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KAMAN Rotor Tips

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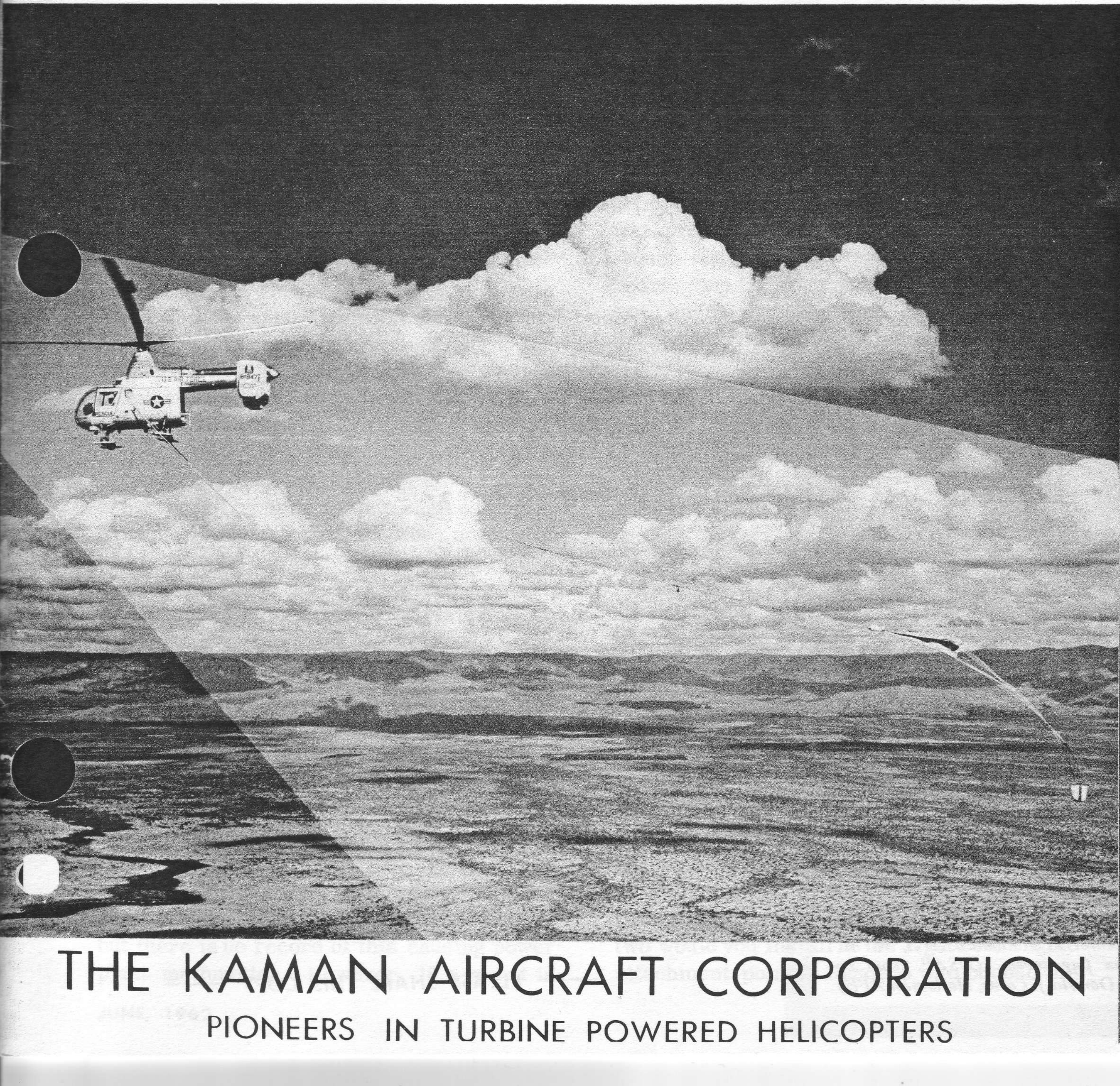

THE KAMAN AIRCRAFT CORPORATION

PIONEERS IN TURBINE POWERED HELICOPTERS

KAMAN

Rotor Tips

JUNE, 1962

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THE COVER

H-43B catches parachuting "nose cone" during testing at AF Missile Development Center at Holloman AFB, N. M. Story on page seven. (USAF photo by T/Sgt. Donald J. Coons, Holloman AFB)

IN THIS ISSUE

— PLEASE SHARE THIS COPY —

ENGINE MOUNT CHECKOUT!

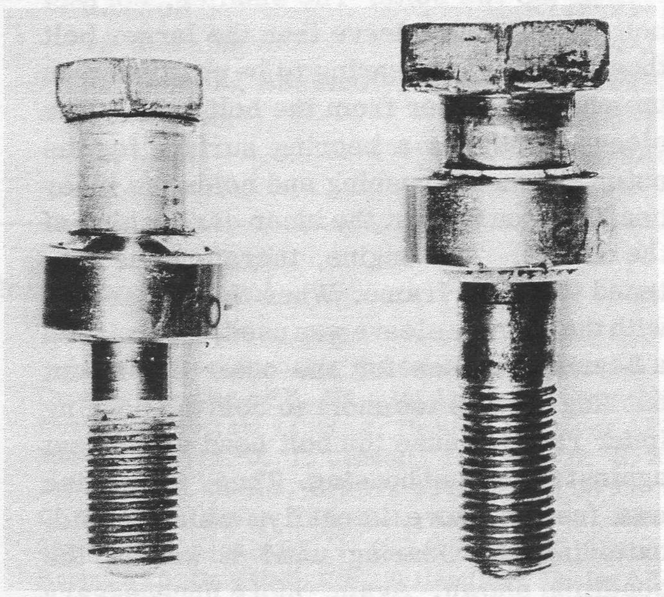
by A. A. Werkheiser
Analyst, Dynamics
Field Service Department

Without an engine the best airframe in the world is unable to carry out its mission and, conversely, an aircraft engine without an airframe becomes just another object for maintenance personnel to move from one place to another. Only when the engine and airframe are properly "tied together" can they accomplish the purpose for which they were both designed — powered flight.

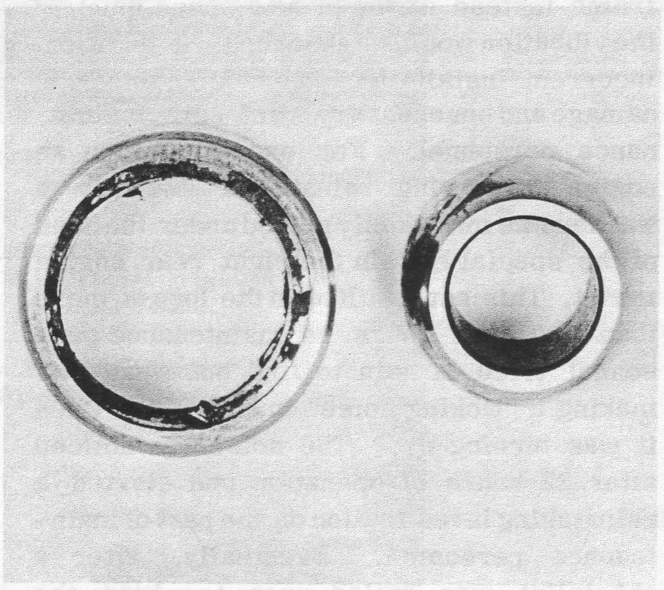
This engine-airframe "togetherness" is accomplished through the use of engine mounts, fittings and bolts, an arrangement whose apparent simplicity has more than once lulled maintenance personnel into making basic errors which have later been reflected in aircraft performance. Actually, this arrangement IS comparatively simple, but certain precautions must be taken when an engine is being removed and another installed if future problems are to be prevented. A knowledge as to why the mounts are not all the same and why a certain order should be maintained when an engine is installed will, of course, aid the mechanic in eliminating most of the mistakes which have occurred in the past.

On the H-43B, the turbine engine mounts are secured by bolts to four engine support fittings firmly attached to a box section of the tail boom structure. These attaching components also have specialized duties to perform beside the primary one of securing the engine to the helicopter frame and, therefore, none are exactly alike. Remember, provision is made for the expansion which occurs as the engine warms up and changes shape slightly, and the torque created by the turbine wheel and other moving parts within the engine must be compensated for.

Occasionally these mounts have been incorrectly installed during an engine change but there is no record of this causing power plant malfunction. However, if a mount is incorrectly installed, it can pass on the normal vibration of the engine to the airframe instead of the mount where much of the vibration would be absorbed. In addition, incorrect installation can cause component damage and unnecessary work for maintenance personnel. For example, when an engine was being reinstalled recently a washer was mistakenly placed under the head of the special bolt in the right rear engine mount. This act resulted in the loss of more than 150 man-hours as maintenance personnel tried in vain to find out what was making a "ticking noise" in the engine when it was turning up. The noise was noticed after 22 hours of operation and started a painstaking investigation on the part of maintenance personnel. Eventually, after a specialist was called upon for help, the washer was found. The bolt sleeve on the mount bearing was very battered and the bearing was also marked. After the bolt and bearing were replaced, using the proper procedure, the ticking noise was eliminated.



Another example of what can occur during an engine change is illustrated by the accompanying photo which shows two bolts with the bearings installed. Which of the two would you install in the right rear engine attachment point? Readers who choose the small bolt are 100 percent correct, but the large bolt was the one found recently in one of the mounts supporting an engine which had operated for 350 hours without trouble. The crew chief noticed the mount was loose when he leaned on the diffuser section and when he investigated found the bearing in the accompanying photo.

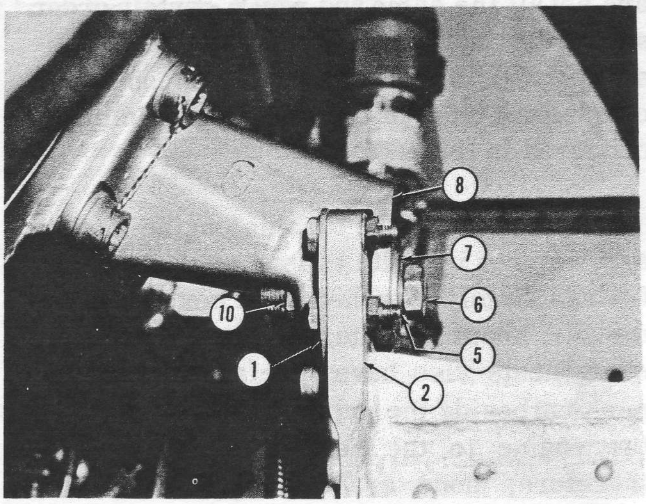


The condition of the bearing was not exactly the same as shown, this occurred when he pushed with his thumb and the inner race popped out of the outer race. How did this condition come about? Take a closer look at the two bolts. The smaller, correct bolt has a longer sleeve than the larger bolt thus allowing the bearing to be positioned on the shank, farther from the bolt head. The sleeve furnishes a bearing surface for the outer ear mount bushing and holds the inner bearing race against the inner ear bushing of the mount. The engine, therefore, is fastened to the airframe. When the larger bolt with the shorter sleeve was used, it furnished a bearing surface for the outer ear mount bushing but was too short to hold the bearing inner race because the bolt head would seat against the mount housing. Thus, the engine was free to move laterally, which it did, battering the bearing until it was in the condition shown. Again, more unnecessary work for maintenance personnel.

Naturally, if any question arises as to correct procedure when installing an engine, the maintenance handbook should be consulted. A precaution which can be taken after an engine has been removed from the aircraft and prior to another being installed, will also aid in preventing maintenance error. The mount components should be checked as they are removed and then, as soon as the old engine has been removed, should be reinstalled in the correct order on the fittings. This will prevent loss, especially if there is an interval of time between pulling out the one engine and installing the new one, and will also be a precaution against mixing components or replacing them incorrectly later on. By checking all components as they are removed, any replacement parts can be ordered immediately. If they aren't checked until it is time to reinstall the engine and then it is discovered that a part needs replacing, there will be a time loss, of course.

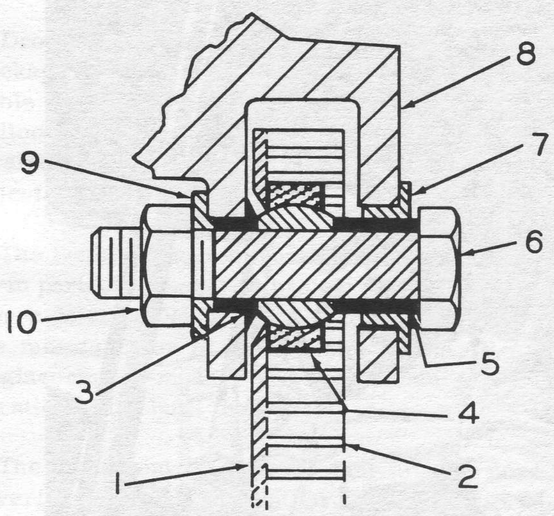
The following information is presented as an aid to maintenance personnel in understanding the functions of the engine mounts and the procedure which should be used when an engine is being installed.

RIGHT REAR ENGINE MOUNT



The right rear engine mount should be connected first since this mount is the main connecting link between the engine and airframe. It secures the aft end of the engine vertically the entire engine assembly from moving forward, to the rear or left or right and also places the new engine in the same basic location as the one removed. A look at the accompanying photograph and drawings will help in understanding how this is accomplished. This is a close tolerance rigid mount which purposely does not provide for engine expansion. Such expansion is taken care of by the other three mounts, two of which are adjustable.

RIGHT REAR ENGINE MOUNT



The engine mount housing (8) is firmly attached to the engine diffuser housing. The mount's mating part, the engine support fitting (2) is firmly attached to the airframe. When installing the engine, the ears of the housing (8) are lowered over the fitting until the bushings in the ears are in line with the inner race of the bearing (4); and the "tailored" bolt (6) will slip through easily. This is a special bolt and no substitutions should be made.

A closer look at the bushings (7) and (3) of the housing shows that the outer ear bushing is larger and the protruding lip is flat. The inner ear bushing (3), besides being smaller in diameter, has a button or mushroom type head. When the tailored bolt is placed through the outer ear, the raised portion (5) of the bolt seats against the outer edge of the bearing (4) inner race. The washer (9) and nut (10) are placed on the bolt and the nut is torqued up. As this is done the inner ear bushing is forced toward the inner race of the bearing (4) until it seats against it. When the nut has been torqued to 175-190 pound-inches, the engine mount housing is firmly attached to the engine support fitting (2) through bushing (3), the inner race of bearing (4), raised portion (5) of bolt (6), and bearing retainer plate (1). Thus the head of the bolt merely serves for wrenching flats when torquing the nut (10) and does not seat the outer ear bushing.

Right rear engine mount components and their part numbers are:

1.	Plate bearing retaining	K734546-13
2.	Fitting engine support	K734546-3
3.	Bushing	K772509-11
4.	Bearing	03-001-0375
5.	Bushing (Part of tailored bolt (6))	K772522-11
6.	Bolt	K772521-1
7.	Bushing	K772520-11
8.	Housing Assembly, mount	K772504-3
9.	Washer	K772508-11
10.	Nut	NAS679A6

(continued on page 21)

Flight Test and Maintenance School

The first of six H-43B Test Pilot's and Maintenance Flight Technique Schools for selected ARS personnel was held recently at Dow Air Force Base, Maine. Hosts for the event, which was sponsored by the Kaman Aircraft Corp., were members of Det. 42, EARC, at the base. Mr. Ralph R. Lee, Kaman test pilot; and Mr. Raymond A. Vokes, a company instructor; conducted the five-day course.

Purpose of the school was to give ARS test pilots and mechanics the latest information on performing functional test flights, what to look for on such a flight in the way of discrepancies; the type information the pilot should pass on to the mechanic to aid in correcting any discrepancies, and similar information which would aid in maintaining the aircraft through a closer relationship between pilot and mechanic.

Among those attending the school were Capt. J. A. Crupper, Loring AFB, Me.; 1st Lt. D. E. Stranahan, Dow AFB, Me.; 1st Lt. W. J. Deming, Westover AFB, Mass.; 2nd Lt. J. T. Connell, Pease AFB, N. H.; 1st Lt. R. L. Merna, Griffiss AFB, N. Y.; 1st Lt. H. G. Caldwell, Dover AFB, Del.; 1st Lt. N. R. Albee, Seymour Johnson AFB, N. C.; Capt. J. M. Slattery, Robins AFB, Ga.; CMSgt. R. T. Hamilton, Loring AFB, Me.; S/Sgt. W. E. Cobb, Dow AFB, Me.; A/2C J. E. Laurenson, Pease AFB, N. H.; T/Sgt. C. L. Eby, Westover AFB, Mass.; S/Sgt. J. C. Ross, Griffiss AFB, N. Y.; S/Sgt. W. Bostic, Dover AFB, Del.; S/Sgt. J. Barnes, Seymour Johnson AFB, N. C.

Similar schools will be held at some future date for personnel in the CARC and WARC. K

USAF HUSKIE BREAKS DISTANCE MARK

HANDSHAKE FOR NEW RECORD HOLDER—Capt. Richard H. Coan, in H-43B cockpit, receives congratulations from KAC Senior Test Pilot Andy Foster after completion of record-breaking flight.

The Air Force has claimed a new closed course distance record of 656.258 miles for its Kaman H-43B HUSKIE helicopter, breaking a record previously held by the Soviet Union.

The new mark was set June 13 over a 24-mile course laid out near Mono Lake, about 80 miles north of Bishop, Calif. Capt. Richard H. Coan, 29, of ARS Det. 52, EARC, Charleston Air Force Base, S. C., was pilot on the flight. Captain Coan has six years service with the Air Force.

Broken was a Russian record of 625.464 miles set with an Mi-1 helicopter over a three-city course on June 24, 1960. The record is in Federation Aeronautique Internationale class E-1d for helicopters weighing between 3,858 and 6,614 pounds. At takeoff, the HUSKIE weighed 6,613-1/2 pounds.

Twenty-six laps were necessary to break the record and 27 were accomplished. The record was bettered by approximately 30 miles. This is the third international helicopter record brought back to the United States from Russia by the H-43B. The others are: Altitude without payload now held by Lt. Col. Francis M. Carney and originally set by Maj. William J. Davis and Maj. Walter J. Hodgson. Altitude with 1,000 kilogram payload set by Capt. Walter C. McMeen. Both of these flights took place at the Kaman Aircraft Corporation plant, Bloomfield, Conn.

Data from the flight will be forwarded by the National Aeronautic Association to the Federation Aeronautique Internationale, world aviation record-keeping body. Carried aboard the helicopter were sealed barographs which recorded the altitude of the helicopter at all times.

The H-43B HUSKIE, which is powered by a Lycoming T-53 gas turbine engine, is an Air Force utility helicopter now stationed at nearly 50 Air Force bases around the nation. Air Rescue Service, MATS; has established the HUSKIE as its standard helicopter and is using the aircraft for local base rescue duty. K

MISSILE CATCH BY HELICOPTER

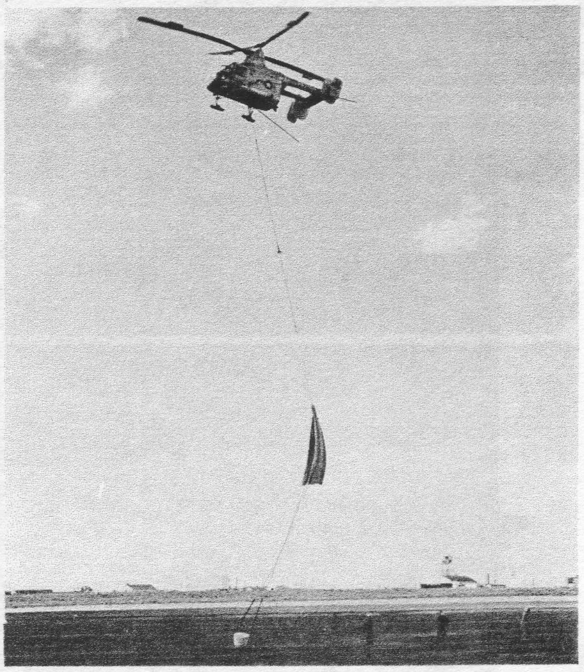
AIR FORCE MISSILE DEVELOPMENT CENTER, HOLLOMAN AFB, N.M. - A successful air snatch of a parachute-supported test package was made over the White Sands Missile Range by an H-43B helicopter.

Dropped from a C-123 aircraft at 10,000 feet the package was snared at about 7,000 feet by a hook-and-cable loop contrivance specially designed for the H-43B helicopter in tests to prove the feasibility of this type of aircraft for midair recovery of parachute-dropped objects.

The tests, conducted from Holloman Air Force Base, form part of a research project undertaken by the Air Force Missile Development Center in conjunction with the manufacturer of the equipment, the All American Engineering Company, and the Kaman Aircraft Corporation which built the helicopter.

The equipment, similar to that already used in recovering several of the DISCOVERER satellite capsules in midair, was modified at Holloman to fit into the H-43B fuselage and consists mainly of a pallet-like structure of lightweight metal which slides snugly into the helicopter and is then bolted down.

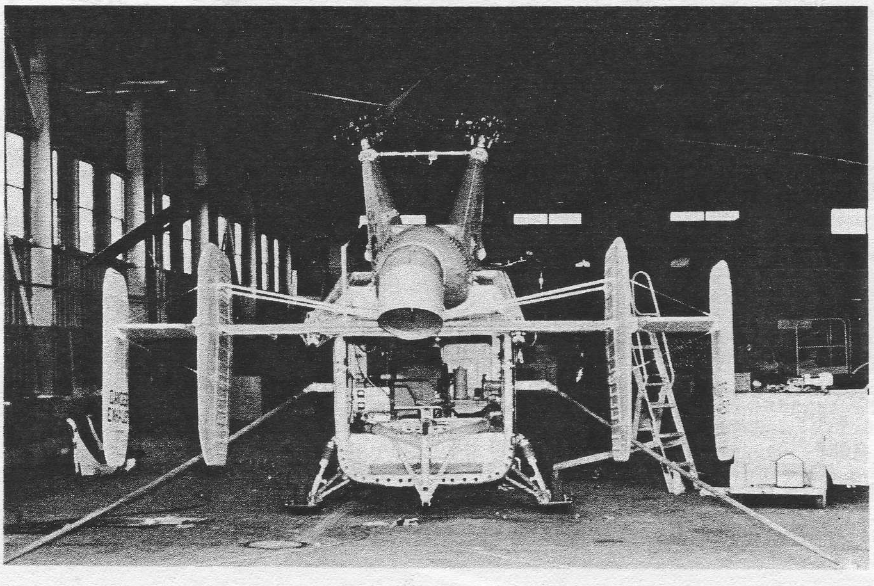
To accomplish the midair catch, powerful winch-operated nylon cable was paid out from the back of the aircraft between two long downward-extending poles which helped to form a cable loop as the helicopter made its approach just above the floating package. Large grappling hooks affixed to the cable loop then engaged the parachute shrouds of the package causing a further payout of cable from the pallet-bolted winch. When the tangential velocity of the winch drum coincided with the forward speed of the aircraft, braking force was applied to the winch after which the recovered package was successfully drawn into towing position and towed all the way back to Holloman to be lowered gently to the ground with no damage to its contents by ground impact.



This first successful flight, using a package weighing 100 pounds for test purposes, was followed by other flights using variously weighted packages from 50 to 800 pounds to determine the complete maneuverability and effectiveness of helicopter midair recovery. Additional requirements of the test plan called for all catches to be made at altitudes between 5,500 and 9,000 feet, at helicopter speeds within 50 to 70 knots. Thirteen catches were tried, and all were successful.

Operating the equipment during most of the catches was Lt. James R. Firestone, test project engineer of AFMDC's Aircraft Maintenance Division. Capt. Jack H. Patterson, DCS/Operations pilot who flew the Kaman-built helicopter, made all 13 catches - and as a result was recommended for the Air Force Commendation Medal.

The Air Force Missile Development Center is a research site of the Air Force Systems command. K



MODIFICATION of an H-43B is completed at Holloman AFB with a slide-in apparatus designed to "catch" parachute-dropped objects in midair. From a winch in the apparatus, nylon cable extends out between two long poles to form a loop fitted with grappling hooks to engage the chute cords of the floating object. First used to snare several of the DISCOVERER satellite capsules, the apparatus is being tested at Holloman for use with helicopters.
(USAF photos)

REPORT *from the ready room*

HELICOPTER WITH A PERSONALITY

JACK C. GOODWIN
Project Test Pilot
HU2K-1

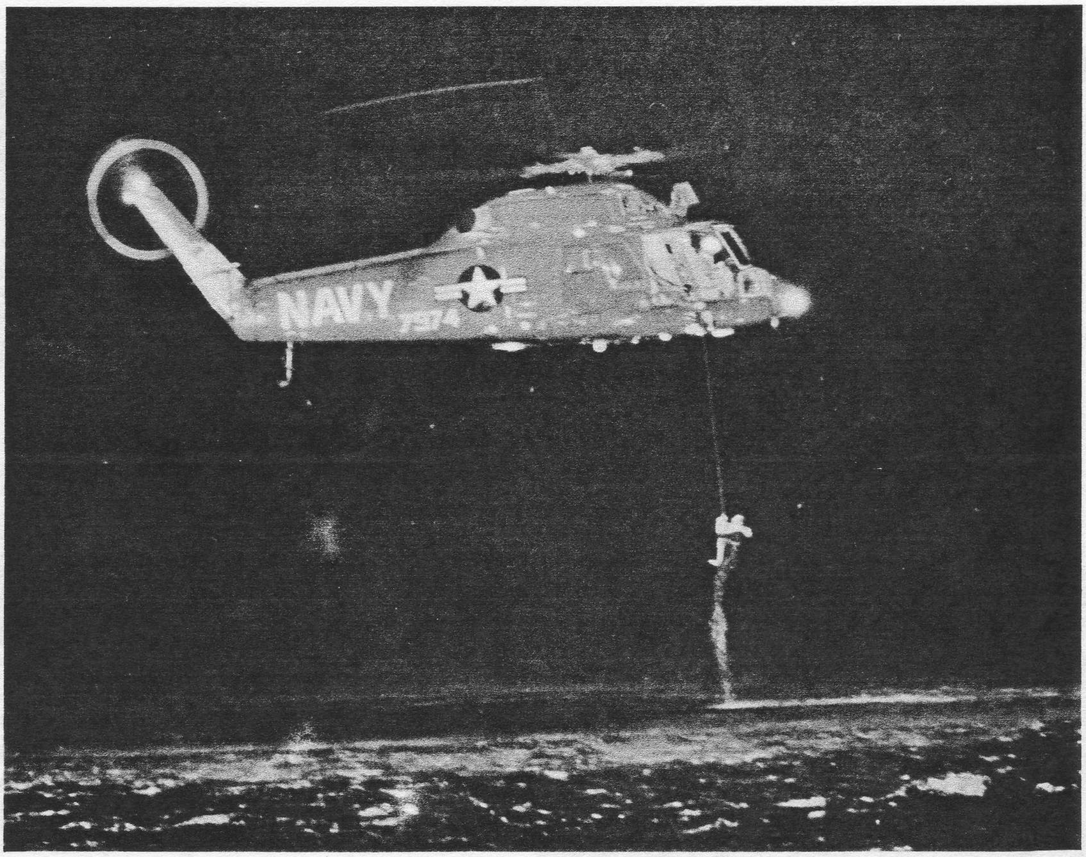
The arrival of the HU2K-1 brings forth a new era in helicopter refinement. From its initial mockup stage, it has been directed toward greatly increasing the capability of the pilot by introducing a machine and equipment that enables him to embark upon missions in all types of weather conditions with the highest degree of safety, comfort and reliability.

To attain these ends, a considerable amount of engineering and development time has been required. Since speed has been a prime requisite, endless effort has gone into increasing the speed beyond the average, under 100K, area of most helicopters. Above this boundary, speed becomes more difficult as each knot increase is added. In attaining our maximum speed set forth by Navy specification, vibration is a big item. Here again, it can be said that a new refinement has been added to the helicopter industry. To this end it has been recorded that the HU2K is the first helicopter to meet vibration specifications. In other words, we possess the most vibration-free helicopter in the industry today. This in itself is a unique advancement and one from which several fringe benefits are derived. One of these benefits is less wear and tear on all electronic gear which is always the equipment most susceptible to problems from vibrations. Since avionic gear has become an integral part of the helicopter, this cannot be over emphasized. Long missions (4-6 hours) of which the HU2K is capable, now become more realistic due to increased pilot comfort and less pilot fatigue as a function of the low vibration level. This applies to airframe parts as well.

The most outstanding contribution to the present state of the art can be attributed to Kaman's servo flap control, coupled with the feedback rotor design. With the servo flap giving the rotor added stability, plus no aerodynamic feedback, the HU2K has outstanding stability characteristics without the aid of automatic stabilization equipment. The feedback rotor feature coupled with the servo flap control concept is partially responsible for the absence of vibration loads being fed back into the helicopter. The feedback principle being that, once the flap has induced control into the blade and the blade has established its new position, the control of the servo flap is "washed out," thereby eliminating any high loads or vibrations that might be fed back into the airframe itself.

Often overlooked in many helicopters, but one of the most important for extended flights and pilot comfort, is the design of the seat itself. Here again Kaman Aircraft took great care in developing the contoured foam rubber pilot seat which is adjustable on the pilot side and is considered the ultimate in present-day comfort.

It is therefore easy to understand why we believe this helicopter has a "personality." The machine will serve its user to the utmost, providing the fundamental principles of understanding and know-how are employed in obtaining the most from this helicopter. It is a new realm in helicopter flying. Its comfort is already accepted. Its flying characteristics more closely resemble a fighter plane than most helicopters with their comparatively slow speeds. The great strides in advancement from World War II fighters to our present day high performance jets has been astronomical. Likewise, the HU2K-1 falls in this category in the h



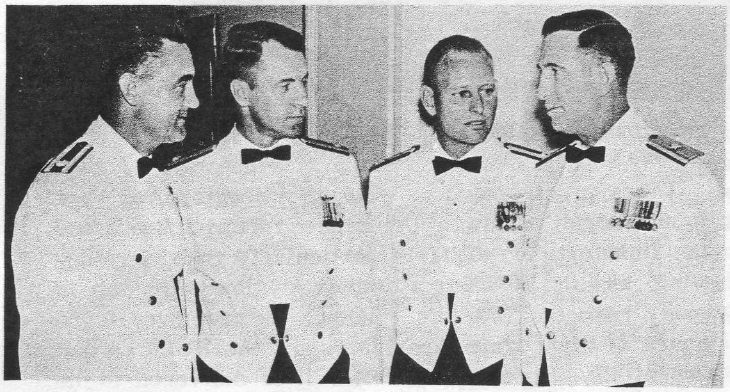
copter field. From the beginning, the HU2K has advanced the state of the art to where speeds and endurance are more than doubled, with an associated improvement in flying qualities.

The self-contained navigation system in conjunction with the advanced ASE now makes possible the all-weather and night overwater rescue missions. This capability, along with the completely new helicopter will provide the Navy with a tool to complete almost any mission assigned.

There is a tremendous amount of development work in an aircraft of this caliber between drawing board and the final article. This is particularly true of rotary wing, and the HU2K is a completely new helicopter in many respects. At this reading, we have over 4,000 hours of flight time experience with the HU2K so that essentially a proven aircraft will be delivered to the fleet. K

HU-1 PERSONNEL, NAAS REAM FIELD, Calif., who are receiving HU2K-1 maintenance training preparatory to taking part in the Fleet Indoctrination Program, and their instructors. The course is being conducted by the Naval Air Maintenance Training Detachment 1071 at Ream. Front row, left to right, are T. C. Nickeles, AMC, Inst.; R.N. Packard, AE1; J. D. Waugh, AE2; B. H. McArdle, AE1; H. A. Smith, ADRC, Inst.; P. M. Vaughan, AE2. Second row, O. Z. Williams, AECS, Inst.; J. F. Prendiville, AEC, Inst.; R. L. Welch, ADRC, Inst.; E. J. Dachtler, ADR1; H. B. Stevens, ADR1; E. P. Estep, AMS2; F. C. Dangel, AE2; D. E. Wilson, AE2; R. F. McCall, AT1; G. M. Stimmel, ATCS, Inst.; E. W. Michalski, ATC, Inst. Third row, W. A. Ruthford, AMHC, Inst.; B. Burress, AMS2; R. F. Skidmore, AMS1; L. J. Jaynes, ADR1; J. C. Jury, ADJ1; R. W. Denning, AE2; D. E. Anderson, AE3; E. J. Lloyd, AT2; H. B. Stevens, ADR3.

ARS HONORED FOR HUMANITARIAN SERVICE—Brig. Gen. Joseph A. Cunningham accepts the William J. Kossler Award on behalf of the Air Rescue Service. The award was presented for "the saving of the lives of hundreds of airmen and civilians in the year of 1961."



RECORD BREAKERS GATHER—Brig. Gen. Joseph A. Cunningham, Commander of the Air Rescue Service, chats with H-43B record breakers at the American Helicopter Society's Honors Night Dinner. Left to right, are Lt. Col. Francis M. Carney, who set four world and national altitude and climb records; Maj. Walter J. Hodgson, who with Maj. William J. Davis (not shown) established a high altitude record in 1959; and Capt. Walter C. McMeen, who set a payload-to-altitude world mark in 1961.

Cheney Award

A helicopter pilot and rescue technician from McChord AFB, Wash., have received the coveted Cheney Award for the hazardous mountainside rescue of an injured woman mountain climber last year. Chosen by Air Force Headquarters to receive the award, which was presented on Armed Forces Day, were 1st. Lt. William A. Luther of ARS Det. 5, WARC; and MSgt. Lawrence G. Seckley of the 325th Operations Squadron.

The Cheney Award is limited to officers and airmen on active duty and is presented annually for "an act of valor, extreme fortitude, or self sacrifice in a humanitarian interest performed in connection with aircraft." The award consists of a certificate, a bronze statue and a $500 honorarium.

Lieutenant Luther was pilot on the flight which involved flying an H-43B below a two-inch wire cable to rescue a woman on the side of a 60-degree slope in a shallow crevasse. With the helicopter's rotor blades just 18 to 20 inches from a ledge, Sergeant Seckley twice climbed out on the helicopter's landing gear to aid in the rescue, once using his knife to slash climbing ropes which secured the injured woman to the ground.

Lieutenant Luther and Sergeant Seckley were also recently awarded Air Medals for the rescue and 1st Lt. Robert S. Michelsen, copilot on the mission, received the Air Force Commendation Medal.

OUTSTANDING HELICOPTER PILOT—Lt. Col. Francis M. Carney, Commander of the 3638th Flying Training Squadron, Stead AFB, Nev., is presented with the Frederick L. Feinberg Memorial Award at the American Helicopter Society's Honors Night Dinner, Washington, D. C. Making the presentation is Awards Committee Chairman Lee S. Johnson. Colonel Carney, third to receive the annual award, set four new world and national altitude records in a USAF H-43B HUSKIE. The memorial, upon which the recipients name is engraved, was established by KAC President Charles H. Kaman and is presented to the outstanding helicopter pilot of the year. It is displayed in the Smithsonian Institution. Colonel Carney also received a cash award and the Feinberg Memorial medallion.

DISTINGUISHED VISITOR—Vice Admiral R. B. Pirie, Deputy Chief of Naval Operations for Air, recently visited Kaman Aircraft Corporation facilities in Bloomfield and Windsor Locks, Conn. After flying the HU2K-1 SEASPRITE, Admiral Pirie and KAC President Charles H. Kaman, second from left, chat with Ernest Deschamps of production flight test, retired Navy aircraft mechanic. Looking on is W. R. Murray. Vice President of Test Operations.

78 RESCUED BY H-43B

INFORMATION OFFICE, LAREDO AFB, 24 April 1962. — A group of farmers and ranchers and their families, trapped by a flash flood near Colombia, Nuevo Leon, Mexico; 15 miles northest of Nuevo Laredo, Mexico, were rescued and brought to safety last night, by a helicopter from Laredo AFB, Texas.

Most of the rescue families had apparently been on the hilltop since late Sunday night. Though they were all wet, hungry and thirsty, there were no known casualties. The area was completely cut off from access by land by the swift water of the arroyo and large inundated flats under four to six feet of water and mud. Captains Lemke and Vurbeff said they doubted that even a power boat could have reached the area, at least from the downstream (Nuevo Laredo) side.

Piloted by Capt. Clyde W. Lemke and Capt. T. C. Vurbeff, with crewmen SSgt. Bobby Singleton, and Airmen Donald Powell and James Driver, the helicopter, a gas-turbine-powered H-43B, picked up the stranded families from a low hilltop where they had taken refuge from the spreading waters of a flood-swollen creek. The refugees, 43 adults and 35 children (including a number of toddlers and babies in arms), were flown approximately three-fourths of a mile to the nearest accessable road point where they were taken over by Mexican authorities and transported to Nuevo Laredo.

The helicopter pilots also acknowledged the invaluable assistance of Border Patrol Pilot Dale Burt and observer Leslie Bell who landed near the scene in a light plane shortly before the helicopter arrived and helped organize the flood victims for most efficient evacuation. Meanwhile, crewmen Singleton, Powell and Driver remained at the evacuation road point to assist women and children from the helicopter to waiting vehicles and keep the bystanders a safe distance from the aircraft.

The word first reached Laredo AFB at 5:55 p.m. yesterday afternoon (Monday) when the refugees were sighted by a Border Patrol Aircraft. American Consul Ben Zweig contacted Mexican authorities for permission for the helicopter to cross the border. Meanwhile, the mission was cleared with Central Air Rescue Center, Richards-Gebaur AFB, Mo. The helicopter is assigned to Detachment 36, Central Air Rescue Center, and is attached to Laredo AFB for Air Rescue support of the pilot training mission.

The helicopter took off a few minutes after 6:00 p.m. and reached the flood scene shortly after 6:30. Evacuation of the refugees was completed at about 9:00 p.m., but the helicopter made several search sweeps over the flooded area to insure that no isolated individuals remained before returning to the base. They were congratulated on landing by Col. Woods W. Rogers Jr., Laredo AFB Commander, and Mexican consul Eugenio Pesquiera. K

HELICOPTER CREWMAN A1C James Driver, left, and A1C Donald Powell stand by as pilots, Capt. Clyde W. Lemke, foreground, and Capt. T. C. Vurbeff shut down engine of H-43B after landing at Laredo AFB.

COL. WOODS W. ROGERS JR., Laredo AFB Commander, confers with Captain Vurbeff, left, and Captain Lemke after landing at base. Mexican Consul Eugenio Pesquiera right, accompanied Colonel Rogers to the landing pad.

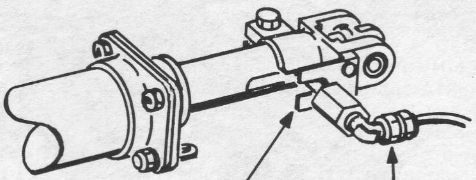
HELICOPTER CREW, left to right, A1C James Driver, SSgt. Bobby Singleton, A1C Donald Powell, Capt. T. C. Vurbeff, and Capt. Clyde W. Lemke; pose with Col. Woods W. Rogers Jr., Mexican Consul Eugenio Pesquiera and Lic. Jose Tonone, liaison representative of the Mexican Red Cross, at end of epic rescue mission, (USAF photos)

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.

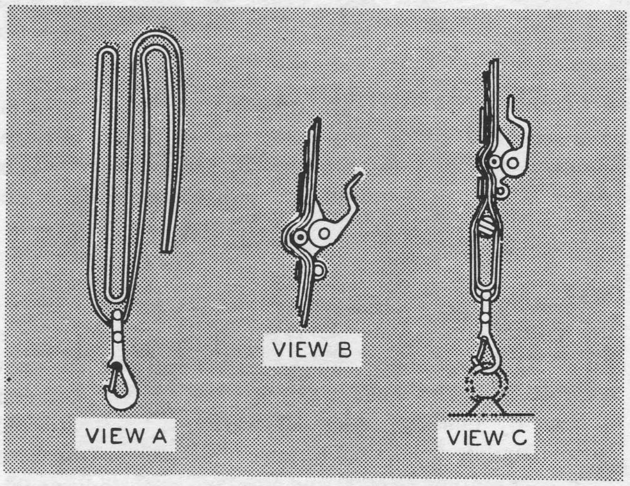
Q. (Applies HOK-1, HUK-1, H-43A, H-43B) WHAT IS THE MEANING OF THE WORD "VISCOSITY?"

A. Commonly expressed, viscosity is a liquid's resistance to flow. Technically, viscosity is the internal resistance exhibited as one portion or layer of liquid is moved in relation to another portion. It is due to the internal friction of the liquid molecules moving past each other. Since temperature is a measure of molecular motion, temperature is the most important variable affecting the viscosity of a liquid and must always be stated in conjunction with viscosity. - C.W.J.



Q. (Applies H-43B) WHAT IS A POSSIBLE CAUSE OF BINDING IN THE COLLECTIVE LIMITER STEM ASSEMBLY?

A. Binding may be caused by preloading the inlet fitting on the assembly in such a way that it rubs on the side of the slot in the guide bracket. Such preloading may occur if the pressure line is allowed to twist when the "B" nut is tightened while the line is being attached to the inlet fitting. It is suggested that the clearance between the stem assembly and the guide bracket slot be checked whenever the inlet line is disturbed. - W.J.W.



Q. (Applies H-43B) WHAT IS THE PROPER METHOD OF ASSEMBLING AND INSTALLING THE LITTER STRAP ASSEMBLY P/N A-5906 AND CLAMP ASSEMBLY P/N 43A1736 USED IN SECURING THE FORWARD LITTER HANDLES?

A. The litter strap is folded as shown in view (A) so that, with the folds brought together, a total of six thicknesses of material exist. The six thicknesses of material are then threaded into the clamp, making sure all the material passes under the clamp roller before passing out through the opposite end of the clamp, as shown in view (B). The snap fastener is hooked to the floor ring and the litter handle is passed through the loop in the belt between the snap fastener and the clamp, as shown in view (C). By pulling up on the strap and pushing down on the clamp simultaneously the litter is held secure. When the clamp lever is depressed the assembly is locked.

This assembly and installation procedure is the same for securing the forward end of both litters. - A. D. C.

Q. (Applies H-43B, H-43A, HOK-1, HUK-1) WHAT CAN BE ONE CAUSE OF UNUSUAL IN-FLIGHT NOISES?

A. Loose tiedown or mooring fittings can cause such noises. Tightening the attaching hardware for the K731694-11 (H-43B) and the K386179-11 (H-43A, HUK, HOK) tiedown rings will resolve this problem. - W.J.R.

Q. (Applies H-43B) WHAT IS THE MAXIMUM BEND ALLOWED IN THE AZIMUTH BAR-TO-HUB CONTROL ROD, P/N K759540?

A. Bends up to 0.38 in any one foot are acceptable and no attempt should be made to straighten the control rod if the bend falls within this limit. If the limit is exceeded, the control rod should be changed. This information will appear in a future issue of the -2 Maintenance Instructions. - W.J.W.

Q. (Applies HOK-1, HUK-1) CAN DAMAGE BE CAUSED BY INSTALLING BLADE BOX COVERS WITH THE ENDS REVERSED?

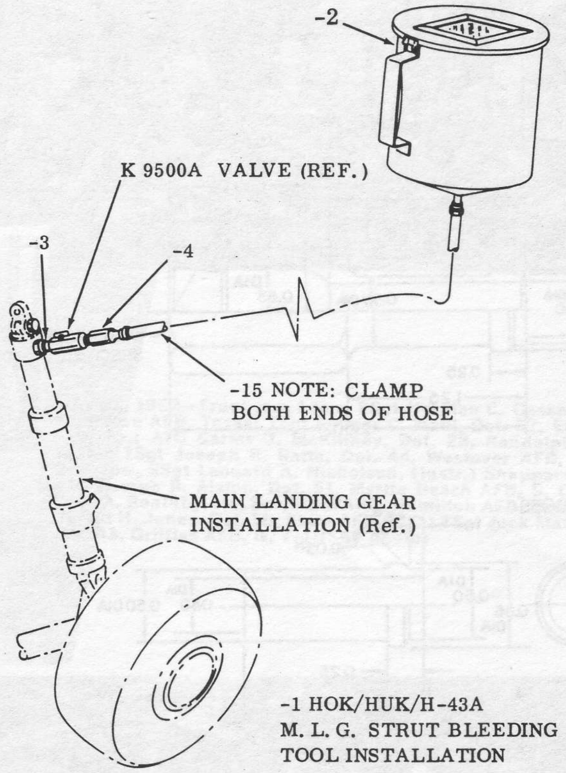
A. Damage to the rotor blades may result if the box covers are reversed. To prevent this improper installation, alignment marks have been placed on the box and its cover. Instructions are stenciled inside the box which should be read carefully before any attempt is made to package the blades for shipment. - N.E.W.

Q. (Applies H-43B, H-43A, HOK-1, HUK-1) WHY IS IT NECESSARY TO INSURE THAT THE CARGO HOOK IS CLOSED WHEN THE HELICOPTER IS ON THE GROUND?

A. If the hook is left in the open position during ground-handling operations, it may snag on objects when the helicopter is moved. This is particularly true if the helicopter is being pushed backward. If the hook does snag, damage may result to either the cargo hook assembly and/or the aircraft structure. - A.D.C.

Q. (Applies HOK-1, HUK-1, H-43A) WHILE "BLEEDING" THE MAIN LANDING GEAR, WHAT ACTION MAY BE TAKEN TO PREVENT SPILLING THE HYDRAULIC FLUID?

A. A comparatively simple device may be fabricated by maintenance personnel from material usually found where aircraft are maintained. Shown below is a drawing of the device; additional plans may be found on the next page. Substitution of the parts called for is permissable as long as the principle is adhered to. The advantages of this system are: 1. Clean fluid is delivered to strut; 2. No loss of fluid in servicing; 3. Struts may be serviced under adverse weather or similar conditions; 4. Low manufacturing cost. - E.L.W.



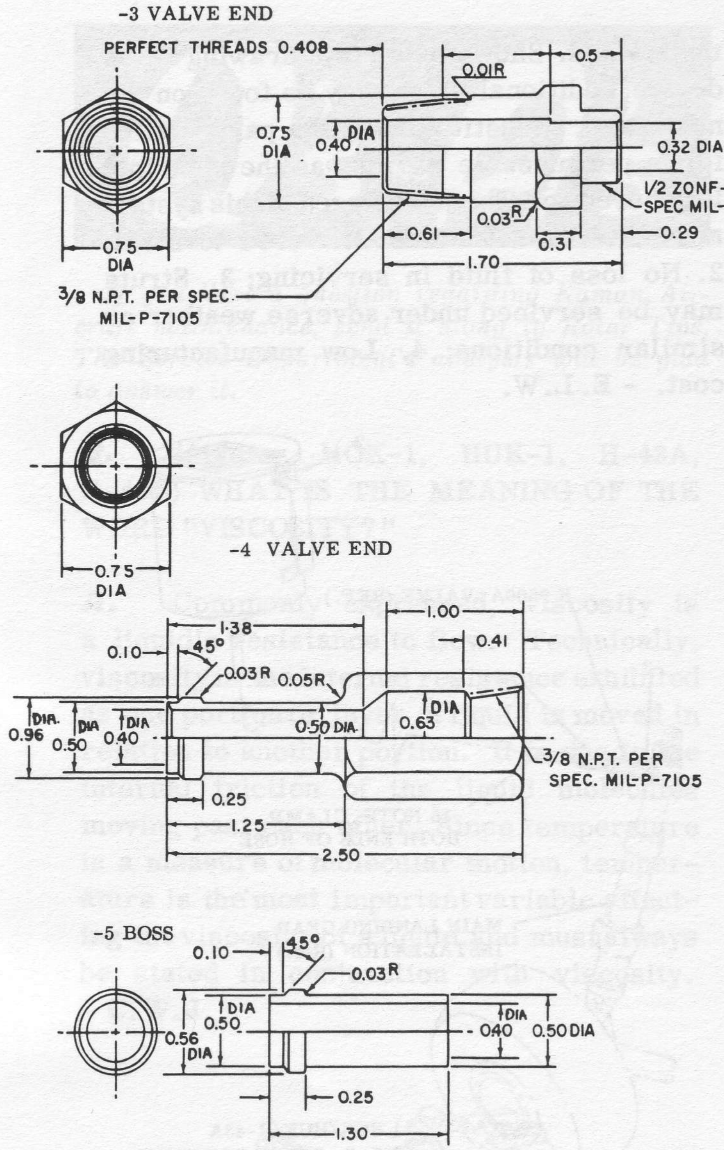
-1 HOK/HUK/H-43A
M. L. G. STRUT BLEEDING
TOOL INSTALLATION

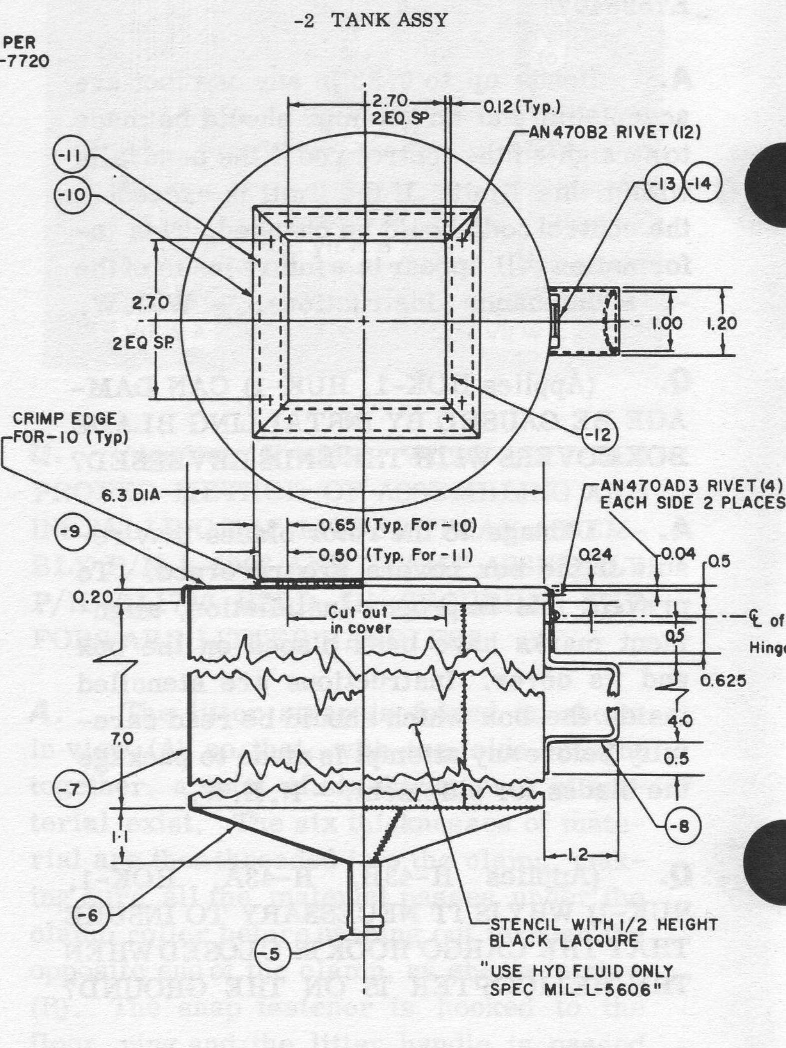
USE OF MAIN LANDING GEAR SERVICING DEVICE

1. Jack up aircraft until struts are extended at least three inches. Remove air from struts through air valve. 2. Remove filler plug containing air valve and disconnect strut from upper fitting. 3. Insert nozzle of hydraulic squirt can into orifice left by removal of filler plug. 4. Fill strut with hydraulic fluid to level of orifice; insert fitting from servicing device, tighten and then open Koheler Valve, P/N K9500A-3, on line from tank assembly. (A similar valve may be used if this type is not available.) 5. Pour approximately one pint of hydraulic fluid into tank. 6. Slowly compress strut then lower, meanwhile observing through tank top or clear plastic hose as the air bubbles are dissipated. Repeat this process until all air and foaming oil is removed. (If clear plastic hose is not available, a glass tube can be inserted in the line from the tank to the strut or a glass door may be provided on top of the tank for observation purposes.) 7. Compress strut, then turn valve into off position. 8. Remove device fitting and reinstall filler plug and air valve. 9. Secure strut to upper fitting, lower aircraft and remove jack. Inflate strut with air pressure according to Handbook of Maintenance Instructions.

continued next page

KAMAN SERVICE ENGINEERING SECTION—*G. D. Eveland, Supervisor, Service Engineering, E. J. Polaski, G. S. Garte, Asst. Supervisors; E. L. White, A. Savard, G. M. Legault, Group Leaders.*
ANALYSTS—*R. A. Berg, P. M. Cummings, M. T. Fiaschetti, P. A. Greco, E. Hermann, C. W. Jenkins, D. W. MacDonald, J. McMahon, W. J. Rudershausen, F. E. Starses, W. J. Wagemaker, N. E. Warner, A. A. Werkheiser, M. Whitmore, W. H. Zarling, R. W. Olsen.*





-2 No.	-1 Reqd.	Part No.	Part Name	Stock Size	Material	Mat'l Spec.	Finish
			Valve	K-9500A-3			
12			Rivet	AN470B2			
4			Rivet	AN470AD3			
	2		Hose Clamp	AN737RM24			
	1	-15	Tube - Vinyl	1/2 I.D. x 25"	Vinyl Tube	Comm.	
1		-14	Hinge Pin	0.063 Pin DIA	Make from		
1		-13	Hinge	0.032"	MS35821-4A		
1		-12	Glass-Window	1/16" x 2.7 x 2.7		Comm.	
4		-11	Seal	1/8" x 0.5 x 4.0		MIL-R-6130	
						Grade A. Class Medium	
4		-10	Frame	0.032" x 0.8 x 4	Al-Aly. Sh.	QQ - A - 318b	
					5052	Temp. 0	
1		-9	Cover Plate	0.032" x 7 x 7			
1		-8	Grip	0.04" x 3 x 8			
1		-7	Side Panel	0.04" x 8 x 22			
1		-6	Bottom Panel	0.04" x 10 x 10	Al-Aly. Sh.	QQ - A - 318b	
					5052	Temp. 0	
1		-5	Boss	5/8 DIA. x 1.5	Al-Aly. Rod	QQ - A - 32b	
					6061	Temp. T	
	1	-4	Valve End	1.0 DIA. x 2.7	Al-Aly. Rod	QQ - A - 268	Anodize
					2024	Temp. T4	
	1	-3	Valve End	1.0 DIA. x 2.0	Brass Rod	Comm.	
	1	-2	Tank Ass'y				Anodize
		-1	Installation				

GRADUATION

H-43B TRAINING SHEPPARD AIR FORCE BASE

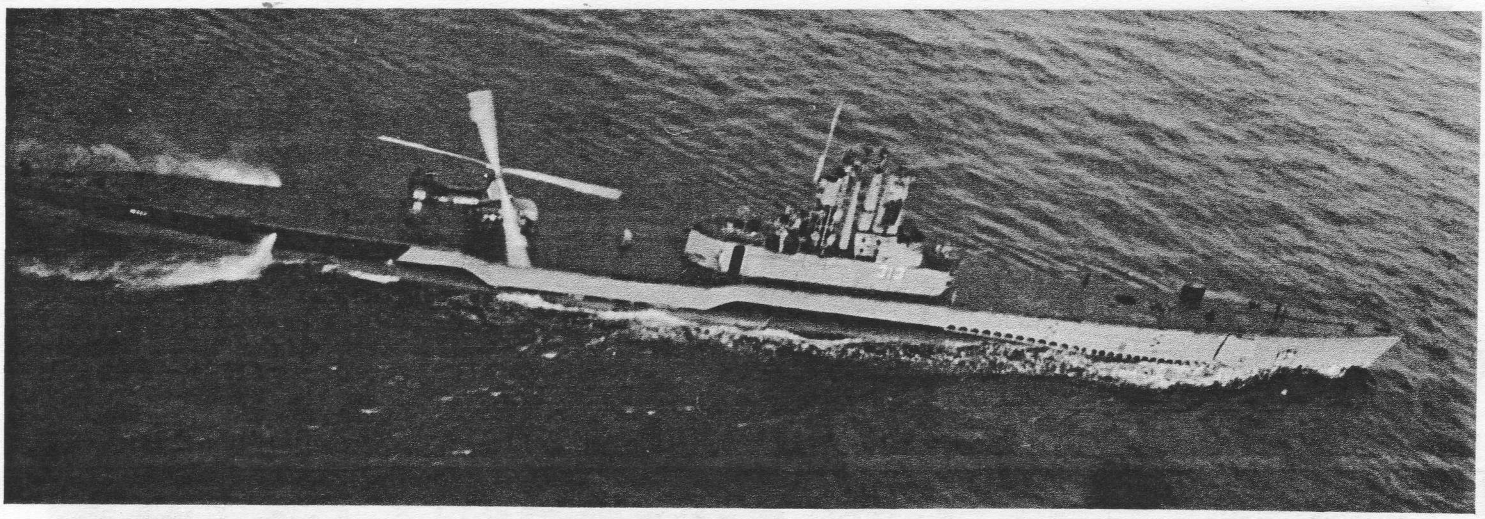
3750TH TECHNICAL SCHOOL, USAF (ATC)

MAY 8, 1962—Front row, l to r, MSgt Francis M. Adair Jr., Det. 32, Webb AFB, Texas; A1C James R. Tabor, Det. 8, Glasgow AFB, Mont.; SSgt Vernon E. Hinton, Det. 39, Laughlin AFB, Texas; A2C William K. Slattery, Det. 47, Langley AFB, Va.; SSgt Charles R. McGatha, Det. 9, Portland Int'l Aprt, Ore.; SSgt C. Wilder (Instr.) Sheppard AFB, Texas. Rear row, SSgt Morehead (Instr.) Sheppard AFB; A2C Robert Kerfoot, Det. 14, Nellis AFB, Nev.; SSgt Conrad L. Neft, Det. 16, Williams AFB, Ariz.; SSgt Robert H. Meyer, Det. 6, Fairchild AFB, Wash.; A1C George Patrick, Det. 22, Duluth MAP, Minn.; TSgt Wilbur C. Sweat, Det. 29, Vance AFB, Okla.; SSgt Clifford R. Langley, Det. 42, Dow AFB, Me.; A1C Hubert O. Marsh, Det. 4, Paine Fld, Wash.; Mr. Fulton, (Instr.) Sheppard AFB. (USAF photo)

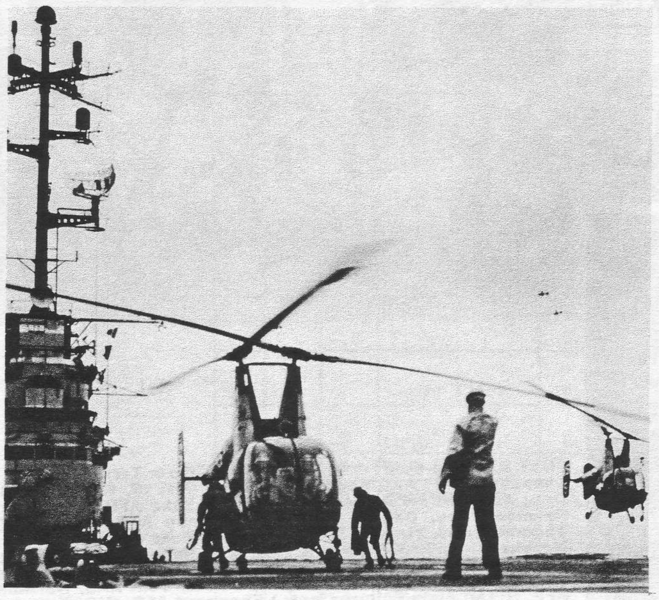
MAY 23, 1962—Front row, l to r, SSgt Herman C. Cassell, Det. 31, Reese AFB, Texas; TSgt Rodger C. Maul, Det. 37, England AFB, La.; A1C Carlos J. McKinney, Det. 28, Randolph AFB, Texas; TSgt Joseph R. Ratte, Det. 44, Westover AFB, Mass. Rear row, SSgt Leonard A. Nicholson, (Instr.) Sheppard AFB; A1C George R. Alston, Det. 51, Myrtle Beach AFB, S. C.; A1C Cecil A. Boothby, Hel Sec, Hq WARC, Hamilton AFB, Calif.; A1C Gerald H. Jones, Det. 50, Shaw AFB, S. C.; TSgt Jack Mathison, Det. 43, Griffiss AFB, N. Y. (USAF photo)

JUNE 12, 1962—Front row, l to r, A2C Ronnie C. Dyer, Det. 33, Perrin AFB, Texas; SSgt Eugene F. Schmidt, Det. 25, Wurtsmith AFB, Mich.; SSgt Charles W. Bowling, Det. 41, Loring AFB, Me.; A2C Roy F. Taulbee, Det. 45, Pease AFB, N. H.; TSgt Dolphie H. Merrill, Det. 53, Craig AFB, Ala. Rear row, Mr. Fred Morrison, (Instr.) Sheppard AFB; SSgt James E. Collis, Det. 54. Moody AFB, Ga.; TSgt William B. Creech, APO 677, New York, N. Y.; SSgt Thomas E. Goodwin, Det. 26, Selfridge AFB, Mich.; A1C Jackie D. Wilkins, 66th FMS, James Connally AFB, Texas; SSgt Robert J. Watson, Det. 41, Loring AFB, Me.; SSgt Clyde D. Gilbreath, Det. 28, Randolph AFB, Texas; Mr. Raymond Maxwell, (Instr.) Sheppard AFB. (USAF photo)

JULY 3, 1962—Front row, l to r, TSgt William Terrace, (Instr.) Sheppard AFB; A2C Kendall R. Higgs, Det. 10, Kingsley Fld, Ore.; A2C William R. Meosker, Det. 15, Luke AFB, Ariz.; TSgt Raymond Key, Det. 2, 54th ARS Harmon AFB, NFLD; A1C Thomas Arms, (Instr.) Sheppard AFB. Rear row, SSgt W. J. Morehead, (Instr.) Sheppard AFB; A2C Robert L. Taylor, Det. 50, Shaw AFB, S. C.; A1C Edward D. Erickson, Det. 31, Reese AFB, Texas; A1C Adron D. Ratliff, Det. 2, 54th ARS, Harmon AFB, NFLD; Alvin Fulton, (Instr.) Sheppard AFB. (USAF photo)



1ST MARDIV. CAMP PENDLETON, Calif.—VMO-6 pilots, led by Lt. Col. H. K. Bruce, Squadron Commander; qualified recently aboard the submarine USS Perch. The HOK-1's launched from Camp Pendleton to land on the small deck aft of the sail on the Perch. (Official USMC photos by Cpl. Henry Godinez).



VMO-2, MAG 16, MCAF OKINAWA—HOK-1's attached to VMO-2 land on the carrier USS Princeton during maneuvers in the Western Pacific. (Official USMC photo)

HUKs MAKE SWAMP RESCUES

Despite the darkness, high trees and dense growth, the crew of an HUK-1 from NAS Cecil Field, Fla., managed to rescue the pilot of an F8U who bailed out and landed in the middle of the Okefenokee Swamp.

Flying the helicopter was Chief N. G. Fowler, while G. W. Muesing, ADR3, was crewman. Chief Fowler located the pilot with the aid of the HUK's floodlights and then hovered the helicopter over 80-foot trees while the pickup was made. The pilot of the fixed-wing aircraft, certain that he wouldn't be rescued that night, had already made camp and settled down to wait out the dawn. Then the night-flying "angel" arrived.

A 13-year-old boy with a yen to "catch a big 'ole catfish for Dad," found a peck of trouble instead when he became lost in a dense Floridian swamp for 11 hours while on his goodwill fishing expedition.

An HUK-1 from Station Operations, NAS Jacksonville, responded to the call for help in locating the lad and shortly afterward the young fisherman was airlifted to safety. Piloting the helicopter was Lt. Irv Hastings while R. J. Schwartz, AD1/C, was crewman.

"OPERATION FOXY"—A simulated medical evacuation is performed by members of VMO-1, MAG26, MCAF, New River, Jacksonville, N.C.; as they load a stretcher patient aboard an HOK-1 during recent weeklong field training exercises. Helicopter pilot is 1st Lt. Robert L. Norton. (Official USMC photo)

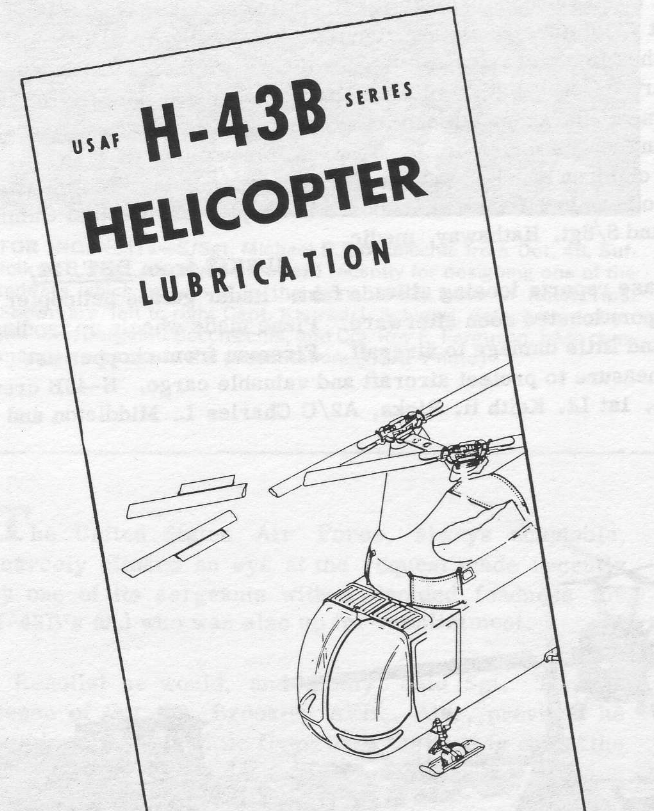
MARINE OBSERVATION SQUADRON ONE
MARINE AIRCRAFT GROUP 26
2D MARINE AIRCRAFT WING, AIRCRAFT, FMF, ATLANTIC
MARINE CORPS AIR FACILITY
NEW RIVER, JACKSONVILLE, N. C.

EARL W. CASSIDY
Lieutenant Colonel, U.S. Marine Corps
Commanding

Date __________

1. Your pilot is __________
2. From __________ to __________
3. Estimated time enroute __________
4. Your aircraft is the HOK helicopter, manufactured by KAMAN Aircraft Corporation. It is powered by a 600 horsepower air-cooled radial engine.
5. Feel free to ask the pilot any questions you might want answered.

COURTESY CARDS—These forms, which Major H. A. Nelson, VMO-1 executive officer, had printed are presented to passengers boarding HOKs attached to VMO-1. Similar cards, each for the particular aircraft involved, are also used to anticipate the most commonly asked questions.



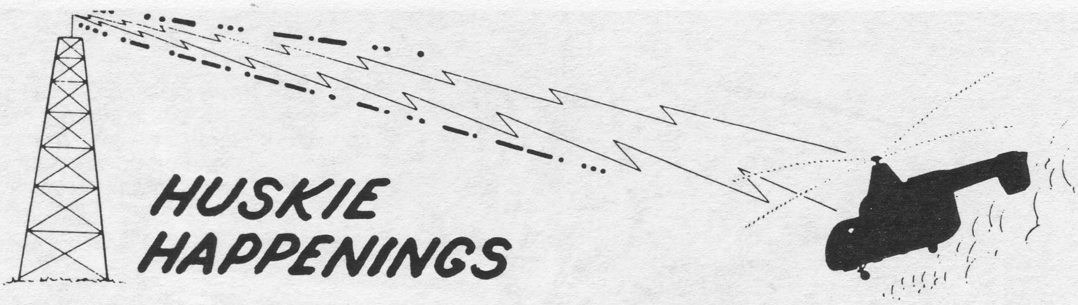
Hip Pocket Reference

As a maintenance aid, a complete lubrication chart which folds like a road map has been distributed to all units flying H-43B helicopters.

Shown on the chart are drawings of the various components, points to lubricate, the type of lubricant to be used, times when the action should be taken, and how the lubricant should be applied. Also shown is the ground safety equipment used to protect the helicopter on the ground and which should be removed before flight.

The 22 by 34-inch chart was designed by the Service Publications section of Kaman Aircraft as a convenience for maintenance personnel. Since it is easily stored in a hip pocket, it does away with the necessity for carrying the larger and heavier technical manual for reference while performing lubrication work. (The chart should be checked periodically against the manual, of course, so that any T.O. revisions may be incorporated.)

Additional copies of the chart may be secured from the company's Field Service Representatives or by writing to the Customer Operations Section, Field Service Department, The Kaman Aircraft Corp., Old Windsor Road, Bloomfield, Conn. A similar chart is now being prepared for the HU2K-1. ▸



HUSKIE HAPPENINGS

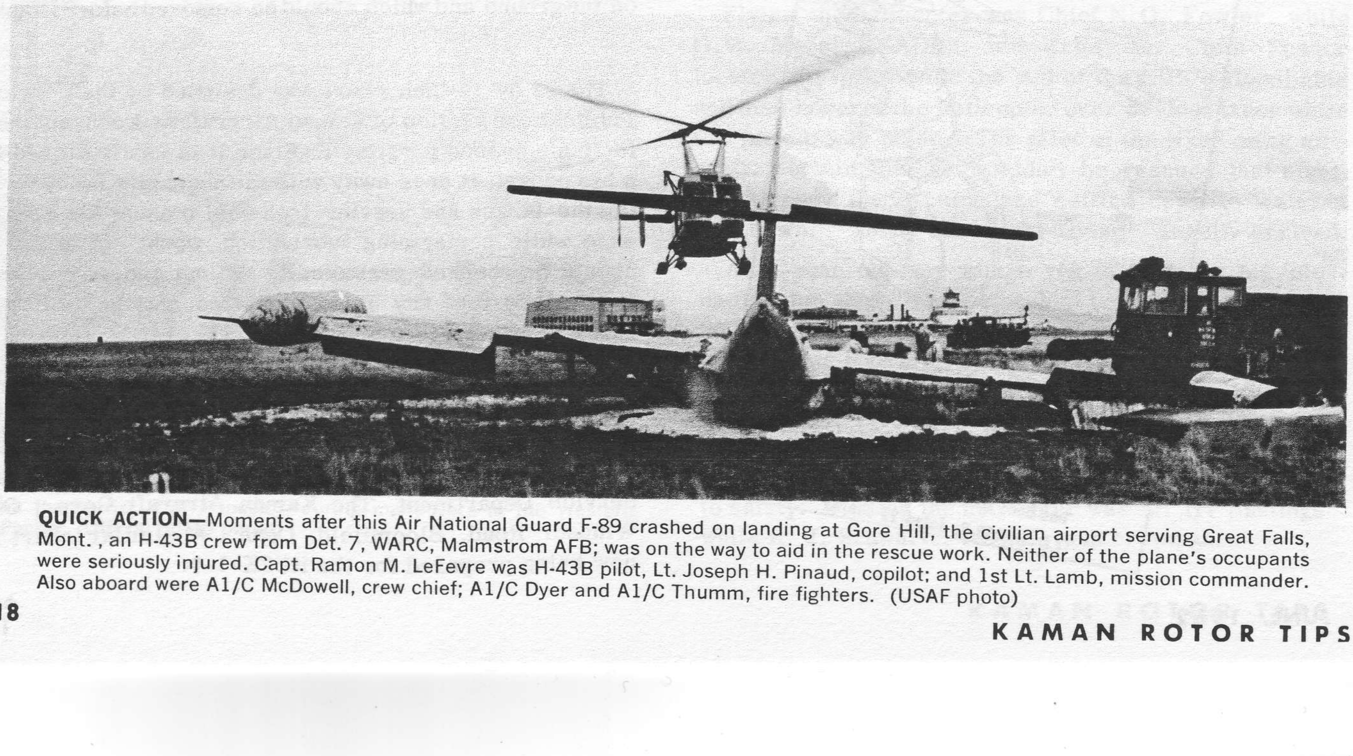
H-43B from DET. 32, Webb AFB, Texas; teams up with runway alert fire vehicle to extinguish T-37 fire. Chopper uses rotor downwash to aid in spreading foam from truck. T-37 crew, one with minor burns, flown to hospital by helicopter afterward. H-43B crew consists of 1st Lt. James L. Butera, 1st Lt. Keith H. Ricks, S/Sgt. M. T. Richardson, S/Sgt. William R. Ford and A1/C Robert L. Duncan.... Responding to call for assistance from Coast Guard, crew of HUSKIE from DET. 42, Dow AFB, Maine, conducts two-hour, night time search over waters off Bucks Harbor for lobsterman who vanished from boat. Search resumes next day at dawn until 1100 before being discontinued. Aboard the helicopter are 1st Lt. D. E. Stranahan, 1st Lt. W. J. Zimmerman, Jr., T/Sgt. M. C. Hartman and HM1/C Juell.

.... Airpoliceman critically injured in automobile accident flown by H-43B from ARS DET. 46, Suffolk County AFB, N.Y., to St. Albans Naval Hospital 50 miles away. During flight, fog, mist and 200-foot ceiling encountered. Flying mission are Lt. F. L. Chase, pilot; Lt. A. P. Lupenski, copilot; Capt. R. Ettenger, doctor; SM/Sgt. J. Bailey, medic; and A2/C Luis Carreras, crew chief.... Helicopter crew from DET. 10, Kingsley Field, Ore., scramble in H-43B after pilots of F101 bail out. Chute spotted 20 minutes later and one pilot, suffering from broken leg, rescued from difficult position in lava bed pothole. Second pilot located soon afterward. Aboard the HUSKIE are Capt. Kenneth L. Spaur, pilot; S/Sgt. Charles W. Sye, medical technician; A1/C Edgar R. Palmer and G. R. Byrge, firemen.

... HUSKIE attached to ARS DET. 26, Selfridge AFB, Mich., scrambles at 2130 after KC-97 reports to RAPCON at base that red flare sighted on Lake St. Clair eight miles east of Selfridge. A2/C Michael W. Liston and A1/C Aaron L. Ward of 2031st Communication Sqd. plot location of flare. With their assistance, helicopter vectored to disabled boat within 10 minutes. Flare no longer visible. Boat's occupants, unharmed but wet and cold, picked up by chopper and flown to safety. Aboard H-43B are 1st Lt. Larry A. Nitz, pilot; 1st Lt. Owen A. Heeter, copilot; and S/Sgt. Arlis V. Williford, 1st USAF Hospital, hoist operator.

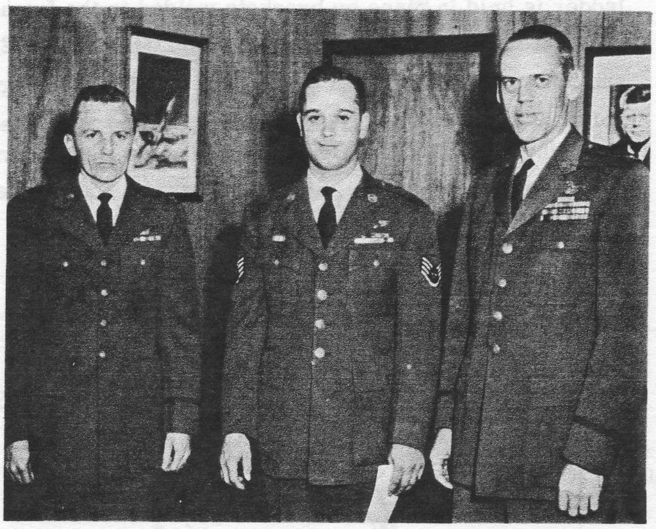
... H-43B from DET. 32, Webb AFB, Texas; airborne one minute and 10 seconds after notification that T-38 has crashed, drops off firemen and fire suppression kit at site as precaution against fire, flys survivor to hospital within seven minutes. Capt. Thomas Seebo, pilot; and 1st Lt. James L. Butera, copilot.... Crew of H-43B from DET. 58, Brookley AFB, Ala., scramble after F105 crashes in Mobile Bay and locates debris within six minutes after alarm sounds. Aboard helicopter are Capt. Floyd Lockhart, pilot; S/Sgt. William Fulford, rescue technician; S/Sgt. George S. Lamontand, and S/Sgt. Robert D. Benton, firemen. Sergeant Fulford lowered into water in effort to locate missing pilot and helicopter later participates in subsequent search missions.... To H-43B crew from DET. 8, Glasgow AFB, Mont., falls sad duty of locating three lost children who had wandered away from picnic. Ten minutes after launch, one youngster found in small lagoon and two others under the ice. Aboard helicopter are Captain Gammon, pilot; Captain Lilly, copilot; S/Sgt. Johnson, crew chief; and S/Sgt. Hathaway, medic.

... HUSKIE from DET. 32, Webb AFB, Texas; scrambles when DC-4 30 miles from base reports loosing altitude fast. Radar guides helicopter crew through thunderstorm to last radar contact and transport located soon afterward. Plane made wheels up landing in deep mud of rain-drenched field. No personnel injury and little damage to aircraft. Firemen from chopper use fire suppression kit to hose down DC-4 as precautionary measure to protect aircraft and valuable cargo. H-43B crew consists of Capt. Thomas Seebo, 1st Lt. James L. Butera, 1st Lt. Keith H. Ricks, A2/C Charles L. Middleton and A1/C Robert L. Duncan.



QUICK ACTION—Moments after this Air National Guard F-89 crashed on landing at Gore Hill, the civilian airport serving Great Falls, Mont., an H-43B crew from Det. 7, WARC, Malmstrom AFB; was on the way to aid in the rescue work. Neither of the plane's occupants were seriously injured. Capt. Ramon M. LeFevre was H-43B pilot, Lt. Joseph H. Pinaud, copilot; and 1st Lt. Lamb, mission commander. Also aboard were A1/C McDowell, crew chief; A1/C Dyer and A1/C Thumm, fire fighters. (USAF photo)

DRAMATIC RESCUE—A welcome sight for two teenagers stranded atop steep Camelback Mt. was this H-43B from Det. 15, WARC, Luke AFB, Ariz. The helicopter plucked the boys from their hazardous perch after they learned, like many a treed cat, climbing up is one thing, coming down another. Capt. R. R. Cowles was pilot, 1st Lt. R. L. Gardner, copilot; and T/Sgt. H. F. Alford, crew chief. The photograph was taken by Wally Stein of the Arizona Journal.



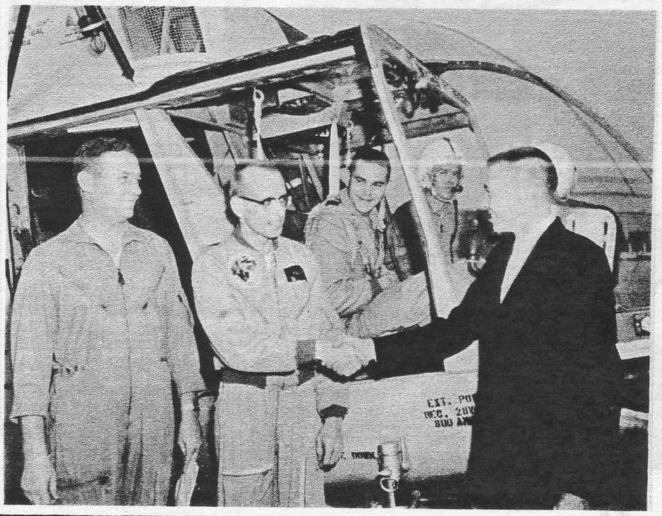
FOR INGENUITY—S/Sgt. Michael P. Bocchicchia from Det. 46, Suffolk AFB, N. Y., received an award recently for designing one of the ladders which appeared in the April, 1962, issue of Rotor Tips. Shown are, left to right Capt. Konrad J. Schiessl, detachment commander; Sergeant Bocchicchia, and Col. Roy E. Ferguson, base commander; who made the presentation. (USAF Photo)

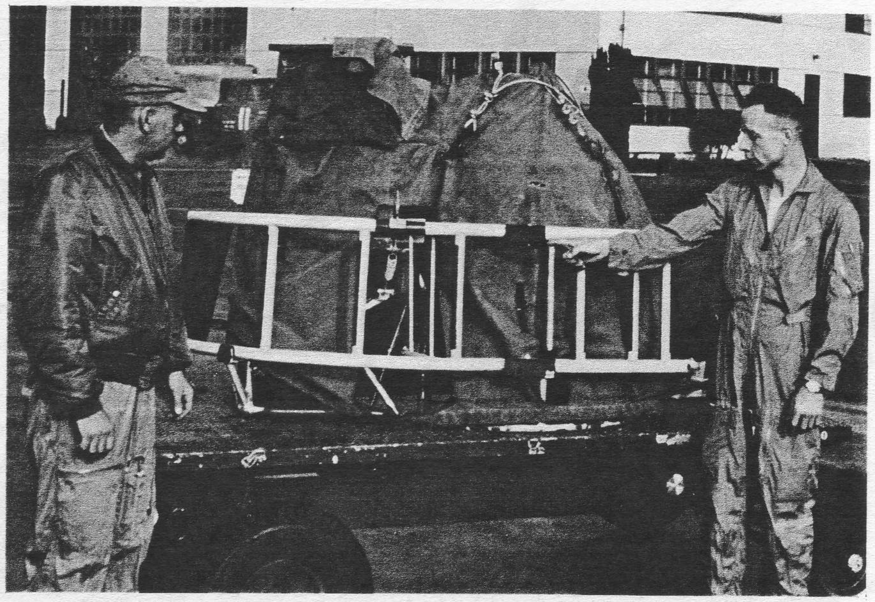
AIRMAN OF THE YEAR—SSgt. Bryan M. Hart, of the 42d Helicopter Detachment at Dow AFB and a Maine native, has been named Airman of the Year by Eastern Air Rescue Center. The Corinna-born sergeant was commended for his work in organizing the administrative structure of the detachment. With his selection of Airman of the Year his name will now go to MATS headquarters for consideration as command airman of the year. (USAF Photo)

The United States Air Force, always adaptable, scarcely blinked an eye at the request made recently by one of its sergeants with a decided fondness for H-43B's and who was also up for reenlistment.

Reenlist he would, and gladly, said Sgt. Thomas Nesco of Det. 58, Brookley AFB., Ala., provided he could be sworn in while flying over the base in one of the aircraft he loved so dearly.

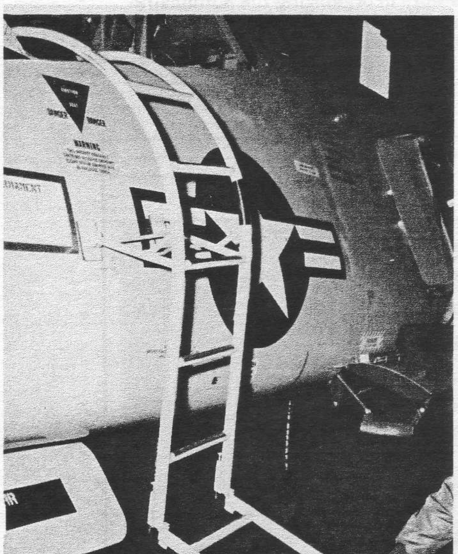
Without hesitation the official nod was given and soon, high in the air over Brookley, Sergeant Nesco said the magic words which continued his Air Force career. Shown after the ceremony are, left to right, Capt. Ray Henley, Sergeant Nesco, Capt. Floyd Lockhart, S/Sgt. George Justus and Robert Lambert, Kaman Field Service Representative. (USAF photo) K

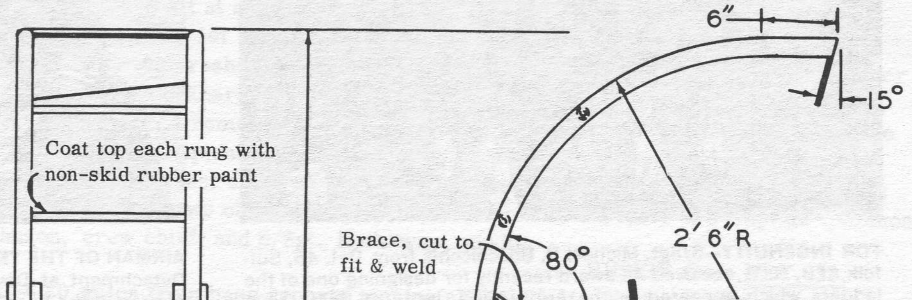




This 29-1/2 pound rescue ladder was developed by T/Sgt. Donald H. Wagner, T/Sgt. Raymond H. Lyons, A1/C Mickey J. Ball, A1/C Charles R. Carver and A1/C Willie R. Johnson, firefighters attached to ARS Det. 5, WARC, at McChord AFB, Wash. It can be utilized for pilot rescue when the aircraft is in either a gear up or gear down position since the lower third of the ladder is jointed to provide this advantage. The ladder is held in place by brackets welded to the frame of the fire suppression kit. Cost of materials was $39.25 and labor, $102.80. Total cost, $142.05. The drawings below are only two of several which appeared on a blueprint furnished by the Detachment. Also shown are detailed descriptions of the swivel plate, pad and bracket and other ladder components. (USAF photos) K

LADDER

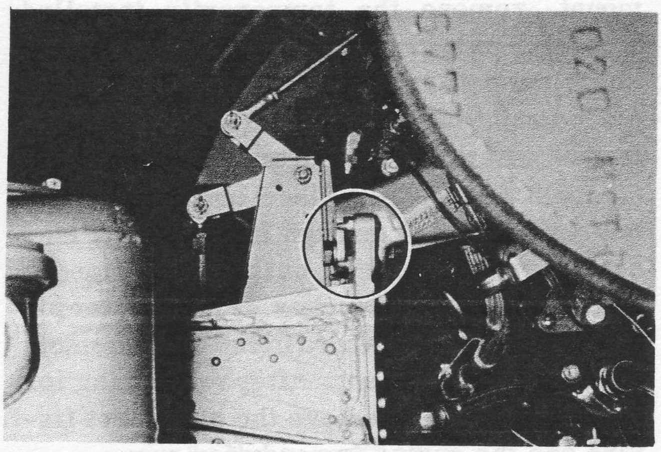


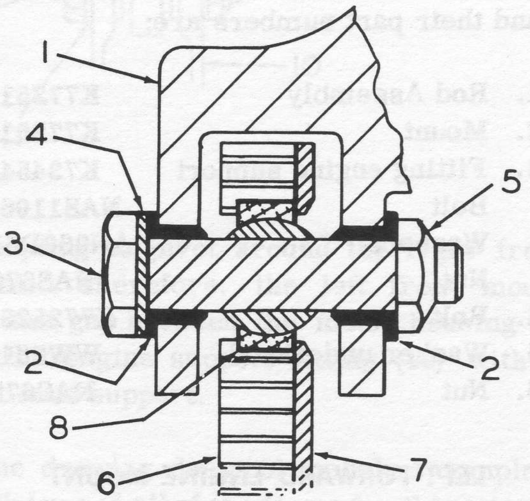


LADDER, A/C PILOT RESCUE
Scale = 1-1/2" = 1'-0"

continued from page 5

LEFT REAR ENGINE MOUNT





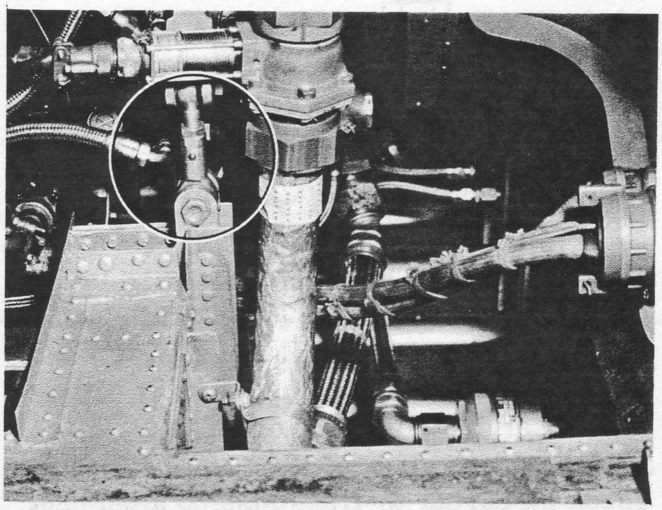
The left rear engine attachment, shown in the accompanying photo and drawing, allows the engine to expand or "grow" laterally but, like the right mount, secures the aft end of the engine vertically and prevents any fore or aft movement. The bushings (2) are of the standard type and have the same diameter. The ears of the mount housing fit over the engine support fitting (6) and when the bushed holes in the ears are in line with the inner race of the bearing (8) the special bolt (3) can be installed. Place the wave washer (4) against the bolt (3) head and slide the bolt through the housing ears and bearing. Place the nut (5) on the bolt and torque to 120-143 pound inches. To prevent damage to the ears on the engine mount housing (1), be sure to use the special or tailored bolt with the wave washer under the bolt head. The threaded portion of the bolt is smaller in diameter than the bolt shank, therefore, in case of over-torque or if the washer is defective, the nut will bottom before damage to the housing ears can occur.

Left rear engine mount components and their part numbers are:

1.	Housing Assembly, mount	K772503-5
2.	Bushings	NAS538-6P26
3.	Bolt	K772519-11
4.	Washer	WW281S10
5.	Nut	NAS679A5
6.	Fitting engine support	K734571-3
7.	Plate, bearing retaining	K734571-13
8.	Bearing	03-001-0375

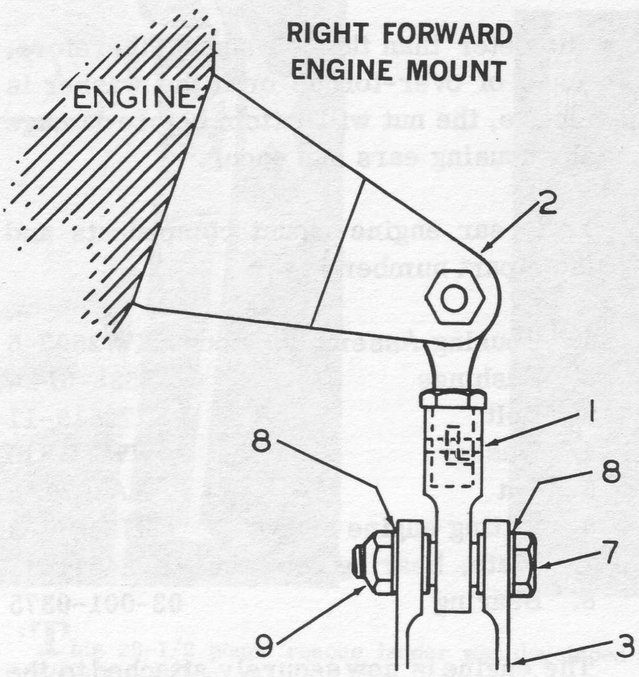
The engine is now securely attached to the airframe, as far as lateral and fore and aft movement are concerned. Now the engine should be aligned vertically with the transmission. The two forward engine attachment points are adjustable and are provided for this purpose. After this has been accomplished the mounts are secured.

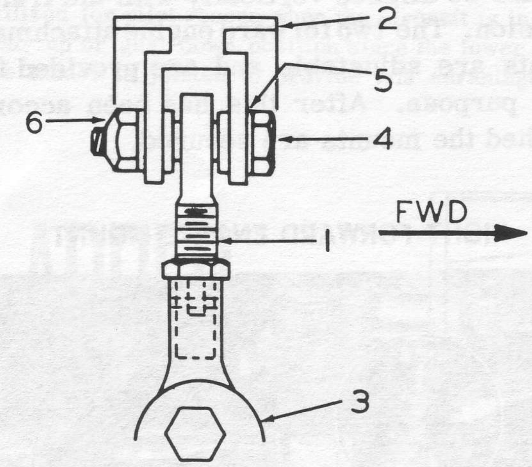
RIGHT FORWARD ENGINE MOUNT



The right forward engine support shown in the accompanying photo and drawing is the main attachment point in this area. The drawing depicts the right forward engine attachment items. The adjustable rod assembly (1) is the connecting link between the mount housing (2) and the engine support fitting (3). The thread shank portion of the rod assembly (1) can be screwed in or out of the rod end portion thus raising or lowering the front of the engine. Initially the rod

RIGHT FORWARD ENGINE MOUNT





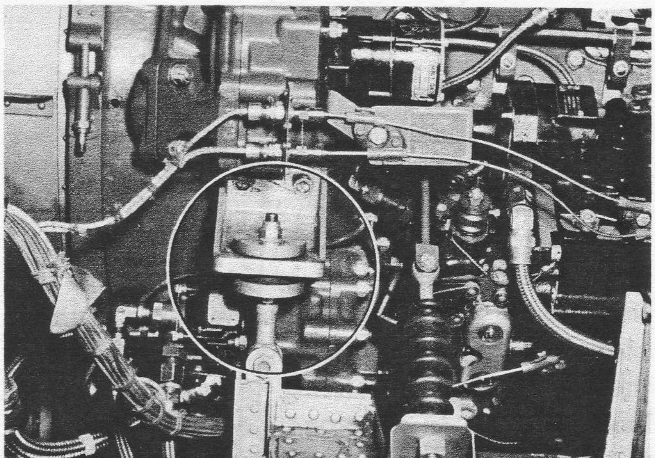
assembly should be temporarily installed by setting at a nominal length and placing bolt (4) through the mount housing (2) and bolt (7) through the engine support fitting (3). After installing the drive shaft, place the alignment fixture (P/N 704508-1) and check the engine-to-transmission alignment by turning the drive shaft counter clockwise and reading the deal indicators per instructions in the maintenance handbook. (T.O. 1H-43B-2) When the alignment check has been completed. and all necessary vertical adjustment has been accomplished on the rod assembly, no further action is taken until the left forward engine attachment items have been installed. Work on the right forward mount is then resumed and completed.

After installing the left forward mount attachment, return to the right forward mount, remove the temporarily installed bolt (4) shown in the drawing, place washer (5) on the bolt and reinstall. Nut (6) is then placed on the bolt and torqued to 45-50 pound-inches. Remove temporarily installed bolt (7) from fitting (3). Place a washer (8) on bolt and reinstall through fitting (3). Place a washer (8) and nut (9) on the bolt and torque to 120 to 140 pound inches. Place cotter pin through the hole provided in rod end assembly and recheck alignment. After rechecking for proper alignment remove the alignment fixture and the engine is ready for runup.

Right foward engine mount components and their part numbers are:

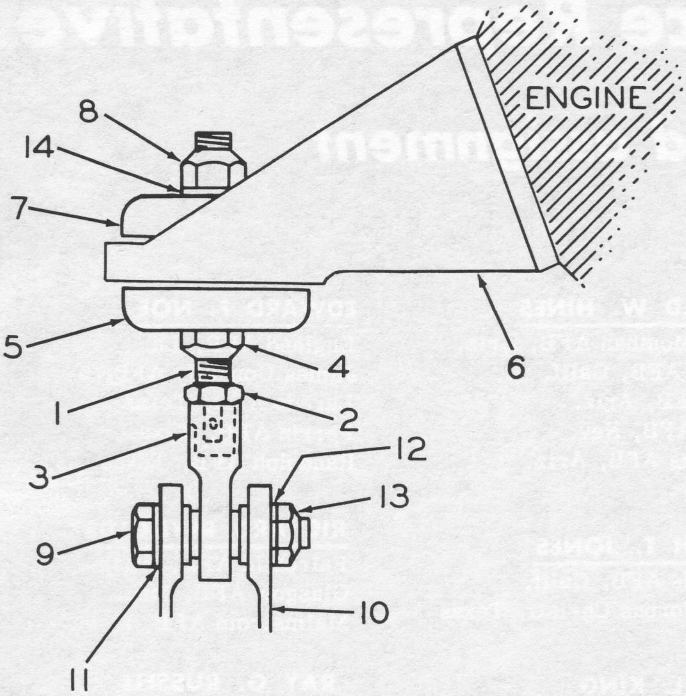
1.	Rod Assembly	K772518-1
2.	Mount	K772514-1
3.	Fitting engine support	K734545-2
	Bolt	NAS1106-18
	Washers	AN960D616L
	Nut	NAS679A6
4.	Bolt	K772523-11
5.	Washer underhead	WW281S10
6.	Nut	NAS679A5

LEFT FORWARD ENGINE MOUNT



The purpose of the left forward engine mount, shown in the accompanying photo and drawing, is to cushion the engine torque load. As the compressor rotates within the engine it tends to move the compressor housing in the same direction. When an acceleration or deceleration occurs, the housing will move in the opposite direction

LEFT FORWARD ENGINE MOUNT



attempting to pivot around the right front mount. Therefore, the left front mount fills the gap between the mount housing (6) and the engine support fitting (10) with a cushioned support.

The drawing does not include a complete breakdown of all of the items for this attachment point. But it does indicate that the engine mount housing (6) is connected by several items to the engine support fitting (10). The illustrated parts breakdown for the aircraft, Tech Order 1H-43B-4, will give the parts required between the bottom stop (5) and the upper stop (7). Prior to installing the stud assembly (1) (2), (3), (4), (5), (7), it should be built up in this manner: Place the nut (4) on the stud (1) approximately one third of the way up the slotted end; screw jam nut (2) on to stud and screw rod end (3) on to stud until the slot in the stud (1) will just clear the cotter pin hole in the rod end (3), lock jam nut (2) against rod end (3) and install cotter pin through the rod end and secure. Place stop (5) down against nut (4) and remaining parts that fit below the mount housing (6) on the stud (1): Slip the stud through the hole in the housing (6) and position the rod end (3) between the ears of the engine support fitting (10). Attach the rod end (3) to the fitting (10) by placing a washer (11) on bolt (9) and installing through the ears and rod end. Place a washer (12) and nut (13) on the bolt (9) and torque to 120-143 pound inches. Tighten nut (4) until the stop (5) is firmly seated in the mount (6) mounting hole, and the rod end (3) does not slide easily on the bolt (9). It should be movable under finger pressure, however. Place the required items under upper stop (7) and install washer (14) and nut (8). Hold nut (4) so that it will not turn, torque nut (8) to 80 to 100 pound inches.

Left forward engine mount components and their part numbers are:

1. Stud	K772515-15
2. Nut check	AN316C6R
3. Rod End	K772527-11
4. Nut	MS20364-624C
5. Stop	K772517-11
6. Mount	K772516-11
7. Stop	K772517-11
8. Nut	MS20365-624C
9. Bolt	NAS1106-18
10. Fitting engine support	K734545-1
2 bushings	NAS77-6-24
11. & 12. Washers	AN960D616L
13. Nut	NAS679A6
14. Washer	AN960D616

Night Rescue At Sea

An injured seaman, in shock and suffering from a loss of blood, was flown to safety from a freighter 20 miles at sea recently by an H-43B crew from ARS Det. 48, EARC, Dover AFB, Del.

The HUSKIE, with Capt. Ronald Ingraham, Lt. Hugh Caldwell, S/Sgt. J. Perrin and A3/C J. Holiday aboard, took off at 1930 in response to the call for assistance from the "African Dawn." The helicopter took approximately 35 minutes to reach the freighter and, due to the high rigging, had to hover about 60 feet over the deck. The medical technician was lowered on the hoist and worked for 30 minutes before the bleeding could be stopped. The patient was then tied in the sling and hoisted to the hovering chopper. A short time later the "B" landed at a Coast Guard Station where an ambulance was waiting. K

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