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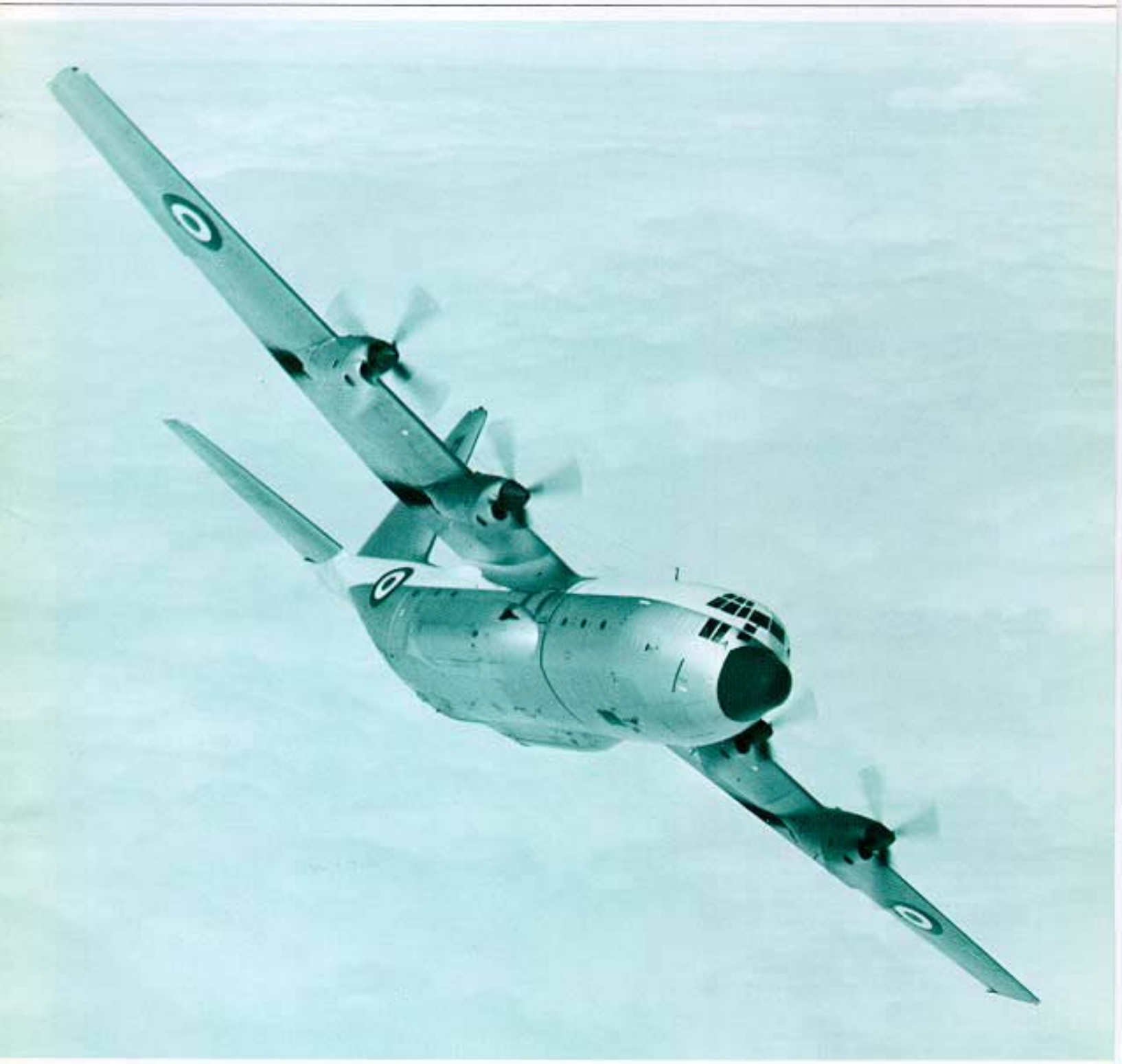
service news

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



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LOCKHEED-GEORGIA COMPANY
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Flight Line OBSTACLE Course

Towing or taxiing the Hercules requires the same general precautions as does any other airplane in motion.

Characteristics peculiar to the Hercules which relate to ground handling will be found in your Hercules Maintenance Manuals covering these activities. We do want to point out how to avoid some unfortunate situations which can occur when details are overlooked while moving airplanes on the flight line.

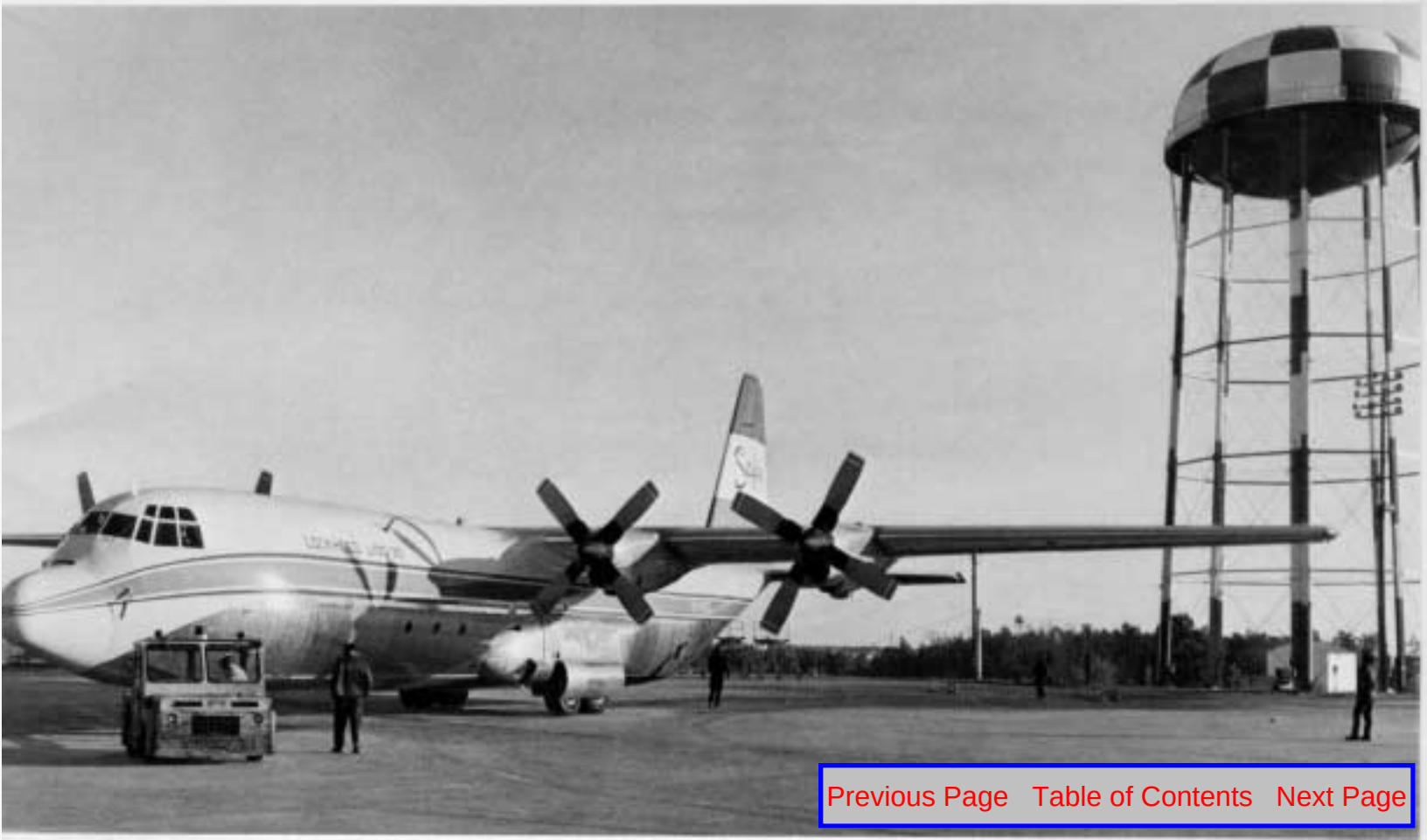
Preparation for towing a Hercules airplane fully equipped is not confined to just attaching a tractor of adequate power by means of a towbar with fittings that match those provided on the Hercules. It is necessary that you know the maneuvering limitations for this airplane and the safety precautions that can be found in your Hercules Maintenance Manuals. For instance, remember that the nose landing gear is not *to be turned beyond its limits* when towing the airplane in a turn. Also, *never turn the nose gear with the towbar when the wheels are not rotating.*

Here is another important thing to remember about towing (or taxiing) an airplane in a turn. Be considerate of the wing tip observers. If other airplanes or obstructions are around the towing area, these two men, one at each wing tip, are required to walk below the tips to warn the crew if there is a possibility of a collision.

It is surprising how fast the wing tip travels on the outside of a sharp turn. It may be more than the wing tip observer can do to keep up with the tip, even if he runs. A shortcut is not the answer because he will lose perspective of the tip and the objects he is to warn against. This factor has been overlooked several times in the past resulting in expensive repairs.

The tractor driver (or pilot in taxi operations) must be considerate enough of the wing man and concerned enough for safety to slow down to a reasonable speed when approaching a turn.

On the following pages we continue this discussion with another aspect of ground handling - that of towing and/or jacking the Hercules with certain major components removed.



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How to Move an Incomplete

by Karl Porter, Commercial Hercules Engineer, *Senior*

The occasion sometimes arises when it is necessary to move a Hercules while major components are removed.

Every situation must be evaluated individually; however, the following offers some general guidelines for movement of the Hercules with certain major components removed. These examples are applicable only to the standard size (97 foot) airplane in its cargo configuration. Your aircraft may be a "stretched" model or modified in such a manner that the following would not apply; therefore, it is recommended that you review the aircraft records.

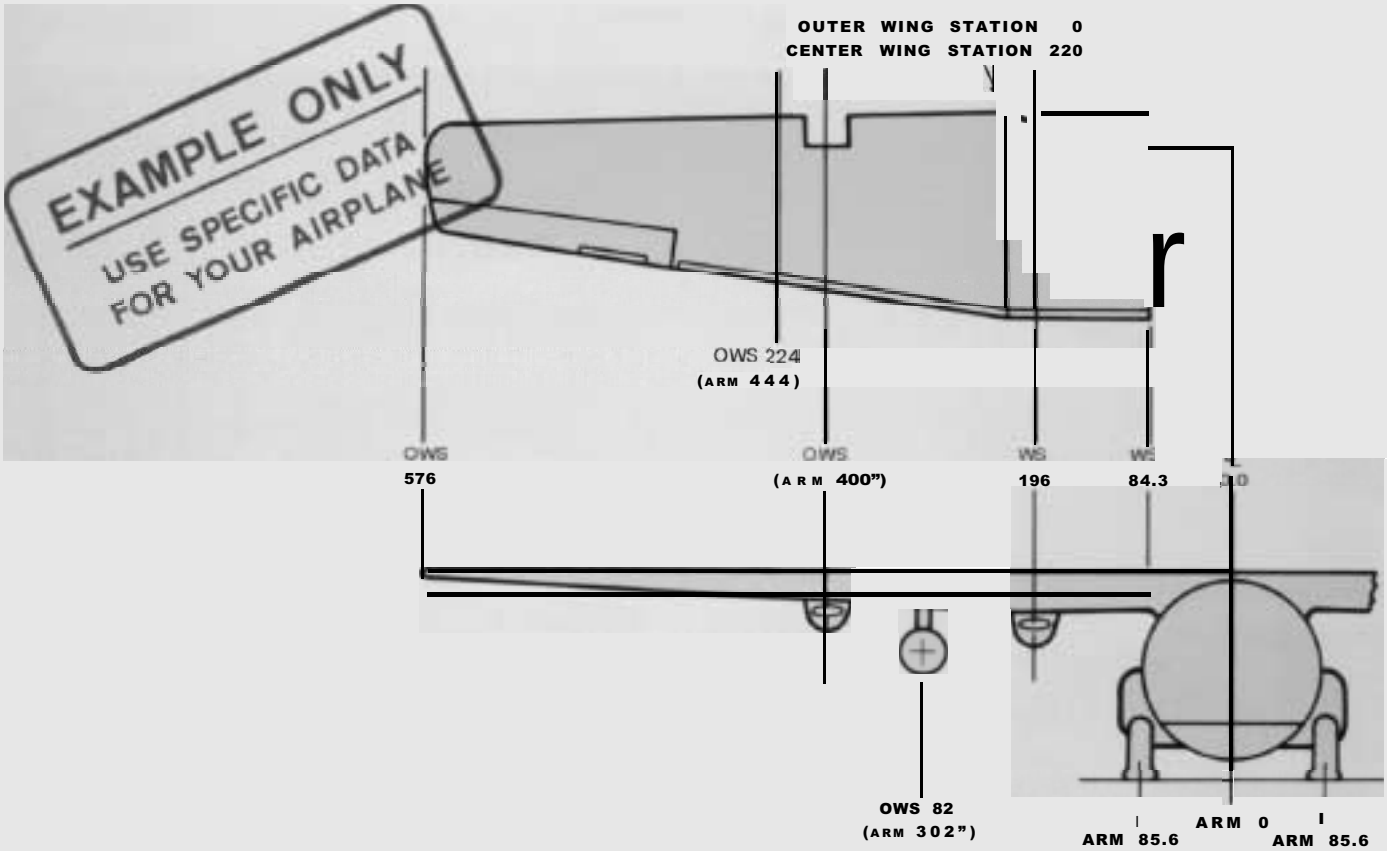
Please note that extreme caution should be exercised when moving an incomplete Hercules. Stop the action immediately if there is any indication that the airplane may be unbalanced. Other than that, our recommendation is to use your handbooks and good judgment as factors in limiting things like – how fast, how far, and how much incline can be allowed and still remain within safe limits.

Center of gravity limits found in the maintenance manual for jacking the Hercules should also be used for towing. Observe and stay within the maximum towing speeds and the minimum turning radius given in the maintenance manual.

Balance must be maintained whether the airplane is in motion or standing with components removed. A simple formula for balance is employed to compute the amount of weight that must be used to compensate for major components when they are removed.

(W) · (A)=M; Where: W=Weight A=Arm M=Moment

A MOMENT is a numerical value representing the effect of a force at a given distance (ARM) from a specific reference point. An ARM always represents the location of the center of gravity of the weight in question. Any



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Hercules

units of measure for weights and distances could be used, providing the same units were used consistently to complete a calculation.

However, the known data provided for the Lockheed Hercules is in POUNDS for WEIGHT and in INCHES for ARM, or distance, denoting fuselage stations and wing stations. The Weight and Balance Manual for your aircraft includes charts showing "stations" layouts and instructions about their use.

A working knowledge of the Hercules station locations is necessary to avoid the necessity of actually measuring ARM distances.

You probably have recognized the importance of the Station Location concept used in the Hercules. This concept not only identifies the location of things but simplifies the calculations necessary for weight and balance, whether for loading cargo or for distributing ballast to compensate for components removed.

While weighing the Hercules is not your objective, and is not the subject of our article, a large part of the data found in manuals on this subject will be essential to your calculations for the amount of ballast necessary and where it should be placed.

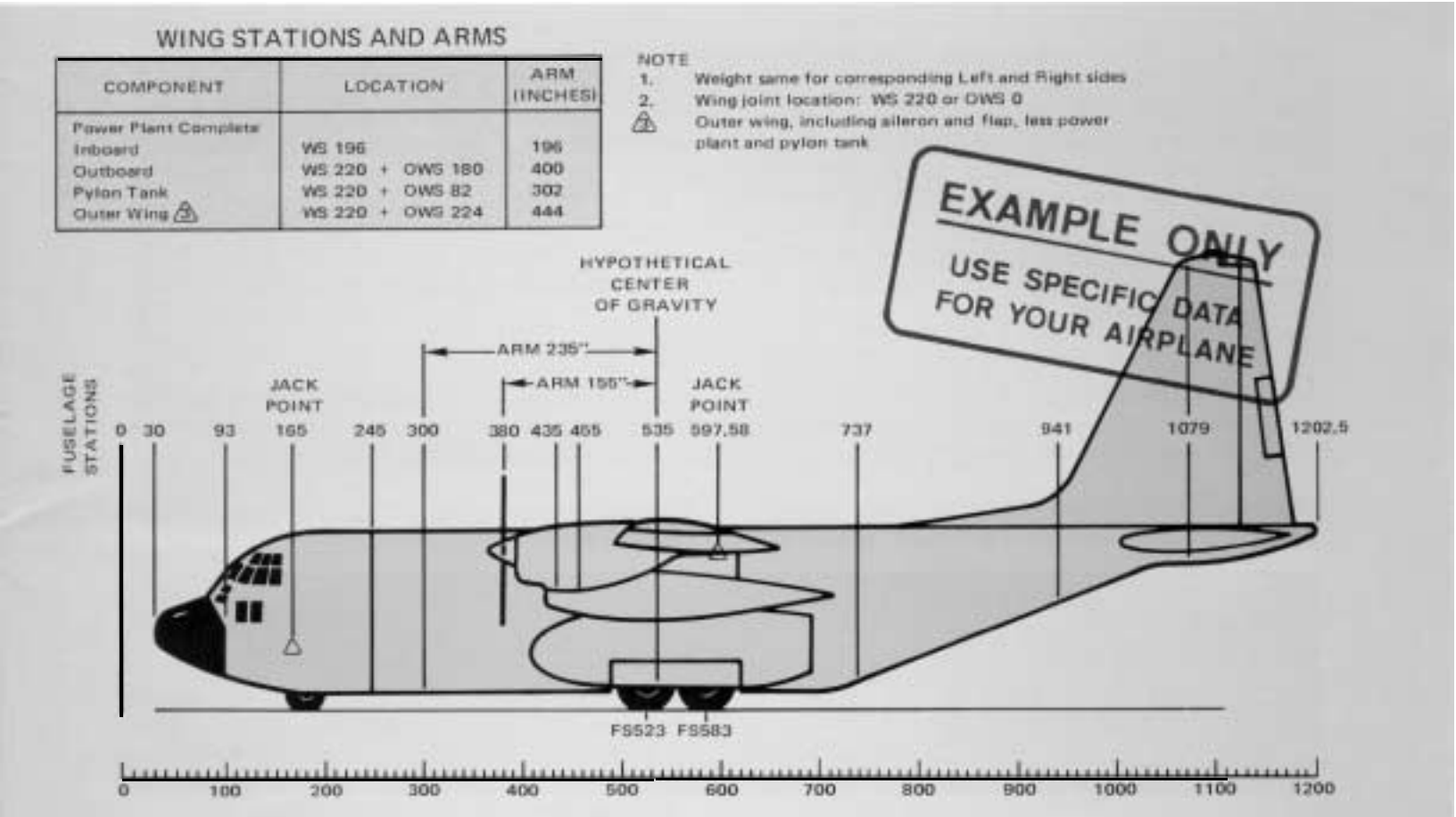
CENTER OF GRAVITY (cg) location must be controlled within limits in two directions – fore-to-aft and side-to-side. (remember that a reference to an ARM is a cg location.) First, let's take a look at ***fore-to-aft*** center of gravity.

FORE-TO-AFT BALANCE

Removal of the four main power plants will create an unsafe towing condition as well as a condition that would leave the airplane subject to damage from the wind if parked out in the open.

All four engines, inboard and outboard, on the Hercules have the same fore-to-aft ARM. The reason for this is that the four engines are lined up evenly along the almost straight leading edge of the Hercules wing.

POUND FOR POUND – If it is easy to load the ballast at the same ARM location as that of the components removed, the weight of the ballast should be the same as



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the total weight of the components. For example, if all four engines and propellers are removed, ballast weighing 15,612 pounds can be evenly distributed over the cargo floor centering around fuselage station (FS) 43.5 which is the same as the ARM of the four engines collectively.

A situation where things balance – Removal of all of the empennage group components and the four power plants will create an unsafe condition unless the proper removal sequence is followed. Remove all the empennage group components first; then remove the four power plants, after which no ballast will be required.

The Pound-for-Pound approach is not often the most practical and so it may be necessary to calculate the moment for the components to be removed, (M=WA).

When removing components and adding compensating ballast, the ARM is not a Fuselage Station but it is the distance from the original aircraft cg to the removed component or the distance from the original aircraft cg to the ballast added cg.

Select the Fuselage Station of a suitable ballast location. Use the station layout chart to determine the ARM. Divide the ARM into MOMENT to get the necessary ballast WEIGHT, ($W=\frac{M}{A}$).

For example, let's say you had an aircraft that weighed 70,000 lb. with a center of gravity at FS 535. You want to remove one propeller assembly and then ballast the aircraft back to the original center of gravity (i.e., FS 535). Suppose the only location for ballast is at FS 300. The propeller cg is at FS 380 which is 155 inches forward of the aircraft cg. The MOMENT effect felt by the aircraft is -166,780 in. lb. The ballast location of FS 300 is 235 inches forward of the aircraft cg. So we want to overcome -166,780 in. lb. at a distance of 235 inches. Divide 166,780 in. lb. by 235 inches and get 710 lb. of ballast. This will return the aircraft to the original cg of FS 535. See chart below.

Divide the ARM into MOMENT to get the necessary ballast WEIGHT, ($W=\frac{M}{A}$). If the WEIGHT is in predetermined increments you should adjust the ARM by dividing the MOMENT by the WEIGHT ($A=\frac{M}{W}$).

Here is another way to achieve the same basic center of gravity with engines removed. The forward fuselage jack

Weights are suspended from jack fittings on the Hercules nose section to stabilize balance during assembly at Lockheed-Georgia.

fittings, P/N 372447-1, may be installed and 1,255 pounds of ballast (weighted oil drums or other suitable weights) may be added to each fitting for a total of 2,510 pounds. To prevent damage, be sure the suspension of the ballast will clear the fuselage.

Please note that load limits of these jack fittings and fuselage structure must not be exceeded. Each jack pad fitting and structure is good for 2,000 pounds.

SIDE-TO-SIDE BALANCE

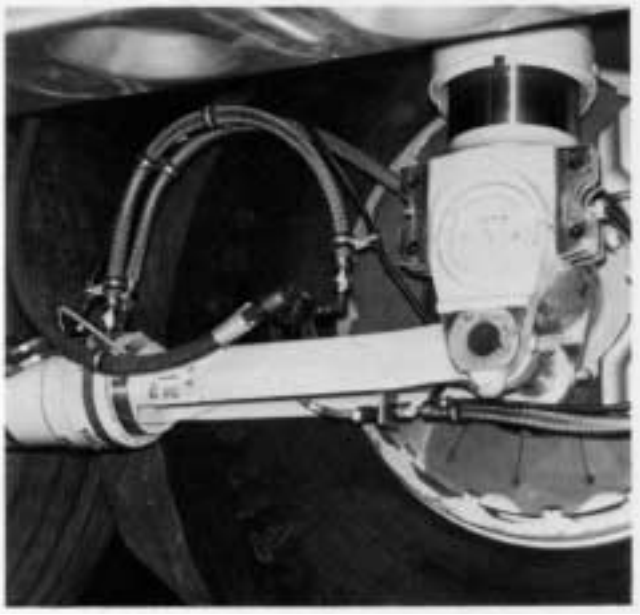
During towing operations, preventing dislocation of the center of gravity to either side is extremely important since the main landing gear is located at the fuselage near the basic airplane center of gravity.

FUEL BY THE POUND - One of the easiest ways to compensate for removed weight where engines and/or propellers are removed from only one side is to transfer fuel from the opposite wing to the side needing ballast. Ah, but you say the handbook has a restriction limiting you to 1,000 pounds difference between opposite fuel tanks and no more than 1,500 pounds difference between wings. That restriction is not a structural one, but a flight restriction to prevent "running out of roll (aileron) control" during landing at low speeds and low gross weights. Further, it is to keep the aircraft from tilting too far while on the ground - so, why not transfer fuel to maintain side-to-side balance.

Just remember to transfer the fuel back when the engines and/or propellers are reinstalled.

	Weight Pounds	Aircraft CG	Fuselage Station	Arm Inches	Moment Inch - Pounds
Propeller	- 1,076	535	380	155	- 166,780
Ballast	710	535	300	235	166,780

A typical fuel control panel, accessible from the ground, for fuel transfer between tanks, as well as for fueling and defueling the Hercules.



One end of a torque strut is shown connected to the bottom of a MLG shock strut. Similar connections at each end hold the two wheels, on either side, in alignment.

Another way to achieve balance side-to-side is to remove an object on one side of the airplane, such as an outboard power plant or wing, when it is necessary to remove a like item on the other side.

For example - removal of the left or right outer wing will produce an unbalanced condition which will be unsafe for towing. Prevent this unsafe condition by also removing the opposite outer wing.

Other examples - Removal of the left or right outboard power plant will produce an unbalanced condition which will be unsafe for towing. Prevent this unsafe condition by removing the opposite outboard power plant.

Both outboard power plants should be removed before removing either inboard power plant when all four of them are to be removed. Why? To maintain side-to-side cg, close to the center line, within limits specified in your maintenance manual.

As pointed out previously, not all factors in unusual circumstances are predictable so we include alternate approaches to accomplish the same results, leaving the choice to be made on site. Whether you choose to achieve balance by transferring fuel, using sandbag type ballast, or by removing an equal and opposite major assembly, can depend on the fuel situation, availability of ballast, the surface of the flight line or parking area, etc.

What about moving a three-legged bird (one MLG strut removed)?

Normally, the completely assembled airplane's center of gravity is just aft of the forward main landing gear. Therefore, special attention should be given to the center of gravity location when one or more rear main landing gear parts are removed.

The torque strut is vital to prevent the lower portion of the main landing gear shock strut (axle and wheel) from twisting - or turning out of alignment. Therefore, the loose end of the torque strut (that is the end where the strut is removed) must be secured in some manner within the wheel well to prevent the installed wheel from twisting.

Here are two methods that have been employed in the past:

Where the main landing gear strut has been removed for maintenance and no structural damage exists within the wheel well, the torque strut may be secured to the main landing gear "shelf bracket" or other structure with a cargo tie-down chain or heavy rope.

Where structural damage exists in the wheel well, it may be necessary to fabricate some bracketry to secure the loose end of the torque strut.

Keeping in mind that it makes a difference as to whether the forward or aft strut is removed, be sure to adjust the center of gravity as necessary. The same thing applies if you have removed two main landing gear struts (one on each side of the airplane).

STRUCTURAL COMPONENTS

Questions also arise from time to time concerning towing the airplane with fuselage and wing components removed

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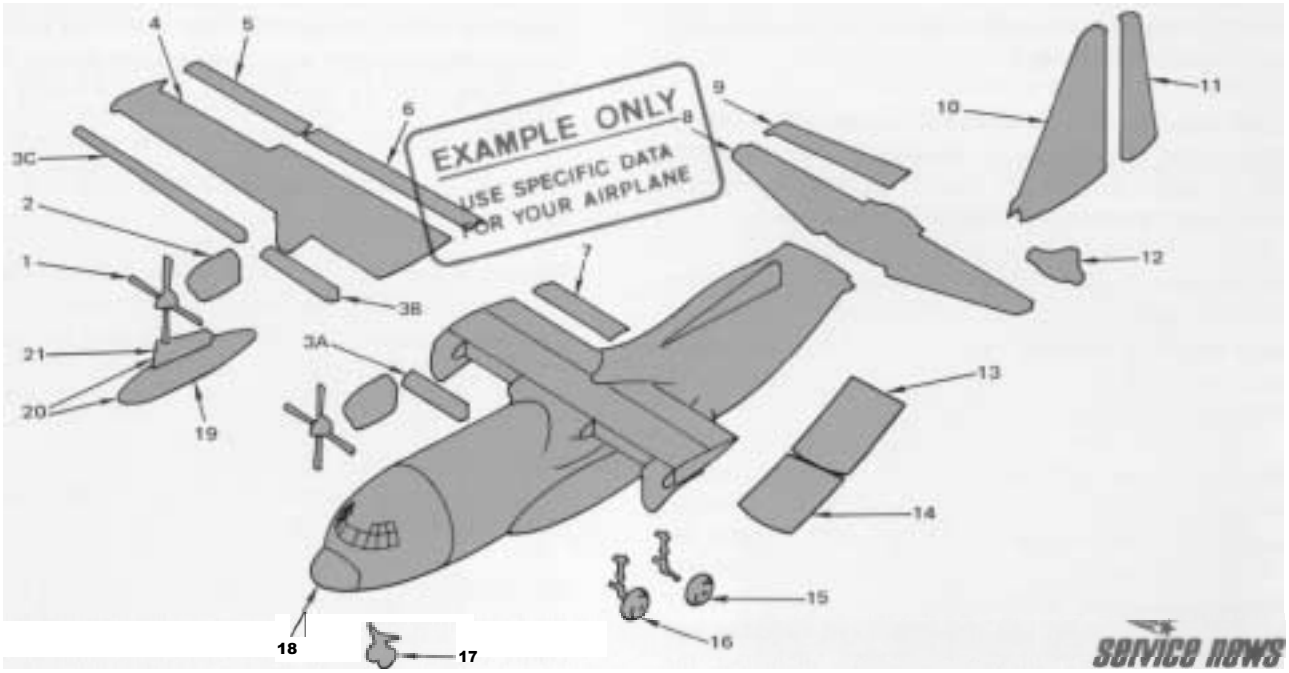
which carry structural loads in normal operations, such as floorboards, wing access panels or leading edges. As anyone who has removed any of these components knows, they are difficult to remove and even more difficult to install, especially if the aircraft has shifted or has been moved. A good rule is to place the item back into position and secure it with an appropriate number of the corner fasteners prior to towing the aircraft. Also, floor boards the full length of the cargo compartment should be secured with enough fasteners to hold. Generally, the center floor boards are preferable; however, treadway floor boards are adequate. Floor boards through the main landing gear area must be installed.

Note that it is generally much easier to remove or install wing leading edges and access panels if the airplane has been de-fueled.

It is structurally safe to tow the aircraft with either or both the cargo ramp and aft cargo door removed. As could be determined earlier by checking fore-to-aft center of gravity, no ballast is required when the cargo ramp and aft cargo door are removed.

There should be no damage to the airplane if you have exercised good judgment along with the proper procedures consistent with the Maintenance Manuals applicable to your Hercules.

COMPONENT	WEIGHT (Pounds)	ARM (Inches)	COMPONENT	WEIGHT (Pounds)	ARM (Inches)
1. Propeller (with spinner)	1,076	380	12. Tail Cone	43	1,158
2. Power Plant (dry engine)	2,827	455	13. Aft Cargo Door	731	956
3. Wing Leading Edges LH or RH			14. cargo Ramp	1,135	508
A. Center Wing	71	496	15. Main Gear Wheel (Complete	392 Fwd	523
B. Inboard-outer wing	104	496	with tire and tube)	392 Aft	583
C. Outboard-outer wing	162	501	16. Main Landing Gear (one gear		
4. Outer wing (dry)	4,112	557	complete with wheel, tire, and		
5. Aileron	205	583	brake)	1.073 Fwd	523
6. Outer Wing Flap & Carriages	276	620		1,073 Aft	583
7. Center Section Flap & Carriages	147	630	17. Nose Landing Gear	573	167
8. Horizontal Stabilizer Assembly	2,104	1,079	18. Radome	218	67
9. Elevator (inboard counterweight			19. Wing Pylon Tank (dry and less		
removed)	270	1,116	pylon Attachment bolts)	627	561
10. Vertical Stabilizer	976	1,052	20. Wing Pylon Tank Installation	791	561
11. Rudder (not including balance			21. Wing Pylon Support (less wing		
weight)	172	1,139	attachment bolts)	143	556



EDITOR'S NOTES

The ***Weight and Balance Data handbook is regularly used while loading the Hercules, in checking weight and balance, and in weighing the airplane when required. For example, SMP521 is for Lockheed Model 382B Hercules. Included in this manual are charts giving calculated moments for a variety of loads at different Locations.***

T.O. 1-1 B-40 and AN 01-1 B-40 for Hercules follows a standard outline for all airplanes except that the data in this edition is specifically tailored for a Hercules configuration.

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POLYTETRAFLUOROETHYLENE

(TEFLON)

LINING FOR OXYGEN SERVICING HOSES

We have some additional information to be used in conjunction with "Oxygen safety" which appeared in the Vol. 1, *No.* 1, January – March 1974 issue of the *Service News* magazine. This information concerns oxygen servicing hoses and there is an important detail that we feel should be emphasized because it has been overlooked at times. Apparently, because so many high quality hoses look alike, some industrial type hoses have been erroneously used for servicing airplanes with oxygen. Some of these create a hazard because of their composition.

It has been pointed out that the kindling temperature of many materials, considered safe and noninflammable, becomes much lower as the percent of oxygen increases. In other words, a small amount of heat can start a fire or explosion in 100% oxygen. Fire can start inside an ordinary hose from elevated temperatures produced by resistance to high pressure flow, or from sudden compression.

A fire may be created by the inadvertent contamination of the oxygen servicing equipment and system. This can occur through the use of servicing hoses that are not compatible with high pressure oxygen. For example, the inner liners of certain hydraulic or pneumatic hoses are constructed of nitrile or neoprene rubber. These rubbers use plasticizers that, with time, age, or heat, tend to "bloom" and surface an oily substance on the inner liner. The presence of this oily flammable plasticizer in the inner liner of the servicing hose can create a serious fire hazard. For this reason, a hose with an inner liner of pure polytetrafluoroethylene (Teflon) should be used that conforms to specification MIL-H-26633B, Hose Assembly, Polytetrafluoroethylene, Oxygen. This specification includes a requirement for a teflon-lined hose assembly that is banded with a metal band showing this specification number and other specific information.

When servicing the oxygen system, all the service cart equipment must be kept a safe distance (8 to 10 ft.) from the aircraft – except the service hose. In some cases the hose is pulled inside the airplane to reach the connectors. In other cases, the bottles are removed for servicing or an external oxygen service connector is utilized. There is some degree of hazard associated with each of these methods. Therefore, the service hose should not be a weak link in the safety precautions.

We welcome subjects on safety and will include short items as well as full length articles when the need comes to our attention. If you have any suggestions, please let us know.

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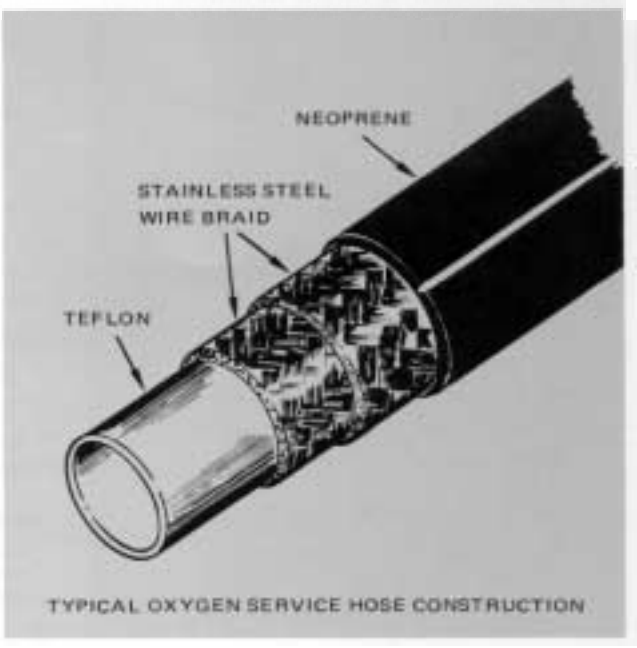

TYPICAL OXYGEN SERVICE HOSE CONSTRUCTION

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HERCULES High Energy Brakes

by CHARLES R. BUSH Design **Engineer** Specialist

AS MOST PEOPLE in the industry know, airplanes tend to grow in size and weight through the years. It's as inevitable as progress itself and the bigger airplanes get, the harder they are to brake to a stop when landing.

The Lockheed Hercules is no exception. From 124,000 pounds on the original C-130A model, the Hercules' gross takeoff weight has increased to 155,000 pounds on the E and H models now flying, with an over gross takeoff weight of 175,000 lbs. Naturally, this added weight put extra stress on the commonly-used single disk brake system which was never designed to stop up to 77 1/2 tons of airplane.

So it was time for a change. Accordingly, Lockheed current production Hercules are equipped with a new Goodyear high-energy, multi-disk brake system. Earlier C-130E and HC-130H airplanes have been retrofitted by T.O. 1 C-130-778 to incorporate the new brakes and associated wheels.

What's better about the multi-disk brake system? Plenty. First of all, you get substantially more, 60 percent, kinetic energy capacity – stopping power – at a weight increase of only 30 percent over the single disk brake.

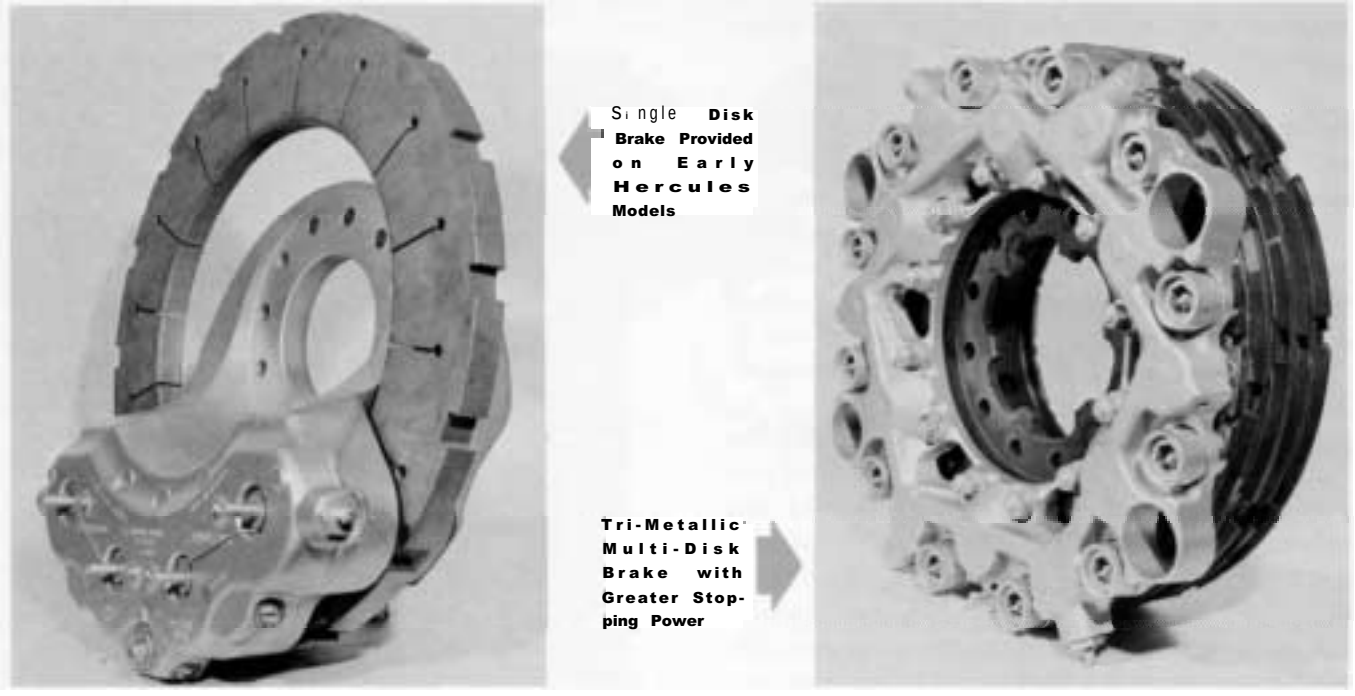
The extra disks, with their greater torque, give faster deceleration stops with less brake fade; and the chance of checking in at the parking ramp with hot brakes is lessened. With this added stopping power, the Hercules can land in even shorter distances an easy achievement for a bird already known and respected for its short field performance.

Check these other tri-metallic (as it is also called) brake system advantages:

LOWER OPERATING COSTS – the direct result of longer brake life due to a much lower wear rate of the sintered metallic lining, and to the fact that many of the heat sink components have wear pads that can be replaced. With the new brakes, Operators are reporting ten times as many landings between wear parts replacements.

LESS MAINTENANCE – required simply because the brake doesn't call for overhaul as often. And the multi-disk tri-metallic brake has housing cylinder sleeves which do away with the need to discard the housing because of damaged cylinder walls.

GREATER RELIABILITY – thanks to the tri-metallic



Single Disk Brake Provided on Early Hercules Models

Tri-Metallic Multi-Disk Brake with Greater Stopping Power

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brake's greater stopping power and its better high temperature performance. Its operating temperature limit is 60 percent higher than that of the single disk brake.

In general, maintenance procedures for the two brake systems are similar. There are, however, certain basic design differences you'll want to bear in mind. For instance, the tri-metallic brake has four rotating disks, three stationary disks, a back plate, and a pressure plate; the older system **has** only one rotating disk (see illustrations).

The rotating disks have a bonded lining of bronze based friction material, while the non-rotating friction parts have replaceable rivited-on wear pads. Note the 12 pistons instead of four (all 12 brake returns are separate from the pistons). The tri-metallic brake has piston cylinder sleeves sealed by static O-rings as well as by the dynamic piston seals. A synthetic rubber piston boot keeps dirt out of the area.

Now, we'll show you the difference in maintenance tasks for the two brake systems and. describe the tasks for each.

TASK	TRI-METALLIC (MULTI-DISK)	ORGANIC (SINGLE DISK)
Inspection of brake ""ear.	Apply brake pressure. Base of nuts on two wear indicators diametrically opposite on housing to be flush with housing when brake wear has reached recommended removal limit.	Apply brake pressure. Return pins on back of pistons to be 1/4 or 3/8 inch below the surface of the adjusting nut (depending on brake P/N) when brake wear has reached recommended removal limit. Distance between housing and disk to be less than 15/16 or l-l/B inch minimum for removal (depending on brake P/N). Distance between end of piston and brake to be 1/8 inch or less for removal.
Remove disk stack.	Remove brake bolts. Remove return pin nuts to allow removal of grip and tube sub-assembly and to free the pressure plate.	Remove brake bolts.
Remove pistons.	Remove insulator screw and insulator, Screw return pin in the insulator screw hole in the piston and pull piston from housing.	Push piston from housing using Arbor press.
Remove cylinder sleeve.	Carefully remove the cylinder sleeve using a good 2 1/8 inch hex socket or an open-end wrench.	
Inspection of disk stack.	Replace rotating disk when worn to a thickness of 0.270" or less. Inspect wear pads on pressure plate, stationary disks and back plate for (1) attaching rivet tightness, (2) cracks or damage, and (3) curling.	Inspect rotating disk for wear shrinkage and dishing Minimum disk thickness is 0.925".
	Replace wear pads as required.	Minimum disk diameter is 21.060".
	Cold straighten the base plate after ""ear pads have been removed, if required.	Maximum disk key slot width is 0.938".
	Minimum pressure plate thickness is 0.345". Minimum stationary disk thickness is 0.355". Minimum back plate, and pad, thickness is 0.610".	Minimum lining thickness at outer edge is 0.125".
Assembly of brake.	Coat all bearing surfaces of bolts, washers and nuts with anti-seize compound. Torque cylinder sleeves to 55 foot-pounds. Torque brake bolts to 50 foot-pounds.	Coat all bearing surfaces of bolts, washers and nuts with anti-seize compound. Torque brake bolts to: 150 foot-pounds small bolts. 300 foot-pounds – large bolts.
Testing.	Apply 3000 psi several times and release. Minimum clearance between pressure plate and rotating disk should be 0.090" minimum with 75 psi back pressure.	Functional testing using 1792 psi.

A striking difference in the performance of the two brake systems is the way the tri-metallic brake keeps working and working in spite of abuse and over-use. But, remember that the new system gives no warning signal when it's being abused, while the single disk brake will show brake fade. So, to ensure maximum performance and life, guard against unknowingly overworking the tri-metallic brakes. As with any brake system, use the brakes sparingly – and be sure your Hercules will stop when and where you want it to.

NEW ALLOY

for JetStar Landing Gear Shock Struts

JetStar landing gear shock, struts are now being manufactured from a new aluminum alloy, 7049-T73, which was specifically developed to resist stress corrosion. It is only recently that such aluminum alloys with suitable strength for use in landing gear struts have become available,

You probably have already learned about the use of this new alloy from JetStar Service Bulletin 329-266 and from JetStar Operators Maintenance Reports, OMR A12 and , OMRA31.

The new cylinder assemblies and related parts have been available from Lockheed as preferred spares for about a year. Many operators have replaced original struts with these of the new alloy when stress corrosion cracking was discovered or when replacements were necessary for other reasons, Inspections required by JetStar Service Bulletin 329-267 are cancelled on the replacement gear cylinder assemblies because of the resistance of the new alloy to corrosion.

Your JetStar Handbook of Operating and Maintenance Instructions and JetStar Illustrated Parts Breakdown provide the basic instructions necessary to accomplish replacement of the struts. The new information is in the Service Bulletin 329-266 and on Lockheed-Georgia Company Drawing JLK27. These two documents are included in each kit. A separate kit is available for each of the three landing gears. Reference to the strut kits are A for the left MLG, B for the right MLG and C for the NLG.

For more information or to place an order contact:

Lockheed-Georgia Company
JetStar Support
Dept. 64-22, Zone 287
Marietta, Georgia 30063

or call (404) 424-3281

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HERCULES CREW ENTRANCE DOOR OPEN WARNING LIGHT SWITCH ADJUSTMENT

by F. A. Hehmeyer, ***Service Representative***

The following procedure has proven beneficial to Hercules maintenance personnel around the world.

It involves adjustment of the crew entrance DOOR OPEN warning light switch with the aid of an easy-to-make tool described in our illustration.

Use this tool in the following steps.

(1) With the door closed securely, place the first step of the tool against the aft, inboard side of the switch mounting bracket.

(2) With the door in the closed position, adjust the tool rod so it will touch the striker plate, on the door, adjacent to the contact point of the switch actuating arm roller.

(3) Tighten the thumb screw so the rod will stay at this specific length.

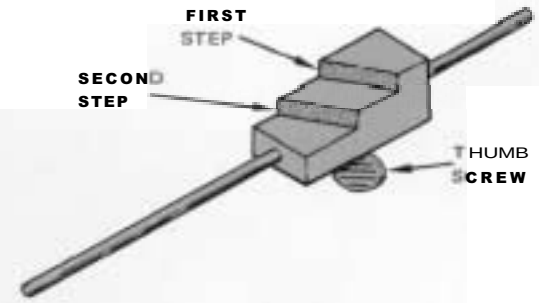
(4) Now open the door so you can fit the second step of the tool against the switch bracket (same place on bracket as previously used).

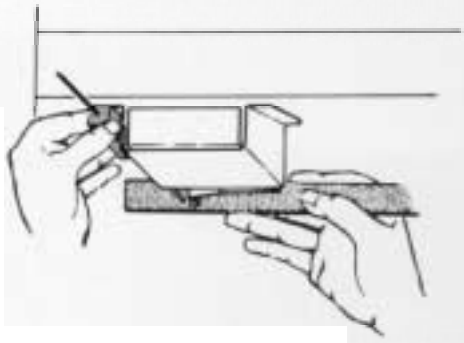
(5) Adjust the switch to actuate when the roller is even with the rod end. Any convenient straight edge across the roller and rod end can verify evenness.

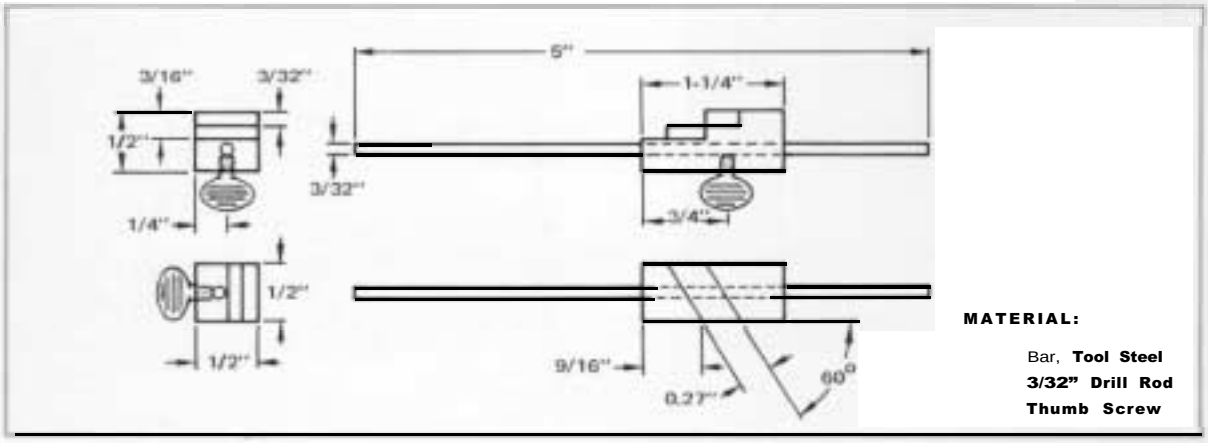
All of your adjustments on the switch are out in the "open" so that accuracy is easy to accomplish.

After you tighten the bracket mounting screws, close the door for a check.

THE OTHER SWITCH – You know that the crew entrance DOOR OPEN light can receive current through another microswitch which is turned off by the latch mechanism when it is in the latched (over center) position. Presently, *Service News* doesn't have a special tool for this switch, but we did not want to ignore the possibility of its being out of adjustment, also. Your Hercules maintenance manual is our recommended reference if the simple approaches are not effective.







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NEW FILTER ELEMENTS

FOR HERCULES HYDRAULIC SYSTEMS

by John Walters,

Design Engineer, Senior

Beginning with Lockheed Serial Number LAC 4499, a new type of filter element is being installed in production airplanes (Commercial, Foreign Direct, and Military) at five locations in the Hercules hydraulic systems. Four of these are three-micron absolute elements and one is a five-micron absolute element. This element change does not require a change to the filter bowls since the new elements are directly interchangeable with the old elements which they replace.

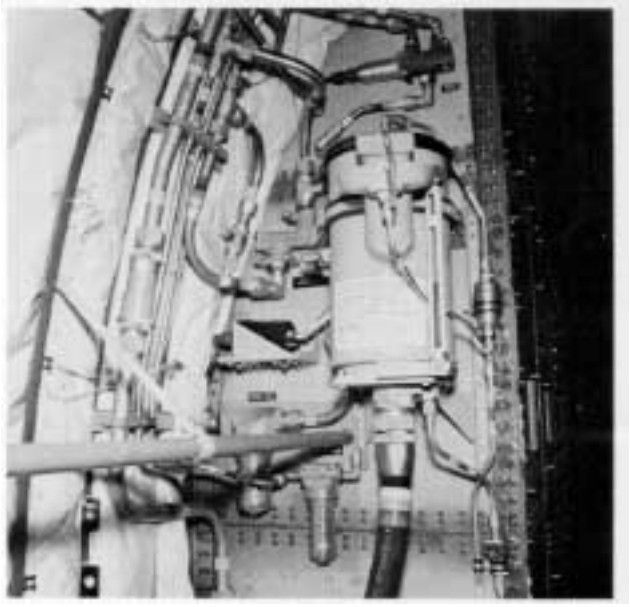
Since the new elements are interchangeable with the old elements, Lockheed Engineering stongly recommends that all commercial and foreign direct operators, and military operators (C-130B and up), replace their existing filter elements with these new FAA and military approved elements on an attrition basis.

Four of the old elements were disposable, with the utility system main return element being the only cleanable type. All five of the new elements are disposable.

For the time being, the schedule currently stipulated in the handbook for replacement of the old elements should be followed for the new elements. A service test is currently being conducted that will furnish data which hopefully will show increased service life for the new elements.

Testing at Lockheed reveals that the new elements result in the contamination count level of the hydraulic system being lowered several classes within a very short operational period. These tests further reveal that silt particles

Filter element at right is typical of the ones previously used in the subject hydraulic systems. The element at left is a new one. The outer protective wire screen is a distinguishing feature. Part numbers are stamped into the bottom of each element.



The new elements are for existing hydraulic filters located near the reservoirs for the systems they serve. The filters in the Booster Hydraulic System are typical, as shown in the photograph above. Consult your Maintenance Manuals for servicing instructions.

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(smaller than 10 microns), which are not counted during the contamination count process, are drastically reduced in number. Theoretically, these silt particles cause most of the wear in hydraulic pumps, motors, and spool-and-sleeve type valves. A Navy program, which was closely monitored on the A-6 and F-4 aircraft, showed a 17% decrease in pump failures with the advent of fine filtration.

The following chart identifies the filter elements by their location and old part numbers, with new replacement part numbers in the last column.

SYSTEM	FILTER LOCATION	OLD ELEMENT PART NUMBER	NEW ELEMENT PART NUMBER
			THREE-MICRON
Utility	Case Drain	AN6235-4A	AC6091F - 12Y8
Booster	Main Return	AN6235-4A	AC6091F - 12Y8
Booster	Case Drain	AN6235-2A	AC6091F - 6Y8
Auxiliary	Return	AN6235-3A	AC6091F - 8Y8
			FIVE-MICRON
Utility	Main Return	AC2031E-12	AC2031F-12UPZ

The new elements can be procured from:

Lockheed-Georgia Company
Department 65-11, Zone 287
86 South Cobb Drive
Marietta, Georgia 30063

PROJECTED PRODUCT IMPROVEMENT

Lockheed is preparing a service bulletin for foreign direct operators which directs installation of a single point hydraulic reservoir fill system and sampling valves. If **sufficient interest** is expressed by commercial operators, a service bulletin could also be published to cover commercial Hercules aircraft.

The single point fill system allows servicing of all of the three Hercules reservoirs from one position, with fluid being pumped through a three-micron filter prior to entering each respective reservoir. The sampling valves provide an easy means of drawing a representative sample of hydraulic fluid from each system for contamination count analysis.

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CUSTOMER SERVICE DIVISION
LOCKHEED-GEORGIA COMPANY
A DIVISION OF LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA, 30063

Thirty-six countries, not counting the United States, have bought nearly 400 Lockheed Hercules propjet airplanes. Total Hercules sales have exceeded 1,400 airplanes.

Lockheed-Georgia has hosted more than 2,000 visitors from 77 different countries in the past year. Students from 11 nations have trained in 1974 at the company's Marietta plant; and 10 nations outside the U.S. currently have plant representatives stationed in Marietta to monitor manufacture of their Lockheed-Georgia aircraft.

The success of the Hercules is due, in part, to our emphasis on continuing Product Support, including deployment of Lockheed Field Service Representatives under contract to Hercules' operators anywhere in the world.