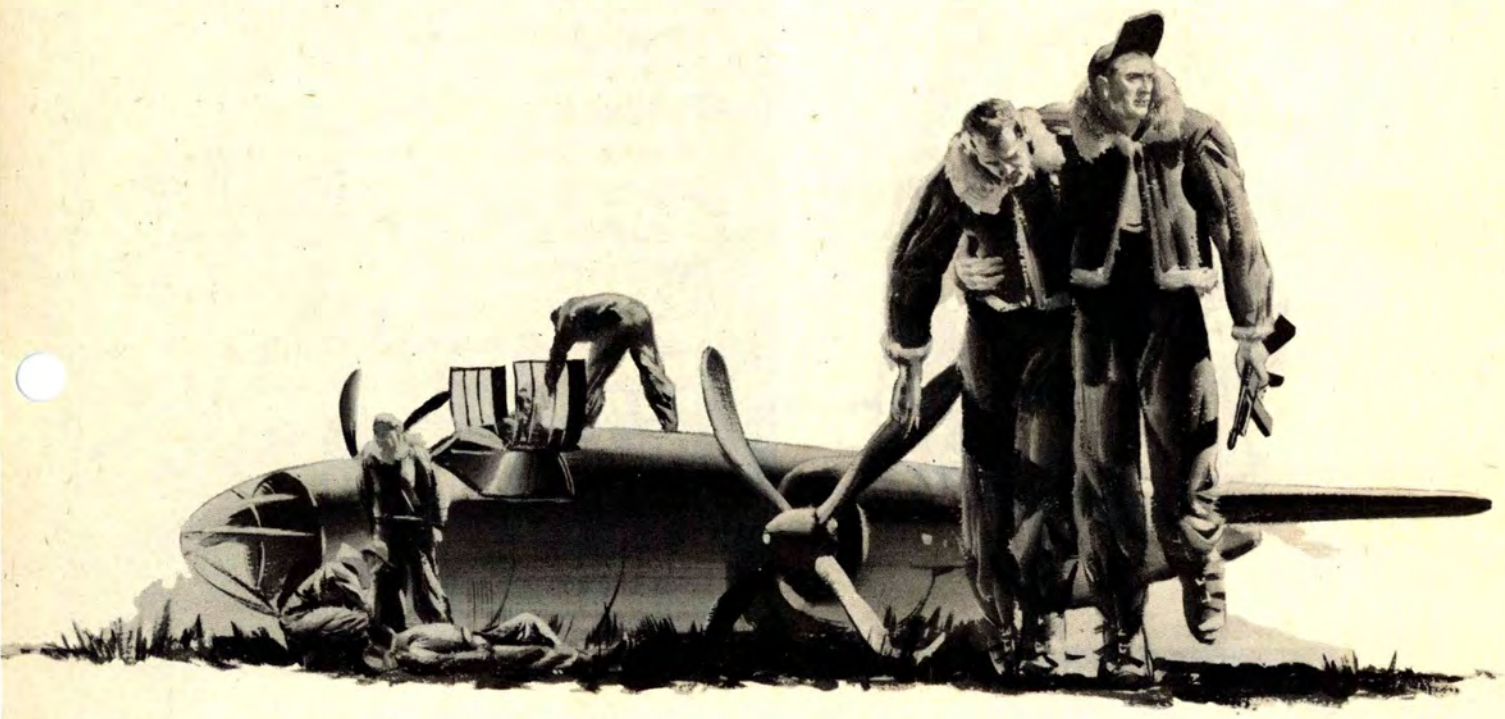
EMERGENCIES



SECTION 8

8

EMERGENCIES

Subjects in Section 8

Emergencies happen suddenly. They give you little time to think. You must therefore be quick and sure in whatever you do. You must conserve your energy and use it where it will be most effective. Above all, you must prepare yourself as thoroughly as possible for any sort of emergency. Learn what to do both in your capacity as radio operator and, in general, as a member of an aircrew. This section gives you a summary of your most important emergency measures. Study them carefully before the time comes for you to use them.

DISTRESS PROCEDURES

Distress frequencies, procedures, and call signs, and the geographical locations of rescue units vary among theaters of operations. **Study and know** all those in force in your theater. Make a list of them and keep it in your airplane.

In general, distress signals should first be transmitted on your assigned air-to-ground frequency. If you can't make contact using this frequency, use the following:

1. The U. S. Emergency and Safety frequency, 8280 kc. This is guarded by the AAF, Navy, and Coast Guard.

2. The International Distress frequency, 500 kc. By international law, all surface vessels maintain a watch on 500 kc for 3 minutes after the first and third quarters of each hour.

3. Any other available frequency on which you can make contact.

There are three basic types of distress signals.

1. **Security:** Used when your pilot is uncertain of his position, or when an emergency is expected, but **when you can proceed, or can land at a suitable field** with the aid of a ground station.

On CW, use the International Safety signal, TTT. On voice, use the word SECURITY.

Example (for CW)

Airplane: TTT TTT TTT V ABC ABC ABC $\overline{\text{INT}}$ QTF K
Station: ABC V DEF R K
Airplane: DEF V ABC (20-second dash) ABC K
Station: ABC V DEF QTF 3315N 733ØW A 1745Z K

Example (For voice)

Airplane: Security, Security, Security. This is Shoeblack. This is Shoeblack. This is Shoeblack. Request fix. Over.
Station: Shoeblack. This is Michael. Transmit for fix. (Here station transmits any special instructions.) Over.
Airplane: Michael. This is Shoeblack. Transmitting for fix. (For VHF, count 1 to 5 and back. For HF, depress microphone button for 20 seconds.) This is Shoeblack. Over.
Station: Shoeblack. This is Michael. Your position is three three one five North—Seven three three zero West. Able. Time one seven four five Zebra. Over.
Airplane: Michael. This is Shoeblack. Roger. Out.

2. **Urgent** or **Emergency:** Used when the airplane is in trouble and requires immediate navigational aid.

If you are on CW, contacting an unknown station, use the International Urgent signal XXX, following the same procedure as you would in asking for TTT. Or, call a known ground station in the normal way, using the precedence prosign O.

If you are on voice, use the International Urgent signal PAN or EMERGENCY. Proceed in the same way as you would in asking for SECURITY.

Request your fix (or course) and:

On CW transmit a 20-second dash and your call sign.

On voice, VHF, give your call sign.

On voice, HF, depress the microphone button for 20 seconds before continuing voice transmission.

Include in your transmission:

Your best estimated position and the time it was calculated.

Course, speed, and altitude.

The pilot's estimate of the time he can remain airborne, and whether he means to ditch, bail out, or crash land.

3. **Distress:** Used when your airplane is threatened with serious or imminent damage, and you need immediate help.

On CW, use the International Distress signal, $\overline{\text{SOS}}$, in this way: $\overline{\text{SOS}}$ $\overline{\text{SOS}}$ $\overline{\text{SOS}}$ V ABC ABC ABC (20-second dash) ABC K. Listen, and if there is no reply, repeat.

On voice, VHF, transmit MAYDAY three times, followed by the call sign of your airplane three times.

On voice, HF, transmit MAYDAY three times followed by the call sign of your airplane three times, then depress your microphone button switch for 20 seconds, and give the call sign once more.

Before ditching turn the IFF EMERGENCY switch ON.

Just before ditching, bailout, or crash, screw down the key.

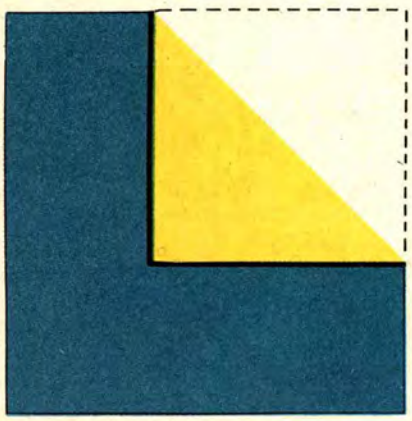
If you are no longer in distress, send a message immediately on the same frequency cancelling the state of distress.

Take special care to authenticate cancelled messages in areas where an authentication system is used.

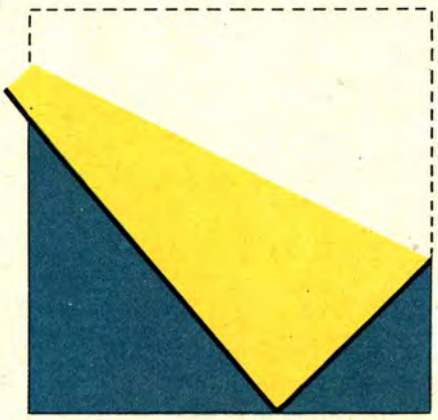
Panel Signals

Many of the emergency kits now supplied contain a large signal panel (roughly 10 ft. by 10 ft.). It is arc fluorescent yellow on one side and blue on the other. Immediately after you are forced down this panel should be spread out on the ground flat—yellow side up on dark backgrounds and blue side up on light backgrounds—the color will help rescue pilots to find you. Once a rescue pilot has located you, messages can be transmitted by folding the panel as indicated in the illustrations on these pages. If it is windy, hold the folds in place with rocks, sand, sticks, or improvised stakes if it is necessary. If several messages are to be transmitted don't change the folds too quickly—allow enough time for the pilot of the rescue plane to read each signal and indicate that he understands it (generally by dipping the nose of his plane several times). These same signals can be transmitted with the square yellow-and-blue sail now a part of the equipment supplied with the large inflatable rubber life raft.

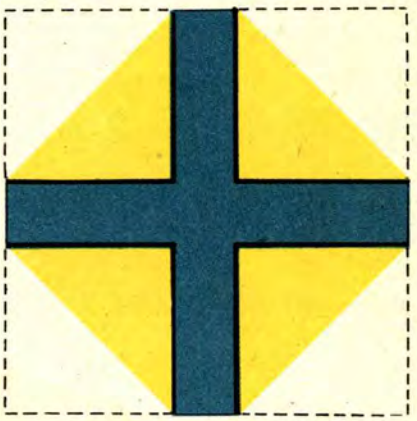
The emergency signal panel also can be used as a tent since its blue side is coated with a waterproof compound. Also, the blue side can be used as an excellent camouflage cover for a life raft if enemy aircraft are sighted.



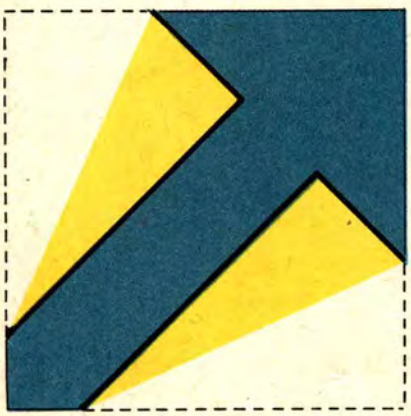
Need Gasoline and Oil, Plane is Flyable



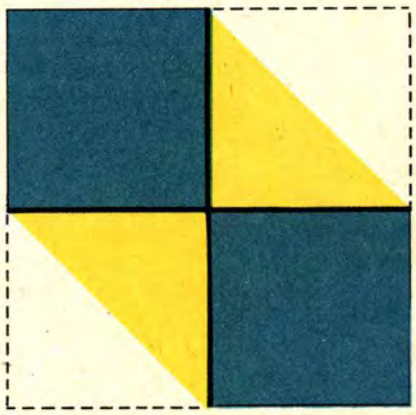
Need Tools, Plane is Flyable



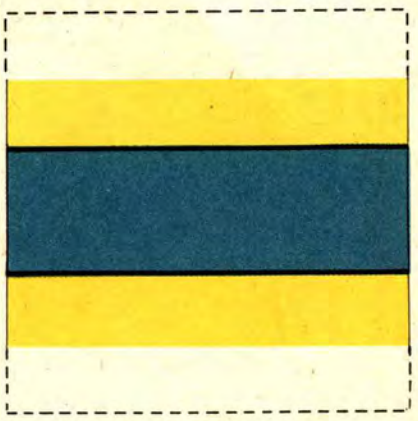
Need Medical Attention



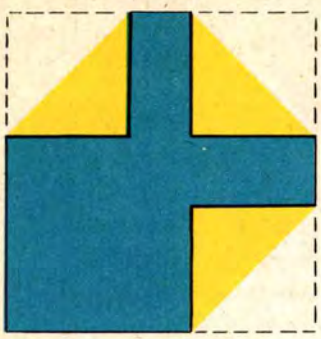
OK to Land, Arrow Shows Landing Direction



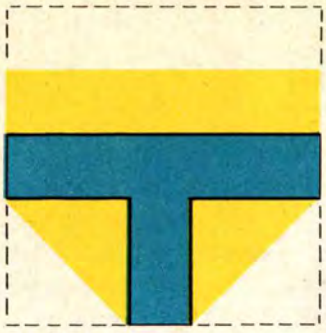
Do Not Attempt Landing



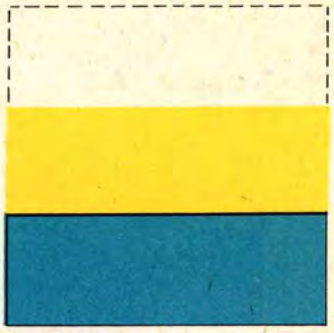
Indicate Direction of Nearest Civilization



Need First-Aid Supplies

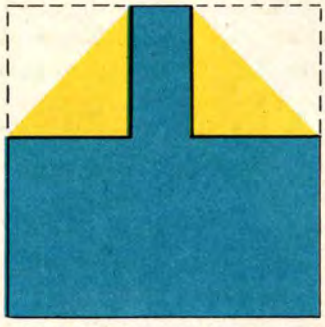


Need Quinine or Atabrine

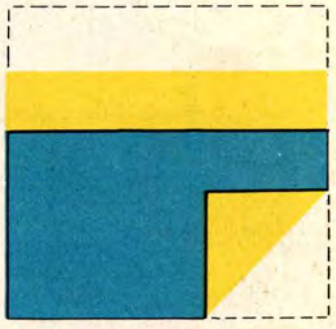


Should We Wait For Rescue Plane?

Need Food and Water



Need Warm Clothing



Have Abandoned Plane, Walking in This Direction

SMOKE GRENADES

Airplanes to be flown over sparsely settled regions on cross-country, patrol, or ferry missions will be equipped with either an M8 or an M3 smoke grenade. In the event of a forced landing, use the grenade as a marker to aid searching parties in locating the airplane which otherwise might be difficult to find.

Radio Operators observing smoke of the type produced by M8 or M3 smoke grenades will immediately attempt to locate the source.

The M8 smoke grenade burns about 3½ minutes, giving off a dense gray smoke, and is intended to be used primarily in heavily forested regions. It is easily distinguished from wood fires which give off a blue-gray or black smoke.

The M3 smoke grenade is designed to be used in snow-covered regions. It gives off a dense red smoke for 2 minutes which can be distinguished against a white snow background for about 4 miles by a person in an airplane.

METHOD OF FIRING M8 SMOKE GRENADE

1—Grasp the grenade with lever held firmly against grenade body.

2—Withdraw safety pin, keeping a firm grip around the grenade and lever.

3—Either throw the grenade with a full swing of the arm, or place on the ground and release.

4—As the grenade is released from the hand the lever drops away, allowing the striker to fire the primer.

METHOD OF FIRING M3 SMOKE GRENADE

1—Pull the 3 vanes on the side of the grenade up and away from grenade body.

2—Place grenade in snow so that it is supported by the vanes in an upright position.

3—Keep lever held firmly against grenade and withdraw safety pin.

4—Release lever.

SAFETY PRECAUTIONS

To avoid a fire, do not throw or place the grenade within 5 feet of dry grass or other readily inflammable material.

After the grenade is ignited, stay at least 5 feet away from the burning grenade, as heavy smoke develops and there is a tendency to throw off hot particles of residue.

Keep these smoke grenades dry. If the chemical contents of a grenade become wet it will ignite. Future procurement of these grenades for the Army Air Forces will be packed in individual waterproof containers.

All smoke grenades will be shipped and handled in accordance with Interstate Commerce requlations. These regulations prohibit the shipment of these smoke grenades in personal baggage.

NOV. 1944 8-4-1

GIBSON GIRL

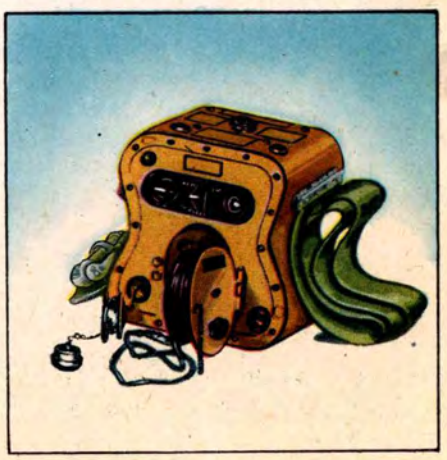
DINGHY SCR 578

Emergency Sea Rescue Transmitter

DESCRIPTION

Radio set SCR-578 is a pretuned, automatically keyed distress transmitter operating on the international distress frequency of 500 kc. It is designed primarily for operation from a rubber life raft.

It is also possible to use the set for a hand-powered signal light.



COMPONENTS

TRANSMITTER BC-778

1—WATERPROOF cover is sealed by rubber gaskets.

2—HAND-CRANKED gear assembly drives a self-contained generator and automatic keying assembly.

SIGNAL LAMP

for visual signaling

One of two types of lamps will be furnished.

NON-DIRECTIONAL TYPE

Straps under the chin. A spare bulb is carried with this type.

Straps around the forehead.

DIRECTIONAL TYPE

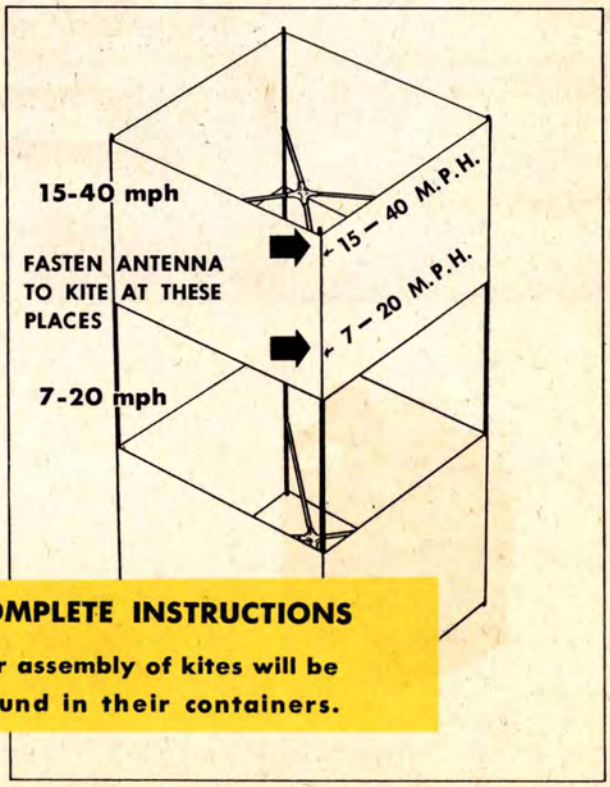
The signal lamp should be used at night if an airplane or surface vessel is heard. ***Do not waste energy by using light if they cannot be heard.***

WHEN TRANSMITTING RADIO SIGNALS 175 TO 300 FEET OF ANTENNA ARE NECESSARY

The following methods are used to fly the antenna:

1—BOX KITE

Collapsible type designed to fly in wind velocities from 7 to 40 mph. The cloth covering is water repellent providing it does not soak continually. There are two types of kites. They differ only in construction. The newer types are hinged so that they will fit into a smaller stowage bag.



COMPLETE INSTRUCTIONS

for assembly of kites will be found in their containers.

Drag the kite out of water as soon as possible. It may require hours to dry if it becomes wet.

2—HYDROGEN BALLOON

Used When Wind Is Too Calm To Fly the Box Kite

There are usually two balloons packed in sealed cans stowed away with each unit.

The balloons are inflated with hydrogen, which is produced by immersion of a chemical generator into water.

Hydrogen is supplied from the generator to the balloon through a special inflating tube.

OPERATING INSTRUCTIONS

Remove the balloon from its sealed container. Care must be taken to avoid tearing it.

Immerse the balloon in water for about 1 minute to insure flexibility. Then gently unfold it.

Remove the top and bottom plugs of the hydrogen generator. Screw the inflating tube into top of the generator. The bottom hole is a water inlet.

Wet the other end of the tube and insert it into the balloon-valve hole. Hold on to the wooden handle of the tube. The chemical contained in the generator will burn the skin or clothing. Wash it off immediately if any splashes on you.

Immerse the generator until its top is level with the water. Wait until the balloon reaches its full diameter of 4 feet.

When the balloon is fully inflated, remove inflating tube and insert the rubber plug tightly in the valve.

If red lines are painted around the generator, immerse it to first red line and wait 10 minutes. Then slowly immerse it until the top of the generator is level with the water.

NO SMOKING!!!!

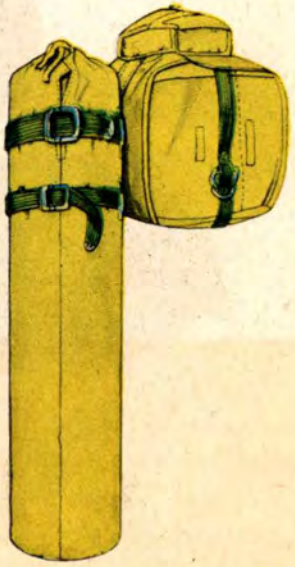
Do not smoke while inflating the balloon. Hydrogen is highly inflammable.

CARRYING BAGS

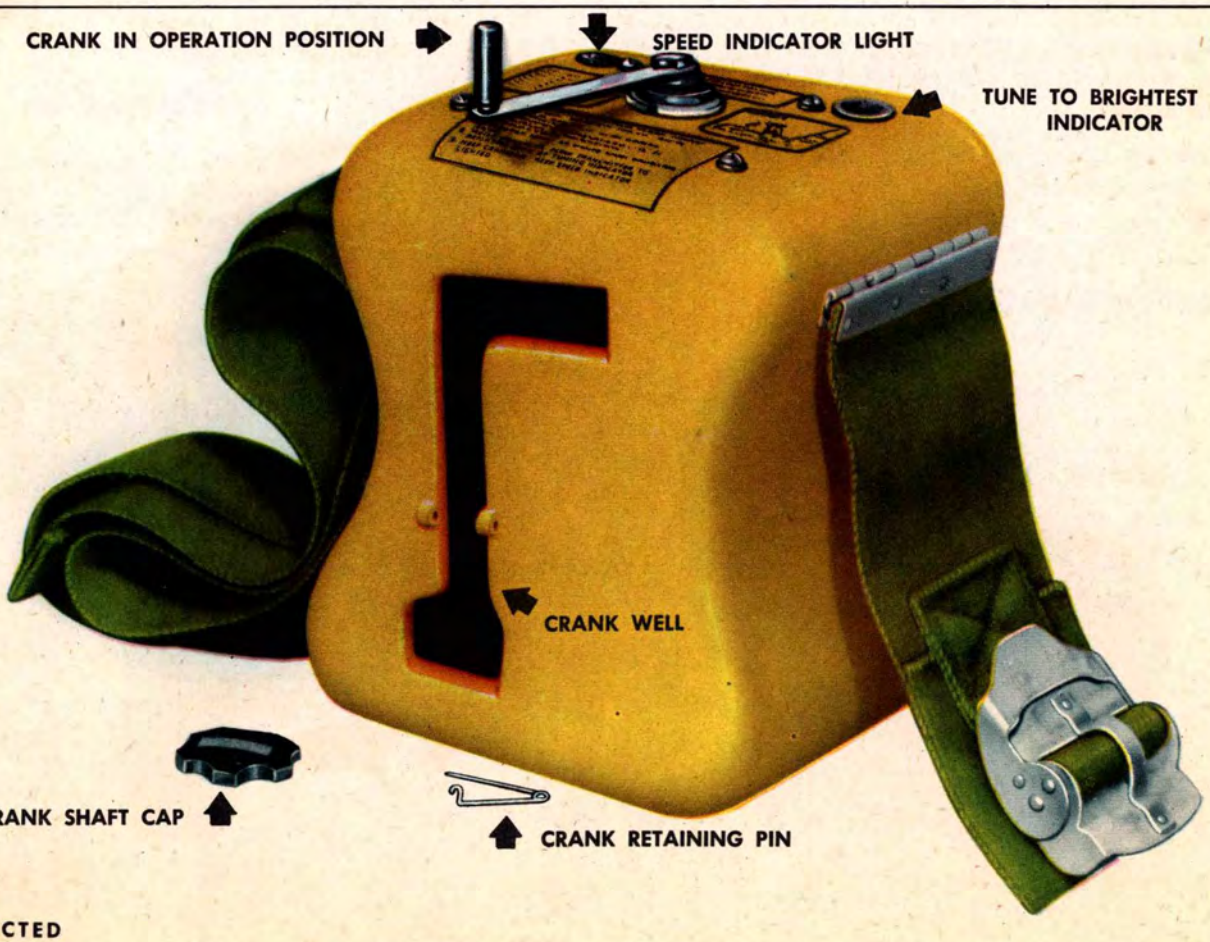
The SCR-578 will be found stowed in one of two types of bags.

Used with SCR-578-B and later models.

Used with SCR-578-A.




JACK FOR SIGNAL LAMP M-308-B
ANTENNA TUNING CONTROL
DOOR CATCH
RADIO LIGHT SWITCH
KEY
ANTENNA LEAD-IN
ANTENNA BRAKE
MANUAL
AUTO. 2
OFF
TUNE
KEY


CRANK IN OPERATION POSITION
SPEED INDICATOR LIGHT
TUNE TO BRIGHTEST INDICATOR
CRANK WELL
CRANK SHAFT CAP
CRANK RETAINING PIN

TRANSMITTER OPERATION

Distress

International law requires all surface vessels to maintain a watch on 500 kc for 3 minutes after the first and third quarters of the hour. Therefore, distress signals are most likely to be picked up if you send them from 15 to 18, and from 45 to 48, minutes after each hour.

Remember to continue your transmissions long enough to allow the stations receiving them to take your bearing.

Radio Transmission

First of all, be sure that you are using the greatest possible antenna length. A length of less than 300 feet will lower the set's operating efficiency.

Unscrew the ground plug and put the wire in the water or earth. Be sure you uncoil and use **all** of the ground wire.

Put crank in the socket on top of the transmitter. **Make sure it is tight.** There are no spare cranks with the set.

Fasten the strap securely around your legs.

Set the RADIO end of the selector switch to the kind of transmission you want (AUTO 1, 2, or MANUAL). To determine type of transmission, consult the chart on the front panel.

Rotate the crank until the speed indicator on top of the unit glows. It will glow at approximately 80 rpm.

Allow 20 seconds for the tubes to heat, then adjust the TUNE control until you obtain maximum brilliancy in the TUNE TO BRIGHTEST indicator.

Conserve energy. Change hands every few minutes, to ease fatigue.

Ranges

Here are the probable ranges of the transmitter. The transmitting ranges vary with the different methods of grounding.

Be sure your set is grounded properly. This is important.

1. At sea	250-500 miles
2. Inland lake	50-150 miles
3. On edge of lake or stream	30- 50 miles
4. On land (grounded in moist earth)	5- 10 miles

WARNING: Do not fly the antenna during an electrical storm.

SIGNAL LAMP OPERATION

Strap the lamp to your head. If you have the non-directional type, fix it so that it shines straight up. Fix the directional type so that it shines along the water, where reflections increase the chances of its being seen from the air.

Put the lamp plug into the SIGNAL LAMP SOCKET on the front of the transmitter. Set the LIGHT end of the selector switch to either AUTO 1 or AUTO 2, for a continuous light. If you want to key the light, turn the switch to MANUAL and use the hand key on the front panel.

Remember: When the selector switch is on LIGHT position, **no radio signals can be heard.**

MAINTENANCE AND INSPECTIONS

Monthly

The transmitter should be inspected once a month in this way:

1. Remove the set from its stowage bag, and insert the crank.
2. Connect the dummy antenna to the antenna lead-in and ground wires. This antenna (A-98) is in your squadron communications kit.
3. Set the selector switch to RADIO position, and turn the crank at 80 rpm. Allow 20 seconds for the tubes to heat.
4. Adjust the TUNE control until you have maximum brilliancy in the TUNE TO BRIGHTEST indicator.
5. Check the keying mechanism. There should be a flickering in the TUNE TO BRIGHTEST indicator when the key is pressed.

Be sure the crank is rotated monthly. Otherwise grease may pack or freeze in the bearings.

General

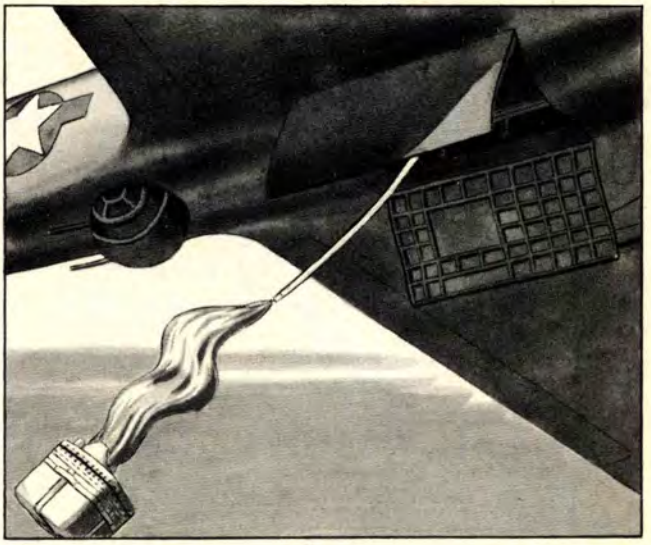
The parachute should be repacked every 60 days. Packing must be done only by properly authorized persons.

After continued humid weather, the dessicator unit may have to be replaced. Its content is normally bluish. If it has absorbed too much moisture it turns a pinkish white and must be replaced.

The set should be given a thorough visual inspection after each flight to make sure the equipment is in good condition.

You will find additional instructions in T. O. AN-08-10-94.

REMOVAL FROM THE AIRPLANE



In case of a crash landing or normal ditching, never drop the Gibson Girl by parachute. In either event it would be far behind you before you could recover it.

You will have to drop it, however, if the pilot has ordered a bailout. It must also be dropped if your airplane is expected to sink too soon after ditching to allow you to remove the set in the normal way. In this case, throw the Gibson Girl out when you are approximately 200 feet above the water. If you drop it sooner, it may drift out of sight.

If you must drop the Gibson Girl by parachute:

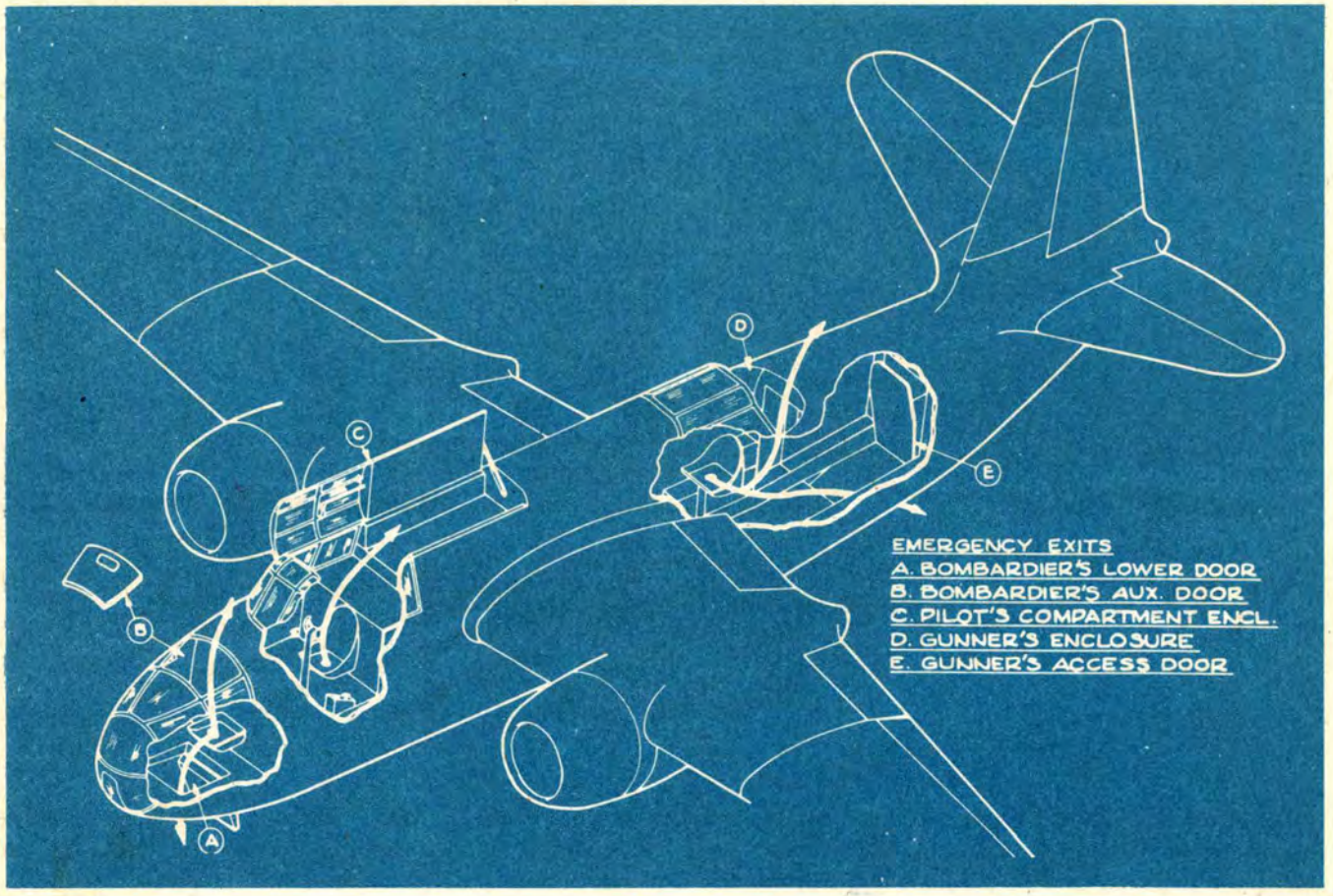
1. Fasten the loose end of the static line to the metal structure of the airplane.
2. Be sure the static line is clear and will not become fouled in other equipment.
3. Throw the set out of the airplane. The static line will open the parachute.

WARNING: Never attach the static line to any part of your body.

When your airplane is to be ditched:

1. Turn the IFF EMERGENCY switch ON.
2. Get the airplane's position from the navigator.
3. Send out the proper distress signals (See ROIF, page 8-1-1.)
4. Screw down the key before you leave your post.

The Gibson Girl will float, and if it is impossible to carry it to the life raft, you can throw it into the water. If you do this, be sure to keep hold of the static line. Attach it to the life raft so that the set will not drift away. Haul it in and begin transmission as soon as you can.



Emergency Exits

All Army Air Forces airplanes contain means for quick exit, in the air, on the ground, or water.

Before you fly, be sure you know:

1. What exit to use.
2. How to use it.
3. When to use it.

All crews must hold frequent practice drills. Teamwork and speed mean a lot in an emergency.

What Exit?

In flight, upper exits are dangerous because of the possibility of being caught by a propeller or of striking the tail. Use lower or side exits whenever possible. Study Handbook of Flight Operating Instructions to learn how to bail out of your particular airplane.

On the ground or water, fasten all lower hatches before landing. Dump all upper ones. They may jam upon impact and delay is dangerous. In an emergency, you can knock a hole in the skin of the airplane. If a handaxe is provided on the airplane, know where it is and how to remove it.

How to Escape

Emergency exits are provided with quick release red handles. Usually the door or hatch will be blown away by the windstream, if you pull the release and give the exit panel a light push.

For a crash landing on land or water, don't dump lower hatches. Dump the upper hatches, but remember that they may damage the tail assembly.

Learn all you can from practice drills. Be sure you know your exact duties and the meaning of emergency signals by interphone, call light, or warning bell.

When to Escape

Any emergency is unexpected and unusual, so keep your wits about you. Be deliberate, even though hurried. Consider the situation; make a decision; then act.

Any crash landing that you can walk away from is a good one. Forced landings in which there is a minimum of damage to the airplane or injury to the crew are the result of forethought, calm execution, and adherence to a few fundamental principles by all crew members. The following suggestions will help you. Think them over. Plan in advance for the day when you are confronted with a forced landing.

1. Stay calm. This is the primary rule for any emergency.

2. Jettison cargo and unnecessary equipment. Throw out all loose objects to prevent injury to crew on impact.

3. Open emergency escape hatches, or they may jam on impact and delay exit. Do not open windows that may slam shut and jam at the time of the impact.

4. Take the position assigned to you in advance for crash landings. It is the one in which you will sustain the least personal injury. It is the pilot's duty to warn you of the impending crash in plenty of time.

5. Take the brunt of the crash through the thickness of your body rather than the length. In general, positions of all crew members for a crash landing are the same as those for ditching. (See ROIF, page 8-7-2.) Brace yourself with a crash, not against it. Never brace yourself with legs or arms rigidly extended. The bones are strong and you may be speared by your own skeleton.

6. After the airplane has stopped, grab first aid kits and any other necessary equipment and get out fast. Get at least 50 feet away. There may be danger of fire and explosion.

BEFORE TAKEOFF

Some day you may be forced down at sea. You won't have time to look up the answers then, so now's the time to start preparing for such an emergency.

Ditching and dinghy drills will familiarize you with the duties you must perform when the order "Prepare for ditching" is given. If you master these

drills well enough to carry them out in a darkened plane under unfavorable circumstances, your education is at least well begun. However, before you take off on a long over-water mission, there are several other important points you must consider.

1. Be sure all emergency equipment functions properly and that it is properly stowed.
2. Make sure that the nearest escape hatch operates properly.
3. Check your life vest adjustment. Blow the vest up by mouth and check the adjustment of waist and leg straps. Inspect CO_2 cartridges and see that the mouth-tube valves are closed.

BEFORE DITCHING

At the first indication of trouble, it is the duty of the navigator to notify you of the airplane's exact position.

Start emergency radio procedure immediately. Your best chance of being rescued lies in early and correct emergency radio procedure. Specific procedure differs in various theaters of operations. Learn the instructions for your theater.

If you have transmitted ditching signals and then find the pilot can make land, notify the Air/Sea Rescue Unit as soon as possible so as to prevent useless search.

For standard emergency radio procedure, see ROIF, page 8-1-1.

Jettisoning

Lighten the plane by jettisoning guns, ammunition, and anything not essential to the operation of the airplane. Throw out any objects lying loose or likely to be torn loose by the impact. Hold, or firmly secure, emergency equipment that you are going to take with you.

Emergency Exits

Close all lower hatches to keep the water out. Keep open top or upper side emergency exits through which you will escape. If they are closed, they may jam on impact. Close all bulkhead doors to stop the flow of water through the plane.

General Preparations

Remove your oxygen mask as soon as you are below 12,000 feet. Take off your necktie and open your collar. Remove heavy boots, but keep on your flying clothing and helmet for protection. Remove your parachute.

Do not take off your life vest. Keep it on at all times. **Do not inflate it until you are out of the airplane.**

If you inflate your life vest while you are still in the airplane, you will find it difficult, if not impossible, to get out through the hatches.

Ditching Positions

All crew members must take the standard ditching positions recommended for various planes in the AAF ditching posters and pilot training manuals. If there is no poster in your airplane, or you can't use the positions recommended because of differences of stowage or structural variations, remember the following:

General Rules

1. The best ditching position is to sit facing the tail of the plane, knees drawn up, back and head braced against a solid structure. If your head extends above the support, clasp your fingers tightly behind it to keep it from being snapped back.

2. The second position is to lie on the floor of the plane, head to the rear and feet firmly braced against a solid structure. Bend the knees slightly. The best position for an injured man depends on his injuries. If the best position is not the injured man's regular one, someone can trade places with him. If there is not enough bulkhead room for all to brace against, if there are extra people in a compartment, it will be necessary for some to sit facing aft, back braced against forward man's shins, feet and knees drawn up, hands clasped behind head.

3. Another position, in airplanes which are equipped with ditching belts, is to brace against the belts.

4. It is the pilot's responsibility to warn you five seconds before the impact, so that you can brace for the shock. Hold your position until the airplane comes to a stop; casualties result when men relax immediately after the initial impact.

Boarding the Life Raft

Launch and board rafts from the wing tips if possible, to avoid damage from jagged edges.

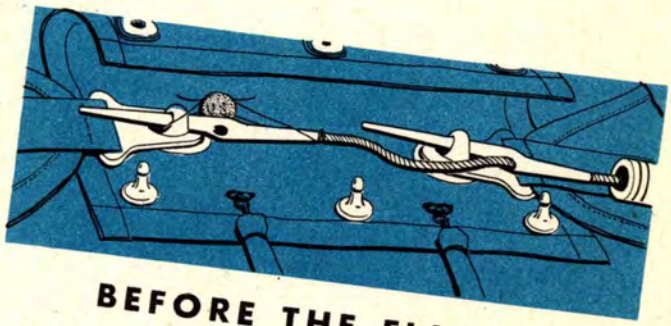
Don't jump into the raft; you'll go through the fabric. Don't get onto an inverted raft; you'll expel the air underneath and make the raft hard to turn over. Right it from the wing of the plane if you can.

Paddle away from the plane and tie all rafts together. Stay near the plane as long as it stays afloat. It will be easier for rescuers to spot you.

Parachutes

All persons aboard Army airplanes will be equipped with standard-type parachutes. Wear your parachute whenever possible. The pilot will see that all persons aboard have parachutes, are instructed in their use, and know the bail-out plan. It is an excellent precaution to carry an extra parachute in multiplace airplanes.

CORRECT LANDING POSITION



BEFORE THE FLIGHT

Inspect your parachute. Remember, you may have to jump with it! Check the date of the last inspection. The packing interval should not exceed 60 days in the United States or 30 days in the tropics. Open the flap; make sure that the ripcord pins are not bent and that the seal is not broken. A bent pin or jammed wire may make it impossible to pull the ripcord. See that the corners of the pack are neatly stowed so that none of the silk is visible. See that the six or eight opening elastics are tight. Inspect each parachute you draw.

Put your parachute on and be sure the harness fits properly. The shoulder and chest straps should be snug without play; the chest buckle should be twelve inches below the chin. The leg straps should be snug. In fact, the harness should be comfortably snug when you are seated and disagreeably tight when you stand up.

IN FLIGHT

If you find yourself in serious trouble, prepare to put your bail-out plan in operation.

CONSIDER THESE POINTS:

1—Note your altimeter reading.
2—Check the altitude of the terrain below.
3—Decide on a minimum altitude at which you can safely bail out. Take into consideration the flight characteristics of the plane and the kind of trouble you are having. Notify the pilot.
4—If you are still in trouble when you reach that minimum altitude—bail out.
5—Remember that in general it is safer to jump than to attempt a forced landing on hazardous terrain with a fully loaded plane.
6—If you have to bail out, help the pilot pick the best available spot.

THE BAIL-OUT

Know the emergency exits provided for the airplane and understand how and when to use them. Bail-out posters are supplied for most bombardment types of aircraft.

Practice making exits while wearing full equipment when the airplane is on the ground. Drill yourself in a standard bail-out procedure, including warning signals and exit signals.

JUMPING FROM TWIN-ENGINE TRAINERS, BOMBERS, AND TRANSPORTS

You will normally use an escape hatch, the bomb bay, or a door, depending upon circumstances. Slide yourself to the edge of the opening and go out head first and straight down.

DRILL IS ESSENTIAL

You Must Know When, Where, and How to Leave the Airplane

CLEARING THE AIRPLANE

Probably the most important single act, in any parachute jump, is opening the parachute only after you are clear of the plane. Wait until you are well away from the airplane before you pull the ripcord. Keep your eyes open. Look around. If you have enough altitude, wait at least five to ten seconds before pulling the ripcord.

PULLING THE RIPCORD

There is nothing complicated or difficult about getting your parachute safely open. Just:

1—Straighten your legs and put your feet together to reduce the opening shock, and to avoid tangling your harness.

2—Use both hands to grasp the ripcord pocket.

3—Grab the ripcord handle with the right hand, and yank! Keep your eyes open and look at the ripcord as you pull it.

THE DESCENT

About two seconds after you have pulled the ripcord, you will feel a sharp, strong tug as the canopy opens and bites the air.

Look up to see that the chute is fully open. If a suspension line traverses the top, or the lines are twisted, manipulate the lines to remedy the fault.

Do not worry about oscillations. They will almost certainly occur on your way down, but are of minor consequence. Do not attempt to check them or to slip the parachute, as such maneuvers are useful only to experts, and are dangerous below 200 feet.

Make a quick estimate of your altitude by looking first at the ground below and then at the horizon.

You will descend approximately 1000 feet per minute.

Observe your drift by craning your neck forward and sighting the ground between your feet, keeping your feet parallel and using them as a driftmeter.

Face in the direction of your drift.

While you cannot steer your chute, you can turn your body in any desired direction. **The body turn is the most useful maneuver you can learn because with it you can make certain that you land facing in the direction of your drift. It is simple and easy. Note carefully exactly how it is done.**

STUDY THE PICTURES. Practice the body turn in a suspended harness if you get the chance. This description may sound backward to you. Note with special care how these turns are executed and simply say to yourself:

"To turn right, right hand behind my head."

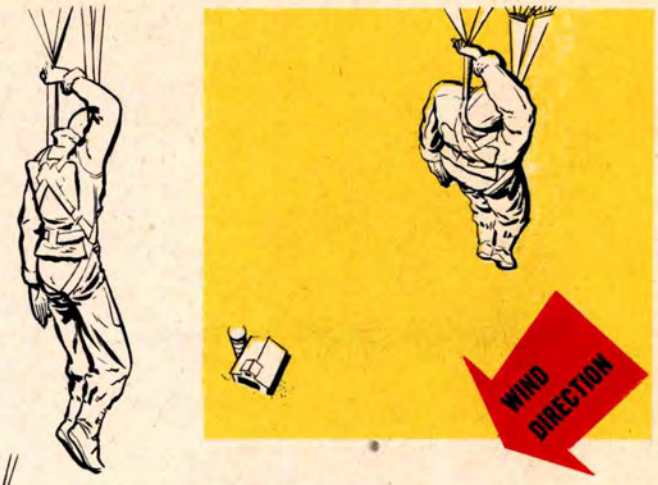
"To turn left, left hand behind my head."

HOW TO MAKE BODY TURNS

TO TURN YOUR BODY TO THE RIGHT:

1

Reach up behind your head with your right hand and grasp the left risers.



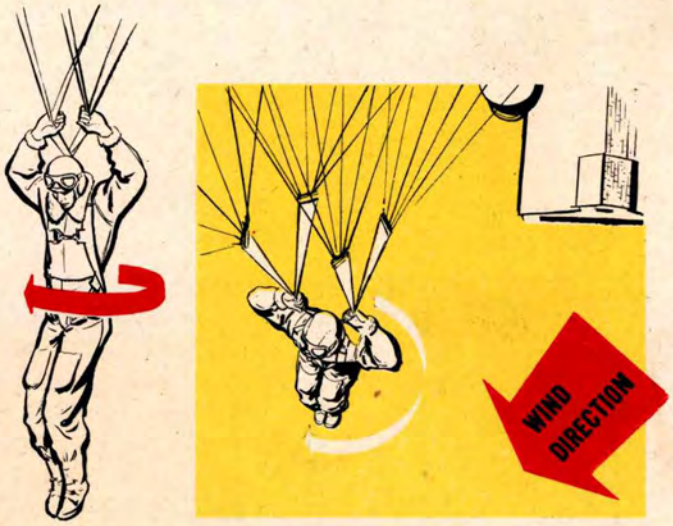
2

Reach across in front of your head with your left hand and grasp the other risers. Your hands are now crossed, the right hand behind, and in each you have two risers.

3

Pull simultaneously with both hands; this will cross the risers above your head and turn your body to the right. You can readily turn 45°, 90°, or 180° by varying the pull.

To turn to the left, reverse this procedure



In the descent, start your body turn high enough to allow you to master it. Once you have made the turn, you will find that you can control your direction of drift perfectly. Hold the turn, or slowly ease up if necessary, to bring you in facing downwind. Continue to hold the risers, whether you have had to twist them to make a body turn or not, and ride right on into the ground this way.

THE LANDING

NORMAL LANDINGS

Whether you have made a body turn or not, keep your hands above your head, grasping the risers.

Look at the ground at a 45-degree angle, not straight down.

Set yourself for the landing by placing your feet together and slightly bending your knees, so that you will land on the balls of your feet.

Don't be limp; don't be rigid.

Relax, and keep your feet firmly together with your knees slightly bent, and your hands grasping the risers above. Now hold everything and ride on into the ground, drifting face forward.

At the moment of impact, fall forward or sideways in a tumbling roll to take up the shock.

ABNORMAL LANDINGS

If there is a strong wind blowing across the ground when you land, do two things.

First, make certain that you carry out the procedures described above for a normal landing, **including the body turn to face you exactly in your direction of drift.**

Second, once you are down, roll over on your abdomen and haul in hand over hand on the suspension lines nearest the ground. Keep right on pulling them in until you grab silk. Then, drag in the skirt of the canopy to spill the air and collapse the chute. If you can't manage this maneuver on your face, go over onto your back, but haul in the suspension lines until you reach the bottom edge of the canopy, then spill the chute.

Tree landings are usually the easiest of all. If you see that you are going to come into a tree, drop the risers, cross your arms in front of your head, and bury your face in the crook of an elbow. You can see under your folded forearm. Keep your feet and knees together. If you get hung up high in a tree, consider first the possibility of immediate rescue before you try to climb down. Failing that, get out of the harness and cut the lines and risers to make a rope for climbing down.

Water landings are safe if you know what to do. The ability to swim is an advantage but not a prerequisite if you are properly equipped and trained. Follow the procedure outlined here for all types of parachutes except the QAC AN6513-1A (which has no risers on pack or harness) and the single point quick release, instructions for which are given separately. Prepare for the water landing as soon as the parachute is open.

1. Throw away what you won't need.
2. Pull yourself well back in the sling by hooking your thumbs in the webbing and forcing the sling downward along your thighs.
3. Undo your chest strap by hooking a thumb beneath one of the vertical lift webs, pushing firmly across your chest to loosen the cross webbing so that you can undo the snap. **This must be done before you inflate the Mae West, as the chest strap cannot be released over an inflated life vest.**
4. When chest strap is undone and you are well back in the sling, unsnap the leg straps by doubling up first one leg and then the other. Then keep your arms folded, or hang onto the risers, so you won't fall out of the harness. If you are unable to unfasten leg straps in the air, remove them in the water by unsnapping them or by working them down over your feet.
5. As soon as you are in the water, inflate your Mae West, one half at a time (either half will support you) and shrug out of the harness. **Remember, never inflate your life vest until you have unfastened your chest strap.**
6. Get clear of the parachute promptly, and stay clear.

Procedure for QAC AN6513-1A (no risers on pack or harness)

Modify the standard procedure as follows:

1. Reach under the pack cover and unfasten the chest strap.

2. Pull yourself well back in the sling and undo the leg straps, if you have time.
3. As soon as you are in the water, release both sides of chest pack from harness and immediately swim **upwind**, away from the canopy and lines.
4. Inflate the Mae West, one half at a time, but never until the chest strap is unfastened.
5. When clear of the canopy and shroud lines, you can slip out of your harness at leisure.

Procedure for Single Point Quick Release Harness

Modify the standard procedure as follows:

1. Before reaching the water, turn the locking cap 90° to set the release mechanism for immediate operation.
2. As soon as you are in the water, but not before, pull the safety clip, and press hard on the cap to release the lock. The harness will then slide off.
3. Inflate the Mae West, one half at a time, but never until the harness has been released.
4. Stay clear of the parachute.

See Life Vest, ROIF 8-9-1, Life Rafts, ROIF 8-11-1.

WARNING: The canopy and shroud lines, **not the harness,** may dangerously tangle you after landing in water. When equipped with any quick attachable chest pack, first unsnap the entire pack from the harness, then get away from the canopy and lines before you stop to take off the harness. **Think it through now and you'll be safe later.**

On over-water flights, **always** carry a sharp, serviceable knife where it is easily accessible. If you experience difficulty releasing yourself from the harness after landing in water, stay calm and cut yourself free.

NIGHT JUMPS

As soon as you are in the chute, prepare for a normal landing. Since you cannot see the ground on a dark night, you want to be ready to make contact at any moment. **Get your feet and knees together, your legs slightly bent. Hang onto the risers above your head and wait for contact.**

HIGH ALTITUDE JUMPS

Bail-outs from high altitudes present special problems. The higher the altitude, the greater the dangers in bailing out. Stay with the airplane as long as you safely can; down to 15,000 feet if possible. If you must leave the airplane at altitudes above 15,000 feet and if you do not have bail-out oxygen equipment, take a deep breath of pure oxygen and hold your breath. Dive out and continue to hold your breath as long as you can before pulling the ripcord.

Except in extreme emergency, do not attempt a bail-out without bail-out oxygen equipment above 30,000 feet.

The chief hazards of high altitude jumping are:

1. Intense cold.
2. Lack of oxygen.
3. High G forces induced by the parachute opening at high altitudes.

If it is necessary to bail out at high altitude, you can reduce the hazard by making a long free fall to about 10,000 feet before pulling your ripcord. A free fall enables you to reach warmer regions more rapidly; it reduces the hazard of anoxia, and insures less shock when the parachute opens.

At high altitudes the opening shock of the parachute develops excessive G forces. The higher the altitude, the greater the shock.

Judging Altitude in Free Falls

Do not depend upon counting or timing to judge distance above the ground. In the excitement it is difficult if not impossible to judge time.

Look at the ground and judge your altitude. For instance, at 5,000 feet the earth begins to look green, you can distinguish details, the horizon spreads, and the ground rushes up at you.

Changing Your Falling Attitude

If your falling attitude is such that you can't see the ground, you can alter your position by extending an arm and the resulting turn will give you a look at the ground. Then pull in your arm and legs and straighten out your knees to stop tumbling before you pull the ripcord.

Terminal Speed

Remember that in many emergency jumps you may leave the airplane at speeds so high that an immediate parachute opening would be dangerous. Hence, if you have sufficient altitude, you should wait 5 to 15 seconds to slow down before pulling the ripcord. This will avoid injury to yourself or damage to your parachute. You actually slow down during the first 10 to 15 seconds in a free fall until you reach terminal velocity. The lower the altitude, the lower the terminal velocity. So in making a free fall you do not tend to fall faster the longer you fall. You actually fall slower and slower the lower you get because the air becomes denser. With your parachute open, the rate of descent is also slower the lower you get.

Notice

In all jumps from above 10,000 feet, fall free to 10,000 feet or less before pulling the ripcord if you can. This will reduce your exposure to cold, anoxia, enemy action, and lessen the opening shock of the parachute. If you do not have bail-out oxygen equipment, just hold your breath and dive out. Then continue to hold your breath as long as possible before pulling the ripcord.

Parachute Types

BACK-TYPE PARACHUTES

Type B-7 (AN6512)—The chest straps and leg straps have bayonet type or snap fasteners. Note that parachute belt is worn outside harness to hold webbing snug.

Type B-8—Flexible back pack with bayonet type fasteners on chest and leg straps. Older type B-8 parachutes have snap fasteners.

Type B-9—Flexible back pack on single point Quick Release harness. To get out of Quick Release harness turn the cap clockwise 90°, pull safety clip, and strike the cap a sharp blow with the hand.

Cap is shown in safetied position.

SEAT-TYPE PARACHUTES

Type S-1, S-2, AN6510, and AN6511 — Harness has back and seat pad. Chest and leg straps have snap or bayonet fasteners.

Type S-5—Same chute as S-1 with single point Quick Release harness.

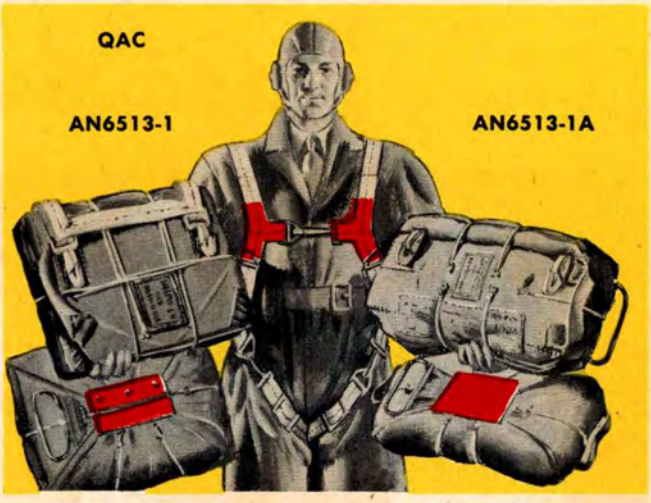
ATTACHABLE CHEST-TYPE PARACHUTES

Group 1 Assemblies

Type QAC (AN6513-1)—Quick attachable chest-type parachute with square pack. Harness has snap fasteners on chest and leg straps. It has D-rings for attachment of pack.

Type QAC (AN6513-1A)—Quick attachable chest-type parachute with barrel-type pack. Harness has snap fasteners on chest and leg straps. It has D-rings for attachment of pack.

NOTE: On both AN6513-1 and AN6513-1A parachute assemblies the snaps are on the pack and the D-rings are on the harness. Either of these packs can be used with the harness shown.

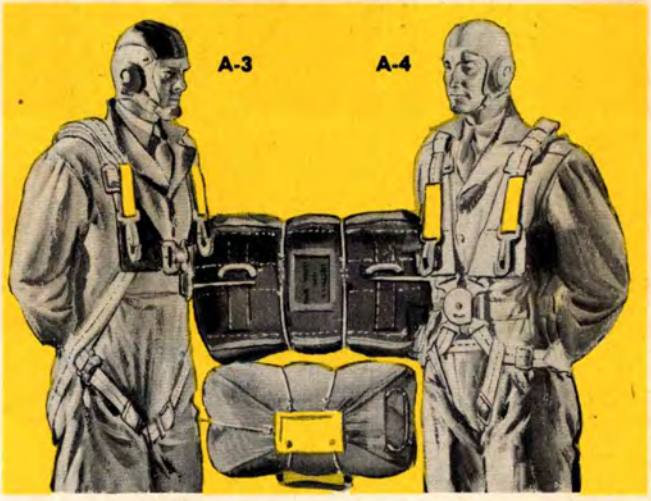


Group 2 Assemblies

Type A-3—Quick attachable chest-type parachute with barrel-type pack. Harness has bayonet-type fasteners.

Type A-4—Quick attachable chest-type parachute with barrel-type pack and single point Quick Release harness.

NOTE: On the A-3 and A-4 parachute assemblies the rings are on the pack and the snaps are on the harness. This pack can be used with either of the harnesses shown.



Caution!

Parachutes of Group 1 are not interchangeable with parachutes of Group 2.

The pilot is responsible for prevention of mismatching quick attachable chutes in his airplane.

Before the airplane moves for take-off, inspect all attachable parachutes to see that the pack fits the harness. Snap each pack to its harness to make certain it matches.

If you find any pack which does not fit the harness, change either pack or harness to get the correct assembly.

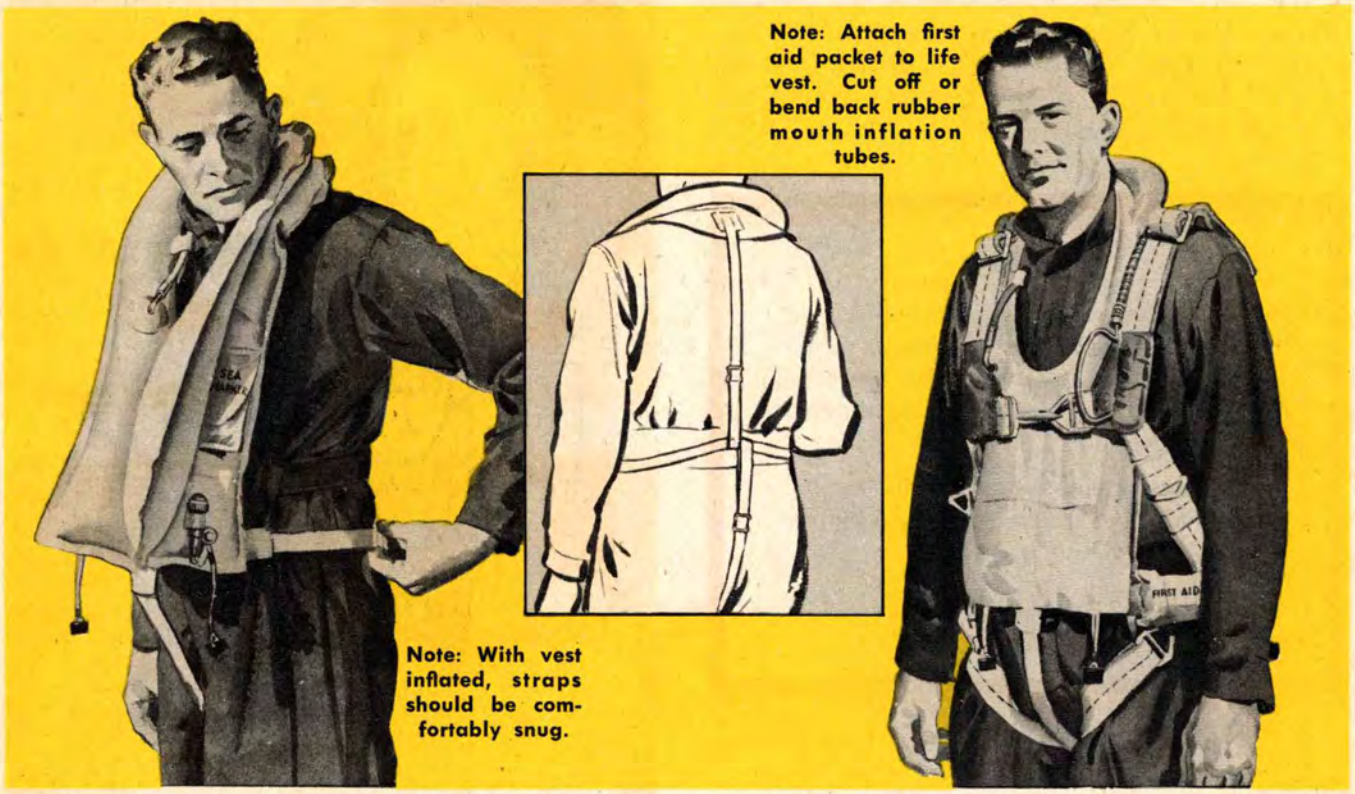
Each group is to be identified by a color. The same color must be on both pack and harness.

Red identifies Group 1.
Yellow identifies Group 2.

Be sure all packs and harnesses in your plane match.

REFERENCE: Technical Order 13-5-39

LIFE PRESERVER VEST



Wear your life vest whenever you fly over water.

When the vest is issued to you, put it on, inflate it by the mouth tubes. Adjust the straps. **With the vest inflated the waist strap should be tight, the crotch strap snug.**

Deflate the vest by opening the valves at the base of the mouth tubes. Roll the vest up to deflate completely. Be sure to close the valves tightly to prevent leak on automatic inflation.

Wear the vest over the clothing and **under the parachute harness.** Tuck the vest under the collar of your flight jacket.

To inflate, pull one cord at a time so that if the mouth valves have been left open you will discover the error before you have discharged both CO_2 cartridges. One compartment will support you and will interfere less with swimming.

If the vest leaks, or fails to inflate completely from the CO_2 cartridge, fill by blowing into the mouth tubes. Open the valves while filling the vest by mouth, then reclose the valves tightly.

Note: cutting off or bending the mouth tubes flush with the retaining loop will prevent possible injury to your eyes at the time your parachute opens.

Before each flight remove the cap from the inflator cylinder and inspect the CO_2 cartridge. If the seal at the top is punctured replace the cartridge. With the lever which actuates the puncturing pin in the up position, parallel to the container, insert the new cartridge, seal end down. Always check the container cap to be sure it is screwed down tightly.

Inserting CO_2 inflator. Screw cap down tight.

SEA MARKER PACKET

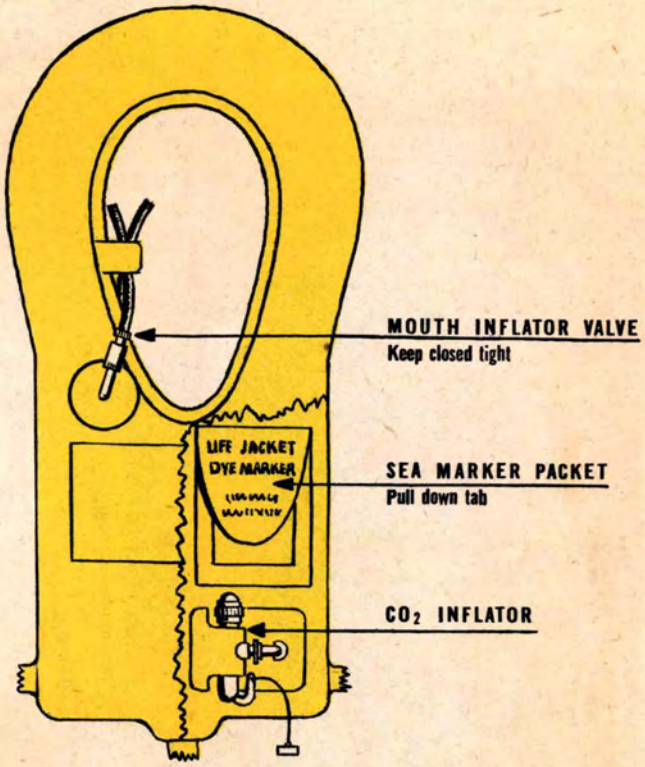
A sea marker packet is cemented to the life vest. When friendly airplanes approach, release the packet by pulling down on the tab. The dye will form a large green area lasting three to four hours. This will help airplanes to find you.

CAUTION

Before take-off be sure your life vest cartridge containers are loaded with live CO_2 cartridges, **and that the container caps are screwed down tightly.** (See illustration.)

Always make certain that the mouth inflator valves are tightly closed before pulling the inflating cords.

Turn in your life vest for inspection every six months.



WARNING: STAY AWAY FROM YOUR CHUTE IN THE WATER

After parachuting into water you will have a tendency to drift downwind into the fallen parachute as soon as you inflate your life vest. To avoid entanglement with harness and shroud lines, work upwind, away from the chute, and stay clear. If you have a raft, salvage your parachute for sail, cover, and extra lines. If not, get away from the chute and stay away.

ROIF 8-10-1
REVISED MARCH 1945

Swimming Through Fire

When an airplane is ditched at sea there is always the possibility that a smashed wing tank and engine will spread flaming oil and gasoline on the water. By using the following procedure, however, you can swim to safety through such a fire, even when you wear a life vest.

1. Jump feet first upwind of your airplane. Cover your eyes, nose and mouth with both hands. Take a deep breath. Hold breath until you rise to the surface.

2. Just before you reach the surface, make a breathing hole in the flames. Swing your arms overhead to splash flames away from head, face, and arms.

3. Swim into the wind. Use the breast stroke. Before taking each stroke splash water ahead and to the sides. Keep mouth and nose close to the water. Duck your head every third or fourth stroke to keep it cool. If there are several men, swim single file. Let the strongest swimmer splash a path so the rest can follow safely in his wake.

Swimming Under Water

If the heat is too intense or flames tco high, swim underwater —out of the danger area. To do this:

1. Splash flames away from body.
2. Hold head near water level.
3. Deflate life vest by releasing valves.
4. Take a deep breath but do not inhale fumes.
5. Sink beneath the surface, feet first.
6. Swim upwind as far as possible.
7. Splash away the flames as you come to the surface. Take a deep breath and submerge again. Repeat procedure until you are beyond the fire.
8. Re-inflate life vest by mouth.

EMERGENCY KITS

Vest, Emergency Sustenance, Type C-1, was developed for the use of aircraft crews forced down in isolated regions. It consists of an adjustable vest-like garment, fitted with pockets into which the items of the kit are conveniently stowed. The vest is to be worn under the life preserver vest and parachute.

PROTECT YOURSELF. Before taking off on a flight over inaccessible or mountainous country, the arctic, jungle, desert, or ocean, check your vest and be sure it contains all the necessary equipment. If it does not, check with your Personal Equipment Officer.

The following items of equipment are carried in the pockets of the vest:

- 1 hat (yellow on one side, OD on the other)
- 1 pair Polaroid sun goggles
- 1 signal mirror, with lanyard
- 1 sharpening stone
- 1 fishing-sewing kit, in plastic container
- 1 collapsible spit and gaff
- 1 plastic water canteen (3-pint capacity)
- 1 Boy Scout knife
- 1 large knife (with 5-inch saw and blade)
- 1 package toilet tissue
- 10 yds. bandage (with sulfa powder)
- 1 waterproof match-box with compass
- 20 matches
- 14 fire starting tabs
- 1 burning glass
- 1 signal whistle
- 1 oil container
- 1 waterproof cover for .45 cal. pistol
- 20 .45 cal. shot cartridges
- 1 First Aid Kit
- 1 Survival manual
- 2 vest-kit rations in tin containers
- 2 five-minute signal flares
- 1 mosquito headnet
- 1 collapsible container for boiling water
- 1 pair woolen insert gloves
- 1 pair leather outer gloves

LIFE RAFT KIT

Accessories for multiplace life rafts are carried in a kit and include the following items:

Signal kit (Pyrotechnic projector and 6 flares).

Emergency drinking water, 7 cans. Don't open before flight or water will spoil. Save cans for storing rain water.

Sea marker, 3 cans. When you see a plane, pour a can of marker on the water and stir it with an oar so it will spread. Do this quickly.

Life raft rations, 7 cans.

Flashlight, hand energized.

Knife, floating, attached to raft.

Police whistle, to attract attention.

First Aid Kit (Medical Supply Catalog, #9776900).

Fishing kit. Don't let hooks puncture raft.

Paulin for use as a sail.

Paulin for signal, shade, camouflage, and catching rain water.

Sun protective ointment, 4 tubes.

Emergency signalling mirror.

Wrist compass.

Religious booklets.

Water containers, 4.

Cellulose sponge.

Aluminum oars, 3.

Hand pump and hose.

Repair kit.

Bailing bucket. Use it also for urinating. Don't stand in raft.

Repair plugs, 4.

Ocean charts.

Gatty's Raft Book.

Survival booklet.

Twine, 40 feet. Tie loose equipment to raft.

Sea anchor.

Life Raft Discipline

EQUIPMENT

Familiarize yourself now with the use of the equipment provided with the various life rafts. Ask your Personal Equipment Officer for demonstrations and instruction in its use.

If there are two or more rafts, connect them with the line provided to keep from becoming separated. Remain in the vicinity of the plane if it stays afloat, but not so close that the raft might be damaged by tossing against a sharp projection. Securely fasten the kit and all loose gear to the raft, with tight but easily untied knots.

Get the emergency radio into operation as soon as weather permits. Instructions are on the set. Keep all signaling equipment where you can get at it quickly. Keep flares and Pyrotechnic Pistol and cartridges as dry as possible. Use the flares only when a ship or plane is near. Fire the pistol almost vertically for maximum height, ahead of the plane so that the shot will be within the visibility range of the pilot.

Use the tarpaulin yellow side up for a signal, blue side up for camouflage from enemy.

Keep the sea anchor out. It will head you into the wind or check your drift.

WATER AND FOOD

Your pilot is in charge of food and water rationing. Abide by his rulings. Take no food at all for the first 24 hours. In general, take no food if you have no water.

Drink all the water you can hold before any overwater flight. Your body will store it.

You can collect rain water in the tarpaulin or sail. Drink as much as you can and store the remainder in empty water cans and other containers.

Never drink sea water or urine.

Take good care of your fishing kit.

PROTECTION

In the tropics protection from the sun is vital. Rig the oars and tarpaulin as a canopy and stay in the shade. Keep arms, legs, and head covered. Wet yourself, clothes and all, with bucket, sponge, or by immersion, but be careful to keep salt water out of your mouth.

Don't overexert. Perspiration will result and you will require more water.

Continued exposure to cold sea water plus loss of circulation may bring about a condition known as Immersion Foot. To guard against it, keep your feet as dry as possible. Move your feet around and wriggle your toes to encourage circulation. If feet become swollen and sore, don't rub them. Rubbing will make the condition worse. Sprinkle open sores with sulfanilamide powder.

Large salt water burns or boils should be covered with sulfanilamide ointment and a light bandage. Don't prick or squeeze boils.

Don't worry about the absence of bowel movement or urination. It is a natural situation. Never take a salt water enema or a laxative.

If there is more than one man aboard, establish a watch routine. Keep a man on alert at all times. **Tie the man to the raft with at least ten feet of slack.**

Fire Fighting

IN FLIGHT

Use all extinguishers applicable and always aim at the base of the fire.

Keep your parachute away from the fire. Put it on as soon as possible.

Give the pilot any assistance possible. Inform him of any terrain obstructions in the path of the airplane.

Get your exact location from the navigator. Transmit your position and the ETA to the field toward which you are heading. Make every attempt possible to get the message through.

Stay at your position until a crash seems imminent, then move to your proper bailout station.

Engine Fires

At the first sign of a fire, if conditions permit, the pilot will take all necessary action to control it from the cockpit. His actions will depend upon the type of equipment he has.

In any engine fire your only duty is to stand by and give all necessary information to the pilot.

Fuel Tank and Amphibian Hull Fires

1—Try to locate the source of the fire.

2—Inform the pilot.

3—If fire is accessible, use hand and built-in equipment if possible.

4—Transmit your position and ETA to the field toward which you are heading.

5—Continue your duties.

Cabin Fires

1—Give pilot the necessary information.

2—Close windows and all openings.

3—Locate source of fire.

4—Use all extinguishers available. (Open windows as soon as the flames are extinguished.)

5—Continue your duties.

Flare Fires

If flares in the racks ignite, release the flares at once. Pry them loose if they stick in the racks.

Other Fires

The pilot will attempt to extinguish wing fires or drop tank fires by slipping the airplane away from the fire or dropping the tanks.

Your only duty is to give the pilot or navigator any necessary information and continue your duties.

In case of fire, don't open emergency hatches or bomb-bay doors in the air, except for bailout. External fires may be drawn into the cabin. Drafts will cause cabin fires to flare up.

Open emergency hatches just before landing if fire makes a crash landing necessary, to permit escape or rescue.

ON THE GROUND

Always have a member of the ground or air crew stand by with adequate, portable fire extinguishing equipment while the engines are being started.

Starting an engine is a critical fire moment. Backfiring sometimes ignites excess priming fuel in the induction system. Fires spread rapidly.

In case of fire while starting engines:

1—Help crew use portable fire-fighting equipment.

2—**Notify tower to rush crash equipment.**

3—See that all crew members clear the airplane.

4—If there is time, remove classified equipment.

Fire Fighting Equipment in Airplanes

LEARN THE LOCATION AND PROPER USE OF FIRE EXTINGUISHING EQUIPMENT INSTALLED IN YOUR AIRPLANE

"Fyr Fyter" hand-type fire extinguishers, having a carbon tetrachloride base, are found in most airplanes. Use this extinguisher primarily for fighting fires in the cockpit or cabin. It is unsuitable for extinguishing fires outside the fuselage during flight.

Aim at the base of the fire, remembering that your supply is limited and must be used effectively. The "Fyr Fyter" extinguisher in your plane has enough fluid to last for about one minute of continuous use. Its effective range is approximately 20 feet.

CO_2 hand-type fire extinguishers, using carbon dioxide, also are found in large airplanes. Use this extinguisher for fighting fires inside the airplane.

The CO_2 extinguisher has an effective range of only 3 feet. The charge will last only 15 to 30 seconds, according to size of the unit. So aim at the base of the fire and move in close, on the upwind side. **Then pull the trigger release, directing the CO_2 straight at the base of the fire.** Move the discharge nozzle slowly across the flame area.

AIM AT BASE OF FIRE

Know the location of all extinguishers, their limitations, and how to use them.

AIM BEFORE PULLING TRIGGER

Both of these extinguishers are effective in combating fuel, electrical, and wood or fabric fires. CO_2 is rapid, clean, and easy to use. However, because of the small quantity in the cartridge, it might not be final in action.

Built-in CO_2 (carbon dioxide) systems are installed in some types of airplanes, so that engines, hulls of amphibians, gasoline tank compartments, or even cargo sections may be flooded with carbon dioxide gas in case of fire. First, set the extinguisher selector valve to direct the CO_2 charge to the desired location. Then pull the release handle. The operating controls are marked clearly to indicate their method of use.

Precautions

Stand back, but within effective range, when using the "Fyr Fyter" carbon tetrachloride extinguisher. Open windows and ventilators after fire is extinguished. **The fumes generated are poisonous.** See a doctor as soon as you land if you have inhaled excessive amounts of the gas or have swallowed even a small quantity of the liquid.

Don't touch any portion of the discharge nozzle of the CO_2 extinguisher. The extremely cold temperature of the carbon dioxide may cause severe burns.

FIRST AID KITS

CONTENTS

OUTSIDE PACKET

- Iodine swabs, (1 package)
- Bandages, gauze, adhesive, 1 pack

LARGE COMPARTMENT

- Dressings, first-aid, large (2)
- Dressing, first-aid, small (1)
- Bandage, gauze, compress (1)
- Morphine tartrate, ½ gr., 2 tubes
- Water purification tablets, halazone, 1 bottle
- Scissors, 1 pair
- Burn-injury set, boric acid ointment (1)
- Eye-dressing set (1)
- Sulfadiazine, 0.5 grm., 8 tablets
- Tourniquet (1)

The **Kit, First-Aid, Aeronautic** is a standard unit in all military aircraft (Medical Department Supply Catalog No. 9776500). It is designed for use of aircrews and should not be opened by ground personnel unless there is urgent need. The contents of the main compartment are protected by a sealed zipper. Break the seal only when you need the contents of the inner kit for the treatment of injuries. A small packet on the outside of the kit contains iodine swabs and adhesive bandages for the treatment of minor injuries. When the seal has been broken, notify your Personal Equipment Officer or Medical Supply Officer, so that he can check the contents and replace missing items. Keep your kit intact. Make sure it is sealed. You life may depend upon it.

KIT, FIRST-AID, FOR PNEUMATIC LIFE RAFT

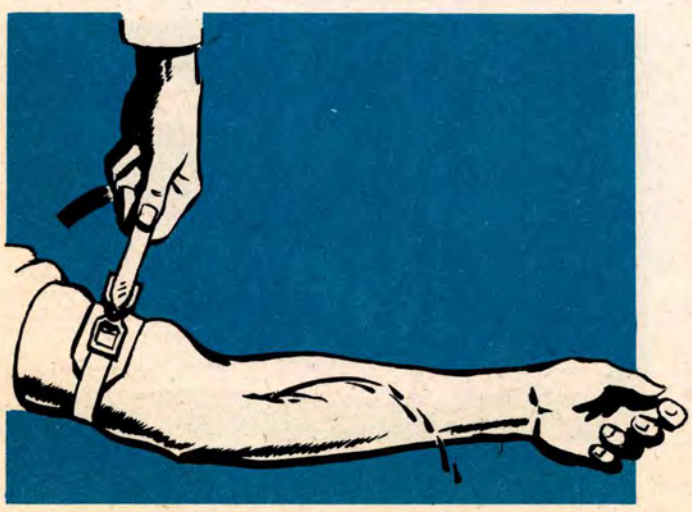
Medical Supply Catalog No. 9776900

This is a part of the life raft kit (See ROIF 8-11-1). It contains morphine syrettes, bandage compresses, sulfanilamide powder, sulfadiazine tablets, and burn ointment.

PACKET, FIRST-AID, PARACHUTE

Medical Supply Catalog No. 9778500

To be attached to the parachute harness or Mae West life vest for constant availability. Should be carried in gun turrets and other cramped spaces where the larger Kit, First-Aid, Aeronautic is not accessible. Contains tourniquet, morphine, wound dressing, and 8 sulfadiazine tablets. You can open the packet by tearing either end of the outer container at the notch.



Your airplane is a good first-aid station. You have the Kit, First-Aid, Aeronautic, and the Packet, First-Aid, Parachute. Oxygen is frequently available. Splints, or splint materials, are at hand. Hot drinks are often carried in thermos jugs. In certain bombers you will be provided with blood plasma. Familiarize yourself thoroughly with the first-aid supplies which you carry, and get clearly in mind just what you can do with them.

WOUNDS AND INJURIES

Wounds and injuries involve one or more of these problems: **pain, cuts, bleeding, broken bones, burns, frostbite, shock, and unconsciousness.** Generally you will have to deal with combinations of these, such as cuts which are bleeding, burns that cause pain, broken bones associated with cuts or burns, and so on. Shock usually comes on after a good deal of blood has been lost either inside the body (where you may not be able to see it), or on the outside. Shock also accompanies deep or extensive burns. Unconsciousness may be produced by a head injury, may follow shock, or may occur as a result of failure to get enough oxygen.

In giving first-aid, try to size up the general situation accurately. Then attend to the most serious problems first. Above all, use common sense.

CUTS AND BLEEDING

1—Expose wound by cutting nearby clothing with scissors.

2—Cover cuts with sterile dressings and apply firm pressure.

3—If this does not stop the bleeding, elevate the bleeding part.

4—If these measures fail to stop bleeding in arms or legs, apply a tourniquet in the middle of the upper arm or middle of the thigh. The tourniquet must be released every 15 minutes for at least a few seconds, depending upon the amount of bleeding.

TOURNIQUET (WARNING)

A tourniquet must be removed, or temporarily released, every 15 minutes. **Failure to release the tourniquet often enough or long enough to provide an adequate circulation to the blocked portion of the arm or leg may necessitate amputation later.**

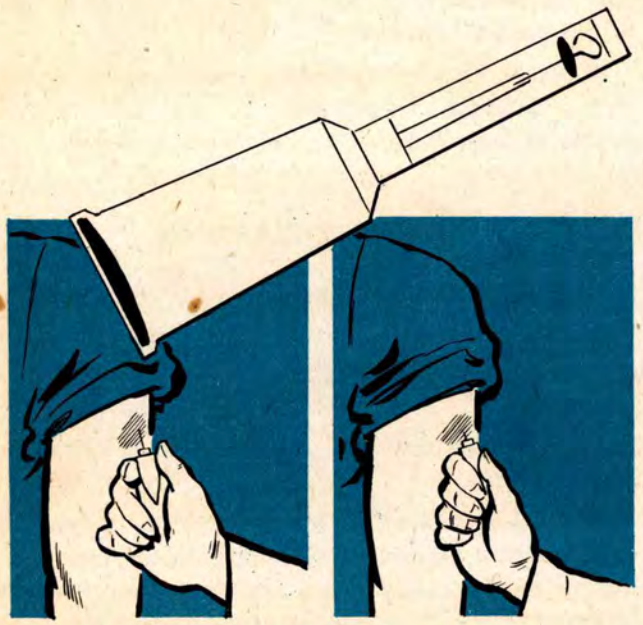
PAIN

Use morphine at once for severe pain. This makes it possible for the patient to lie quietly, preventing aggravation of the injuries. Do not use more than one tube (½ grain) of morphine at any one time.

When giving morphine, mark down the time and dose on the patient's forehead or clothing with a pencil. Remember that an excess of morphine can be fatal. Do not give morphine to a person who is unconscious, who has a head injury, or who is breathing less than 12 times per minute.

TO GIVE MORPHINE

1—Paint any small area of skin with iodine.
2—Remove the transparent cover from the morphine syrette.
3—**Push in the wire loop to puncture the inner seal;** then pull the wire out.
4—Thrust the needle through the skin, using care not to press morphine out of the tube while doing so.
5—Squeeze the tube slowly to inject the morphine.



GIVE MORPHINE:

1—To stop pain.
2—To decrease shock.
3—To facilitate moving the patient.

DON'T GIVE MORPHINE:

1—To an unconscious person.
2—To a person with a head injury.
3—To a person who is breathing less than 12 times per minute.

SHOCK

You can tell when a patient is in shock by the total picture he presents rather than by any single sign. Usually he will have:

1—Lost considerable blood, or
2—Suffered severe burns, or
3—Been subjected to intense pain, or
4—Received a head injury.

His skin is pale, cold, clammy, or moist.

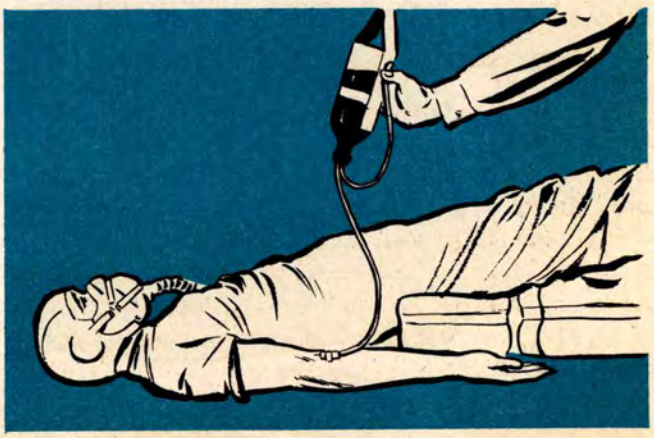
His breathing is shallow, and may be irregular.

His pulse is weak, rapid, thready, and often difficult to find.

Sometimes there is nausea and vomiting.

Treat shock by doing the following things as promptly as possible:

1—Stop any obvious bleeding.
2—Give pure oxygen to breathe. (Automix "OFF.")
3—Give morphine. (Exception: Head injury.)
4—Keep the patient warm with blankets, extra clothing, or a sleeping bag, but avoid excessive heat.
5—Loosen any tight clothing.
6—Place the patient with his head slightly lower



than his feet, to promote better circulation to the brain.

7—Inject plasma, when it is available, in accordance with the directions on the plasma package.

FRACTURES

1—If a broken bone is associated with a cut, sprinkle with sulfa powder and cover with a sterile dressing. If the dressing is firmly bound in place it will almost always stop the bleeding.

2—Give morphine.

3—Apply a temporary splint to the part, using wood, strips of metal, heavy cardboard, or any convenient pieces of equipment such as a machine-gun barrel or fire axe.

4—Do not attempt to set the bone. Manipulation causes shock.

BURNS

For minor burns:

Squeeze burn ointment onto a sterile dressing. Then cover the burn gently with the dressing.

For severe burns:

1—Give morphine.

2—Treat shock. (Oxygen; plasma, if available.)

3—Apply burn ointment on sterile dressings, **and bind the dressings gently but firmly in place.**

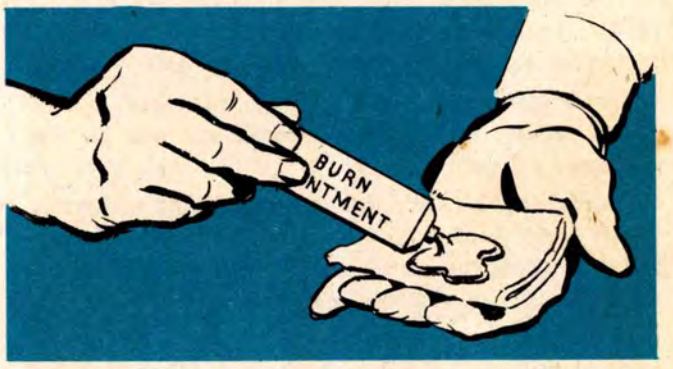
4—Never open blisters resulting from burns.

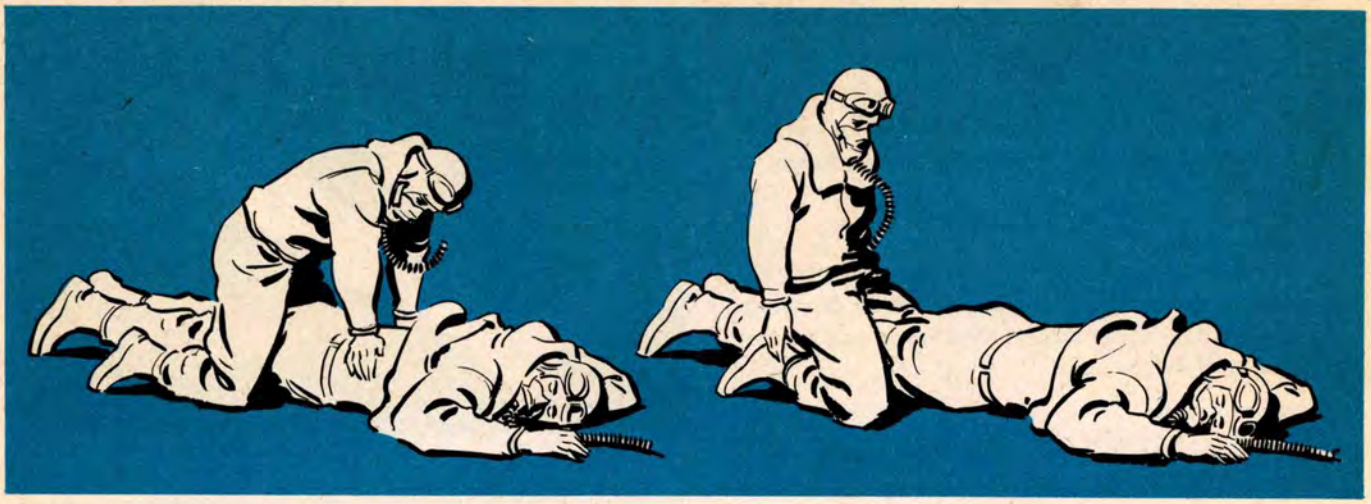
FOR EYE BURNS

Apply Metaphen ophthalmic ointment directly to the eyeball. Then apply the boric acid ointment to the inner surface of the eyelid. Cover the eye with a dressing and secure in place with adhesive strips, provided the skin around the eye is not burned. Do not touch the eye with your fingers, and do not rub it—either before or after the ointment has been applied.

TRANSPORTATION OF WOUNDED

If it becomes necessary to move an injured crew member improvise a litter with 2 poles and a pair of flying jackets. Turn the sleeves inside out and insert the poles through them. Then close the jacket over the outside of the poles. Additional support can be obtained by using boards or cardboard splints inside the jackets. Litters can also be improvised with poles and blankets. Take great care to be as gentle as possible in moving an injured person onto a litter. Keep his body as flat as possible at all times. Have 3 or more persons move and support him by placing their arms under his legs, buttocks, back, shoulders, and head.





UNCONSCIOUSNESS AND NEAR-UNCONSCIOUSNESS

Oxygen lack, carbon monoxide poisoning, and head injury are important causes. Immediate treatment is vital, especially if breathing has stopped.

1—Give artificial respiration:

First, lay the patient face down with one arm bent at the elbow, his face resting on his hand, and his other arm extended beyond his head.

Second, open his mouth and remove all foreign substances such as false teeth and chewing gum. If his tongue has fallen back into his mouth, grasp it with your fingers and pull it well forward.

Third, give him pure oxygen. (Auto-mix OFF.) **If the patient has stopped breathing, turn on the emergency flow.**

Fourth, kneel astride the patient's thighs with your knees about even with his. Place the palms of your hands against the small of the patient's back, with your little finger over the lowest rib.

Fifth, with your arms stiff, swing your body forward slowly so that your weight is applied over the patient's back. This should take about 3 seconds.

Sixth, release your hands with a sudden snap and swing backward to remove all pressure from the patient. After about 2 seconds repeat the cycle.

Continue giving artificial respiration without stopping for 2 hours or longer, unless the person to whom it is being given begins to breathe normally.

2—Keep the patient warm.

3—Do not give morphine.

FROSTBITE

1—Fingers, toes, ears, cheeks, chin, and nose are the parts most frequently affected.

2—Numbness, stiffness, and whitish discoloration are the first symptoms.

3—Wrinkle your face to find out if it is numb; watch for blanched faces of your crew mates.

4—If frostbite occurs, warm the affected part gradually. Never rub or attempt to thaw it rapidly.

5—If blisters develop, do not open them. (See HEAT AND COLD, PIF 4-7-3.)

FAILURE OF OXYGEN SUPPLY

If a crew member's oxygen supply fails above 10,000 feet, make every effort to replace his equipment or give him an emergency supply. If this is not practicable, descend to 10,000 feet as fast as safe operation permits. Loss of oxygen above 20,000 feet is critical, but there is no need for panic. **Get oxygen, or get down.**

WOUND DISINFECTANTS

1—Sprinkle Sulfa powder in open wounds.

2—Use iodine only for small cuts and scratches, which should not be covered by a dressing.

3—Never put iodine on or into large or deep wounds.