



airborne

fire suppression kit

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It looks like a blown-up version of a space-age gimmick that might be found on the counter in a local toy store.

However, this unit, the airborne fire suppression kit, is a far cry from being a toy; it is a proven piece of fire suppression equipment designed for aerial delivery by the Kaman H-43A and H-43B helicopters to the scene of an aircraft crash. Deposited on the ground within striking distance of the crash scene, this 1000-pound "flying fire engine" contains the extinguishing medium and equip-

ment to effectively suppress a flammable liquid fire in a path fashioned to facilitate the removal of entrapped flight personnel from the aircraft.

The success of a rescue-from-fire mission can best be realized by continued training of the fire fighters and pilot personnel assigned to this activity. Proficiency in the mission through know-how is certainly desirable, but know-how back at the crash station in maintaining the equipment you depend so heavily on is of the utmost importance. The proper operation of your in-service kit is a must if

a successful mission is to be realized. A loose expansion ring, a burst hose, improperly installed O-ring seals or a malfunctioning regulator most certainly spell the failure of a mission.

After the first fire suppression kit arrived at Kaman for testing, we put it through its paces and then compiled a list of complaints on numerous small items that only through handling and use were disclosed. As I look back, the major "growl" dealt primarily with rubber O-rings used quite extensively that might fail and cause loss of air pressure. In the kit's present configuration the number of these rings has been kept to a minimum and I believe that no difficulty with them is encountered.

While maintenance is the theme, let's look at the kit a little closer. We have an all-dacron jacketed hose line 150 feet in length. This hose is folded down in a basket with one end attached to the discharge outlet on the upper portion of the foam liquid tank, the other is attached to the foam discharge nozzle. I recommend that new hose be on hand for replacement when needed and that old hose be used during training missions. When the kit is readied for stand-by, try to keep new hose in the basket. The older hose should be washed and dried properly after use to prolong its life. Under certain training conditions use regular double jacket line from your station supply—it's easier to wash in 50-foot lengths and you conserve the kit hose.

Air in the hose line makes folding a pretty difficult task, and you end up with line you can't get into the basket. We find the answer to this is to stretch the line out full length and flush it out with water. Two men should pick the hose up midway and, each man holding the line high, walk in opposite directions to the ends of the hose. By this method of draining the line we have no air entering the hose. The female end is then attached to the kit; the male end should be folded and a hose clamp or similar device applied to prevent air from entering that end of the line. I find this works well.



CRITICAL ADJUSTMENT of these hex set screws must be done in base shops to avoid possible malfunction at the scene of an incident.

The pressure-reducing regulator mounted on the kit above and behind the hose basket is a very important unit. Atop the regulator are two hex type set screws; these are setting adjustments and should not be touched. The slightest movement of either screw can render the unit useless. Repairs to this unit should be done according to handbook specs and are best accomplished in the base shops.

A low pressure relief valve is located on top of the foam liquid tank. It is protected from the elements by a plastic cap. To prevent weakening of the rupture disc inside the valve, we have wiped the inside of this unit with a light oil and replaced the cap in an effort to reduce corrosion which can attack the aluminum disc. Always keep the plastic cap in place.

An item of major importance is the charging of the fiberglass pressure sphere. The original plan was to pressurize the spheres with dry nitrogen to be certain that moisture would not be introduced into the regulator. Any moisture present could freeze in the regulator and cause it to malfunction. Realizing that compressed dry air is available on all bases it was decided to utilize this. When the spheres are recharged you should be certain that the dehydrating air filters on the compressor have been changed according to

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placarded instructions. It is highly desirable that each crash station have a capable compressor assigned to it for recharging spheres. I have seen units furnished by the alert crews for recharging that have not had the filters replaced in a long time and others had no filters. Watch this closely and insist on new filters. A weight check reveals the moisture content of filters. Don't pump damp air into your pressure sphere or you may be in trouble.

On "the moisture kick," it must be pointed out that overfilling the water tank can cause water to slosh back into the regulator during transportation of the kit on the trailer over rough terrain. The 78.5 gallons of water is realized by filling only to the bottom of the filler neck. If you overfill, drain the water via the petcock on the bottom of the tank. Use a flashlight to check the water level.

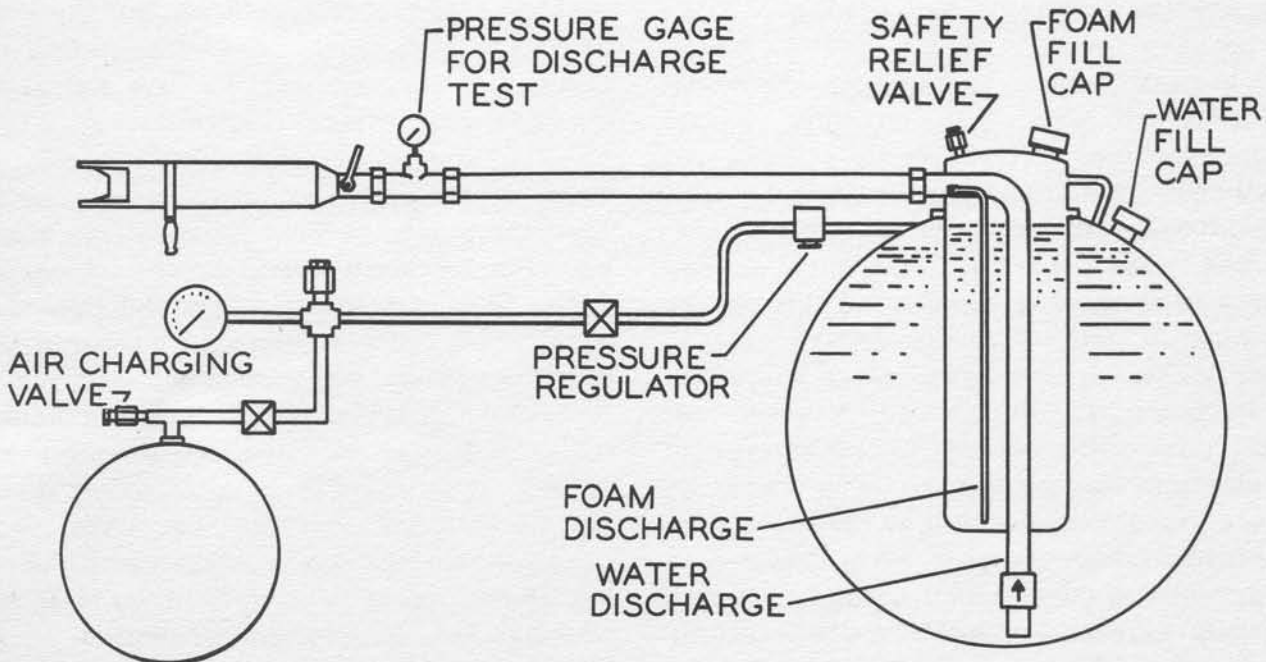
The unit should be flushed out completely periodically to remove any coagulated foam that could obstruct the proportioning tube. This is accomplished by filling both tanks with water and using the pressurized dry air sphere to expell the water under pressure. This must be done under pressure as the foam tank can not be drained and this is the only method by which the proportioning tube can be satisfactorily purged. No hose line is required in this operation.

Occasionally we find that the rubber grip on the phase control handle of the nozzle becomes loose and, when the operator is wearing heavy gloves, control of the nozzle is difficult. Here a little rubber cement solves the problem.

When the kit is on standby and exposed to the sun or heat from some other source, or if there is a leak in the main shut-off valve, the resultant air pressure build-up in the water-foam tank pushes foam up the proportion tube and into the nylon hose, thereby encouraging hose deterioration. This condition could also result in excessively rich foam mixture during initial operation followed by premature exhaustion of the foam fluid. A fix to prevent this condition has been submitted as an Engineering Change Proposal and is awaiting Air Force approval.

Under this proposed change, the present foam tank filler cap would be replaced with a new cap containing a built-in relief valve. This valve, which would normally be open permitting equilization of pressures, would close upon application of discharge pressure to the inside of the foam tank. The proposed design change would assure protection of the valve by keeping it entirely within the tank.

As an item of safety it is important that





PERSONNEL FROM MARINE AIR GROUP-36, Camp Pendleton, Calif., who recently completed a training course at The Kaman Aircraft Corporation are, left to right, Cpls. E-4 J. Monahan and J. Szobocson, Pfc. R. M. Hockenbury, 1st Lt. R. B. Lassiter, Sgt. E-5 J. H. Garbrick, 1st Lts. W. D. Merris and R. E. Usher, Capt. R. G. Miller, and L/Cpl. G. F. Austin. KAC Instructor was Raymond A. Vokes.



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you exercise extreme care when working in the vicinity of the compressed air sphere. Although shatterproof, the tank can explode when charged, if penetrated by a sharp object. The sphere should never be rigidly restrained since its size varies slightly with temperature and pressure changes.

The second major part of your equipment is the USAF Type MB-1 trailer chassis equipped with a platform for the storage and handling of the airborne fire suppression unit. Tie-down straps are provided for securing the unit to the trailer. These must be used only during ground handling of the kit; be certain that the kit is not secured during standby. This trailer has a heating unit which is combined with an insulating blanket to prevent the unit from freezing when exposed to sub-zero temperatures. The insulating blanket should be secured to the unit by the provided D-rings and clips when it is necessary to operate the burner. Be certain that the snap flaps are properly located when the kit is covered. The unit may be airlifted

during freezing weather with the blanket in place.

The operation of the heater itself is well described by an instruction plate on the trailer's side. Follow these instructions and no problems should arise as to the burner's operation. It should be mentioned that the burner's fuel tank should be kept full at all times to prevent condensation.

The airborne fire suppression unit has already been used several times during actual emergencies and certainly proven its place in the USAF inventory. Take the time necessary to be certain that your airborne fire suppression kits get proper maintenance so that, should your team be called, you respond with a unit that will function properly and without delay. Delay or malfunction of the operation of your unit can certainly not be corrected at the scene of an emergency. Your know-how back at the crash station is as important as the airborne fire suppression kit itself—and it can save a life. **K**

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