND RIGHT TRAFFIC STOP.



Stand facing traffic with the arm raised, palm open.

Figure 2-65. FRONT TRAFFIC STOP.

Stand with the back to traffic, the arm raised, palm open. Rotate the upper body so the palm faces traffic.



Figure 2-66. REAR TRAFFIC STOP.

Stand with the right side facing traffic, left arm extended, palm open. The right arm is parallel to the ground and bent with the palm at shoulder level.



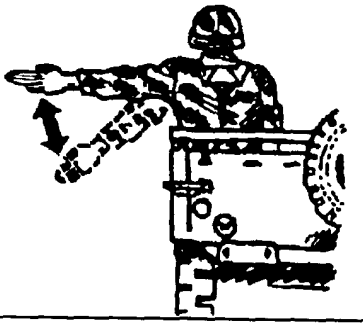
Figure 2-67. TRAFFIC FROM RIGHT, GO.

Stand with the left side facing traffic, right arm extended, palm open. The left arm is parallel to the ground with the palm at shoulder level.



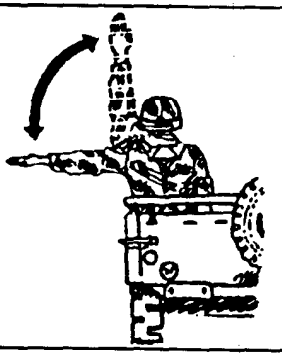
Figure 2-68. TRAFFIC FROM LEFT, GO.

b. Convoy Control. In addition to traffic control personnel, convoy commanders can use arm-and-hand signals to convey messages (Figures 2-69 through 2-72).



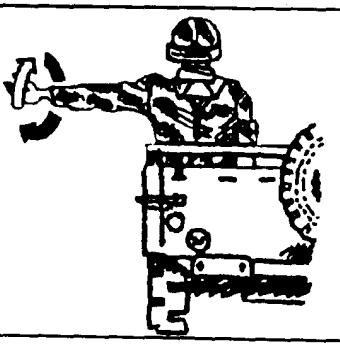
Extend the left arm horizontally to the side, palm to the front, then move the arm downward to an angle 45 degrees below horizontal. Repeat several times.

Figure 2-69. OPEN UP (EXTEND DISTANCE BETWEEN VEHICLES).



Extend the left arm sideward to the horizontal, palm up, and raise it to the vertical. Repeat several times.

Figure 2-70. CLOSE UP.



Extend the left arm horizontally to the side, palm to the front, and describe large circles to the front by rotating the arm clockwise from the elbow.

Figure 2-71. PASS AND KEEP GOING.

Face the unit being signaled and raise the hand to shoulder level in front of the body, palm to the front; extend the arm forward to its full extent in a pushing motion, keeping the palm to the front.

NOTE: This is done when the commander's vehicle has halted.



Figure 2-72. MOVE IN REVERSE.

2-7. Signals for Recovery Operations

Although recovery operations normally involve maintenance personnel who know the arm-and-hand signals required, all soldiers should be familiar with some basic signals in order to assist in recovery (Figures 2-73 through 2-80).

Extend the arm to the side and bend it upward at the elbow. Extend the index finger from the fist, rotate the hand slowly.



Figure 2-73. RAISE THE HOIST WINCH CABLE.



Hold the arm downward and out slightly from the side. Extend the index finger from the fist, rotate the hand slightly.

Figure 2-74. LOWER THE HOIST WINCH CABLE.

Extend the arm and fist toward the operator, thumb pointing up.

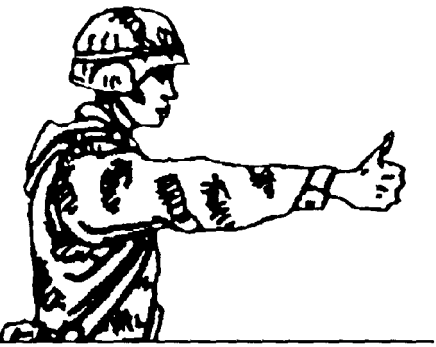
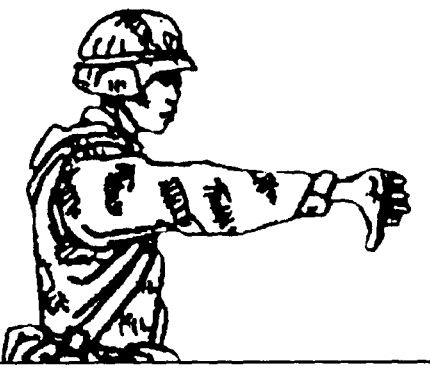
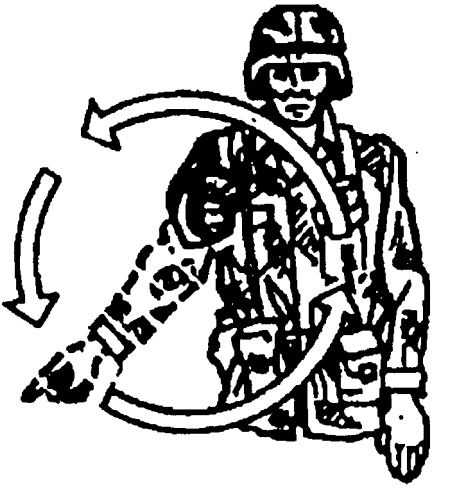


Figure 2-75. RAISE THE BOOM.



Extend the arm and fist, thumb pointing down.

Figure 2-76. LOWER THE BOOM.



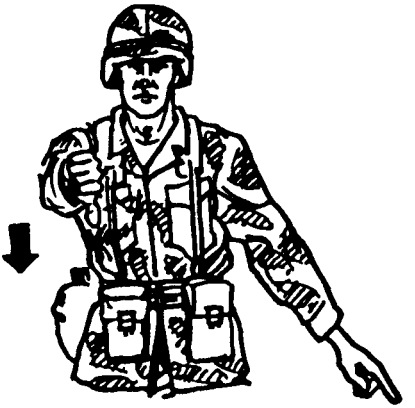
Point at the operator with the index finger. Rotate the arm in a circular motion.

Figure 2-77. IN HAUL THE MAIN WINCH.

Bend the arm, bringing the hand in front of the chest. Move the hand down and away from the body at belt level, circling back to the chest. Repeat until the signal to stop.

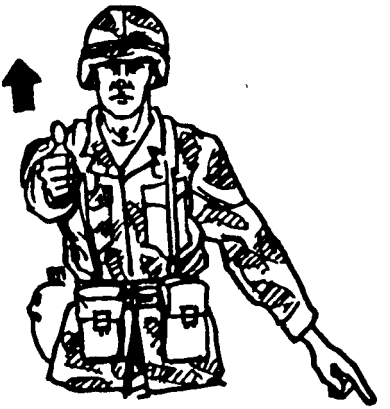


Figure 2-78. PAY OUT THE MAIN WINCH.



Point at the spade with the index finger of the left hand. While pointing with the left hand, extend the right arm and fist toward the operator, thumb pointing down.

Figure 2-79. LOWER THE SPADE.



Point at the spade with the index finger of the left hand. While pointing with the left hand, extend the right arm and fist toward the operator, thumb pointing up.

Figure 2-80. RAISE THE SPADE.

CHAPTER 3

FLAG SIGNALS FOR ARMORED AND MECHANIZED UNITS

3-1. GENERAL

a. Flags are issued to armored and mechanized units for control purposes and as an alternate means of communication within these units. Each combat vehicle is equipped with a flag set consisting of one red, one yellow, and one green flag. Flag signals may be given by using a single flag or a combination of two or three flags, according to a prearranged code. Flag signals, when understood, are repeated and executed at once (Figures 3-1 through 3-7).

b. Flags are used to:

(1) Mark vehicle positions. For example, a quartering party member uses colored flags in an assembly area to mark positions.

(2) Identify disabled vehicles.

(3) Warn friendly elements of an advancing enemy. For example, an observation post uses a flag to signal a platoon to move to its fighting position.

(4) Control movement. Flags serve as an extension of arm-and-hand signals when distances between vehicles become too great.

c. When used alone, flag colors have the following meanings.

(1) Red – DANGER, or ENEMY IN SIGHT.

(2) Green – ALL CLEAR, READY, or UNDERSTOOD.

(3) Yellow – DISREGARD, or VEHICLE OUT OF ACTION.

d. During periods of limited visibility flashlights with colored filters or colored chemical lights maybe substituted for flags.



Figure 3-1. Use of a Single Signal Flag.

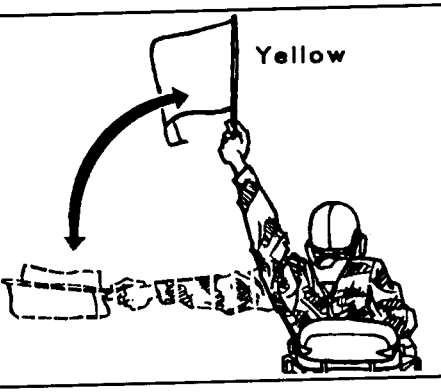


Figure 3-2. MOUNT.



Figure 3-3. DISMOUNT.

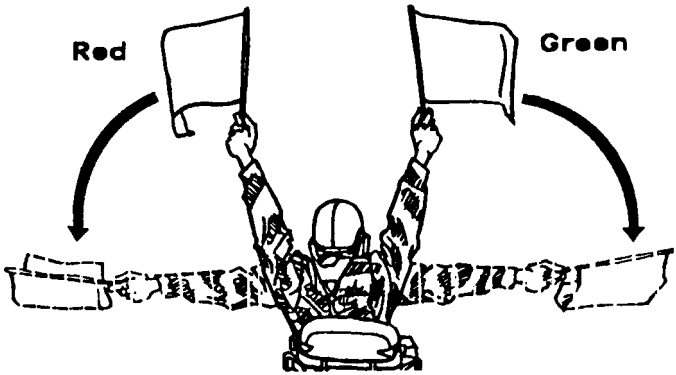


Figure 3-4. DISMOUNT AND ASSAULT.

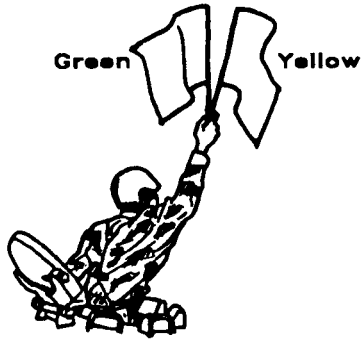


Figure 3-5. ASSEMBLE or CLOSE.

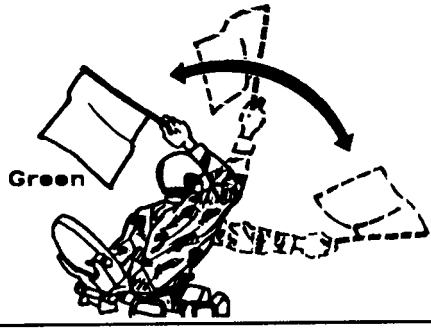


Figure 3-6. MOVE OUT.

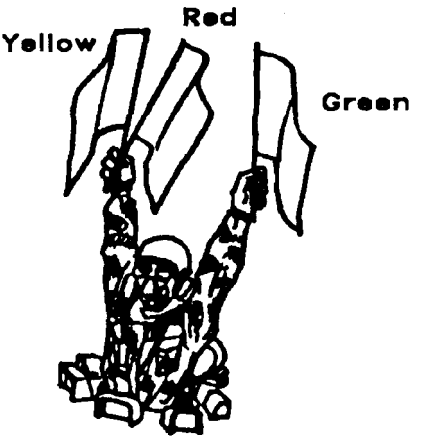


Figure 3-7. NUCLEAR, BIOLOGICAL, CHEMICAL HAZARD PRESENT.

3-2. Firing Range Flag Signals

Signal flags are used on firing ranges for tanks or fighting vehicles to indicate the status of the range and the status of the individual vehicle. A red flag at the control point indicates that firing may be conducted, wide a green flag indicates that it may not (Figures 3-8 through 3-12).

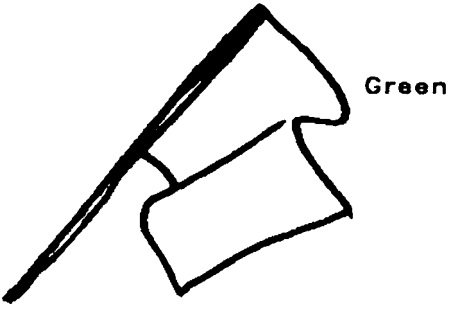


Figure 3-8. ALL WEAPONS CLEAR (guns elevated).

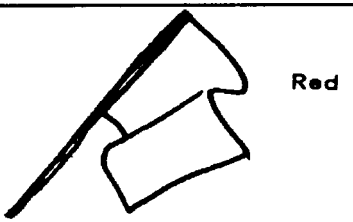


Figure 3-9. CONDUCTING LIVE FIRE.

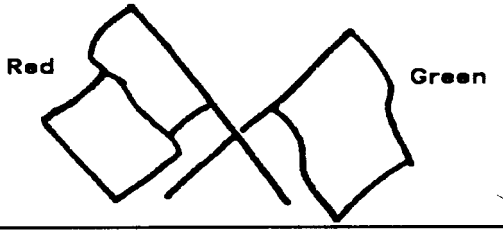


Figure 3-10. CONDUCTING PREPARE-TO-FIRE or NONFIRING EXERCISES. Ammunition is uploaded and the system is on safe.

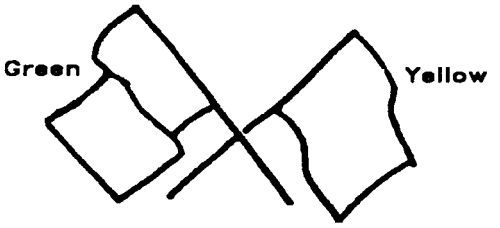


Figure 3-11. MALFUNCTION--WEAPONS CLEAR.

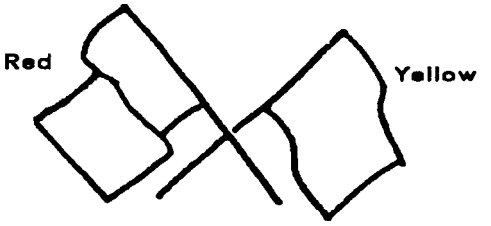


Figure 3-12. MALFUNCTION--WEAPONS LOADED.

CHAPTER 4

PYROTECHNICS

4-1. GENERAL

Pyrotechnics produce either smoke or light and are consumed in the process. When used for communications, prearranged or prescribed signals are developed and used throughout a unit. These signals are developed based on the color and characteristics of the pyrotechnic device used. Pyrotechnic signals supplement or replace normal means of communication and allow a large number of troops and/or isolated units to be signaled quickly. They can be used for friendly unit identification, maneuver element control, fire support control, target marking, and location reports. When pyrotechnics are used, the signal and its meaning are included in the command and signal portion of the operation order and in the unit's communications-electronics operating instructions.

WARNING

DO NOT DISCHARGE PYROTECHNICS IN THE VICINITY OF AIRCRAFT FLYING IN THE AREA.

4-2. Description

Pyrotechnics are usually issued as complete rounds. There are two common types of military pyrotechnics used for signaling--hand-held devices and ground smoke. (The M203 grenade launcher can fire pyrotechnic rounds; see FM 23-31.)

4-3. Handheld Signals

a. Handheld signals are rocket-propelled, fin-stabilized, and consist of three concentric tubes. The outer tube is the container, the next is the launcher, and inside the launcher is the fin-stabilized tube containing the rocket propellant and signal element. When fired, the fin-stabilized tube is lifted about 50 feet in the air, the signal element is expelled, and it burns from 4 to 42 seconds, (depending upon the type of signal: cluster, or parachute devices).

b. The following types of handheld signal rockets are available.

(1) Star Clusters. Star clusters are used for signaling and illuminating. They are issued in an expendable launcher that consists of a launching tube and a firing cap. These signals produce a cluster of five free-falling pyrotechnic stars. Star clusters are available in green, red, and white (Figure 4-1).



Figure 4-1. STAR CLUSTERS

(2) Star parachutes. Star parachutes are used for signaling and illuminating. They are issued in an expendable launcher that consists of a launching tube and a firing cap. These signals produce a single parachute-suspended illuminant star. Star parachutes are available in green, red, and white (Figure 4-2).



Figure 4-2. SINGLE STAR.

(3) Smoke parachutes. Smoke parachutes are used for signaling only. They are issued in an expendable launcher that consists of a launching tube and a firing cap. The device is a perforated cannister that is parachute-suspended. They are available in green, yellow, and red smoke.

4-4. Ground Smoke

a. Smoke may be used for both ground and ground-to-air signaling. Both white and colored smoke may be used for this purpose. Smoke signals are visible over greater distances when employed against a terrain background of contrasting color. Smoke is valuable for marking unit flanks, positions of lead elements, locations of targets, drop zones, tactical landing areas, and medical evacuation landing sites. Smoke signals are not suitable for messages, but are applicable when communicating by prearranged signals between small units and with aircraft. Smoke signals may be observed by the enemy; therefore, due regard for secrecy must be

considered to try and avoid disclosing position locations and/or a unit's intentions.

b. Smoke grenades are available in white, green, yellow, red, and violet smoke. This color range is provided by two types of grenades.

(1) The white smoke hand grenade is a burning-type grenade used for signaling and for laying smoke screens. When ignited, it produces dense white smoke for 105 to 150 seconds. It will not normally injure exposed troops. In heavy concentrations, troops should wear the field protective mask. However, the mask will not protect against heavy concentrations of this smoke in enclosed spaces due to oxygen depletion and carbon monoxide buildup.

(2) The M18 colored smoke grenade is similar in appearance to the white smoke grenade, but its top is painted the color of the smoke it produces. Its filler is a burning-type mixture containing a dye; only four are standard: red, green, violet, and yellow. As a burning-type grenade, it has an igniting-type fuse, and burns 50 to 90 seconds.

CHAPTER 5

SIGNALS TO AIRCRAFT

5-1. General

With the introduction of the airplane and helicopter to the combined arms team, a new requirement for communication was added to the battlefield. Ground troops and air forces need to communicate. There will be times when radios cannot be used and visual signals must be used. Therefore, systems of standard visual signals have been developed to allow ground-to-air communication. These systems include arm-and-hand signals used by ground forces to direct helicopters in direct support; devices that can be used to communicate with aircraft; and ground-to-air emergency signals and codes.

5-2 Arm-and-Hand Ground Signals

Helicopters and fixed-wing aircraft are often used to support ground forces by moving supplies and/or personnel. Often, pathfinder personnel will not be available to direct aircraft in support of these efforts. Therefore, the responsibility to guide aircraft will fall upon the ground forces. To be prepared for this effort, the soldier must know these general signals (Figures 5-1 through 5-22).



When directing a taxiing helicopter, the signalman's position is slightly to the right, in full view of the pilot, and at a safe distance of no less than 40 meters (or, no closer than 20 meters during slingload operations). These positions are used in day and night operations. The signalman never stands in front of an armed helicopter.

Figure 5-1. HELICOPTERS (rotary wing).



When directing taxiing airplanes, the signalman's position is forward of the left wing tip and in full view of the pilot.

Figure 5-2. AIRPLANES (fixed wing).

Either arm, level with the shoulder, palm down. Draw the extended hand across the neck in a throat-cutting motion. If a specific engine (rotor) of a multi-engine (rotor) aircraft is to be shut down, execute the signal and point with the other hand to the appropriate engine (rotor).

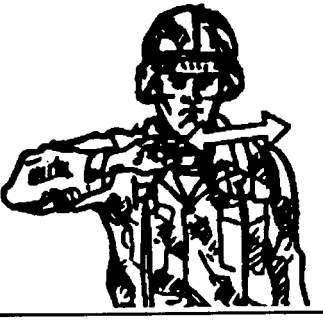


Figure 5-3. CUT ENGINE(S), or STOP ROTOR(S).

The hand is raised, thumb down.



Figure 5-4. NEGATIVE SIGNAL.



Bend the left arm and fist horizontally across chest (knuckles down); point the open, right hand up to the center of the left fist.

Figure 5-5. LOAD HAS NOT BEEN RELEASED.



Move the fist up and down, making contact with the other fist, which is stationary and on top of the helmet.

Figure 5-6. HOOKUP COMPLETE.



Extend the left arm horizontally with the fist toward the load while the right arm makes a horizontal, slicing motion under the left arm, palm down.

Figure 5-7. RELEASE.

Hold the left arm down. Extend the right arm across the body to indicate the direction to the next signalman.



Figure 5-8. PROCEED RIGHT TO NEXT SIGNALMAN.

Hold the right arm down. Extend the left arm across the body to indicate the direction to the next signalman.



Figure 5-9. PROCEED LEFT TO NEXT SIGNALMAN.

Make an overhead circular motion with the right hand, ending it in a throwing motion in the direction of lift-off (takeoff).

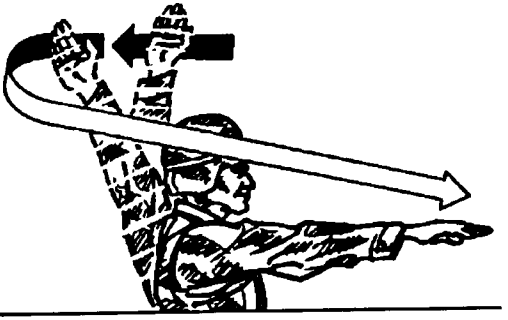


Figure 5-10. DEPART.



Cross the arms repeatedly overhead.

Figure 5-11. GO AROUND, DO NOT LAND.



Extend the crossed arms downward in front of the body.

Figure 5-12. LAND.



Cross the arms above the head, palms forward.

Figure 5-13. STOP.

Move the hand upward and backward, from a horizontal position, to indicate direction of tail movement. Point the other hand toward the center of the spot turn. The signalman must remain in full view of the pilot.



Figure 5-14. SPOT TURN.

Extend the left arm horizontally to the side in the direction of movement; swing the right arm over the head in the same direction (repeat movement).



Figure 5-15. MOVE RIGHT.

Extend the right arm horizontally to the side in the direction of movement; swing the left arm over the head in the same direction (repeat movement).

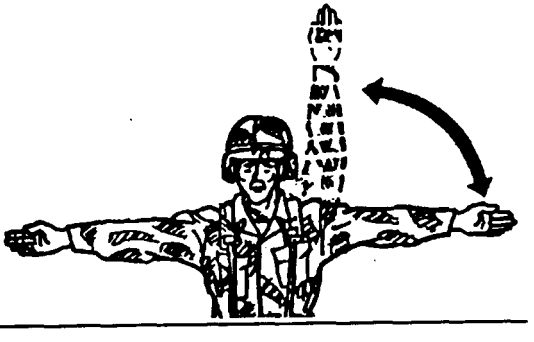


Figure 5-16. MOVE LEFT.



Extend the arms slightly away rom the side, palms to the rear, and repeatedly move them upward and backward (from shoulder height). This signal is used to indicate short distances.

Figure 5-17. MOVE AHEAD.



Place the arms by the sides, palms to the front. Sweep the arms foward and upward repeatedly, level with the shoulders.

Figure 5-18. MOVE REARWARD.



Extend the arms horizontally to the sides, beckon downward, palms down.

Figures 5-19. MOVE DOWNWARD.

Extend the arms horizontally to the sides, beckon upward, palms up.



Figure 5-20. MOVE UPWARD.

The signalman assumes guidance by extending the arms above the head in a verticle position, palms facing forward.



Figure 5-21. ASSUME GUIDANCE.



Extend the arms horizontally to the sides, palms down. (When guiding a landing helicopter, this signal should not be given until the helicopter is at a normal hover height above the ground and just short of the desired landing point, depending on its forward speed).

Figure 5-22. HOVER.

5-3. Ground-to-Air Panel System

a. The panel system is a method ground troops use to communicate, to a limited degree, with aircraft by displaying panels on the ground. There are two types of panels: marking and identifying colored panels, and black and white panels for transmitting messages.

(1) The marking and identifying panels are made in fluorescent colors. The panels are used to mark positions and identify friendly units. These panels can be ordered through the supply system using the nomenclature Panel Marker, Aerial, Liaison (Figure 5-23).

(2) Black and white panel sets are arranged on light or dark terrain backgrounds. They are used to transmit brief messages or to identify a unit. This is done by using the combined panel system and the panel recognition code in the unit's communications-electronics operating instructions.

b. Panels (if constructed locally) should be large enough to permit easy reading from the air. There should be as much color contrast as possible between the symbols and the background. Panels should beat least six feet long and two feet wide.

c. Select a relatively flat, clear area of ground about 40 by 130 feet. This area is large enough to display messages and special signs. For message drop and pickup, the area should be clear of obstacles which could prevent aircraft from flying into the wind at reduced airspeed and low altitude.

d. When using the panel system, one of the panels is used as a base panel. Place the base panels first and keep them in place as long as panel signaling is in progress. The distance between panels is one panel length throughout, when space is available. Change from one panel figure to another as soon as possible by shifting, adding, or removing panels (other than the base panels). The index panel is the first removed and the last laid out when the display is changed. Remove all panels from view that are not used for a particular display.

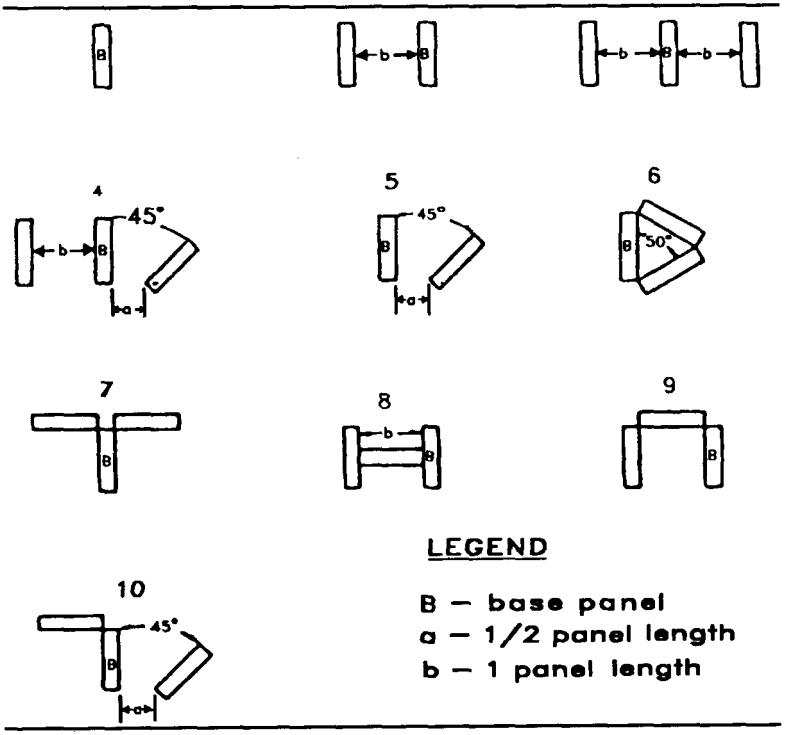


Figure 5-23. PANEL CODE FIGURES.

e. The unit's communications-electronics operating instructions assign specific vocabulary, receipting, acknowledging, and identification procedures. Code meanings are normally based on this manual, with local amplification, while the numbers associated with the meanings are determined by the unit's communications-electronics operating instructions. They are changed periodically to prevent compromise.

f. An aircraft pilot indicates that ground signals have been understood by rocking the wings laterally, by flashing a green signal lamp, or by any prearranged signal (A, Figure 5-24). The pilot indicates that ground signals are not understood by making a 360-degree turn to the right, by flashing a red signal lamp, or by any prearranged signal (B, Figure 5-24). Each panel display is acknowledged. A pilot requests a unit to display an identification code by a prearranged signal. In no case does a unit display an identification code until the aircraft has been identified as friendly.

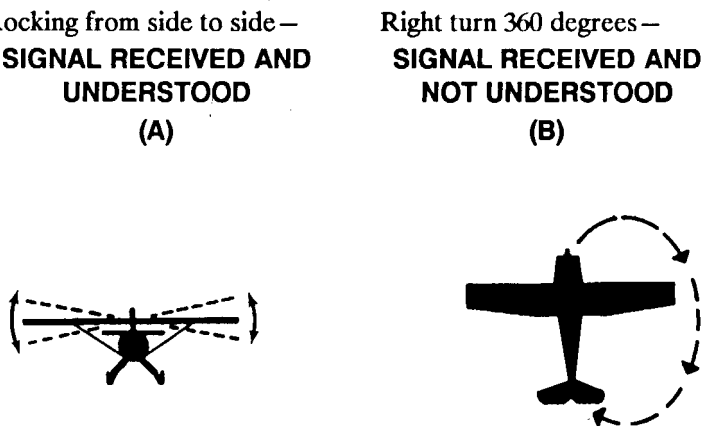


Figure 5-24. AIRCRAFT ACKNOWLEDGEMENT.

g. Ground units can identify themselves as friendly elements to a pilot by using a panel marker or its equivalent. This panel marker is displayed on combat vehicles to identify the vehicle as friendly to the pilot. It is also displayed on the ground for other purposes; for example, to identify friendly front lines and dismounted troops. The color and pattern of the display are prescribed in unit standing operating procedures.

5-4. Special Panel Signals

a. **Wind-T.** The T is used to indicate wind direction. It represents an aircraft flying into the wind. The wind-T is two panels wide and two panels long (Figure 5-25).

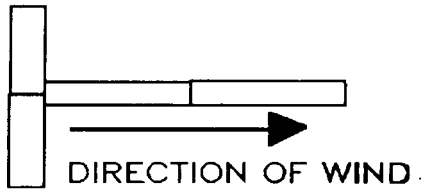


Figure 5-25. WIND DIRECTION, wind-T.

b. **Message Pickup.** This message is displayed by the figure 8 (H) with the wind-T centered below it. The crossbar of the H (8) is not placed in position until the message is ready to be picked up. The pickup poles are placed so that each pole is one panel-length away from the comer of the nearest panel (Figure 5-26).

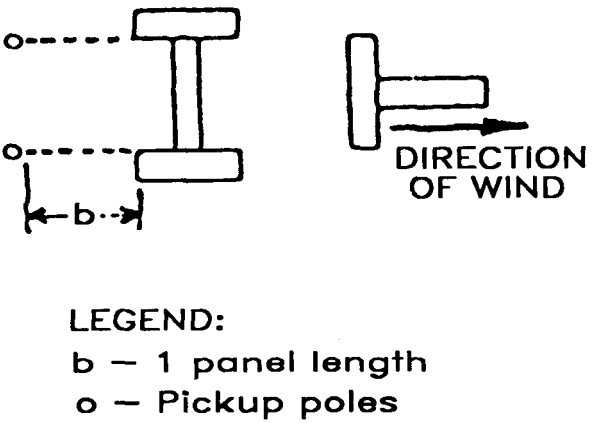


Figure 5-26. PICK UP MESSAGE HERE (wind in direction indicated)

c. **Message Drop.** When a dropped message is not found, this symbol is displayed in the drop area (Figure 5-27).

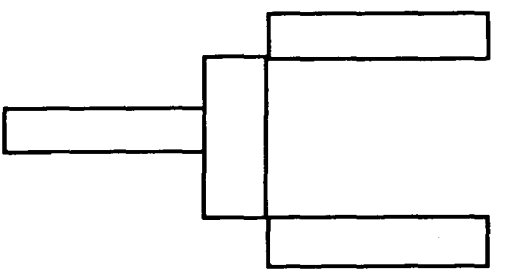


Figure 5-27. DROPPED MESSAGE NOT RECEIVED.

d. **Enemy Aircraft.** Two panels, placed at right angles to a third and on the axis of any base panel, always means enemy aircraft near– even though other parts of the panel display remain in place (Figure 5-28).

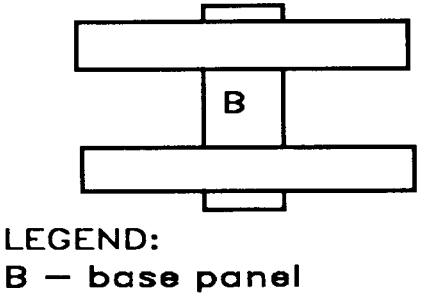


Figure 5-28. ENEMY AIRCRAFT IN YOUR VICINITY.

e. **Direction Indicator.** An arrow made with not less than four panels means "in this direction." This sign is used alone or with the pattern preceding it to complete its meaning (Figure 5-29).

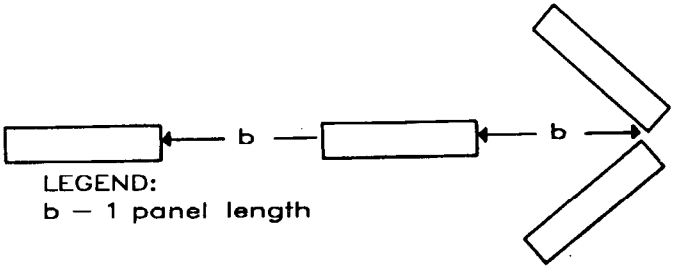


Figure 5-29. DIRECTION INDICATOR.

5-5. Ground-to-Air Emergency Signals and Codes

a. Two Methods. Aviators have developed two methods of transmitting emergency messages once a pilot's attention has been obtained.

b. Emergency Signals. The body can be used to transmit messages. The individual stands in an open area to make the signals. He ensures that the background (as seen from the air) is not confusing, goes through the motions slowly, and repeats each signal until it has been understood (Figure 5-30).

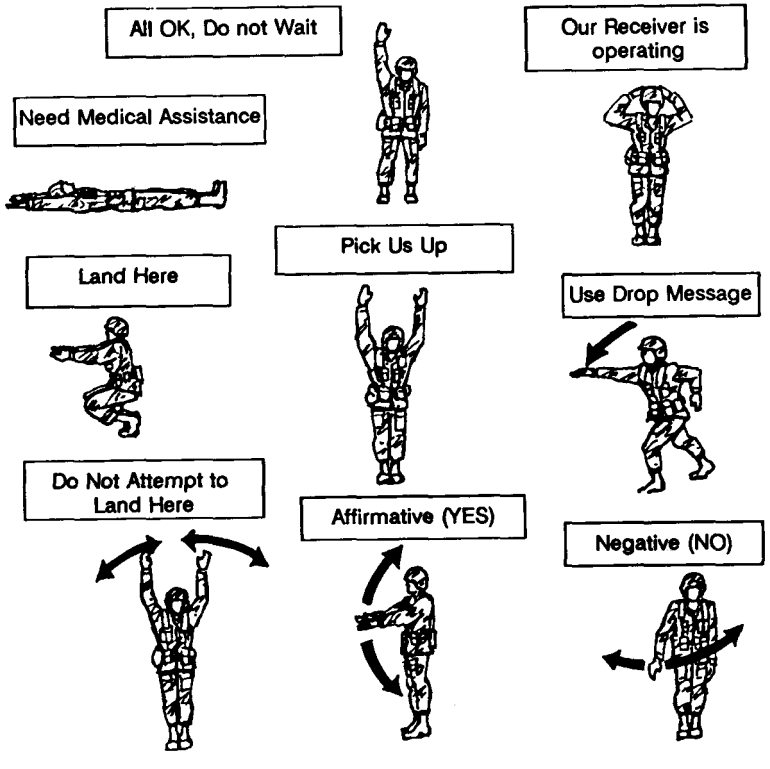


Figure 5-30. EMERGENCY SIGNALS

c. Emergency Codes. The symbols for these codes may be constructed from any available material that contrasts with the background; for example, strips of parachute canopy, undershirts torn into wide strips, rocks, sticks, and foliage stripped from trees. Once laid out, these signals (codes) are semipermanent (Figure 5-31).

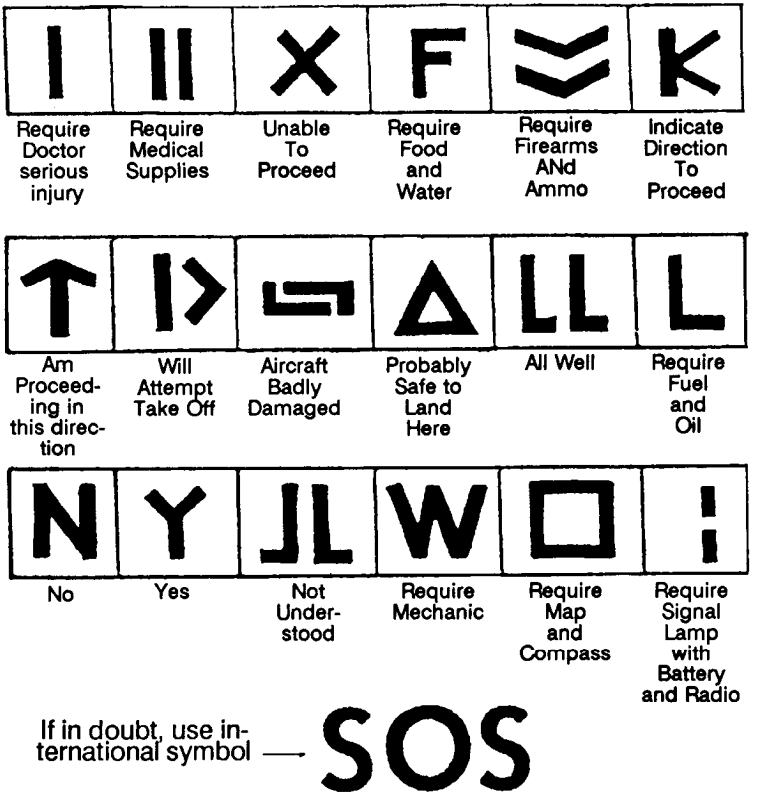
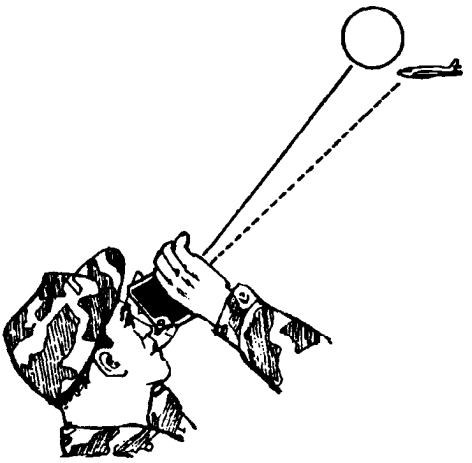


Figure 5-31. EMERGENCY CODES.

5-6. Signaling With Mirrors and Strobes

a. **Mirrors.** These are used to get the attention of an aircraft pilot during the day. Their use requires good visibility and little or no cloud cover in order to reflect the sun. Mirrors can also be used to transmit messages, if signals have been arranged. The MK 3 signal mirror is designed for use as a signal device. Instructions for its use are printed on the back of the mirror (Figure 5-32).



HOW TO USE THE MK-3 SIGNAL MIRROR

1 Reflect sunlight from mirror onto a nearby surface (raft, hand, etc.).
2. Slowly bring mirror up to eye-level and look through sighting hole. You will see a bright spot of light. This is the aim indicator.
3. Hold mirror near eye and slowly turn and manipulate it so that the bright spot of light is on the target.
4. In friendly areas where only rescue by friendly forces is anticipated, free use of mirror is recommended. Even though no aircraft or ships are in sight, continue to sweep the horizon. Mirror flashes may be seen for many miles, even in hazy weather. In hostile areas, the signal mirror must be used as an aimed signal only.

Figure 5-32. HOW TO USE A SIGNAL MIRROR.

b. **Strobes.** These can be used at night to identify positions. If prior coordination has been conducted with supporting aviation units, strobes may also be used to signal pilots. In order to reduce detection when used, strobe lights should be placed in holes so they can only be viewed from above. Strobes with infrared covers can be used if there has been prior coordination with the aircrew. Strobes are ordered using the nomenclature Distress Markers.

REFERENCES

Required Publications

Required publications are sources that users must read in order to understand or to comply with this publication.
None

Related Publications

Related publications are sources of additional information. They are not required in order to understand this publication.

Army Regulation (AR)

310-25	Dictionary of United States Army Terms
310-50	Authorized Abbreviations, Brevity Codes, and Acronyms

Field Manual (FM)

1-300	Flight Operations and Airfield Management
1-400	Aviator's Handbook
3-4	NBC Protection
9-13	Ammunition Handbook
17-15 (Test)	Tank Platoon Division 86
17-98	The Army 86 Scout Platoon
20-22	Vehicle Recovery Operations
21-17	Driver Selection, Training, and Supervision, Track Combat Vehicles
21-76	Survival
21-305	Manual for the Wheeled Vehicle Drive
21-306	Manual for the Track Combat Vehicle Drive
23-30	Grenades and Pyrotechnic Signals
23-31	40-mm Grenade Launchers, M203 and M79
23-92	4.2-inch Mortar, M30
24-1	Combat Communications

55-450-1	Army Helicopter External Load Operations
57-38	Pathfinder Operations
57-220	Basic Parachuting Techniques and Training

Soldier's Training Publication (STP)

7-llB1 (SM) Soldier's Manual, llB, Infantryman (Skill Level 1)
21-1 (SMCT) Soldier's Manual of Common Tasks (Skill Level 1)

Department of the Army Pamphlet (DA Pam)

310-35 Index of International Standardization Agreements

NATO STANAG*	No.
Recognition and Identification of Forces	2129
Aircraft Marshalling Signals	3117
Inflight Visual Signals	3379
Drop Zones: Visual Signals	3570

QSTAG*	No.
Tactical Hand-and-Arm Signals for the Control of AFVs	573

*The acronyms are defined as follows: North Atlantic Treaty Organization (NATO), Standardization Agreement (STANAG), Quadripartite Standardization Agreement (QSTAG). Standardization agreements are available from the Naval Publication sand Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120. DD Form 1425 (Specifications and Standards Requisition) is used to requisition these documents.

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By Order of the Secretary of the Army:

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DISTRIBUTION:

Active Army, USAR, and ARNG: To be distributed in accordance with DA Form 12-11A, Requirements for Visual Signals (Qty rqr block no. 173).

U.S. GOVERNMENT PRINTING OFFICE : 1995 0 - 163-062

PIN: 007200-000