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service news

A SERVICE PUBLICATION OF LOCKHEED-GEORGIA COMPANY, A DIVISION OF LOCKHEED CORPORATION

Previous Page Table of Contents Next Page

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A SERVICE PUBLICATION OF
LOCKHEED-GEORGIA COMPANY
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LOCKHEED CORPORATION

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Vol. 8, No. 3, July -September 1981

CONTENTS

Cover: This issue's cover features a USAF *C-130E* from McChord AFB on a training mission over the mountains of western Washington state.

F. CARTER

FocalPoint

TECHNOLOGY TO MEET NATURE'S CHALLENGE

The forces of nature never cease in their relentless efforts to return the handicrafts of mankind to the basic elements of nature. And so it is with our Hercules aircraft and corrosion.

Corrosion is a formidable challenge for Lockheed materials engineers. They must use their skills and knowledge to ensure a long, safe life for our airplanes and the lowest possible maintenance cost. The problem is heightened by the severe environment in which our "workhorse" airplanes often perform. And although the challenge has been great, the knowledge gained through years of study and experience has enabled Lockheed materials specialists to achieve an outstanding degree of success. The result is a superior product that has been updated and improved constantly over the years. Significantly, much of this has happened literally from the inside out.

The forces of nature will ultimately win out over all of man's creations, but this is not the important point. What is important is that now, and in future years, our customers can be certain that Hercules aircraft will always be built of the best and most durable materials advanced technology is able to provide. Our engineers will develop stronger and more corrosion-resistant structural components, better paints, better sealants, and innovative new ways to combat the destructive forces of nature. And these developments will continue to improve the Hercules without altering its appearance or excellent flying characteristics.

We of Lockheed-Georgia's Materials and Processes Engineering Department are proud of the Hercules aircraft, and proud of our contribution to the continuing improvement of the world's foremost airlifter.

Sincerely,

F. J. Carter
Manager

Materials and Processes Engineering

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Previous Page Table of Contents Next Page

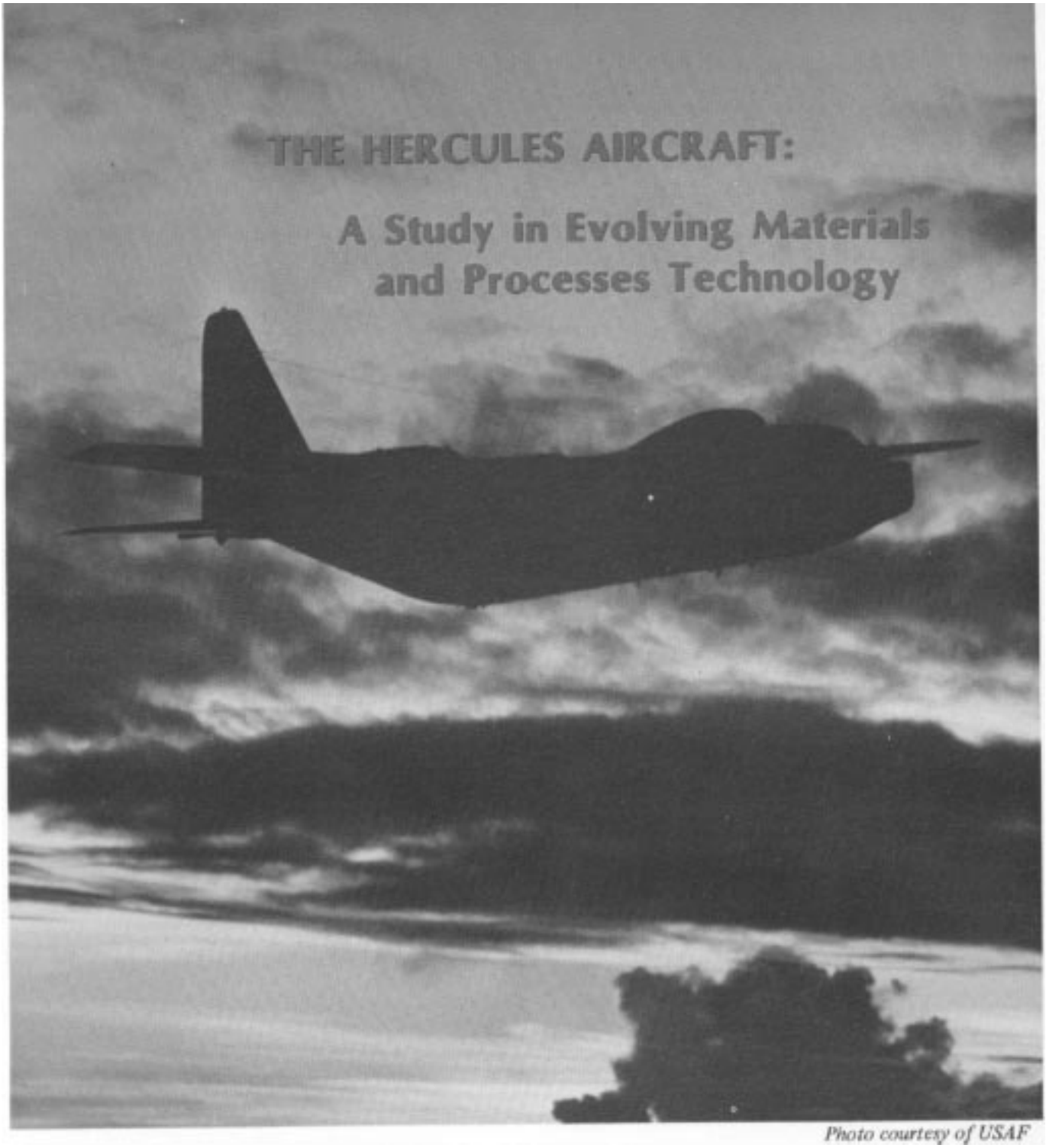


Photo courtesy of USAF

THE HERCULES AIRCRAFT: A Study in Evolving Materials and Processes Technology

by Harold J. Singletary
Materials and Processes Staff Engineer

Even though the Hercules aircraft has been in production longer than any other large aircraft in the world marketplace today, it is not the same product that was introduced to the aviation community in 1956. Neither is it the same airplane that was built ten years ago. Outwardly, it may look the same, but don't let the looks fool you.

Today's Hercules is the result of over 25 years of progressive development, based on a wealth of operational experience, feedback, and technology transfer. From hundreds of overhaul and depot reviews, thousands of field service reports, and 25 years of constant contact with Hercules operators, Lockheed has come to know and understand every facet of what is necessary to make the Hercules perform the role for which it was intended. Today's Hercules incorporates the latest and best technology in materials of construction, protective finishes, sealing, and corrosion prevention. This advanced technology is reflected in excellent aircraft service performance.

What are some of the attributes of the new Hercules aircraft in terms of materials technology which reduce maintenance and promote longer service life? Here are a few of the improvements which have been incorporated since the first C-130A was built:

■ The entire exterior of the aircraft is now environmentally sealed. Every permanent exterior joint, from nose to tail and wingtip to wingtip, is sealed between faying surfaces with a sealing compound containing a corrosion inhibitor. Every permanent exterior fastener is installed wet, using the same corrosion-inhibiting sealant. Then selected joints subject to corrosive fluids are sealed with a special fluid and solvent-resistant sealant.

▪ Protective cladding is used on fuselage skins, empennage skins, and wing leading and trailing edges; inside and outside.

▪ Wing panels are made of 7075-T73 alloy, which resists exfoliation and stress corrosion.

. Engine truss mounts, nacelle longerons, and firewall forgings are made from 7175-T736, a premium alloy with high strength and fracture toughness, plus high stress-corrosion cracking resistance.

. Wing attach fittings are made of 7075-T73 aluminum alloy and 17-4 pH corrosion-resistant steel as measures to preclude stresscorrosion cracking.

▪ Drainage of all wing dry bays and ventilation in the outer wing dry bays reduce corrosion and thus reduce the need for maintenance of these areas.

▪ A water-removal system in the integral fuel tanks greatly reduces the degree of microbial infestation and associated corrosion. The interiors of the tanks are finished with a two-part polyurethane coating and, on bottom surfaces, a second coating containing a biocidal additive is used to inhibit microbial penetration of the coating. The fuel tanks are fillet-sealed with MILS-8802 sealant at all seams, and all fasteners are sealed with a double brush coat of this same sealant. After sealing with MIL-S-8802, the seams and fasteners are then top-coated with a clear polyurethane to prevent "chalking" (degradation) of the sealant.

▪ The fluid-tightness of the fuel tanks has been significantly improved over that of earlier models.

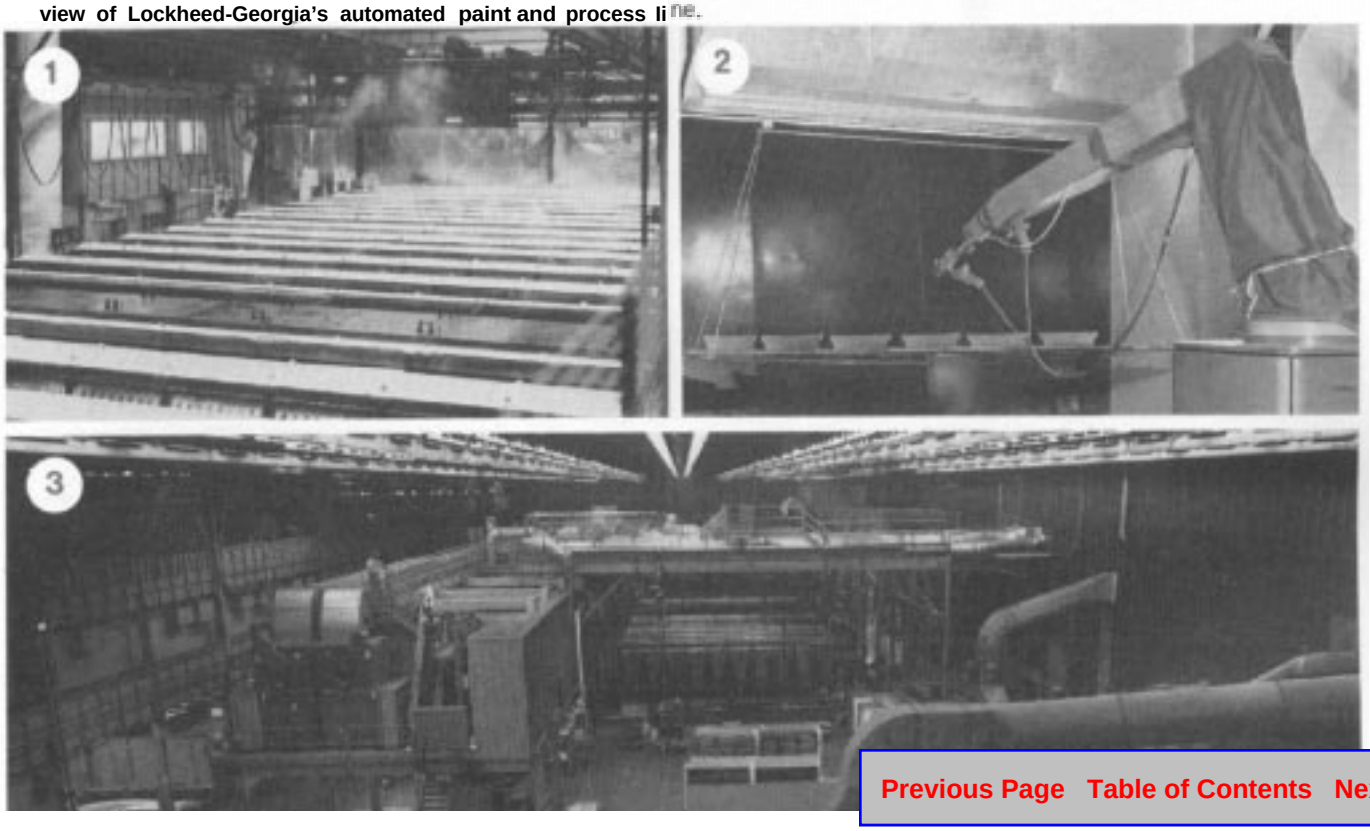
▪ Extensive shot peening is applied to machined aluminum structure to impose surface compressive stresses and thus minimize stress-corrosion cracking.

▪ Maximum corrosion-resistant sulfuric acid anodizing is used extensively on non-clad high-strength aluminum alloy components.

■ A corrosion-inhibiting epoxy polyamide primer/ aliphatic polyurethane finish system is applied to all exterior skin metallic surfaces except stainless steel and titanium. An additional coat of epoxy primer is applied to the upper surface of the wing box structure.

▪ A special sealant, which is resistant to regular paint remover compounds and solvents, is used in seams under organic finish systems. Its function is to protect the joints during overhaul maintenance in cases where the

① The anodizing facility, seen from close up. ② A robot paint sprayer applies protective coatings to detail parts. ③ A general view of Lockheed-Georgia's automated paint and process line.



Previous Page Table of Contents Next Page

surfaces must be stripped of paint for inspection or repair. This sealant is further used to seal all exterior wing joints to help provide a smooth aerodynamic flow. It also seals exterior joints in the ramp and the aft cargo door and provides protection for interior joints under the floor that may be subjected to corrosive fluids.

■ Landing gear wheels are anodized aluminum alloy forgings and have a special bead design which resists failure induced by stress-corrosion cracking or fatigue.

■ High-strength steel landing gear components are titanium-cadmium plated to minimize the potential for hydrogen embrittlement.

■ Nose gear components are now made of vacuum-melted 300M-steel with higher ultimate tensile strength, fatigue resistance, and improved fracture toughness.

■ The material for the hydraulic booster control valve cranks has been changed from 420 stainless steel to PH13-8MO stainless steel to provide better fracture toughness, more ductility, and better corrosion resistance.

■ Supporting structure and fire and barrier containment for the APU in the wheel well utilize TI 6AL-4V annealed material to take advantage of its elevated-temperature resistant properties.

. The following tables document in a more graphic manner the evolutionary changes in materials and processes that for over 25 years have helped keep the Hercules aircraft as modern as today. They clearly demonstrate why the Hercules remains a progressive, up-to-date airlifter, designed for modern needs.

C-130 STRUCTURAL MATERIALS ENHANCEMENT

UPGRADED ALLOYS TO PREVENT STRESS-CORROSION CRACKING AND EXFOLIATION

Structural Members	AID	C-130 Series B	E	H
center wing upper skin panels	7178.T6	7178-T6 (1)	7178.T6 & 7075T73 A	7075.T73
Center wing lower skin panels	7075.T6	7075.T6 A	7075T6 & 7075.T73 A	7075-T73
Outer wing skin panels	7075.T6	7075.T6 (2)	7075-T6 A	7075T73
Wing beam caps	7075-T6	7075.T6	7075-T6	7075.T73
Wing corner fittings	7075-T6	7075.T6	7075.T6	7075-T73 & 17-4 pH steel
Hinge/hinge pins on leading edges and trailing edges of wing	7075-T6 & 2024-T4/corrosion resistant steel	No change	No change	7075-T73/ titanium 6-4 with Teflon coating
Cargo compartment floor beam end fittings at FS 697 & 737	7075.T6	7075-T6	7075.T6	7049.T73
Fuselage lower (sloping) longeron end fitting at FS 737	7075-T6	7075-n	7075.T6	7049-T73
Fuselage underfloor bulkhead fittings at FS 517,528,577, 588 and 597	2014.T6	7075.T6	4340 steel at FS 517, 528.577 and 588	4340 steel forging at FS 597
Engine truss mounts	7075.T6	7075T6	7075-T6	7175-T736
Engine QEC firewall frames	7075.T6	7075T6	7075T6	7175.T736

(1) All C-130B/E airplanes which received "old" center wings in production have received the "new" replacement modification, which incorporates the C.130H skin panel material. New center wings incorporating the later material were used on production aircraft LAC 4299.4303,4305,4314 and up.

(2) Some C-130B/E airplanes have received the "new" outer wing replacement modification, which incorporates the C-130H skin panel material, All C-130 aircraft LAC 4542 and up have the later material changes.

C-130 STRUCTURAL MATERIALS ENHANCEMENT

OPTIMIZED STRUCTURE WITH REDUCED STRESS LEVELS

Structural Members	C-130 Series A/D	B	E	H
QEC longerons	7075T6	7075-T6 with beefed-up structure for bigger engine	Same as "B"	7075T6 and currently 7175. T736 net forging to minimize amount of machining
Floor beam end fittings	7075.T6	No change	No change	4340 steel built-up assy at FS 677
Jack pad fittings on center wing	7075.T6	7075-T6	174 pH steel	17-4 pH steel
Wing panels on center and outer wing boxes	7178-T6 0r 7075. T6 extrusions	Panels made thicker	Thickened even more in local areas	Extensively thickened beyond "E" requirements
Engine mount drag angles	7075-T6 extrusions	7075-T6 forgings	Same es "B"	7075T73 forgings with added thicknea
Outer wing rainbow fitting	7075.T6	7075-T6	Same material but reprofiled	7075.T73 and reprofiled
Nose landing geer	4340 steel	4340 steel	4340 steel	300 M forging and reprofiled

C-130 INTEGRAL FUEL TANK ENHANCEMENT

Features	C-l 30 Series A/D	B	E	H
Inorganic coating	MIL-C-6641 conversion coating for first 7 acft. Chromic acid anodize on rest	Chromic acid anodize until LAC 3900, then sulfuric acid anodize	Sulfuric acid anodize with dichromate seal	Same as "E"
Coating inside tank	Buna.N rubber	Ml L-S-8802 sealant and Buna-N topcoat	MIL-C-27725 polyurethene coating	Ml L-C-27726 polyurethane coating with a biocidal dye added in second coat
Fey surface sealing	None	Polysulfide tape LAC I-2024 and later with MIL-S-8802 sealant	Ml L-S-8802 sealant	Ml L-S-81 733 corrosion-inhibitive polysulfide sealant
Fillet sealing	Ml L-S-7602 polysulfide sealant up to LAC 3124, then MIL-S-8802 sealant	MIL-S-8802 sealant	MIL-S-8802 sealant and MIL-C-83019 polyurethane topcoat	Same as "E"
Automatic water removal system (water pick-up and ejector process)	None	None	None	LAC 4642 and up (all new and replacement outer wings have this system)

Previous Page Table of Contents Next Page

C-130 CORROSION-PREVENTIVE SEALING ENHANCEMENT

Type of Sealing	C-130 Series A/D	B	E	H
Wet installation of fasteners	None	None	MIL-S-8802 sealant up to LAC 4331, then MIL-S-81733 corrosion-inhibitive polysulfide sealant	MILS-81733 corrosion-inhibitive polysulfide sealant
Fey surface sealing	None	Polysulfide tape LAC i-2024	MIL-S-9802 sealant up to LAC 4331, then MIL-S-81733 corrosion-inhibitive polysulfide sealant	MILS-81733 corrosion-inhibitive polysulfide sealant
Environmental sealing (to exclude fluids from contact with fay surface sealants)	None	None	LAC 4499 and up “se STM 40.207/MI L-C-83982 polyurethane sealant	Same es “E”
Acid-resistant sealing (to protect structure under galley and toilets)	None	None	LAC 4127 and up use STM 40.207/MILC-83982 polyurethane sealant	Same es “E”

C-130 PROTECTIVE FINISHES ENHANCEMENT

Location	C-130 Series A/D	B	E	H
General exterior (clad skin)	None	None	MIL-C-5541 conversion coating, zinc chromate primer, and lacquer topcoat. Changed to “H” system et LAC 4076	MIL-C-5641 conversion coating, MIL.P-23377 epoxy primer, and MIL-C-83286 polyurethane topcoat
Flaps end ailerons	None	None	Same es general exterior clad skin above	MIL-C-5641 conversion coating, MIL-P. 87112 polysulfide primer. end MIL-C. 83286 polyurethane topcoat
Wing box upper surface for center wing	MIL-C-6641 conversion coating, acid-wash primer, zinc chromate primer, end MIL-C5044, Type I polysulfide walkway coating	Chromic acid anodize, acid-wash primer, zinc chromate primer, Ml L-C-38713 elastomer, and MIL-C-5044, Type I walkway coating	Same es “B” except for anodize improvement to sulfuric acid anodize	Sulfuric acid anodize, PR1432G corrosion-inhibiting primer, PR1436G corrosion-inhibiting sealant, PR1436AS elastomer, and MIL-C-83286 polyurethane topcoat
Fuselage pressure skin under cargo compartment floor	Ml L-C-6641 conversion coating and zinc chromate primer	No change	Same es “B” but acid-resistant coating system added under galley and toilet at LAC 4127	Same es “E” but a special sealing added below finish to pro. tect structure
Fuselage longeron under paratroop door sill	Ml L-C-6641 conversion coating and zinc chromate primer	No change	Sulfuric acid anodize, MIL-C-27725 polyurethane coating, and MIL-P-23377 epoxy primer topcoat	Same es “E” (improved drainage to protect the finish)

Previous Page Table of Contents Next Page

Aft Cargo Door Uplock Binding

by William B. Maddox, ***Senior Aircraft Design Engineer***

Binding aft cargo uplocks can be frustrating to deal with and difficult to troubleshoot. If you are having problems with a binding uplock, the trouble may be traceable to an unsuspected cause: misaligned aft cargo door uplock support angles (Figure 1).

The uplock support angles, part numbers 374518-l (RH) and 374519-l (LH), are components of the uplock support assembly, part number 374513-l. The uplock support assembly is located between the fuselage station 847 canted bulkhead (844 at top end) and the fuselage station 858 bulkhead, just to the right of the aircraft centerline. As its name implies, its purpose is to support the aft cargo door uplock mechanism.

Proper alignment of the uplock support angles is crucial to the overall operation of the aft cargo door uplock system. The angles must be installed correctly in order for the uplock to function smoothly. If your organization has a Hercules aircraft that has been written up repeatedly because of a binding aft cargo door uplock, it may save a good deal of time and further aggravation to check the uplock support angles for misalignment. If it turns out that they are misaligned, replacing them with properly installed support angles may well solve the problem.

Alignment Check

To determine whether or not the uplock support angles need to be changed, check the relationship between the spacer rod, located on the forward side of the uplock assembly, and the stabilizer plate (P/N 374512-l) which is attached to the fuselage station 847 canted bulkhead. With no outside load applied, the clearance between the spacer rod and the stabilizer plate must be at least 0.03 of an inch on both the forward and aft sides of the rod (Figure 2).

If you find that there is insufficient clearance, or that the spacer rod and stabilizer plate are actually touching, attempt to correct the problem by adjusting the 374512-1 stabilizer plate. This is done by loosening the three NAS623-3-7 screws which attach the stabilizer plate to the fuselage station 847 canted bulkhead. Slide the stabilizer plate forward or aft, as necessary, to obtain the appropriate clearance. Then tighten the screws. If the correct clearance cannot be obtained, or if the spacer rod strikes the adjacent structure (the stabilizer plate support angle), the two uplock support angles are probably misaligned. Make the following check to determine whether they are in fact misaligned:

Examine the two uplock support angles to see if the upper surface of both the angles is 0.70 (+/- 0.03) of an inch below the inside surface of the fuselage upper skin along their entire lengths (Figure 3). If you find that the uplock support angles are not in tolerance in accordance with the above dimension, the two uplock support angles should be removed and replaced.

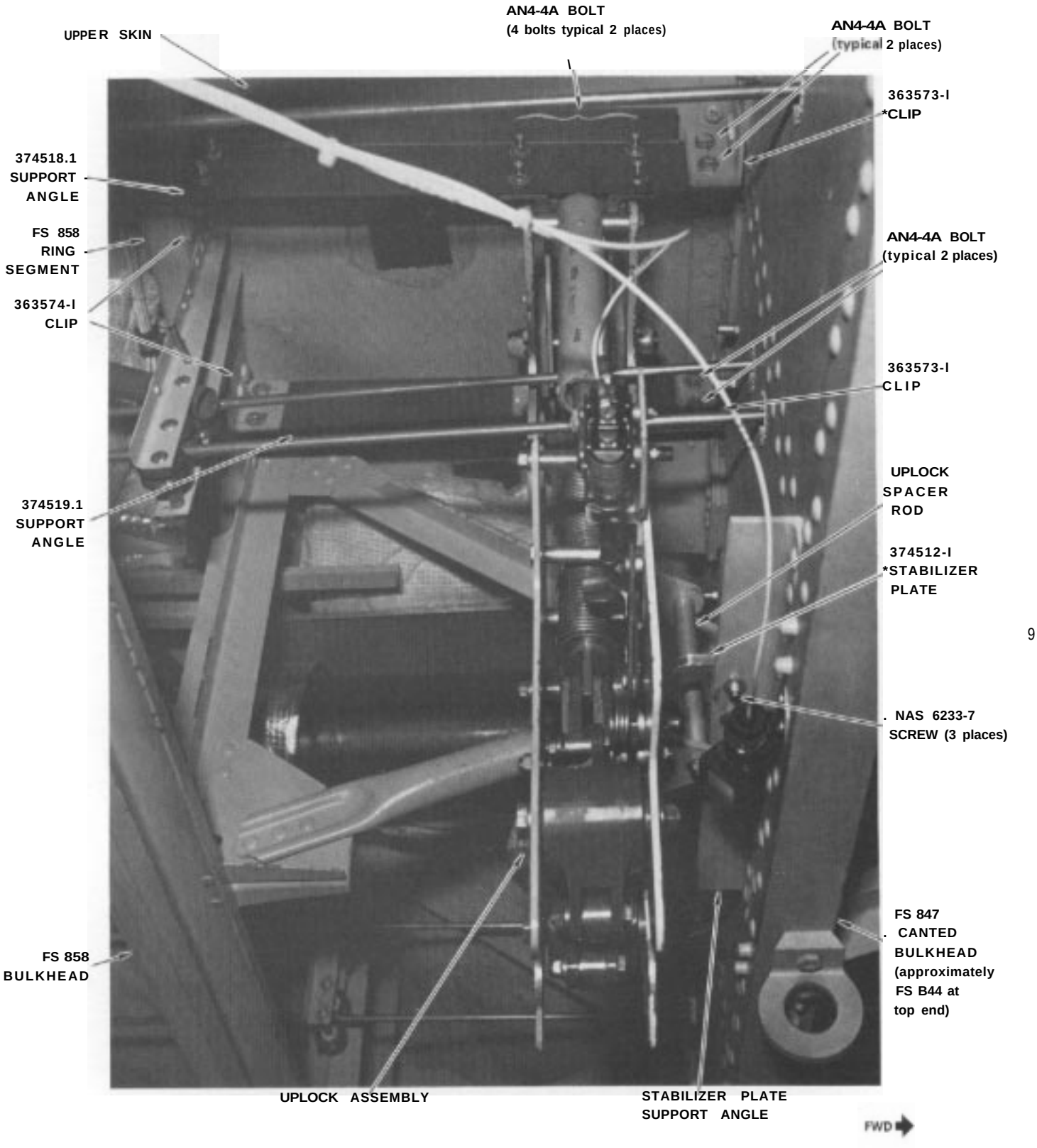
Uplock Support Angle Replacement

To replace the uplock support angles, first disconnect the manual release cable from the left side of the uplock assembly. This is accomplished by removing the 363729-l spring attached to the end of the cable fitting and the screw, nut, and washer attaching the cable end to the uplock assembly. Retain these parts and remember how they are installed.

Support the uplock assembly to eliminate the necessity of disturbing the attaching hydraulic hose assembly. Remove the two AN4-4A bolts from each end of the support angles. Next, remove the eight AN4-4A bolts which are located 2.4 and 5.2 inches from the forward ends of the two support angles. Save the bolts and their attaching nuts and washers for later reuse.

Obtain new 374518-l and 374519-1 support angles. If new support angles are not available, fabricate the two support angles from LS3399-2 angle extrusion (2.50 x 1.25x 0.125inch thick right angle 7075-T6 aluminum or equivalent). Use the removed support angles as a pattern, but do not drill the two holes at each end at this time. Duplicate the position of the other four bolt holes as closely as possible. You may notice that the original 374518-l support angle is 0.094 of an inch thick in contrast to the 0.125-inch thickness of both the above mentioned extrusion and the 374519-l support angle. The 0.125-inch extrusion may be used in fabricating the 374518-l support angle. After fabricating or obtaining new support angles, discard the old ones. Loosely install the new support angles, using the previously removed AN4-4A bolts and their nuts and washers. Make sure that the short leg of the new support angles is up and outboard.

Now position the uplock and uplock support assembly with the new support angles attached so that the upper surfaces of the new support angles are 0.70 (+/- 0.03) of an inch from the inside surface of the fuselage upper skin, and the aft end of each angle is 0.10 (+/- 0.03) inch from



AFT CARGO DOOR UPLOCK ASSEMBLY

Figure 1. Aft cargo door uplock assembly and supporting structure, seen from below.

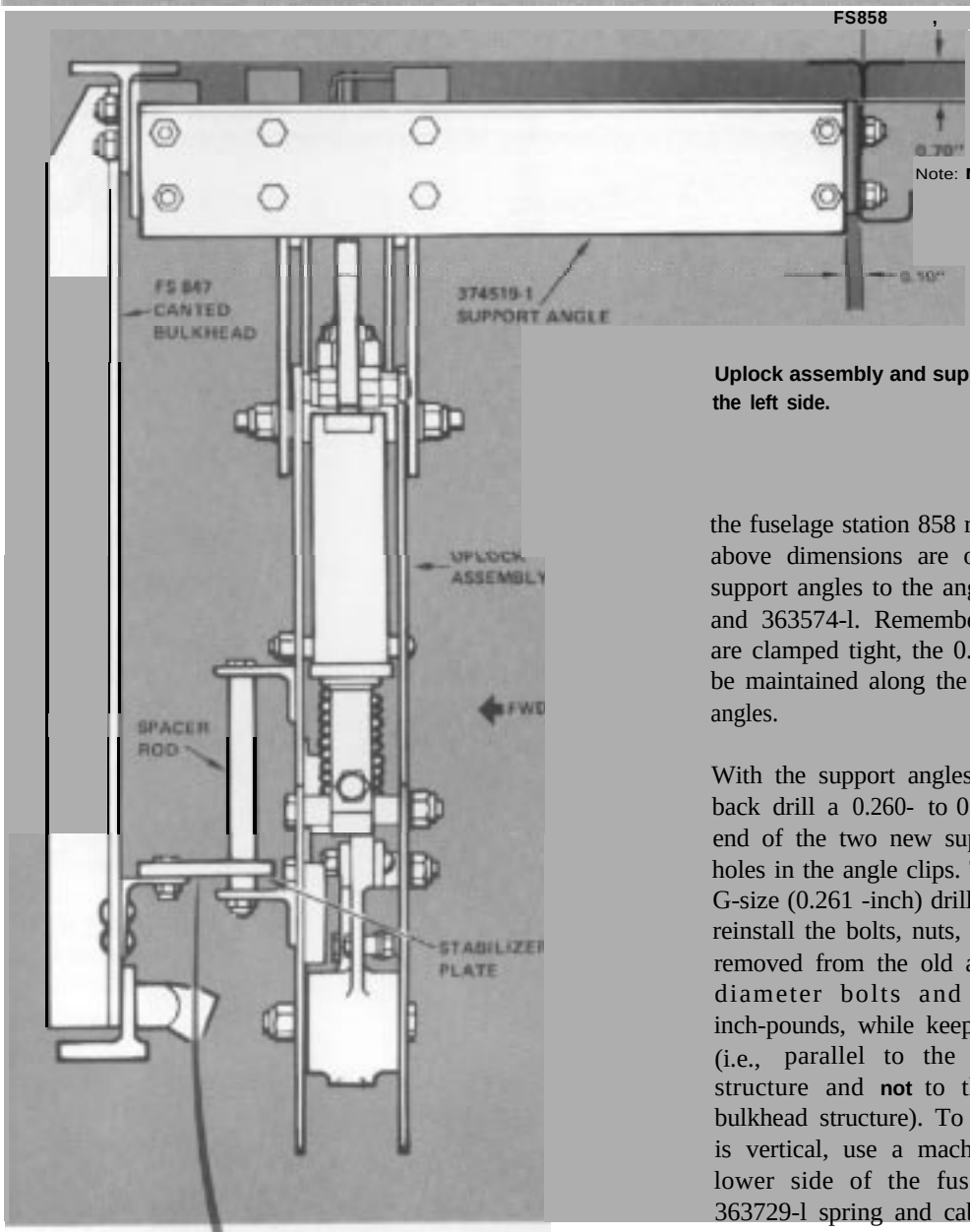
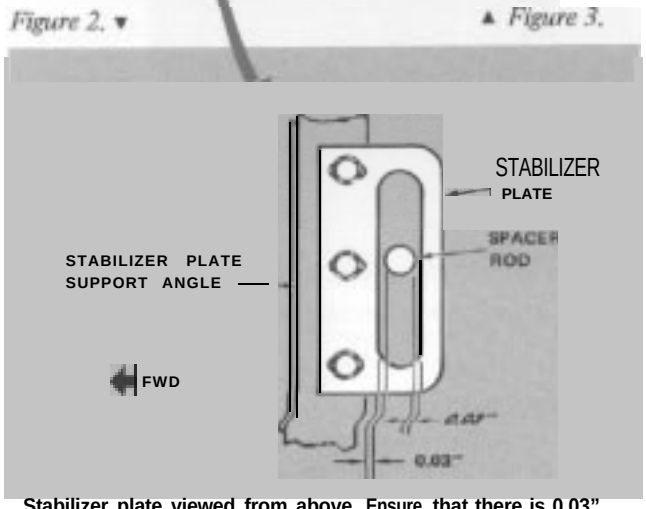


Figure 2. ▼

▲ Figure 3.



Stabilizer plate viewed from above. Ensure that there is 0.03" clearance forward and eft of the spacer rod.

Uplock assembly and supporting structure. viewed from the left side.

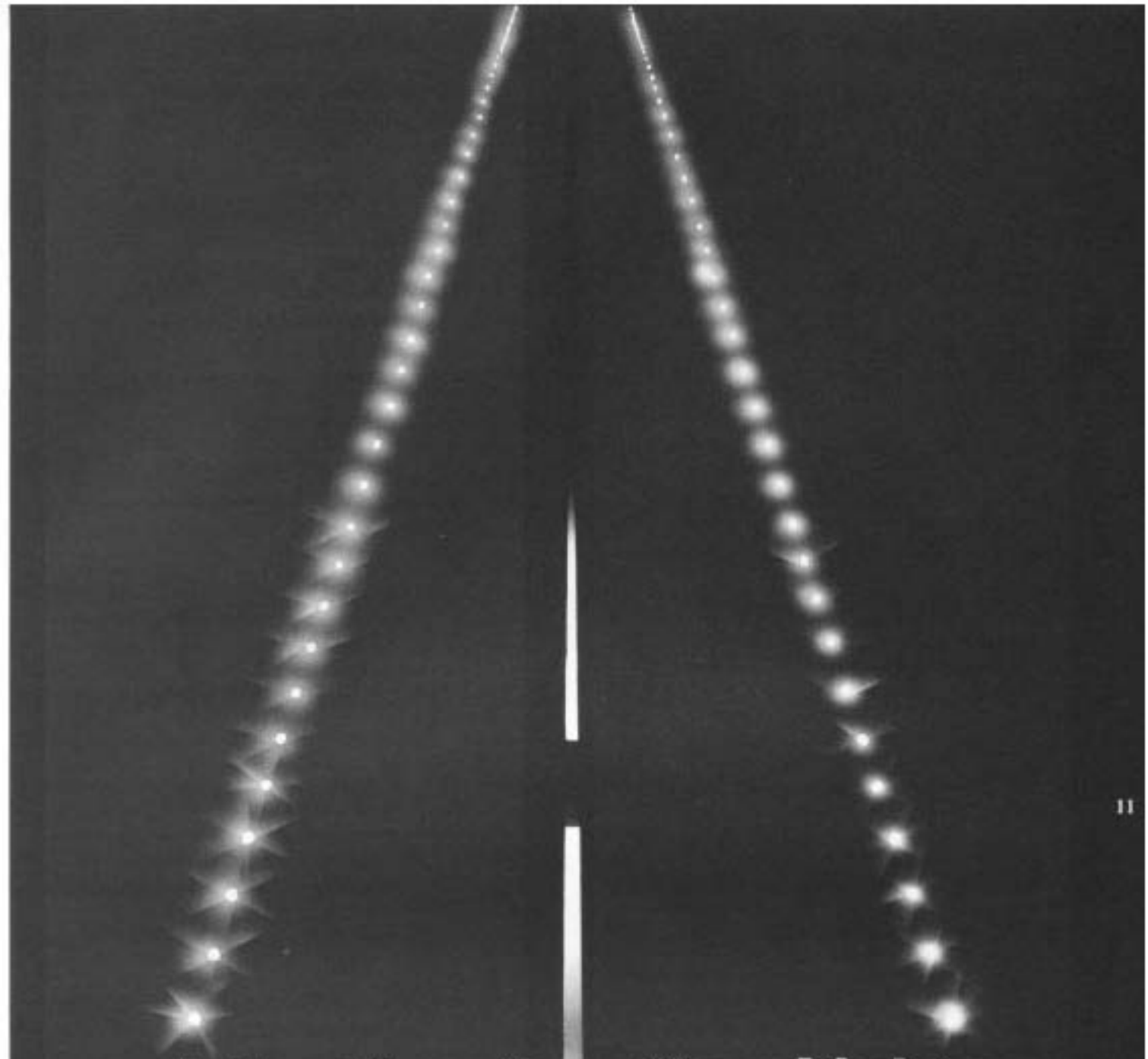
the fuselage station 858 ring segment (Figure 3). When the above dimensions are obtained, clamp the new uplock support angles to the angle clips, part numbers 363573-1 and 363574-l. Remember that when the support angles are clamped tight, the 0.70 (+/- 0.03) inch dimension must be maintained along the entire length of both the support angles.

With the support angles clamped in the proper location, back drill a 0.260- to 0.267-inch diameter hole at each end of the two new support angles through the existing holes in the angle clips. This can be accomplished using a G-size (0.261 -inch) drill bit. After drilling the eight holes, reinstall the bolts, nuts, **and** washers that were previously removed from the old angles. Tighten all loose l/4-inch diameter bolts and nuts to a torque of 40-50 inch-pounds, while keeping the uplock assembly vertical (i.e., parallel to the fuselage station 858 bulkhead structure and **not** to the fuselage station 847 canted bulkhead structure). To ensure that the uplock assembly is vertical, use a machinist's square placed against the lower side of the fuselage upper skin. Reattach the 363729-l spring and cable end with the removed screw, nut and washer. Now rerig the aft cargo door uplock assembly and emergency release cable in accordance with the applicable maintenance instructions. During the rigging, check the position of the serrated plates to ensure the uplock remains vertical and recheck the 0.03inch clearance between the uplock spacer rod and the slot in the 374512-1 stabilizer plate. Readjust if necessary.

We hope this article will help you correct any seemingly unresolvable uplock binding problem that your organization may have encountered. The procedures outlined above are relatively ***simple,*** and jn short order your Hercules aircraft can be returned to service with a smooth-working aft cargo door uplock.

service news

Previous Page Table of Contents Next Page



Adjusting Landing Lights

Hercules aircraft are equipped with two main landing lights, one located on the lower surface of each wing between the nacelles (Figure 1). They seldom require much attention beyond the occasional replacement of a burned-out lamp, but sometimes a landing light assembly is damaged, or found to be corroded or worn. In such cases, it may be necessary to remove the entire assembly for replacement or repair.

Removing and replacing a landing light assembly is a relatively straightforward procedure, but whenever a landing light has been disturbed, or when a new assembly must be installed, it is important to be sure that the unit is adjusted so that it will provide the proper illumination pattern for the aircraft in which it is to be used.

This may be a little easier said than done, because some of the manuals offering the most complete information on checking and adjusting landing lights are not readily accessible to all Hercules operators. Let's take a look at landing light replacement and adjustment and see if we can clarify the most important points.

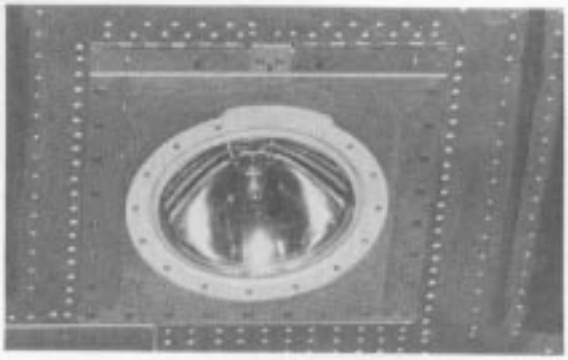


Figure 1 (left). Landing light location on E- and H-model Hercules aircraft. *Figure 2 (right).* Installed landing light in retracted position.

Landing Light Extend Angles

When the main landing lights of a Hercules aircraft are extended, they pivot from their retracted position flush with the lower surface of the wing (Figure 2) to a predetermined extend angle which will provide the desired pattern of illumination. Just what this angle is will depend upon the design of the wing in which the unit is installed.

All E- and I-I-model Hercules aircraft, and also older airplanes with new outer wings, use landing light part number G.5400-5, which is factoryset to an extend angle of 74 (+/- 1) degrees. This setting provides the correct lighting pattern when the light is used in E- and H-model outer wing assemblies.

It is very important that the specified angle be maintained if the unit is to provide proper illumination. If the light assembly has been overhauled or otherwise disturbed, the factory setting may have been lost. It will then be necessary to readjust the unit to restore the correct lighting angle.

On A- and B-model Hercules aircraft, landing light part number C5400-1 is the original equipment. The landing light location in the wing of these aircraft is slightly different from that of E- and H-models (and other Hercules models with new outer wings), and the required setting for proper illumination is 88 (+/-1) degrees.

The G5400-1 landing lights on these aircraft were adjusted to the correct value prior to installation so that they would provide the desired lighting angle when in use. Damage or maintenance activities may result in an inadvertent change in this setting, however. If there is any reason to suspect that the setting of one of these lights is no longer correct, it should be checked and readjusted to specifications.

Replacement Landing Light Assemblies

Occasionally an entire landing light assembly will have to be replaced with a new unit. Both the G5400-1 and the (X400-5 landing light assemblies used on Hercules aircraft are manufactured by Grimes Manufacturing Company of Urbana, Ohio, and they are for all practical purposes identical. The only difference between the two models is the extend angle that the vendor presets at the factory. The G5400-1 light, as currently manufactured, is preset to an angle of 73 (+/-3) degrees. The G5400-5 unit

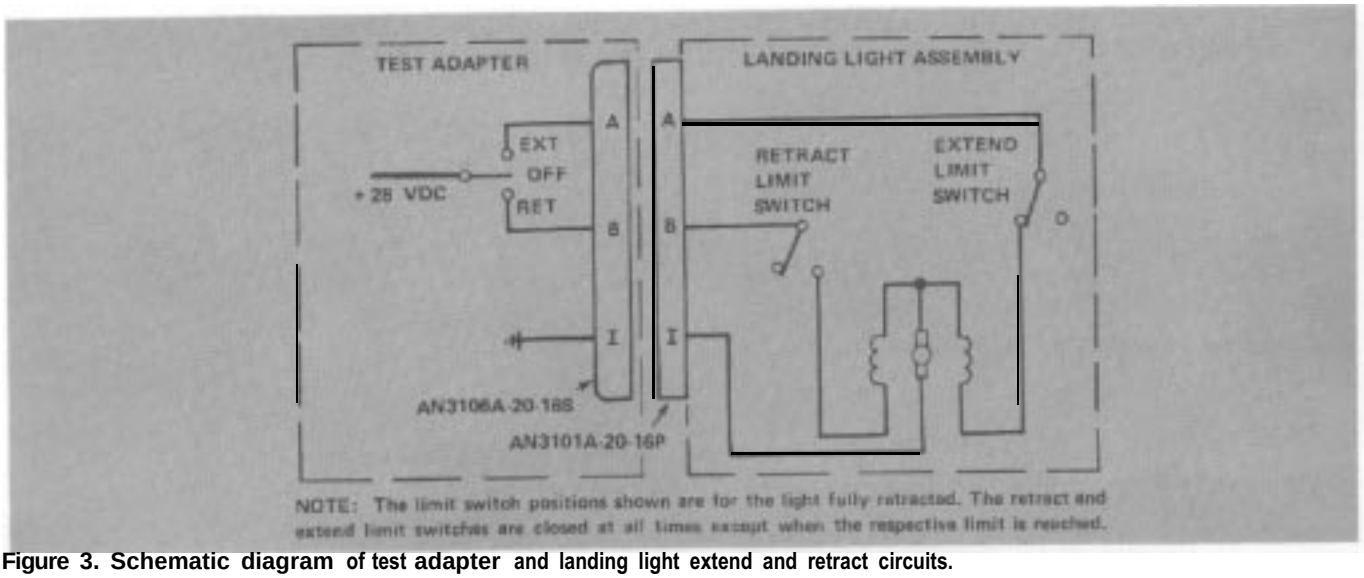


Figure 3. Schematic diagram of test adapter and landing light extend and retract circuits.

is set at 74 (+/- 1) degrees. Only the G5400-5 landing light assembly is presently available from Lockheed as a replacement part, so we shall confine the remainder of our discussion to this model. Keep in mind, however, the adjustment procedure for both units is the same.

When a new landing light must be installed on an E- or H-model aircraft, the procedure usually amounts to little more than a case of careful removal and replacement. The new G5400-5 light should already have been preset to 74 (+/- 1) during manufacture, and adjustment prior to installation is usually not necessary. The setting should always be benchchecked and verified, however. There is always the possibility that the unit might have been tampered with before it reached your hands. Strictly speaking, the specified landing light extend angle for these aircraft is 75 (+/- 1) degrees. In practice, it will usually be found that the light's preset angle of 74 (+/- 1) degrees is so close to this value that differences, if any, will be difficult to measure.

If it becomes necessary to install a new landing light in an A-model Hercules aircraft, or a B-model with its original outer wings, adjustment of the light's extend angle will be necessary before installation. The G5400-5 light now used as a spare by Lockheed **for** all models has, as we have noted, a factory-set extend angle of 74 (+/- 1) degrees. It will have to be readjusted to 88(+/- 1) degrees before the light can be used in an A- or B- model aircraft.

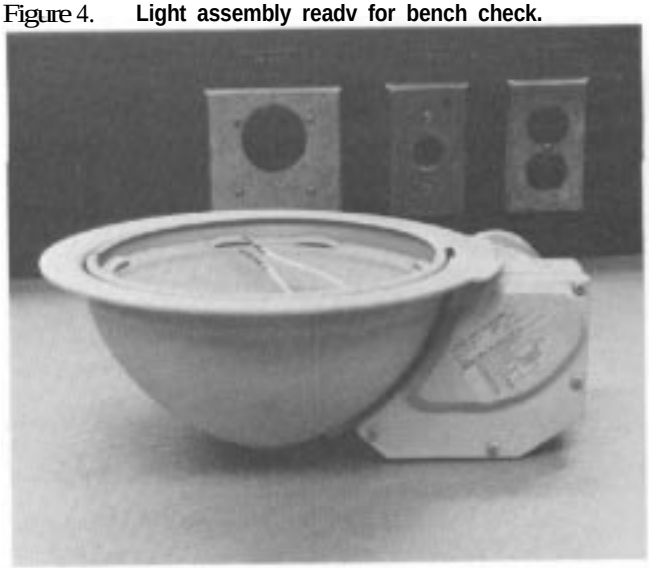
Landing Light Adjustment Procedure

Adjusting a landing light assembly does not **involve any** particularly complex or difficult steps. The only tools called for are a screwdriver, a common protractor, and a straightedge. You will have to supply 28 VDC power to the unit, however, and the best way to do this safely and conveniently is to prepare the simple test adapter shown schematically in Figure 3. The actual construction details can be varied to suit the user, but the materials for the tester will include an AN3106A-20-16s connector or the equivalent, a three-position switch, and suitable wiring connections.

To illustrate how a typical landing light extend angle adjustment is carried out, let us take as an example the case in which a new G5400-5 landing light assembly is to be installed in an A-model Hercules. Since the G5400-5 light assembly comes from the factory with its extend angle preset to 74 (+/- 1) degrees, it will be necessary to reset the angle to 88 (+/- 1) degrees before the light can be used in the aircraft. Proceed as follows:

Place the landing light assembly on a workbench, as shown in Figure 4.

Figure 4. **Light assembly readv for bench check.**



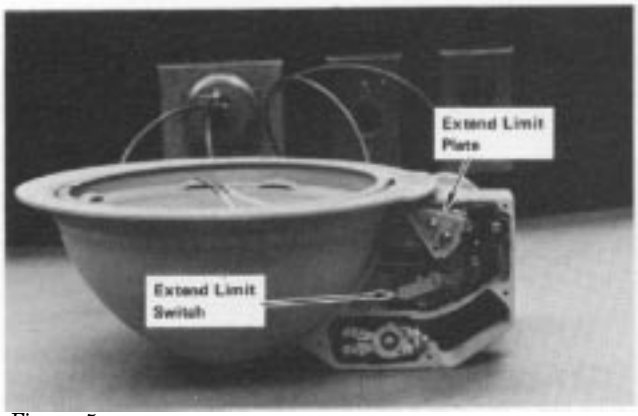


Figure 5. **Unit with side cover removed**

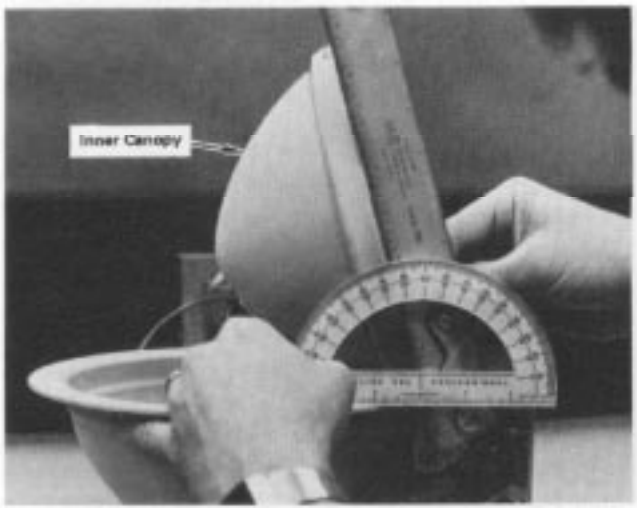


Figure 6. *Inner canopy* **extended to preset angle of 74 (±1) degrees.**

Figure 7. **Landing light assembly with lamp installed.**

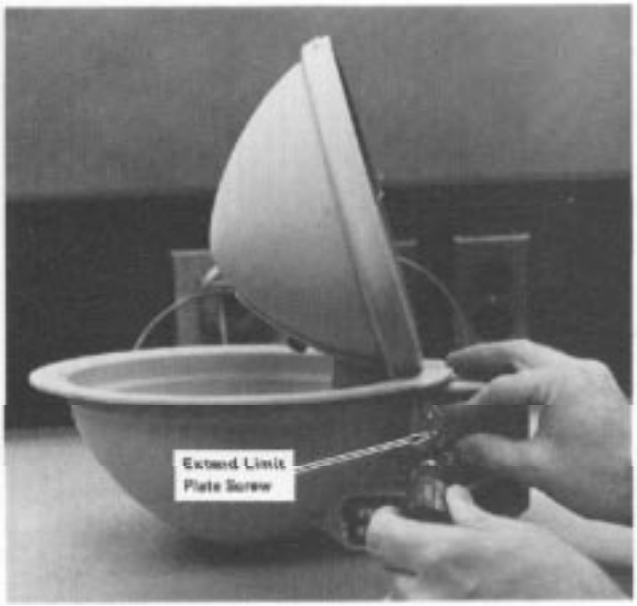


Figure 8. **Adjusting the extend limit plate.**

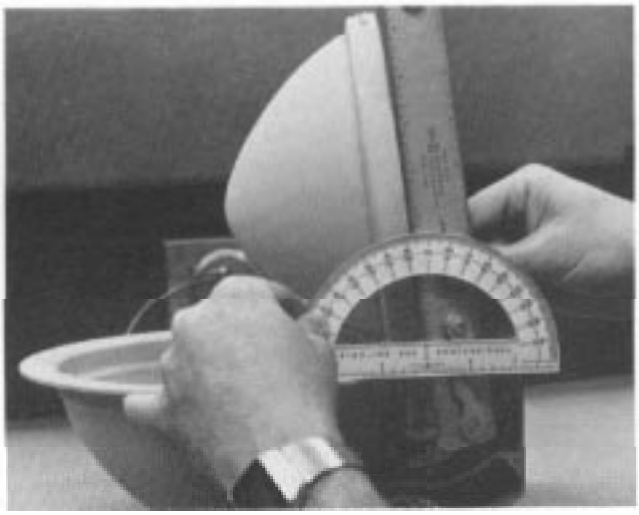


Figure 9. **Insufficient extension, requiring extend limit switch adjustment.**

Figure 10. **Unit with inner canopy retracted.**

Previous Page Table of Contents Next Page

Remove the side cover to expose the extend limit plate and the extend limit switch (Figure 5). Supply 28 VDC power, using the test adapter described above.

Move the switch of the test adapter to its extend position so that 28 VDC power is supplied through the extend limit switch to the motor. This will extend the inner canopy to the 74 (+/-1)degree extend angle which was preset by the vendor (Figure 6). Note that it will be easier to make the necessary angle measurements in the following steps if a lamp is installed in the light assembly (Figure 7). If a lamp is not installed, the retainer ring on the inner canopy must be held in the position it would normally occupy when the lamp is present. If the retainer ring is not in the correct position, an inaccurate measurement of the extend angle could result.

With the switch of the tester still in the extend position, hold the extend limit plate and then loosen the extend limit plate screw (Figure 8). Slowly rotate the extend limit plate counterclockwise. This allows the extend limit switch contacts to close, which completes the circuit and allows the inner canopy to extend farther. Measure the angle with a protractor and straightedge, as shown in Figure 6. When the extend angle has increased to 88 (+/-1) degrees, tighten the extend limit screw. Be sure not to allow the extend angle to exceed 90 degrees or damage to the unit may result.

If the extend limit plate does not rotate far enough to allow the correct extend angle to be obtained (Figure 9), the extend limit switch itself will have to be adjusted. Before adjusting the extend limit switch, first rotate the extend limit plate clockwise to the approximate position that it had for the 74.degree extend angle. This is done more easily if the inner canopy is retracted before you try to rotate the extend limit plate (Figure 10).

After the extend limit plate has been repositioned to the 74degree position, loosen the extend limit switch screw and slide the extend limit switch to the left (Figure 11). Now retighten the extend limit switch screw and extend the canopy (Figure 12). Again attempt to adjust the extend angle to 88 (+/-I) degrees by rotating the extend limit plate counterclockwise, as previously described. If an extend angle of 88 (+/-1) degrees still cannot be obtained, the extend limit switch will have to be moved farther to the left.

When an extend angle of 88 (+/-I) degrees has been reached (Figure 13), ensure that both screws loosened during this procedure have been retightened, and then reinstall the side cover. Now retract the canopy and remove the test adapter. The landing light assembly is now properly adjusted and ready for installation in the aircraft.

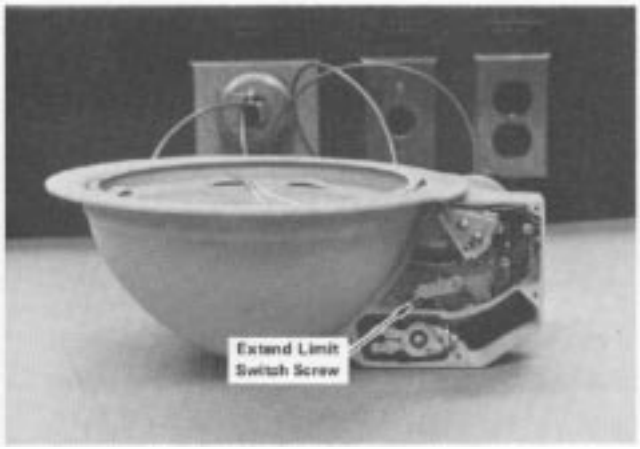
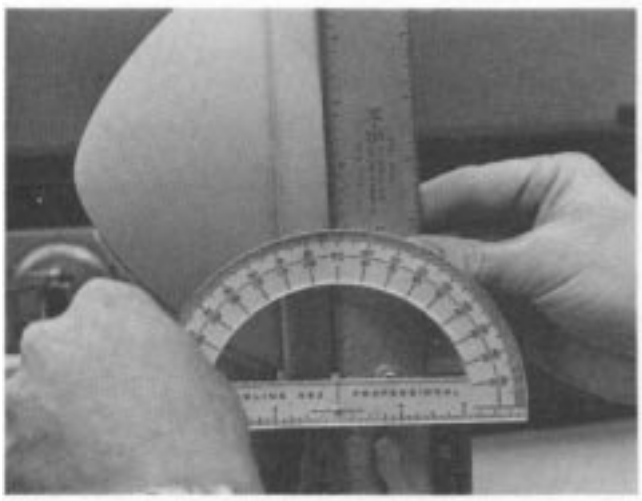


Figure II. Extend limit switch repositioned to increase extend angle.

Figure 12. Inner canopy **extended after limit switch adjustment.**

Figure 13. **Landing light properly adjusted for A-model aircraft (see text for other models).**



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Marietta, Georgia 30063

AIR ALGÉRIE

The first of three advanced model L-100-30 passenger/cargo convertible Hercules aircraft was delivered to Air Algérie, Algeria's national airline, in June of this year.

Air Algérie will use its versatile new Hercules airlifters as both passenger and cargo carriers. The specially modified L-100-30s are expressly designed to convert quickly from passenger to cargo configuration and back again.

Key elements of the convertible feature are seven pallets which provide seating for 91 passengers, plus a complete galley and lavatory. The seat pallets can be installed easily by utilizing the floor rollers of the aircraft's commercial loading system. Once in position, they are locked securely in place. When the airplane is again needed for cargo-hauling missions, the pallets can be removed and the aircraft converted back into a cargo carrier in less than an hour.

Previous Page Table of Contents Next Page