SECTION 8 EMERGENCIES

PIF 8-1-1
REVISED January 1, 1945

TO BAIL OR NOT TO BAIL

It is obviously impossible to give a definite set of rules on when to bail out and when not to. Every emergency presents a different set of conditions. The final decision is always up to the pilot.

In an emergency, try to save your plane by bringing it in for a normal or forced landing if it is reasonably possible. Engine failure on a multi-engine airplane is not an automatic signal for bailout. Jettison cargo, bombs, or auxiliary tanks if necessary, and try to continue under power to a safe landing place.

In general, make a forced landing rather than bail out under the following conditions:

1. When you have wounded men aboard.
2. When your airplane and its equipment are needed for survival after you are down—in the Arctic, jungle, or desert.
3. Over water, in airplanes except fighter types, ditching has the advantage of keeping the crew together in one or more dinghies. The dinghy radio, flares, rations, water, and other emergency equipment increase your chances of survival.

In general, when you are faced with the immediate decision of whether to bail out or try a forced landing, choose bailout under the following conditions:

1. **Loss of control**—When for any reason you are unable to control your airplane, bail out when you reach your predetermined critical altitude.

2. **Unfavorable terrain**—Bail out when in trouble over mountains, wooded areas, or flat terrain that appears too rough for a safe forced landing.

Over water, bail out from a fighter plane rather than try to ditch it.

3. **Uncontrollable fires**—Use all available equipment to try to put out a fire, but don't fight it too long. As soon as you find you can't control it, get out as fast as you can.

4. **Limited visibility**—If you have flying power but know you must land or bail out soon, try to determine type of terrain below and location of emergency landing fields. If unsatisfactory, gain sufficient altitude and prepare to bail out. If flying power is not available, bail out, unless you have at least a 1000 foot ceiling and terrain is satisfactory for a forced landing.

When leaving on any flight that will take you over the jungle, the desert, the Arctic, or any rugged country, wear shoes that you can walk home in, and wear clothes for the climate.

Forced Landings

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. The following suggestions will help you. Think them over. Plan in advance for that day when you are confronted with a forced landing.

1. Start looking for a spot where you can land while you still have fuel enough to be choosy.

2. Jettison bombs, fuel, cargo, and unnecessary equipment. Lightening the airplane lowers the landing speed, and also may keep you in the air long enough to make an airfield. Throw out all loose objects to prevent injury to crew on impact.

3. Open emergency escape hatches, otherwise 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. Land as nearly into the wind as you can, never over 90° from the wind.

5. Don't attempt turns near the ground; a stall may result.

6. Keep ample flying speed until the airplane is on the ground. There is a general tendency to stall out while making a forced landing.

7. Use flaps as you would in a normal landing.

8. Land wheels up on any type of terrain except a known airfield. If you land with the wheels down on rough ground the airplane is almost certain to nose over, increasing damage to the airplane and danger to the crew. (Exception: always crash land B-24 with wheels down.)

9. If you have power available, use it. Fly the airplane right down to the ground with ample speed. Don't try a stall landing.

10. Warn your crew in plenty of time so that they can get in position for the crash. Warn them again a few seconds before the actual contact with the ground so they can get braced. In general, positions of all crew members for a crash landing are the same as those for ditching.

11. Just before the crash, cut all switches and turn fuel selector valves off to avoid fire.

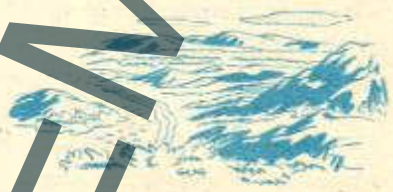
12. Try to land so the airplane has a chance to slow down instead of stopping suddenly. For instance: if there is a solid obstruction ahead, ground-loop your airplane to kill the speed and get the wing in a position where it can absorb the blow.

13. 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.

In case of forced landing immediately after takeoff, land straight ahead. Don't try to turn back. Turning back to the field has killed many good pilots.

SURVIVAL AFTER FORCED LANDINGS

Your chances of survival after a successful forced landing in uninhabited areas depends upon the amount of preparation you have made for this emergency. Learn as much as you can about the area in which you are flying. You must know such things as:



Type of terrain, and any prominent landmarks that can help you orient yourself.

Kinds of foods you should look for.

Attitude of natives.

Natural dangers.

Health and first-aid precautions.

Approximate location of the enemy.

Rescue organization and procedure.

Your airplane and its equipment provide you with plenty of material to improvise shelter, signaling equipment, cooking utensils, etc.

Study your manual, "Survival". It gives a complete story of how to live off the land and make your way back home.

PIF 8-3-1
REVISED January 1, 1945

Ditching

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. Here's how to do it:

1. Know the proper procedure for ditching your airplane.

2. Know the use of emergency equipment provided for ditching purposes.

As pilot, you must not only learn your own ditching duties thoroughly, but must make sure that your crew members know theirs. Success depends on the speed and efficiency with which each member of the crew executes his assigned job, and upon the coordination of all efforts.

Conduct ditching and dinghy drills regularly. Your Personal Equipment Officer will help you work out a drill procedure.

Inspections

Before taking off on an over-water mission, make the following checks:

1. **Emergency equipment**—See that it is complete, properly stowed, and that it has been inspected as required.

2. **Escape hatches**—Make sure that they operate properly.

3. **Life vests**—Check your own and your crew member's. Blow the vests up by mouth and check the adjustment of waist and leg straps. Inspect CO_2 cartridge and see that valves are closed.

As soon as you have the slightest doubt that you can make land, give the order: "Prepare for ditching." Give your crew as much time as possible to

carry out their ditching duties and get in position.

In addition to verbal warnings over the interphone, use the standard ditching signals: six short rings—"Prepare for ditching"; one long ring—"Brace for ditching."

Radio Procedure

Start emergency radio procedure immediately. Your best chance of being rescued lies in early and correct emergency radio procedure.

Specific radio procedure differs in various theaters of operations. Learn the instructions for your theater and make sure your radio operator knows them. If you have transmitted ditching signals and then find you can make land, notify the Air/Sea Rescue Unit as soon as possible so as to prevent useless search.

Jettisoning

Lighten the plane by jettisoning bombs, guns, ammunition, extra fuel and anything not essential to 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 bomb bay doors after jettisoning bombs. Close all lower hatches to keep water out. Keep open top or upper side emergency exits through which you will escape. If closed, they may jam on impact. Close all bulkhead doors to stop the flow of water through the plane.

General Crew Preparations

Remove oxygen masks as soon as you are below 12,000 feet. Take off neckties and open collars. Remove heavy boots, but keep on flying clothing and helmet for protection.

Remove parachutes, except when you need the one-man life raft attached to the harness.

Do not remove life vests. Keep them on at all times. **Do not inflate until 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 follow the standard ditching positions recommended for various combat planes in the AAF ditching posters.

If there is no poster on 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 hold it from being snapped back.

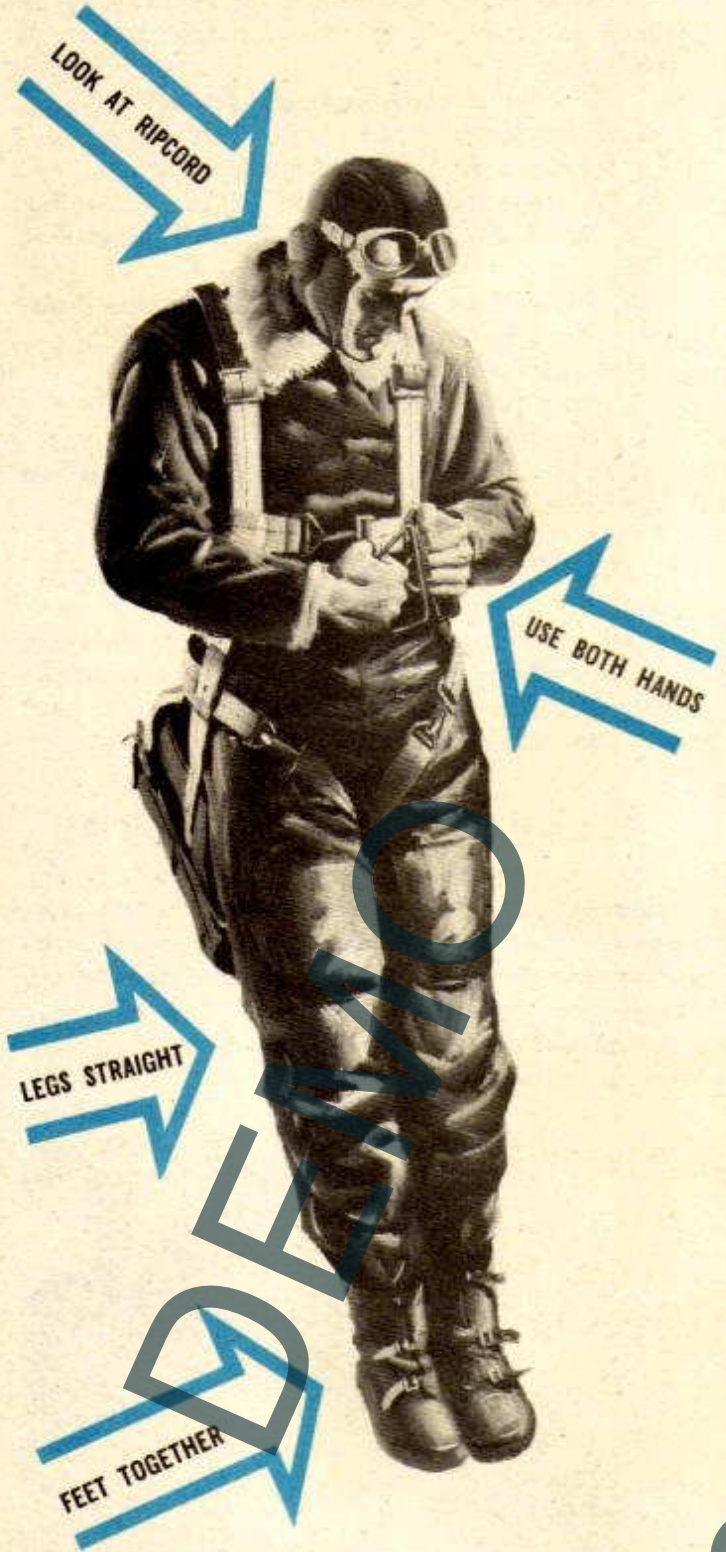
2. The second position is to lie on the floor of the plane, head to the rear and feet firmly braced against a solid structure. Bend the knees slightly. The best position for an injured man is the seated one. If such a position is not the injured man's regular one, have him trade places with someone. 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. Pilot and copilot must have seat belt and shoulder harness fastened. Warn the crew five seconds before the impact so that they can brace for the shock. Stress that positions must be held until the airplane comes to a stop; casualties occur when men relax immediately after the initial impact.

PIF 8-4-3
REVISED March 1, 1944

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."

PIF 8-4-4
REVISED March 1, 1944

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.

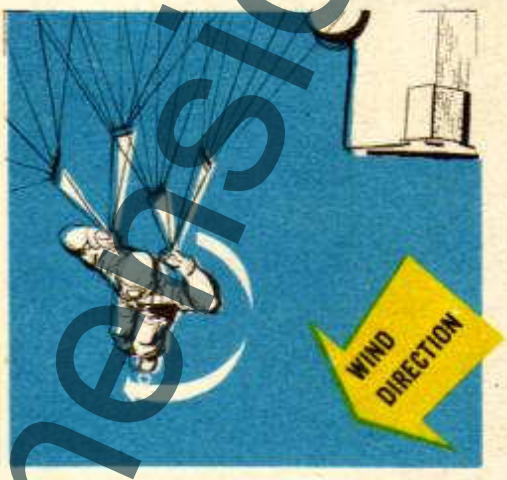
2

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.

PIF 8-4-8
REVISED June 1, 1944

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.

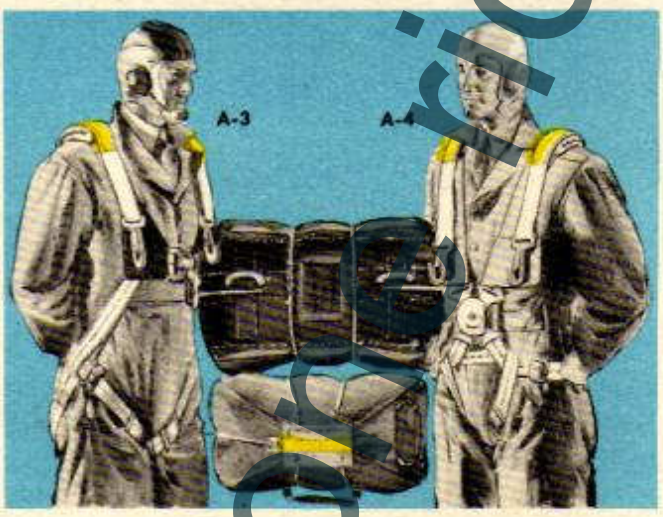
ATTACHABLE CHEST-TYPE PARACHUTES

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 in Group 1 are not interchangeable with parachutes in Group 2.

Each pilot is responsible for the prevention of mismatching quick attachable parachutes in his airplane.

Before taxiing for takeoff the pilot should:

1. Inspect all attachable parachutes to see if the pack will fit the harness. Snap each pack to its harness to make certain.

2. Inspect all attachable parachute assemblies (packs and harnesses) in the airplane and make certain that all are in Group 1 or that all are in Group 2.

This will prevent danger of mismatching.

Group 1 parachutes and harnesses are marked with red webbing.

Group 2 parachutes and harnesses are marked with yellow webbing.

Make sure all packs and harnesses in your plane are the same color.

REFERENCE: Technical Order 13-5-39

PYROTECHNIC PISTOLS

When radio communication is inadvisable or when radio equipment has failed, brief coded messages may be sent with pyrotechnic signals. Do not use pyrotechnic signals to control important operations unless no other means is available. The various colored signals which are available for use with M2 and AN-M8 pyrotechnic pistols are assigned different meanings under a code that will be changed at frequent intervals in each edition of Signal Operation Instructions. The M11, red star parachute signal, however, is always used as a distress signal to be fired from the ground or from a life raft.

M2 Pistol

The M2 pyrotechnic pistol has a strong recoil. Use both hands to fire it if practicable. The signals themselves burn with an extremely hot flame; observe every reasonable precaution while handling or firing them.

1. **Fire signals only from airplane in flight** with the exception of the M11 distress signal.

2. Point the pistol in such a way as to prevent signals from striking any part of the airplane.

3. If a signal fails to ignite on the first attempt, try at least twice more. **If third or final try fails, keep the pistol pointed overboard and clear of all parts of the airplane for at least 30 seconds, then discard signal.**

4. **Discard a misfired signal, if possible, without handling the signal itself.** One method is to hold the pistol over an opening in the airplane and release the cartridge by pressing on the latch and allowing the signal to fall clear under the force of gravity. The force of the air blast prevents holding the pistol on the outside of most airplanes. **Be careful to prevent discarded signal from striking any part of the airplane.**

5. Do not discard misfired signals when flying over populated areas.

6. Fire the M11 distress signal as nearly straight up as is practicable.

AN-M8 Pistol

The AN-M8 pyrotechnic pistol is replacing the M2 pistol. It is fired by inserting and locking the barrel in a type M-1 mount. This mount is really a little "door," fastened rigidly to the airplane, that permits the pistol barrel to extend through the airplane outer skin. The mount absorbs the recoil of the pistol. Observe these precautions in using this pistol:

1. Place cartridge in chamber after pistol is inserted in mount, and only when immediate use is anticipated.

2. Since the pistol is cocked at all times when the breech is closed, **never leave a live signal in the pistol when it is removed from the mount.**

Body Signals

If a rescue plane flies low and circles your location and you are sure that you have attracted the pilot's attention, messages can be transmitted by the emergency body signals shown on this page. When performing the signals stand in the open, make sure that the background as it will be seen from the plane is not confusing, make the motions deliberately and slowly, and repeat each signal until the pilot indicates that he understands.

OUR RECEIVER IS OPERATING

USE DROP MESSAGE

NEED MEDICAL ASSISTANCE—URGENT (Lie prone)

AFFIRMATIVE (Yes)

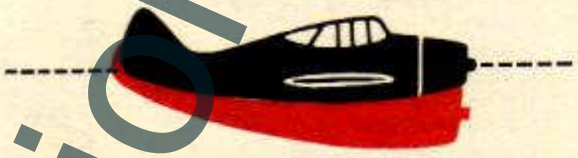
NEGATIVE (No)

ALL O K
DO NOT WAIT

CAN PROCEED SHORTLY—
WAIT IF PRACTICABLE

HOW PLANE ANSWERS

The pilot of the rescue plane will answer your messages either by dropping a note or by dipping the nose of his plane for the affirmative (yes) and fishtailing his plane for the negative (no).



AFFIRMATIVE (Yes) DIP NOSE OF PLANE

NEED MECHANICAL HELP
OR PARTS—LONG DELAY

PICK US UP—
PLANE ABANDONED

DO NOT ATTEMPT
TO LAND HERE

LAND HERE (Point in
Direction of Landing)

NEGATIVE (No) FISHTAIL PLANE

VEST TYPE EMERGENCY KIT

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

Vest, Emergency Sustenance, Type C-1 was developed for the use of pilots and crew members 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.

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 and back straps snug. After adjusting the back strap hand tack it to the waist strap.** 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.

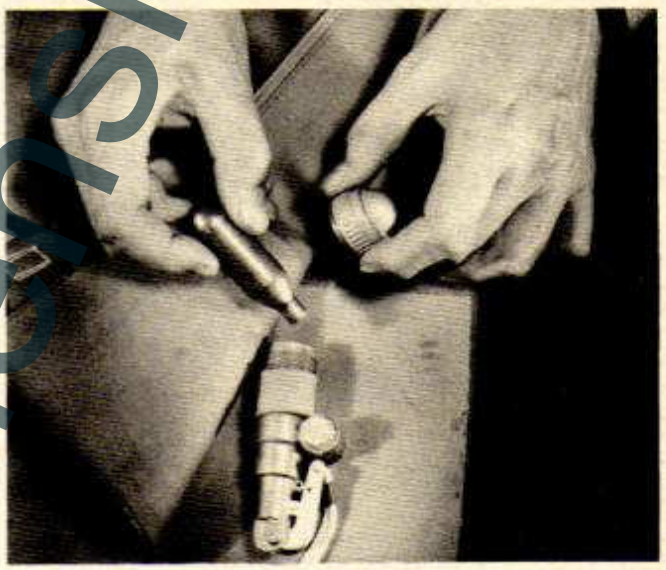
To inflate, pull one cord at a time so that if the mouth valves have been left open you will discover the error before you have discharged both CO_2 cartridges. One compartment will support you and will interfere less with swimming.

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 eye 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 tip 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 cap to be sure it is screwed down tightly.

REFERENCES: Technical Order 13-1-3 and Technical Order 13-1-17.



Inserting CO_2 inflator. Screw cap down tight.

PIF 8-10-2
REVISED July 1, 1944

Sea Marker Packet

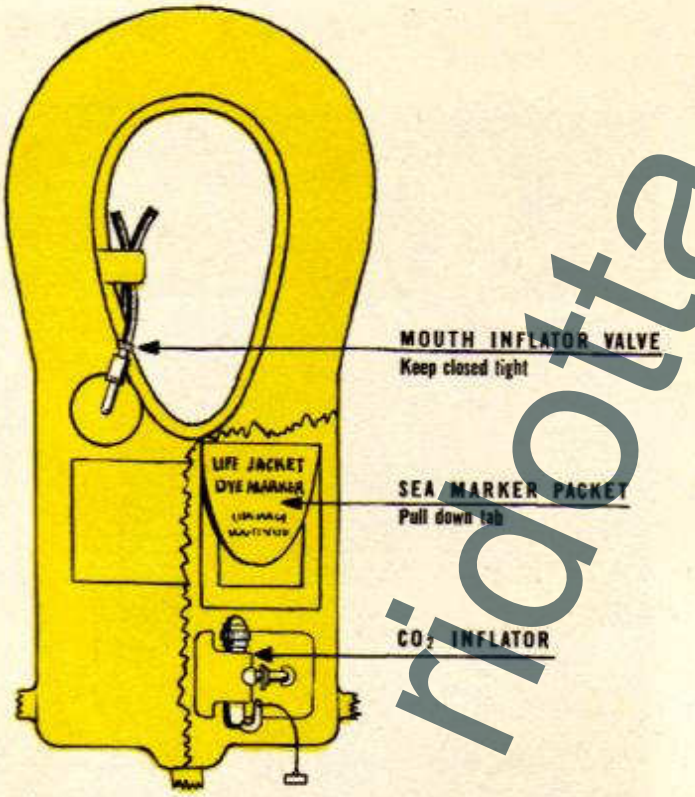
A sea marker packet is cemented to the life vest. When friendly airplanes approach, release the packet by pulling down on the tab. The dye will form a large green area lasting three to four hours. This will help airplanes to find you.

Caution

Before takeoff 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.)

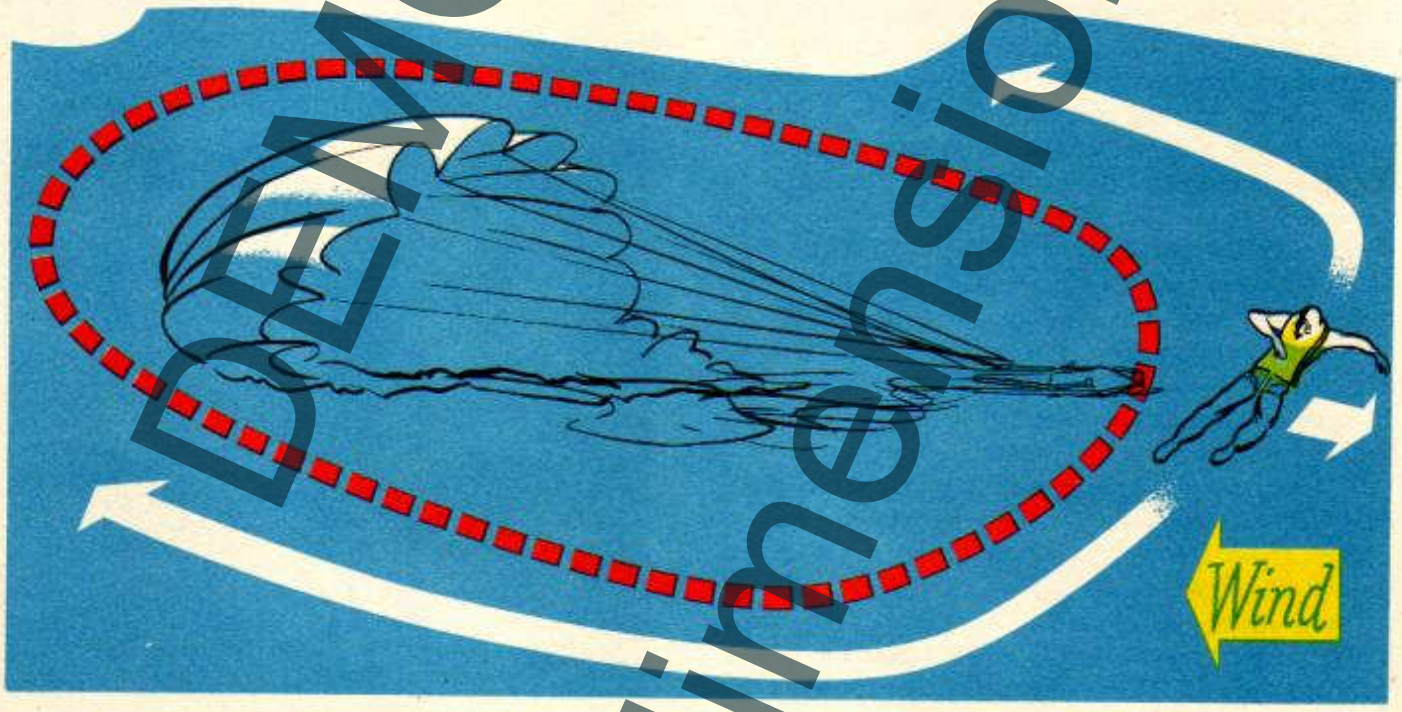
Always make certain that the mouth inflator valves are tightly closed before pulling the inflating cords.

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.



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.

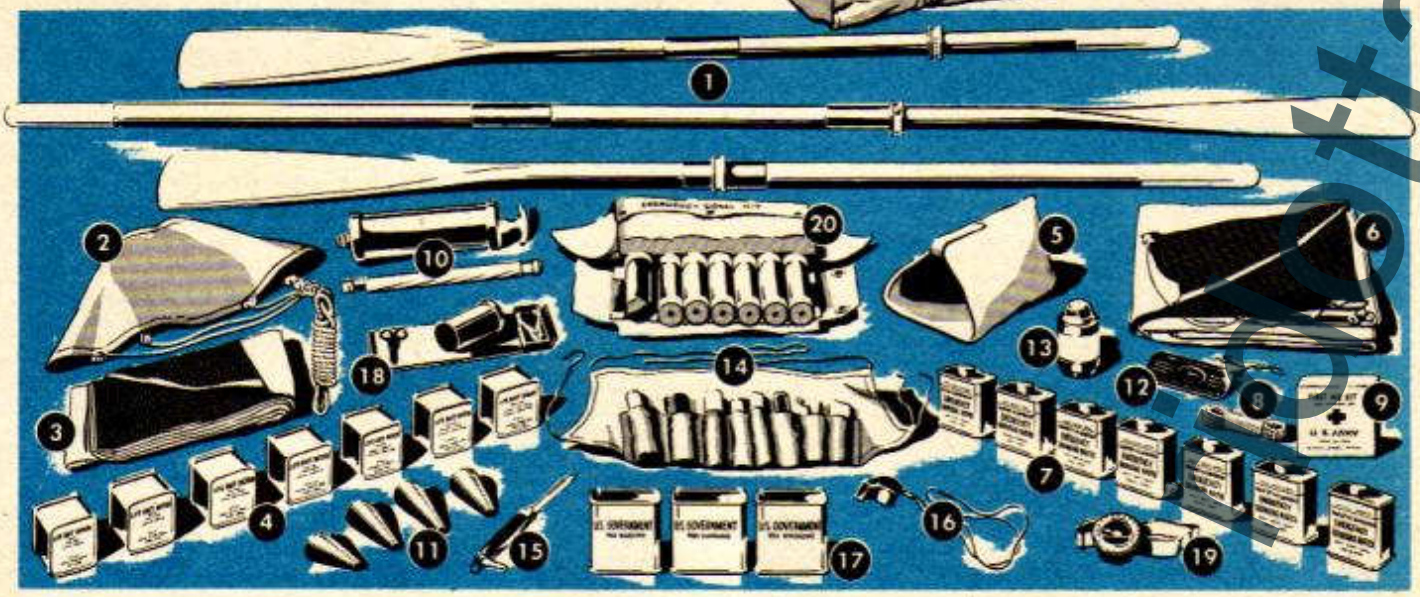
Swimming Under Water

If the heat is too intense or flames too 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.

LIFE RAFT KIT

LIFE RAFT KIT
(Closed)

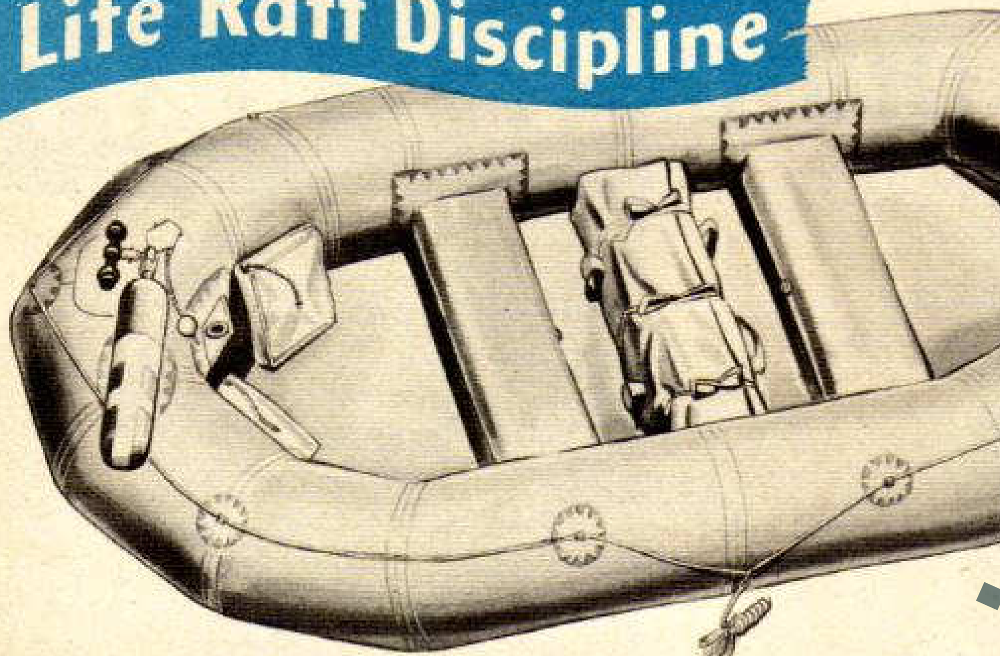


1. Oars. Use also as masts for sail.
2. Canvas Bucket Sea Anchor.
3. Sail. Use also for catching water if it rains.
4. Ration A.
5. Bailing Bucket. Use also for urination; don't try to stand in raft.
6. Shade and Camouflage Cloth. Yellow side for signal, blue for camouflage. Use it also for sun, wind, and spray protection and for catching rain water.
7. Emergency Drinking Water. Don't open or refill cans before flight. This water has been sterilized. Ordinary water will not keep. Save the cans for storage of rain water. Chemical sea water purification kits may replace some of the water cans.
8. Line. Tie down all loose equipment.
9. First-Aid Kit. Use as directed.
10. Inflating Pump. To replace with air the CO_2 lost by leakage and to inflate seats.
11. Puncture Plugs. Screw in plugs to seal leaks.
12. Signal Mirror. Best bet for signalling plane in daytime. Instructions for use on back of mirror.
13. Flashlight. Floating water-proof type. Tie it to the raft with the cord provided. Let it float as a night signal when an airplane is sighted. The battery will last 24 hours.
14. Fishing Tackle. Instructions included. Don't let hooks puncture raft. Dry lines and hooks.
15. Knife.
16. Whistle. Use to attract attention if ship or plane is near. Don't bother shouting.
17. Sea Marker. When you see a plane, pour the marker on the water. It will form a large colored slick which will last one to two hours. Get it overboard quickly when a plane is sighted as it takes a while for the color to spread. Stir the chemical with an oar to hasten spread.
18. Repair Kit.
19. Wrist Compass.
20. Signal Kit. Contains flare pistol and five or six flares. Fire proper flare (day or night) when plane is sighted. Aim high and ahead of plane.

Warning

When deflating life raft before storing it away in the airplane, use the deflating pump for that purpose. **Be sure the life raft is completely deflated.** If any air or CO_2 is left in the raft it will expand at altitude and become a dangerous hazard.

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 signalling equipment where you can get at it quickly. Keep flares and Very 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

Take no food and water for 24 hours. Then ration it carefully. The pilot is in charge of rationing. In general don't eat food if you have no water.

Have all members of the crew drink all the water they can before any over-water flight. Don't take chances on starting your raft expedition thirsty.

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.**

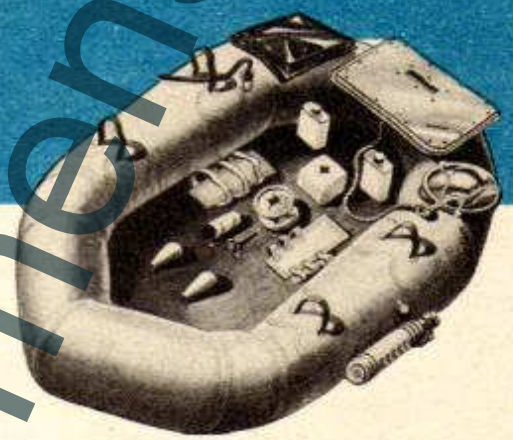
PIF 8-11-3
REVISED April 1, 1944

One man LIFE RAFT

Raft lanyard goes under harness and clips to life vest ring.

To inflate raft pull out locking pin and open valve slowly.

Board raft from small end by pulling it under you.



Pre-Flight

The one-man life raft is stowed in a seat pack attached to the parachute harness. It is inflated after the jumper strikes the water.

When you put on parachute and life raft pack, **clip the lead strap from the raft to the ring of the life vest waist strap under the harness.** Otherwise you will lose the raft pack when you get out of the harness.

Before flight unsnap the pack cover far enough to expose the CO_2 cylinder. Test the locking pin.

In the Water

Pull open pack cover. Pull locking pin out of valve handle and open valve to inflate. Enter raft from small end by grasping hand straps and pulling.

Aboard the Raft

Keep your life vest on.

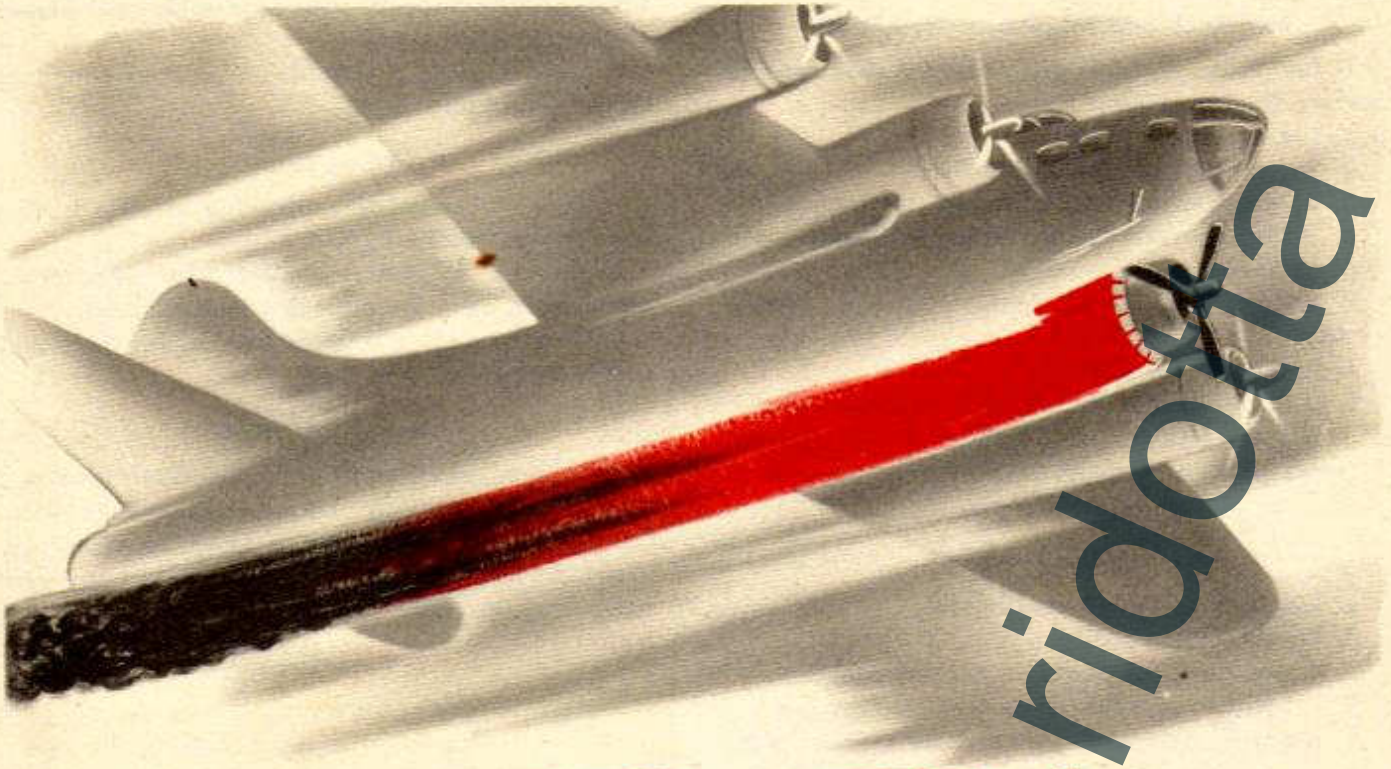
Top off inflation by blowing in the rubber mouth tube. Tighten valve after inflating.

Keep the CO_2 cylinder on the valve. The valve might leak if exposed.

Keep the lead strap from raft clipped to yourself.

Fasten down everything aboard.

The raft contains sea marker, sea anchor, bailing bucket, bullet-hole plugs, blue and yellow cloth, first-aid kit, repair kit, paddles, and water. The water may be replaced by a chemical sea water purification kit in some rafts.



Fire Fighting

KNOW THE HAZARDS OF FIRE IN AIRCRAFT—BE FAMILIAR WITH THE PROCEDURE FOR FIGHTING FIRES ON THE GROUND AND IN FLIGHT

In Flight

Use all fire extinguishers applicable and follow proper procedure at once.

Prepare for emergency. Warn every man on the airplane to attach his parachute and to move to his proper position for bailout.

Determine whether a landing will be attempted or the airplane abandoned.

If airplane is to be abandoned, climb to a safe altitude, if possible, then give the order to bail out.

Engine Fires

At the first sign of a fire, if conditions permit, use the following procedure on the affected engine:

With built-in carbon dioxide system:

1. Cowling flaps "OPEN".
2. Shut fuel "OFF".
3. Feather propeller.
4. Turn ignition "OFF".
5. Set extinguisher selector valve.
6. Release carbon dioxide charge.
7. Do not start engine again.
8. Land as soon as possible, determine cause of fire, and correct condition before continuing flight.

Without carbon dioxide system:

1. Shut fuel "OFF".
2. Turn ignition "OFF".
3. Feather propeller.
4. Cowling flaps "CLOSED".
5. Land as soon as possible, determine cause of fire, and correct condition before continuing flight.

PIF 8-12-3
REVISED May 1, 1944

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.

CREW FIRE DISCIPLINE

Be sure that your air and ground crews are instructed in fire fighting procedures and methods of fire prevention.

RELEASE DROP TANKS BEFORE A WHEELS-UP LANDING

PIF 8-13-1
REVISED October 1, 1943

KIT, FIRST-AID, AERONAUTIC

Installed in Military Aircraft

Medical Supply Catalog No. 97765

SEAL: Not to be broken except in case of an actual wound or injury.

EXTERNAL POCKET: Contains iodine and adhesive compresses for minor injuries.

CONTENTS

1. Tourniquet, (1)
2. Morphine syrette (2)
3. Wound dressing, small, (3)
4. Scissors, (1 pair)
5. Sulfanilamide crystals, envelope, (1)
6. Sulfadiazine tablets, (1 box of 12 tablets)
7. Burn ointment, (1 tube) (Boric or 5% Sulfadiazine)
8. Eye dressing set
9. Halazone tablets
10. 1" Adhesive compresses (1 box) (Contents of small outer pocket)
11. Iodine swabs (10) (Contents of small outer pocket)

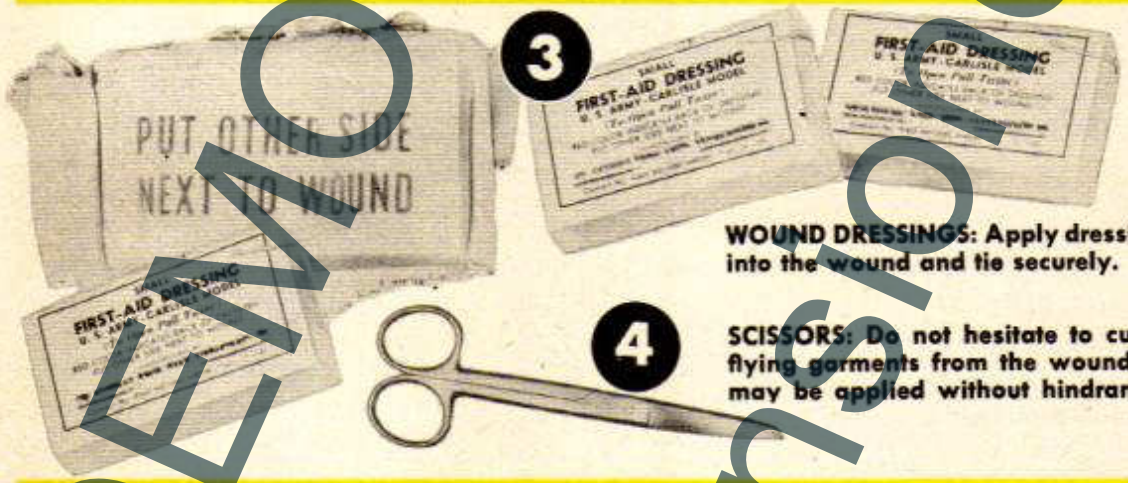
1. In the case of a wound, first stop the flow of blood. The clothing should be cut away and a compress or wound dressing applied after the sulfanilamide powder has been sprinkled into the wound. If a firmly applied dressing will not cause the bleeding to stop, or if there is actual spurting of blood from an artery, the tourniquet should be applied. A tourniquet must be released every twenty minutes and removed as soon as hemorrhage stops.
2. To relieve severe pain open the small cardboard container and follow directions given there in the use of the hypodermic syrettes of morphine. Do not hesitate to use the hypodermic to relieve suffering.
3. In case of head injury have the man lie quietly with head slightly elevated.
4. In the event of marked blood loss with shock and/or unconsciousness have the man lie horizontally or lie with the head down, if possible.
5. An adequate supply of oxygen is doubly important in case of serious injury. Use it generously.

PIF 8-13-2
REVISED October 1, 1943

NOTICE: Drugs Contained in This Kit are Potent and Must Be Used Correctly. Follow Directions!

TOURNIQUET: To be used to stop flow of blood but use only if blood flow cannot be stopped with a wound dressing. *Caution:* Release tourniquet every 15-20 minutes and remove as soon as hemorrhage is controlled. (See PIF 8-14.)

MORPHINE SYRETTE: To be used to relieve pain and should be employed without hesitation to prevent suffering. *Directions for use:* Remove transparent hood, grasp wire loop and push wire in to pierce inner seal, turning if necessary. Pull out and discard wire, thrust needle through skin at least half its length and inject solution by slowly squeezing the syrette from the sealed end. In extreme cold, warm syrette by holding under clothing next to skin.

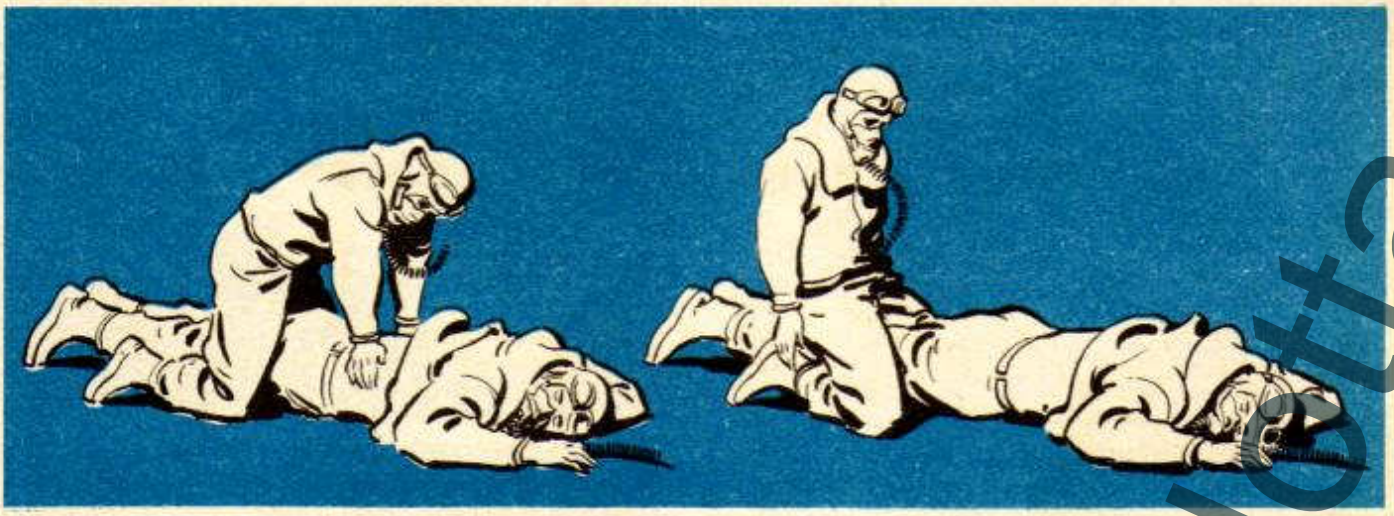


WOUND DRESSINGS: Apply dressing with firm pressure into the wound and tie securely.

SCISSORS: Do not hesitate to cut away clothing and flying garments from the wound so that the dressing may be applied without hindrance.

SULFANILAMIDE POWDER: Sprinkle on the wound to prevent infection.

SULFADIAZINE TABLETS: To be taken internally if wounded. *Directions for use:* Take two tablets with water every five minutes until all twelve tablets are taken. Swallow whole without chewing.



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. (Automix "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.