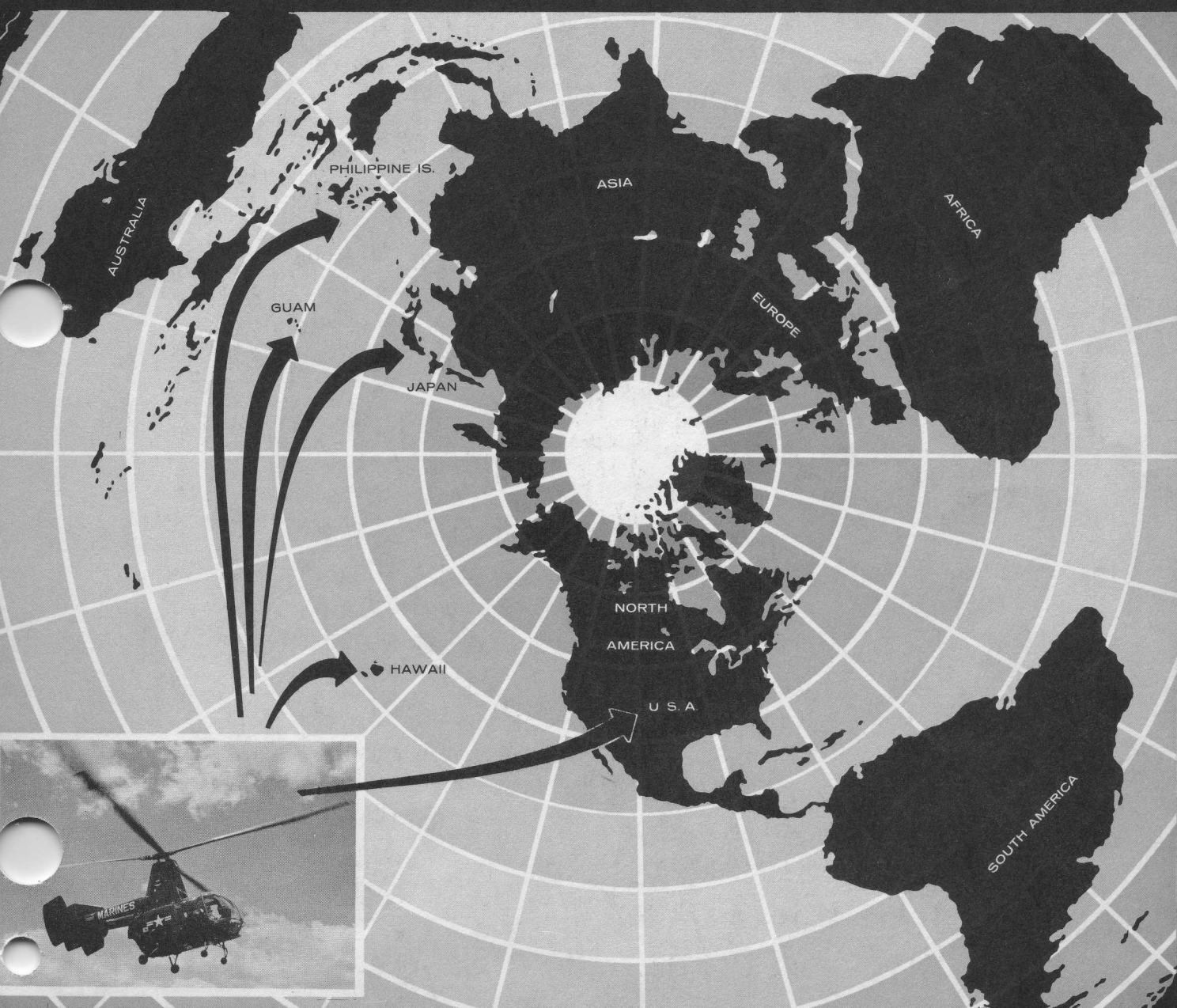




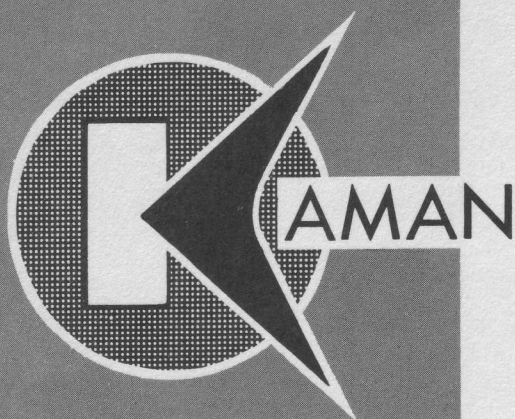
Rotor Tips

ISSUE NO. 5

AUGUST 1960



THE KAMAN AIRCRAFT CORPORATION
PIONEERS IN TURBINE POWERED HELICOPTERS



Rotor Tips

AUGUST, 1960

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THE COVER

*Kaman Field Service Representatives,
like the HOK-1 pictured, serve in many
places both at home and abroad.*

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— PLEASE SHARE THIS COPY —

TECH REPS

Mechanical know-how, ingenuity, compatibility, a sense of humor and the ability to accept with some degree of calmness the fact that orders overseas were suddenly cancelled after shots had been received against small-pox, diphtheria, tetanus, yellow fever, cholera, typhoid, beri-beri, and hoof-and-mouth disease — all of these are attributes which go into the make-up of a successful tech rep.

Officially designated "Kaman Field Service Representatives," these men operate out of the company's Field Service Department and may be found at U.S. Navy, Air Force, and Marine bases and stations both in this country and abroad, wherever Kaman-produced helicopters are in use. In most cases the reps are operating under company contracts with the military.

The goal of a Kaman Service Representative, as specified in a company directive, is to work with mechanics, pilots and engineering, operational and executive personnel in such a manner as to "Always Keep 'Em Flying," and his prime responsibility is to "achieve maximum safe utilization of the aircraft."

The major duty of a rep is on-the-job and classroom instruction of military crews in the maintenance and operation of the helicopters Kaman produces. He also helps and advises maintenance crews while they are trouble shooting, making service changes or engaging in similar activities. Many times



the field service representative delivers the parts necessary for service changes, and he also assists in solving supply problems which may arise. Always ready to aid the rep are company specialists from service, management, engineering, flight test, spares and other departments at Kaman.

In addition to working with maintenance personnel, the representative also acts as liaison man between the various military groups and the company so that Kaman Aircraft's home office is constantly "updated" as to the needs of the operating units.

In addition to these activities, the representative has the inevitable paper work to contend with which includes Weekly Reports, Field Discrepancy Reports and Special Reports. These reports are his main line of communication with the home office and are vital to the company in forecasting problem areas and initiating corrective action.

NEXT MONTH: *HU2K-1 MAINTENANCE TRAINER*

While on the job, a tech rep, like any good mechanic, often makes on-the-spot improvisations in order to get the job done. For example, one rep, when stationed at an overseas base, found that a maintenance crew did not have the type grease fitting adapter needed. After receiving permission from the proper authority, he procured a hypodermic needle from the sick bay and made the adapter. The rep found his "home grown" product worked very well, especially on the stirrup cranks and when working on the azimuth assembly from the cabin.



ASSEMBLING H-43B newly arrived at Cannon Air Force Base are, left to right, TSgt. Charles P. Clark, A2C William Burks, both of Base Flight, and Stanley Balczak, Kaman tech rep. (U.S. Air Force Photo by 1st Lt Carl R. Balduf)

In his travels a rep will occasionally run into a situation which tends to "shake him up" at the time, but is good for a chuckle later when he tells of the experience.

Recently one rep attempted to report in at the base to which he had been newly assigned but found his explanation as to who he was entirely unsatisfactory as far as the heavily armed sentry at the gate was concerned. "I showed him credentials signed by almost everyone but the President," the rep moaned later when telling the story, "but he just kept fingering the flap on his holster. It took a call direct to the commanding officer before I dared put a foot inside the place."

Another service representative became involved in quite a conversational hassle after a border guard in a foreign country found the spare helicopter parts the rep was carrying in the back of his car. "I thought he was joking until the talk turned to \$10,000 fines and things like that — then I got very, very serious," the rep reported afterward.

One rep, his head filled with wonderful stories of life on Guam by a not-too-truthful "friend," arrived there expecting to find a paradise. "Paradise" turned out



ROBERT BASSETT, pointing, and **George Eveland** study map before making periodic reassignments of tech reps to new locations. Bassett is Supervisor of the Customer Operations Section of the Field Service Department; Eveland is Assistant Supervisor, Field Service Representatives.

to be a bit less than he expected due to the humidity which grew a fine crop of green mould on his clothes overnight. Also

An impressive total of 175.3 hours of flight time during a four-day period was recently accumulated by the Marine pilots from VMO-2 flying five HOKs during exercise "Sea Hawk."

The helicopters were used for reconnaissance, courier duty, liaison, evacuation, gun fire spotting and also some troop hauling. The high degree of maintenance work performed during this time was credited to M/Sgt. Ed Bailor and his crew who worked from 0400 to 2200 each day during the entire operation.

The pilots were also credited with doing an outstanding job. For example, while qualifying for shipboard landings, they made 105 such landings on an aircraft carrier during a 50 minute period. There were two pilots in each of the five HOKs participating.

Trials and tribulations of a

tech rep as

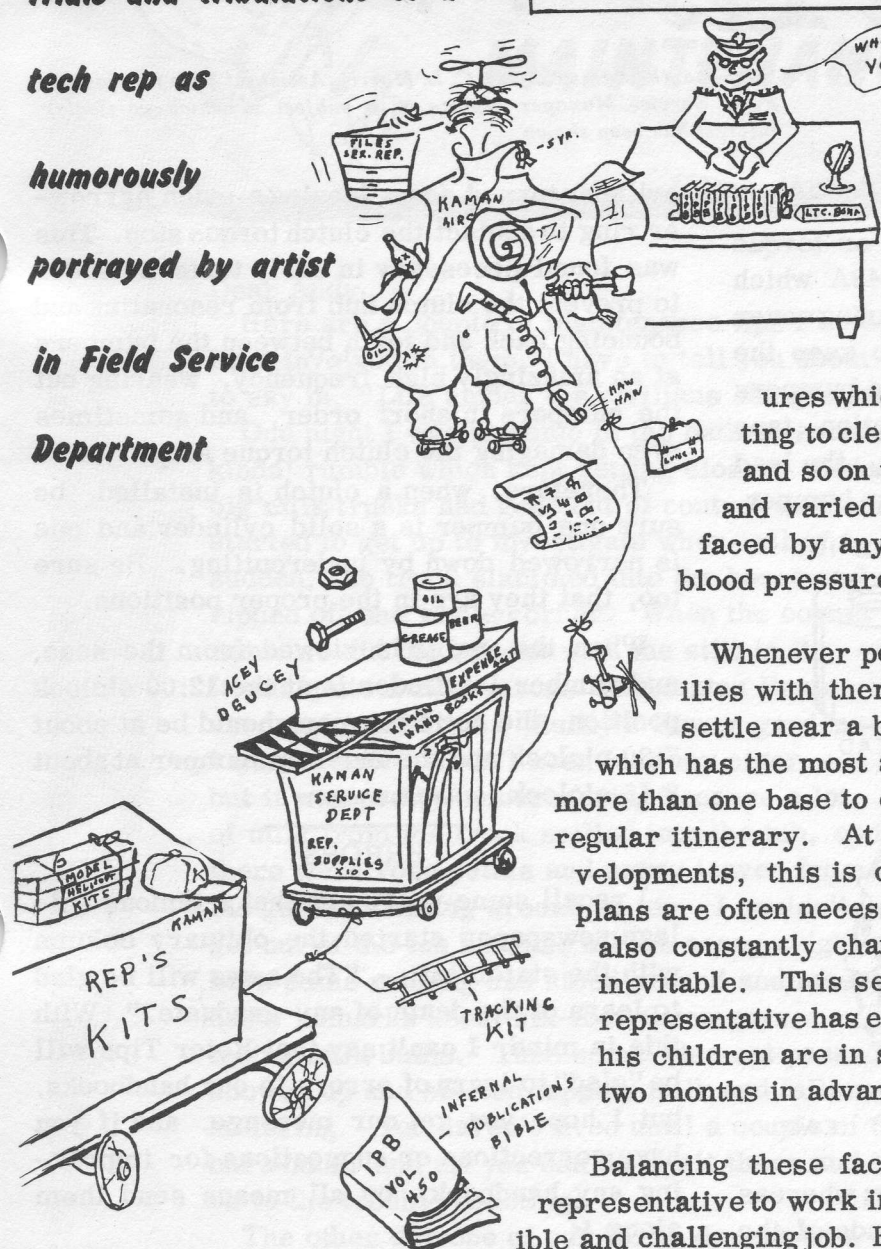
humorously

portrayed by artist

in Field Service

Department

EAGER BEAVER AIR BASE



tending to shatter his illusions were the gecko lizards which hung from the over-head of the Quonset hut and looked over his shoulder as he attempted to type his sweat-drenched reports. A series of typhoons which hit the area didn't help any either.

Needless to say, the adventures which reps have run into while attempting to clear technical books, supplies, files and so on through foreign customs are many and varied and certainly not the type to be faced by anyone with a tendency toward high blood pressure.

Whenever possible, the reps take their families with them to assignment areas and try to settle near a base which is centrally located or which has the most activity. Nearly all the reps have more than one base to cover and they attempt to follow a regular itinerary. At times, because of unexpected developments, this is difficult to do and deviations from plans are often necessary. Military requirements are also constantly changing and transfer of aircraft is inevitable. This seems to happen about the time the representative has established himself in a community, his children are in school, and the rent has been paid two months in advance.

Balancing these factors is the opportunity given the representative to work in an interesting field at a responsible and challenging job. He also takes pride in the fact that, like the military personnel he works with, he is making a definite contribution in safeguarding the defenses of his country. Helicopter men also derive a great deal of satisfaction from the fact that one of the primary missions of the "choppers" is a humanitarian one, and the rep is no exception. Whenever a helicopter produced by Kaman Aircraft is used in a rescue, the tech rep — like the company he represents — has the same feeling of accomplishment as the military personnel who flew or maintained the aircraft. ◀

THE FUNCTION OF KAMAN FIELD SERVICE REPRESENTATIVES IS TO ASSIST THE OPERATORS OF OUR HELICOPTERS IN ANY WAY THEY CAN. WE URGE ALL CONCERNED TO TAKE ADVANTAGE OF THEIR SERVICES.

More From Les

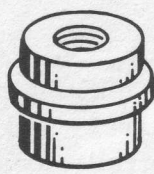
Each month in this column, C. L. Morris, Assistant Vice President—Field Service Manager reports on a subject in which particular interest has been shown

CLUTCH BUMPERS (HOK/HUK/H-43A)

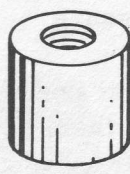
There are two clutch bumpers, or torque stops, in each HOK, HUK and H-43A which are mounted on the engine thrust bearing cover plate studs in such manner as to keep the clutch rear hub from turning. These bumpers look like several layers of friction tape wrapped around the stud; BUT, the lead bumper is not the same as the lag bumper.

K 371382-9

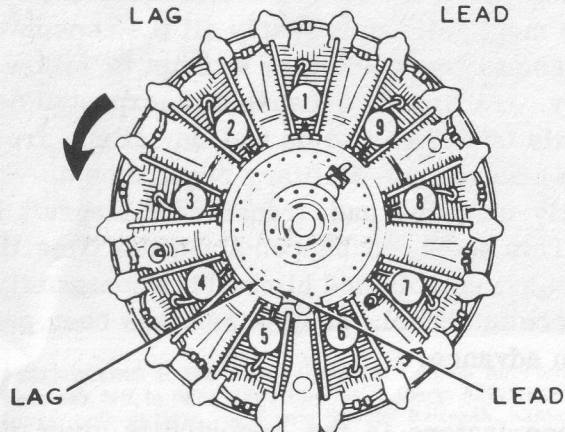
K 371382-101



LAG



LEAD



The lead bumper is a solid cylinder; whereas the lag bumper has had the two ends of the

cylinder turned down, leaving a much narrower ring to contact the clutch torque stop. This was found necessary in early tests in order to prevent the clutch hub from resonating and bouncing back and forth between the bumpers at an amazingly high frequency, wearing out the bumpers in short order, and sometimes even damaging the clutch torque stop.

Therefore, when a clutch is installed, be sure one bumper is a solid cylinder and one is narrowed down by undercutting. Be sure too, that they are in the proper positions.

When the engine is viewed from the nose, and number 1 cylinder is at the 12:00 o'clock position, the solid bumper should be at about 7:30 o'clock and the undercut bumper at about 8:45 o'clock. (See illustration)

ERRORS

I recall some years ago that a famous college newspaper started the obituary column with the statement: - "The news will be glad to learn of the death of any graduate." With this in mind, I can't say that Rotor Tips will be "glad" to learn of errors in our handbooks, but I hope you get our message, and if you have corrections or suggestions for improving any handbook, by all means send them along. **K**

RESCUE!

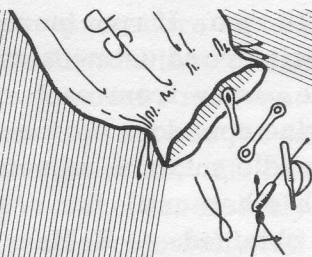


Capt. W. C. McMeen, USAF

Capt. Walter C. McMeen, USAF, who only a short while ago rescued three teenagers from a ledge on Superstition Mountain in Arizona in the first such rescue to be performed with an H-43B, has again participated in a mercy mission with this same type Kaman helicopter.

This time Captain McMeen, who heads the Search and Rescue Unit at Luke Air Force Base, took the turbine-powered aircraft far below the rim of the Grand Canyon in order to evacuate the victim of a boating accident who had suffered a compound fracture of the lower leg. The pickup was made from a sandbar in the river at a point where the canyon is about 100 yards wide and 2500 feet deep. Because of this, after the injured

(continued on page 10)



MAINTENANCE MAILBAG

Dear Andy,

Here are a couple of maintenance tips I've come across recently; but before I get involved in them, I have to tell you about that leave I just had. All I have to say is, "Life among the civilians can get pretty rugged sometimes."

One night I was at home in the bathtub soaking and reading when I heard a kinda' rumble which kept getting closer. Didn't know it then, but one of those big milk trucks had gone out of control on that long hill near our house. I started to get up to investigate when, all of a sudden, the truck slammed into the house and ripped off one whole corner. When the corner went, so did the bathtub with me still in it. It was quite a ride across Washington Boulevard and into Mrs. O'Reilly's flower garden. I wasn't hurt---didn't even lose my cigar---but it was pretty embarrassing because a lot of milk from the truck spilled into the tub, and there were rose petals and pansy leaves from the garden floating around on top. I couldn't get out of the tub because all the nosey neighbors came running and stood around and made nasty remarks about six-foot-three guys taking milk baths. Then some wise cat passed the word, and all of his friends showed up and started lapping milk and falling in the tub and screeching and hollering. You haven't lived until a couple of cats sink their claws into your bare back, and all you can do is sit there and take it! Well, enough of this, and on to the trouble shooting.



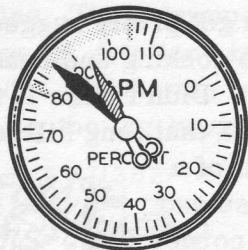
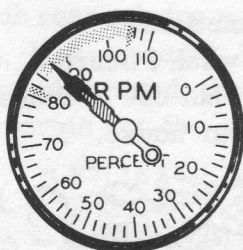
The other day one of our HOKs developed a clutch problem. At high idle rpm (1100), the clutch would engage itself if the aircraft sat on the deck for several minutes, even though the manual control was in disengaged position. We checked the oil level first and it was o.k. Then we checked the clutch linkage and found it was misrigged in such a way that, with the handle in disengaged position, the clutch dump valve arm had not fully completed its travel. We used the latest procedure in re-rigging the clutch, and it checked out fine. You can get all the dope in Section III of the handbook (AN 01-260HBA-2).

Another situation has come up twice lately. When an engine with Scintilla mags is changed for an overhauled engine with Bosch mags, the "P" lead cigarettes are not long enough to push the mag spring off "ground." If the new engine will not fire after an engine change, this would be a good thing to look at first. K

All for now,
Mike

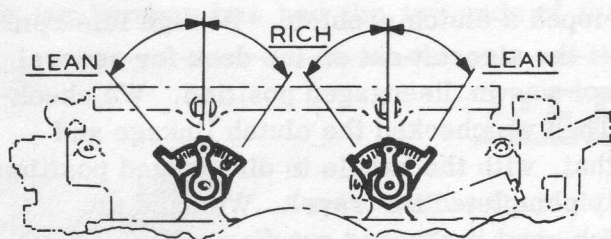
Q's AND A's

If you have a question regarding Kaman Aircraft maintenance, send it along to Rotor Tips. The Service Department's analysts will be glad to answer it.



Q. THE N2 (POWER TURBINE) AND THE ROTOR INDICATOR NEEDLES SELDOM SPLIT DURING A NORMAL POWER-ON AUTOROTATION, WHY? (Applies H-43B)

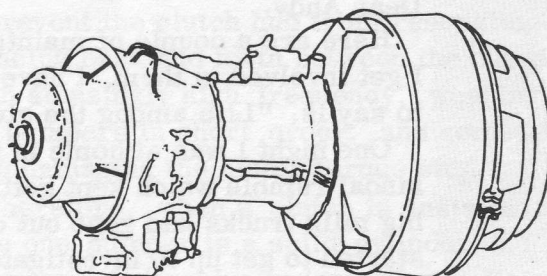
A. At standard atmospheric conditions at or near sea level, with the throttle reduced to flight idle (recommended position for all intentional autorotations), there is a sufficient amount of air and fuel flow to the engine to cause the power turbine shaft to turn at the same rpm as the transmission input drive, which is being driven by the rotors when in autorotation. — T. C.



Q. WHAT IS THE PROPER IDLE MIXTURE ADJUSTMENT PROCEDURE FOR THE STROMBERG NA-Y9E AND NA-Y9E1 CARBURETORS? (Applies HOK-1, HUK-1, H-43A)

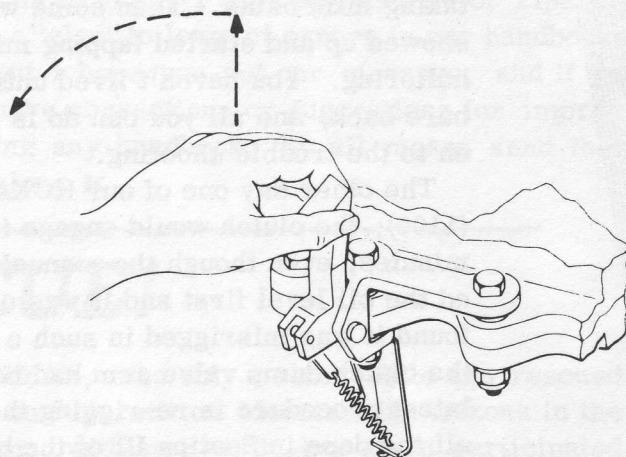
A. With the throttle fully closed and the engine idling at 1000 rpm, slowly move the mixture control lever to a point about 2/3 the distance toward idle cut-off. Engine rpm

should increase 5-10 rpm. If rpm increases more, turn the idle mixture adjustment levers, one notch at a time, away from each other toward lean. If engine rpm does not increase 5-10 rpm, turn the idle mixture adjustment levers toward each other until the desired increase in rpm is obtained. — E. M.



Q. WHAT IS THE MAXIMUM TIME REQUIRED FOR THE T-53-L-1B ENGINE TO REACH 41% OF N1 (GAS PRODUCER) DURING STARTING? (Applies H-43B)

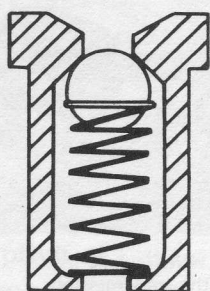
A. The maximum time for N1 to reach 41% is between 18-25 seconds. This time interval will depend upon the condition of the electrical power supply equipment used. See T.O. 1H-43B-2, Sect. III. — E. M.



Q. WHY IS IT SOMETIMES DIFFICULT TO DISENGAGE THE ROTOR BLADE FOLDING LOCK FROM THE "STOWED" POSITION WHEN FOLDING BLADES? (Applies HOK-1, HUK-1, H-43A, H-43B)

A. It should not be difficult to disengage the folding lock if the procedures outlined in the maintenance handbooks are followed. The

proper procedure is to lift the folding lock vertically and then outboard in two separate, but continuous, motions. It should never be necessary to force the folding locks from the stowed position. If these locks are forced they become excessively loose due to wear, and may accidentally fall to the folding position while in flight and interfere with the blade grip assembly. — E. P.



NAS 516-1
GREASE FITTING



ADAPTER FOR
GREASE GUN

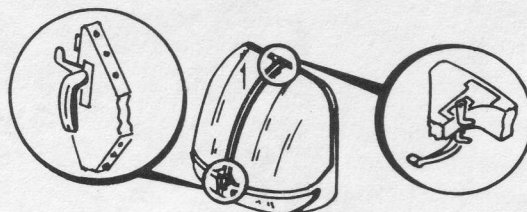
Q. WHY ARE NAS 516-1 FLUSH-TYPE GREASE FITTINGS USED, AND HOW CAN GREASE BE APPLIED TO THEM? (Applies HOK-1, HUK-1, H-43A, H-43B)

A. The NAS 516-1 grease fittings are used for several reasons: they present no major clearance problems, they save weight, and better component strength is obtained. The small reamed hole into which this tiny fitting is pressed removes less material, and has less stress-raising potential than the larger threaded hole which designers must provide for other fittings.

The flush-type fittings are lubricated with a standard grease gun, using a flush-type adapter MS24203-1 (Navy P/N R4930-300-8596-5231 or AF FSN 4930-200-1841) attached to the nozzle end. To insure proper lubrication, three things are needed: a grease gun, a flush-type adapter for grease gun, and a lubrication chart.

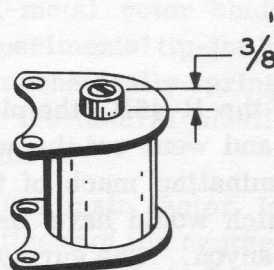
Point to remember: - The small size of the flush-type fitting increases the possibility that they will be overlooked and not lubricated. A little extra time and thought to be sure you

have lubricated ALL the fittings can save a lot of maintenance headaches later on. — W. J. W.



Q. WHAT PRECAUTION SHOULD BE OBSERVED WHEN INSTALLING THE NOSE DOOR BUBBLE GLASS? (Applies HOK-1, HUK-1, H-43A)

A. When replacing the nose door bubble glass, it is recommended that the door be closed with both latches engaged. This maintains rigidity in the door frame while fitting the new bubble glass. — D. G.



H43B
SHIMMY DAMPER



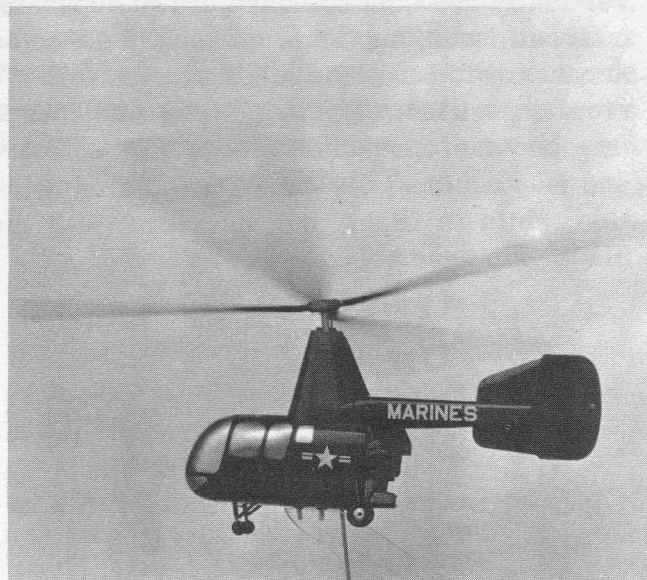
HOK/HUK & H43A
SHIMMY DAMPER

Q. HOW IS THE FRONT LANDING GEAR SHIMMY DAMPER (HOUDAILLE PART NO. 307001-1) SERVICED? (Applies HOK-1, HUK-1, H-43A, H-43B)

A. The front gear shimmy dampers are serviced with MIL-H-5606 Hydraulic Fluid. Remove the dust plug on the top of the damper, and insert hydraulic fitting MS 15003-1. With a clean zerk gun filled with MIL-H-5606 fluid, pump the fluid into damper until a 3/8 inch dimension is obtained between top of housing and top of the filler opening. Remove MS fitting and replace dust plug. Shimmy dampers that do not incorporate a fluid indicator can be serviced by removing the pipe plug fitting and adding fluid from a clean, common oil can. — W. J. W.

KAMAN SERVICE ENGINEERING SECTION — R. J. Myer, Supervisor, Service Engineering; E. J. Polaski, G. S. Garte, Assistant Supervisors. ANALYSTS — Roy Berg, Richard (Ted) Chaapel, Dave Godbout, Wayne Jenkins, Chuck Nolin, Al Savard, Norm Warner, Loring Lynes, Ross Wynott, Bill Wagemaker, Frank Bober, Robert Krans. Edward Mah, Wayne Zarling.

TRAINING



ED WHITE, KAMAN FIELD SERVICE REPRESENTATIVE IN JAPAN, uses this "energized" model of an HOK-1 while explaining how the synchropter design works. White used a small, battery-operated motor working through the transmission from a child's toy to power the rotors.

(continued from page 6)

man was placed aboard the H-43B, the pilot did a turn on the spot and went out the way he'd come in, thus eliminating much of the sharp maneuvering which would have been required to follow the canyon. The survivor was delivered to a waiting ambulance at Grand Canyon Village, elevation 6300 feet, about 50 miles away from the scene of the accident.

Earlier, another landing was made on a baseball field near the rim of the canyon, elevation 7200 feet.

Co-pilot on the flight was Frank H. Horn, a Kaman Aircraft test pilot. Captain McMeen was one of a group of Air Force pilots who attended an H-43B flight training class at Kaman a few months ago.

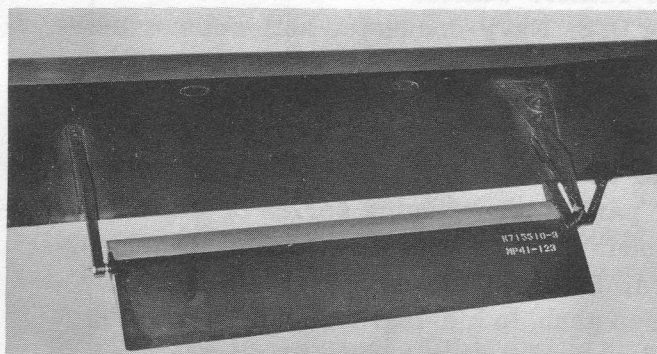


INJURED BOATMAN IS placed aboard H-43B in Grand Canyon rescue.

ROTOR SERVO-FLAP

by D. W. ROBINSON
Project Manager, Engineer

Kaman helicopters have always been distinguished by the use of Servo-Flap control. You can tell them by the small flaps attached to the trailing edge of the rotor blades about three quarters of the way out to the tips. Unlike other helicopters, where the pilot's controls are attached directly, or through heavy, complicated hydraulic boost systems, to the rotor blades, and vary the pitch of the blades by direct effort; Kaman helicopters link the pilot's controls only to the servo-flaps. As the pitch of the flap is changed, aerodynamic forces acting on it change the pitch of the main rotor blade, much as forces acting on the elevator of an airplane pitch the plane to change the angle of attack of the wing. Thus, heavy control forces and vibrations are eliminated, and no hydraulic boost system is required.



As with the airplane, it is necessary that the system be inherently stable—that is, that the blade will continue along a steady flight path in spite of gusts or disturbances until directed to a new flight path by the pilot through manipulation of the controls. A pitch reference must be given the blade, therefore, to insure a stable rotor plane from which the pilot can command control deviations. The rotor shaft, which is rigidly attached to the helicopter, can provide that reference, so long as the rotor blades are attached to the shaft in a manner that provides some definite relationship between the angle of the shaft

and that of the blades. On the HOK, HUK, and H-43 helicopters, the blades with their hub are pinned to the shaft so that freedom of flapping or teetering is provided, but the pitch angle of the inner end of the blade is rigidly maintained with respect to a plane perpendicular to the shaft. All pilot commanded deviations from this pitch angle in response to varying servo-flap angles, hence flap aerodynamic loads, take place through twisting of the blades against the structural elasticity of the blade material. Thus, when the control command is removed, the natural blade stiffness returns the blade to the reference angle. This same system was used with all-metal rotor blades on the Kaman K-17 experimental tip-jet helicopter by substituting a mechanically spring-centered pitch bearing for the natural elasticity of the wooden HOK blade.

The main factor influencing the required stiffness of the centering spring is aeroelastic stability—blade flutter. Like a venetian blind in an open window, helicopter blades will develop an undesirable vibration, or flutter, unless a carefully controlled combination of blade mass distribution, structural and aerodynamic damping, and torsional stiffness is provided. For practical blade design, this has required a relatively stiff centering spring, whether structural or mechanical. Thus, large pitch angle deviations from the spring-centered position require large servo-flap loads to produce.

For relatively low-speed helicopters such as the HOK-1, the range of pitch angle required is moderate, and little aerodynamic or structural penalty is exacted to balance the spring by servo-flap air-load. A further refinement of the servo-flap control system has been developed at Kaman to permit efficient operation on high-speed helicopters such as the HU2K and will be described in a subsequent article. **K**

ENGINEERING

Report

FROM THE READY ROOM

ROBOT RESCUE

Editor's Note: Ralph Lee was recently honored by the U.S. Navy for his activities in testing the HTK drone helicopter and for this flight. He was appointed an "Honorary Destroyer Man," by Rear Adm. Charles E. Weakley, commander of the Destroyer Force, U.S. Atlantic Fleet, in a ceremony aboard the flagship, USS Yosemite.

Sitting in the pilot's seat of a remote-controlled helicopter operating overwater and through heavy fog during an emergency mercy flight apparently has all the necessary ingredients for a first-rate adventure story — especially when the man actually at the controls was located on a ship several miles away.

In reality, the flight was a "no sweat" mission, and certainly did not fall into the type of "thrilling" story these seeming hazards imply, since the HTK-1 used for the trip had been participating in remote-control flights in the area for sometime during U. S. Navy-conducted anti-submarine warfare tests. This was, however, the first robot rescue on record and the helicopter used is probably the oldest Kaman helicopter still operating.

The flight took place June 16th while the U. S. S. Hazelwood was 10 miles at sea off Newport, R. I., conducting part of a continuing series of experiments using Kaman Aircraft-developed winch-down procedures, coupled with droned flight. About 1100 hours, Seaman Steven W. Patryn, 19, of Adams, Mass., slipped and cut a deep gash in his leg. The Hazelwood's corpsman decided it was necessary to get him to a hospital as quickly as possible, and the decision was made to launch the HTK-1 in spite of the heavy fog bank laying between the ship and the shore line. Since the HTK has only rudimentary instruments, none of which are for IFR flight, reliance had to be placed on the Automatic Stabilization Equipment (ASE) integral with the drone gear.

As soon as Patryn was placed aboard the helicopter and made as comfortable as possible, I took off from the deck of the destroyer and flew about 1,000 yards from the ship. Just prior to entry into the fog bank, a double check was made on the "black boxes" used in remote control. Check was 100 per cent and control of the HTK was then turned over to Lt. (jg) Jim Julian, operations officer on the Hazelwood and controller in the drone test program. Julian was huddled over a radar screen in the CIC room, deep in the nerve center of the Hazelwood, and had one hand on the drone control "joy stick", a miniature of the actual helicopter controls.



RALPH LEE
Project Test Pilot,
HTK Drone Program

For the next 10 miles, enroute to shore, radio communication with the Hazelwood and occasional glimpses of the water 25 or 30 feet below were the only contact with the world. I kept my eyes on the lights and meters in the 'copter, making sure everything was in order, and also checked visual reference with the water when it could be seen through the fog. During one of these times I spotted three lobster pots and one seagull which was only making about a knot-and-a-half through the fog — apparently all the other birds were grounded. I kept up a running conversation by radio with Julian during the trip to shore regarding distances and direction and, in between times, chatted with the injured sailor in an attempt to reassure him. Patryn, however, was calm during the entire trip and seemed more concerned with the fact he'd left his white hat back on the ship than with the outcome of the radio-controlled flight.

My only real concern during the entire flight was that Jim Julian could hold a good radar picture of the HTK and the shoreline, and that his experience on 100 sub attacks wouldn't fail him now. It didn't — in fact, he outdid himself by droning the helicopter to within 100 yards of the intended landfall. With land came the end of the fog bank, the drone gear was switched off, and the landing was made manually. Patryn was transferred to a waiting ambulance, and shortly after 37 stitches were taken in his wound at the hospital, he was returned to the Hazelwood.

Here is the background of the drone program which led me to call this a "no sweat" mission:

The HTK-1, Bu. No. 129314, used in the flight started life as a trainer and, after a tour at Pensacola, Fla., returned to The Kaman Aircraft Corporation plant at Bloomfield, Conn., to be a flying test bed for Kaman-pioneered drone equipment. The helicopter has been the Navy's primary vehicle for testing the DASH (Destroyer Anti-Submarine Helicopter) concept, with the majority of the tests being conducted aboard the Hazelwood.

The DASH concept calls for the helicopter to fly unmanned from the deck of a destroyer with a drone operator on the ship having full

control over cyclic, rudder, and collective controls. Power is automatically regulated to the proper rpm. The operator can also set the altitude and heading of the machine from his location in CIC. This, coupled with sonar information, allows him to successfully attack submerged submarines with homing torpedos during night and IFR conditions, as well as during a day VFR situation. Kaman has been successfully demonstrating this capability for a period of years.

During the past year, #314 has had some interesting moments, dropping homing torpedos on submarines, and planting practice depth charges so close to one sub that the Commanding Officer cried "uncle" on the underwater telephone.



HTK—Drone Helicopter

This helicopter has landed on the Hazelwood in a sea state of "5", a 35-knot wind, and with the deck rolling 25° port and starboard. The HTK-1 has made 446 shipboard landings, of which 57 were droned. It came through the latest series of test with 100 per cent availability (six weeks of flying.) This included a trip to Key West, Fla., and back.

Those who visit the Kaman plant in Bloomfield can see #314 sitting in a hangar among the spanking new HU2K-1 and H-43B turbine-powered machines. With so much accomplished by such an old machine, it is interesting to speculate on the future of the new ones — especially since the HU2K-1, for instance, carries ASE equipment derived from, but far outstripping, that of #129314. **K**

SUNBURN and CORROSION!

Sunburn and corroded helicopter transmissions? These seem to have little in common until KAC Service Representative Jack L. King ties the two together with this dissertation on "a little foresight" in—The Case Against Sunburn and Corroded Transmissions.

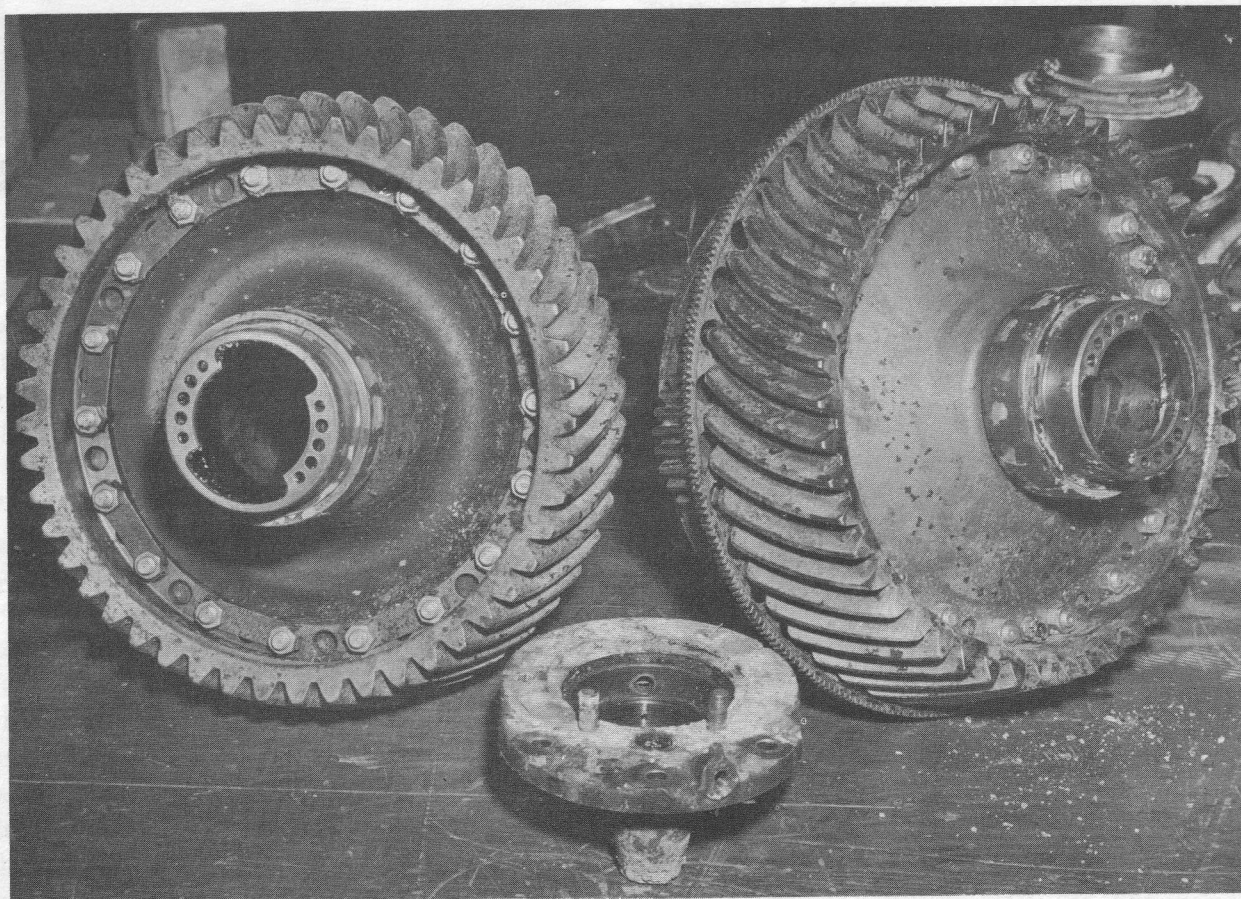
Any attempt at establishing a relationship between the subjects in the above title may seem a bit far-fetched at first glance; however, a recent incident at an overhaul activity illustrates a parallel existing between them.

Pursuing the latter first, we have a transmission removed from a helicopter as a routine overhaul interval replacement. This transmission was received by the overhaul activity in an unsealed, wooden crate instead of the proper shipping container, and no preservative measures of any kind had been taken. Due to the inherent oxidation characteristics of most unprotected metals exposed to the elements for any extended period, the transmission was a total loss. In other words, a collection of finely machined parts ended up as scrap! The price paid was many more useful operating hours as well as the dollar value of the component. A useless

waste which might have been prevented with a little foresight.

Touching on the sunburn (ouch!) I imagine many of you spend a great deal of time outdoors and have, on occasion, found yourselves suffering from the painful consequences of prolonged exposure to excessive radiation from the invisible rays of the spectrum beyond the violet end of the visible spectrum. (Note: In English, this means you were sunburned.) As you were smearing on various medications in an attempt to relieve the pain, I wonder if the thought didn't cross your mind, "Why didn't I use a tanning oil or wear protective clothing?" The probable answer is that the consequences of the act were not considered until it was too late.

Medical science is constantly reminding us of the dangers of overexposure, and the cosmetic industry makes various salves, creams, oils, ointments, balms, unguents, lenitives, emollients and lotions, all guaranteed to keep



CURRENT CHANGES

TIME COMPLIANCE TECHNICAL ORDERS (USAF)

Applies — T.O. 1H-43A-504, 1 August, 1960, Installation of Reverse
H-43A Spring Assembly on H-43A Helicopter.

AIRCRAFT SERVICE CHANGES (USN)

Applies — HOK/HUK ASC No. 102A, 30 July, 1960
HOK-1 Flight Controls Azimuth Spindle Bearing Load Relief
HUK-1 Spring and Fail-safe Roller Bearing Washer, Installation
of.

FIELD INFORMATION DIGESTS (KAMAN)

Applies — No. B-29, 29 June, 1960
H-43A Lag Pin Installation Procedure in H-43A and H-43B
H-43B Helicopter.

Applies — A-53, 28 June, 1960
HOK-1 Lag Pin Installation Procedure in HOK-1 and HUK-1
HUK-1 Helicopter.

Sunburn and Corrosion! continued

you from burning. Similarly, a great deal of time, money and effort is devoted by various contractors in researching and publishing data on proper preservation and packaging of aircraft components. The Handbook of Maintenance Instructions, (NavWeps 01-260HCA-2 T.O. 1H-43A-2, T.O. 1H-43B-2) contains at the end of each major component removal sequence, detailed instructions on packing which, if followed, will insure the arrival of the assembly at the overhaul activity in a condition that will warrant overhaul and further use.

The parallel should now be pretty clear. To sum it all up, when replacing major components which are reusable after overhaul and/or rework, check the handbook to determine if any special packaging or preserving techniques are required. Apply them when and where needed, and everyone will be saved a lot of grief. On the subject of sunburn, use tanning oil, wear protective clothing and avoid overexposure.

These are two of the rare instances when the prohibitions against "getting oiled" do not apply. K

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