GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

July 7, 1976

GLAC SERVICE INSTRUCTION #1

TO ALL GREAT LAKES OWNERS:

SUBJECT - BATTERY ACID SPILLAGE

The design for elimination of acid leakage can only be as effective as the maintenance and preflight inspection.

The use of MS25185-1 cap and special manifold will vent fumes and any spilled acid overboard if properly installed. Caps must be tight to prevent leakage, and the manifold installed as far down over the caps as possible.

If caps are difficult to remove, a slight side pressure while twisting will usually loosen them up.

Do not use pliers as caps may be broken.

A close visual inspection in the battery area should be a part of every preflight inspection.

GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

October 7, 1976

GLAC SERVICE BULLETIN #2

TO ALL GREAT LAKES OWNERS:

In continuation of our policy to keep owners advised of conditions affecting the safe operation of their aircraft the following is submitted.

Upon accidently applying negative "G" forces in excess of published 4 "G" limits the battery may shift in the battery box.

As an added safety factor we are enclosing a plywood spacer for you to install in the lid of the box.

By removing existing rubber pads over battery terminals and back drilling 2 ea. #50 holes the self tapping #4 screws will hold the spacer securely in place.

Please fill out and return the compliance post card when modification has been made.

GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

July 20, 1977

GLAC SERVICE LETTER #3

TO ALL GREAT LAKES OWNERS

SUBJECT: Fin Brace Wires

A new heavy duty wire is available for retrofit on all Great Lakes.

This wire is identified with P/N 30130-13 and requires 2 ea. 10116-1 brackets and 1 ea. 10115-1 & 10115-2 bracket for installation.

Installation time approximately 1 hr.

GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

July 20, 1977

GLAC SERVICE BULLETIN #4

TO ALL GREAT LAKES OWNERS

SUBJECT: TAIL WIRE RIGGING

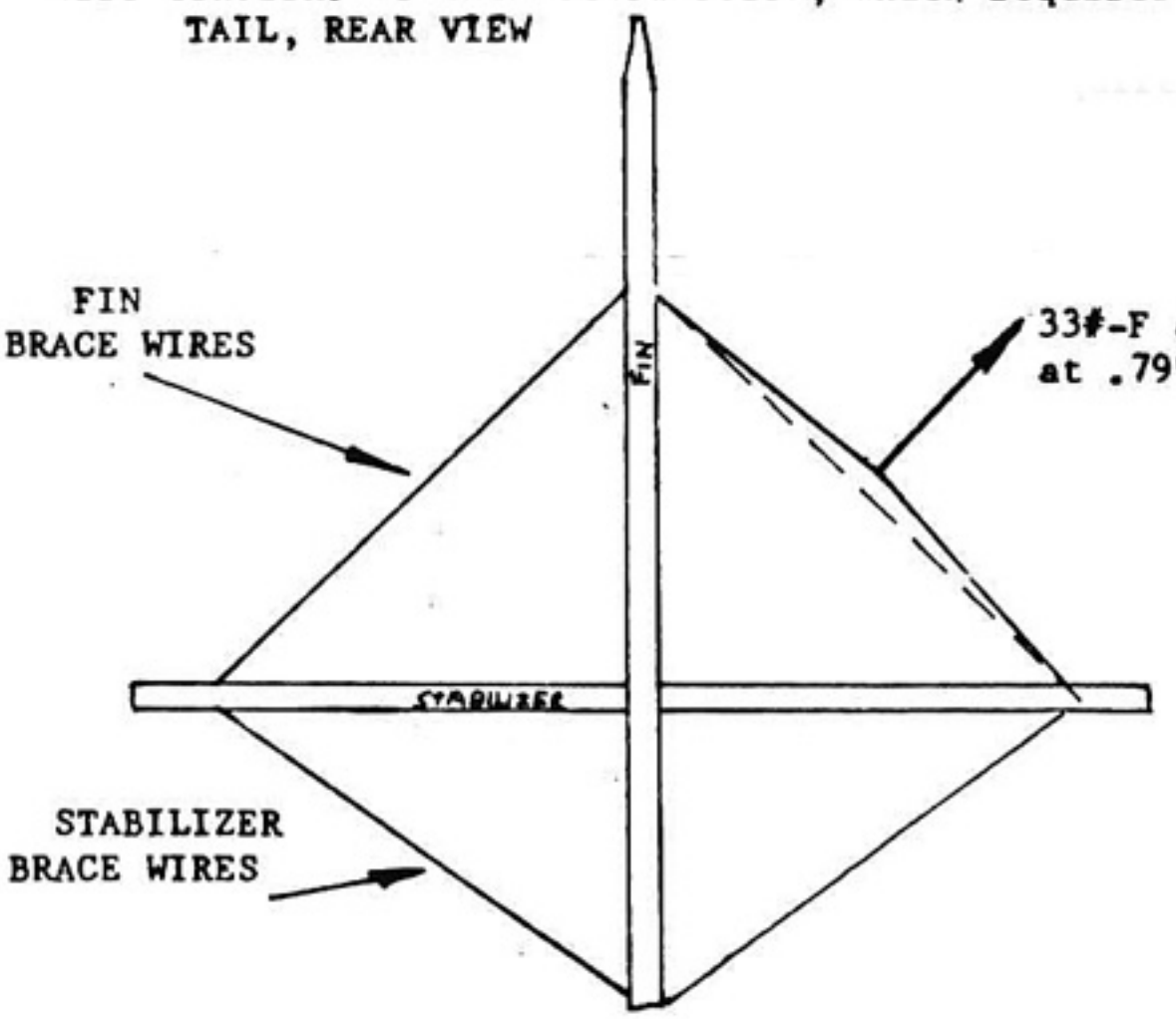
It has come to our attention that field adjustment of fin brace wires may cause different tensions between wires on the same side of the fin.

The proper procedure is as follows; With the stabilizer trimmed in the normal flight position, approximately centered, the bolt attaching wire lugs thru the stabilizer is tightened until lugs will not rotate, then backed off 3/4 turn --- this will allow lugs to "pivot" during flight trim adjustments.

The wires are then adjusted to the proper tension: 380#, ±25.

Fin brace wire tension can be checked two ways: one, by using a flying wire tensiometer, which incorporates the deflection, and reads out directly in #-Force wire tension. Or the method below, which requires a spring scale and a straightedge.

TAIL, REAR VIEW



GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

June 16, 1978

TO ALL GREAT LAKES OWNERS

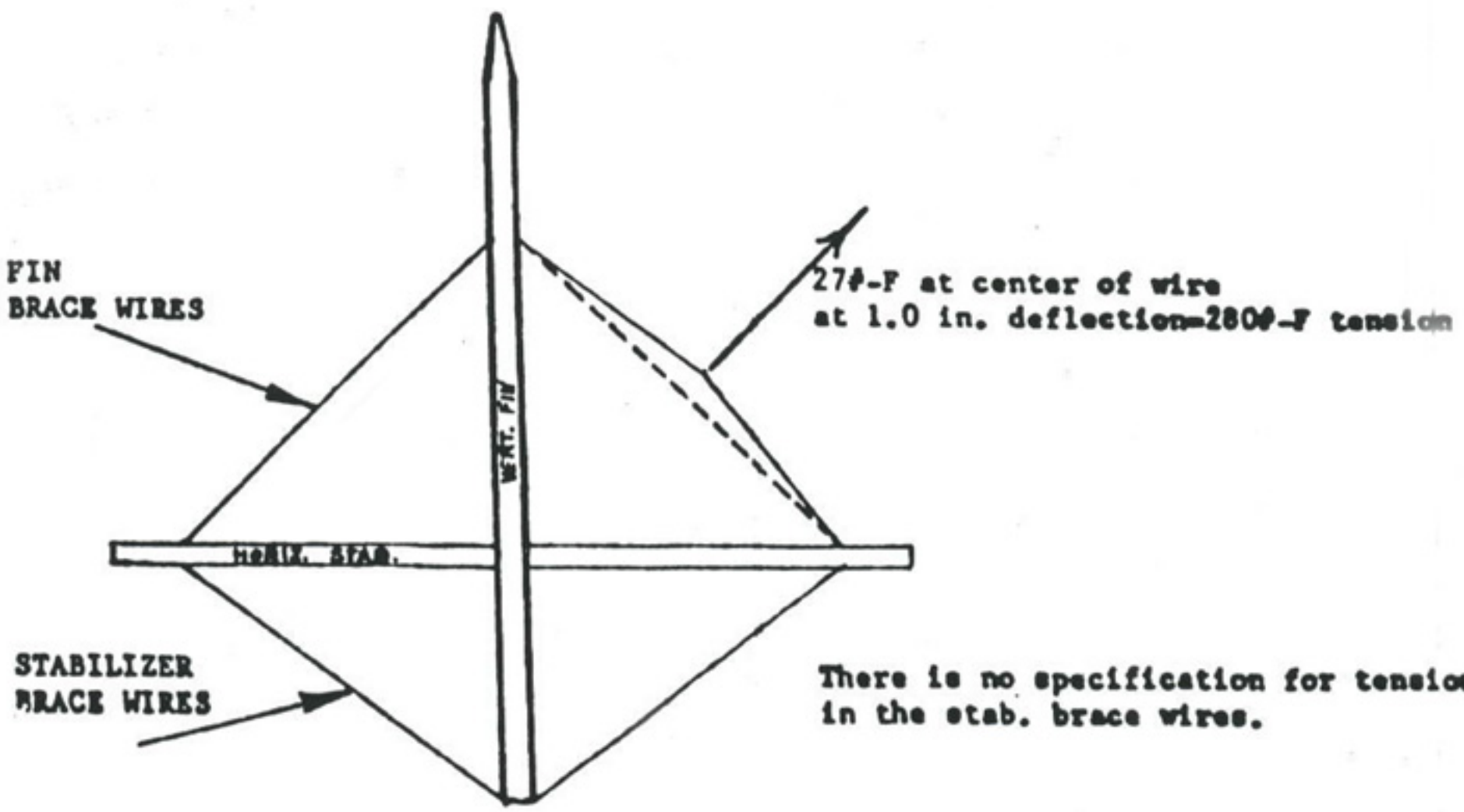
GLAC SERVICE BULLETIN #4A

SUBJECT: CORRECTION OF SERVICE BULLETIN #4

PLEASE NOTE THE CORRECT TENSION IN THE FIN BRACE WIRE IS TO BE 280# ± 25.

Procedure: install all parts loosely, then tighten bolts through fin. Tighten all wires just until all slack is removed. With stabilizer centered, tighten the bolt through the stabilizer until the lug (10116-1) will not rotate, then back off the nut 3/4 turn. This will allow the lugs to pivot during trim adjustments. Progressively increase tension on all wires keeping elevator hinges perfectly in line; this may be checked with a string pulled taut. The lower wires adjust this, while the fin brace wires do more to move the fin itself. With the aircraft level laterally and lonitudinally, the fin should be vertical (plumb).

Fin brace wire tension can be checked two ways: one, by using a flying wire tensiometer, which incorporates the deflection, and reads out directly in #-Force wire tension. Or the method below, which requires a spring scale and a straightedge.



GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

August 10, 1977

GLAC SERVICE BULLETIN #5

TO ALL GREAT LAKES OWNERS:

SUBJECT: PROPELLER AD77-12-6

Hartzell Propeller P/N HC-C2YK-4F/FC7666A-2 is used on Great Lakes 2T-1A-2 Aircraft.

Airworthiness Directive 77-12-6 and Hartzell Service Bulletin 118A require the blades on affected assemblies be inspected and reworked to prevent possible failure. Total time in service along with blade serial numbers determine the action to be taken and also time of compliance.

Blades with serial numbers above D47534 and those having R or PR rubber stamped on the camber side have been reworked and no further action is required.

We suggest you contact your Hartzell Propeller Distributor for details and possible warranty allowance in their rework program.

It is our understanding this is a one time compliance item.

GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

June 21, 1978

TO ALL GREAT LAKES OWNERS SERVICE LETTER #6

SUBJECT: PRODUCT IMPROVEMENT

For those who fly vigorous aerobatics, we have redesigned the inverted oil system. The new system relocates the oil separator tank forward on the engine mount. The purpose is to reduce the amount of oil lost during certain maneuvers.

The change-over requires one new oil hose , an oil separator support plate, a breather tube, and miscellaneous hardware, at a total cost of $26.00, plus shipping.

These are now available on request.

GREAT LAKES AIRCRAFT COMPANY
Wichita Division
Box 11132
Wichita, Kansas 67202
(316) 265-0786

May 30, 1978

TO: ALL GREAT LAKES OWNERS GLAC SERVICE BULLETIN # 7

SUBJECT: PRODUCT IMPROVEMENT

Enclosed is a copy of Service Bulletin # 4, which refers to the proper adjustment of the fin brace wire attachment bolts.

This Bulletin recommends the adjustment be checked to ensure compliance with Service Bulletin # 4. The attachment bolts cannot be tight; the lugs must be able to pivot to prevent fluctuations.in wire tension resulting from trimming the aircraft.

Prior to aircraft serial number 0772, all aircraft left the factory with wires having a 6-40 thread.

Aircraft serial numbers 0772 and on were produced with heavier wires having a 10-32 thread. We are recommending that owners of aircraft serial numbers 0501 through 0511 and 0701 through 0771 update their aircraft by installing the new wires.

To encourage the change-over to the improved assembly, the Company will furnish all parts free of charge. Please submit aircraft serial number with current address, and the Great Lakes Aircraft Company will ship the parts at no charge to allow you to comply with this recommendation.

PLEASE FORWARD THIS BULLETIN TO NEW OWNER IF AIRCRAFT IS NO LONGER IN YOUR POSSESSION.

GREAT LAKES
AIRCRAFT COMPANY
Wichita Division
Box 11182
Wichita, Kansas 67202
(316) 265-0786

JULY 26, 1978

TO: ALL GREAT LAKES OWNERS

SERVICE BULLETIN #8

SUBJECT: LOOSENING OF EXHAUST AND FUEL INJECTOR ATTACHMENT NUTS

It has been brought to our attention that some of the attachment nuts on the base of the fuel injector and at the exhaust flange on the cylinder have loosened during operation.

It is highly recommended that these nuts be secured with steel pal-nuts on the injector and steel jam nuts on the exhaust.

PLEASE FORWARD THIS BULLETIN TO NEW OWNER IF AIRCRAFT IS NO LONGER IN YOUR POSSESSION.

GREAT LAKES
AIRCRAFT COMPANY
Box 3526
Enid, Oklahoma 73701

November 17, 1978

GLAC SERVICE BULLETIN NO. 9

TO: ALL GREAT LAKES AIRCRAFT OWNERS

SUBJECT: LEFT HAND EXHAUST MANIFOLD HEAT EXCHANGER SECTION

This bulletin reflects the policy of the Great Lakes Aircraft Company to inform owners, or operators, of any items, or conditions, that may affect the safe operation of their aircraft.

It has come to our attention that the Heat Exchanger section of the Left Hand Exhaust Manifold has shown signs of cracking at the forward end portion. Due to the possibility that such cracks in the area of the Exchanger section covered by the Heater Shroud could result in the introduction of exhaust fumes into the Heater system, or that continued operation without corrective action could result in failure of the entire forward end of the Exchanger, it is strongly recommended that the following inspection procedures be followed to safely operate the Heater System.

These procedures must be accomplished at no later than 75 hrs. and each 25 hrs. thereafter. For aircraft in excess of 75 hrs. at the present time the inspection procedures must be carried out immediately.

1. Disconnect the two heater ducts from the Heater Shroud and remove Shroud. Carefully inspect the 5 tube cluster at each end for cracks. If no cracks are evident then the unit may be re-installed. At 100 hrs. the unit must be removed from the aircraft to be inspected by the "Dye-Chek" or "Zyglo" method. The product Manufacturer's directions must be followed.

2. If the inspection reveals evidence of cracking and the unit is not repairable by re-welding (in no case is the unit to be repaired more than once) then the entire unit must be removed from the aircraft and replaced with an original straight section. At this time the ram air and heater ducts shall be removed and the cabin outlet closed and secured in an approved manner.

3. All pre-flight inspection shall include the manifold bulk-head hanger for deterioration or rupture.

GREAT LAKES AIRCRAFT COMPANY
Drawer A
Eastman, Georgia 31023
(912) 374-5535

2-21-80

GLAC SERVICE BULLETIN #10

To: ALL GREAT LAKES OWNERS
SUBJECT: INSPECTION REQUIREMENT

At 500 airframe hours, and every 100 hours thereafter, it is required that the aluminum channel fabric attach strips in the center-section wing be inspected for secure fastening to the ribs, especially those at the upper rear of the fuel tank. Check: ribs- for cracks in the bend radius; channel- for cracks at the edge of the rib; and rivets- for looseness or shear. This inspection may be accomplished through the access hole in the lower rear center-section fabric.

Cracks in these areas have been reported on aircraft subjected to energetic maneuvering flight. In one case, complete separation of the fabric attach strip from the rib was observed but did not affect flight. If this occurs, the parts must be replaced.

The fabric attach strips and their attachments to the spar have been completely redesigned for greater longevity. Parts will soon be available, along with rebuild instructions

PLEASE FOREWARD THIS BULLETIN TO NEW OWNER IF AIRCRAFT IS NO LONGER IN YOUR POSSESSION.

GREAT LAKES AIRCRAFT COMPANY

Drawer A
Eastman, Georgia 31023
(912) 374-5535

1 September 1980

FAA APPROVED
SERVICE BULLETIN #11
GREAT LAKES AIRCRAFT COMPANY

TO: All Great Lakes Owners
SUBJECT: Redesigned Oil Cooler System Installation
APPLICABILITY: To All Great Lakes Aircraft Powered By The Lycoming AEIO-360-B1G6 or The IO-360-B1F6 Engine, Serial Nos. 0501 to 0828.

In order to provide a more effective oil cooling system for your Great Lakes Airplane, a new oil cooling system has been designed, approved by the FAA, and is now available for installation in your 2T-1A-1 or 2.

It consists of a new four inch diameter fiberglass inlet duct installed in the nose cowl to inlet ambient air through a four inch diameter hose directly into the oil cooler radiator which is remounted inside the bottom of the belly cowl.

The new oil cooling system allows the owner to use the oil radiator originally installed in the airplane. Fiberglass and paint work to the lower cowl and nose cowl will be required in order to bond the oil radiator mounts to the cowl and to install the cowl face inlet duct.

A service parts kit SPK101 is now available from the factory at our factory cost of $249.95. This kit consists of a fiberglass inlet duct, an oil radiator inlet duct, all mounting brackets, a longer oil hose, a baffle cover plate and all the miscellaneous hardware required for the installation. Also, installation schematic diagrams and fiberglass bonding instructions are provided.

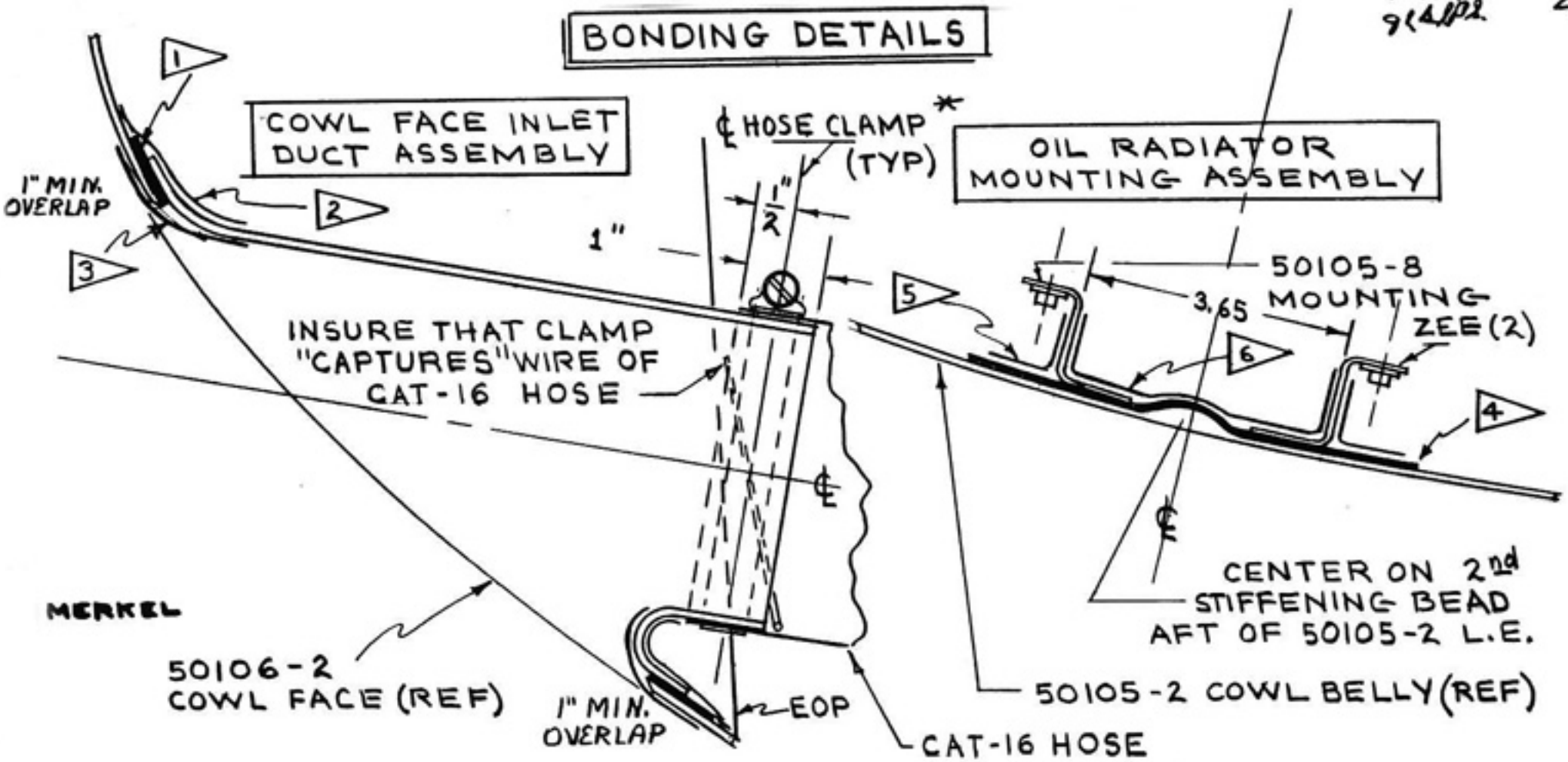
A breakdown of labor required for the installation is as follows:

Installing the inlet in the nose cowl and mounting brackets in the belly cowl	8.0 hours
Removing propeller, cowls, oil cooler; reinstalling cowls, propeller, oil cooler, new hardware, washing engine compartment	7.5 hours
Repaint nose cowl	3.0 hours
Total hours	18.5 hours

Orders for this kit, Part No. SPK101, should be sent directly to the factory, Attention Service Parts Department.

Should additional information be required for this installation, contact the Great Lakes Customer Services Department. 1-912-374-5535.

BONDING DETAILS

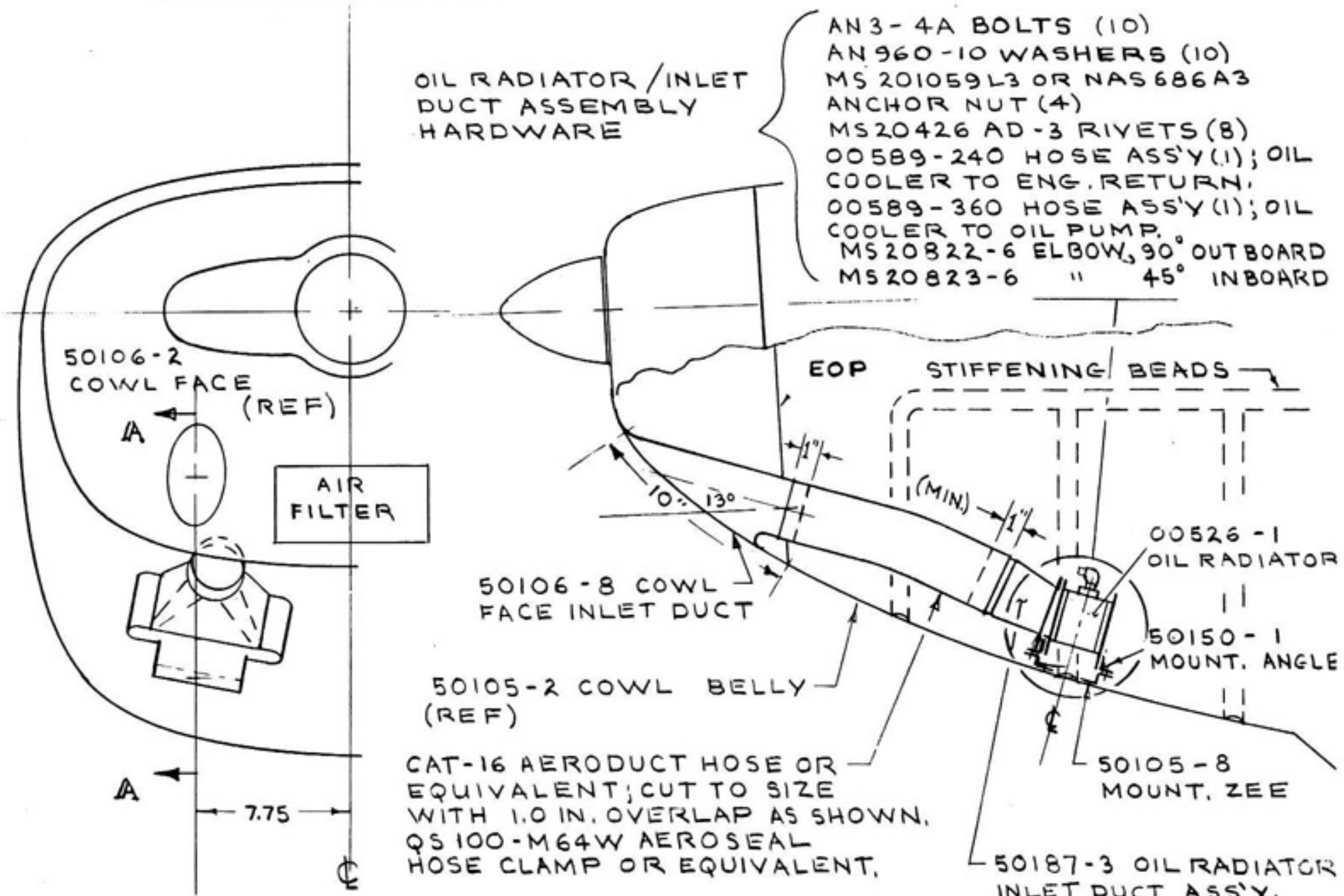


GLASS FABRIC REINFORCED POLYESTER RESIN STRUCTURAL LAMINATE PER ABOVE ILLUSTRATIONS

1. BED; (3) LAYERS OF 3 OZ. MATTE
2. LAMINATE; (4) LAYERS OF 2" 10 OZ. FIBERGLASS TAPE
3. LAMINATE; (1) LAYER OF 2" 10 OZ. FIBERGLASS TAPE
4. BED; (4) LAYERS OF 3 OZ. MATTE, 1" X 6" FORE & AFT OF STIFFENING BEAD.
5. LAMINATE; (3) LAYERS OF 2", 10 OZ. FIBERGLASS TAPE
6. LAMINATE; (4) LAYERS OF 3 OZ. MATTE

* TORQUE TO 25 ± 5 IN-LBS.

OIL COOLER SYSTEM INSTALLATION SCHEMATIC

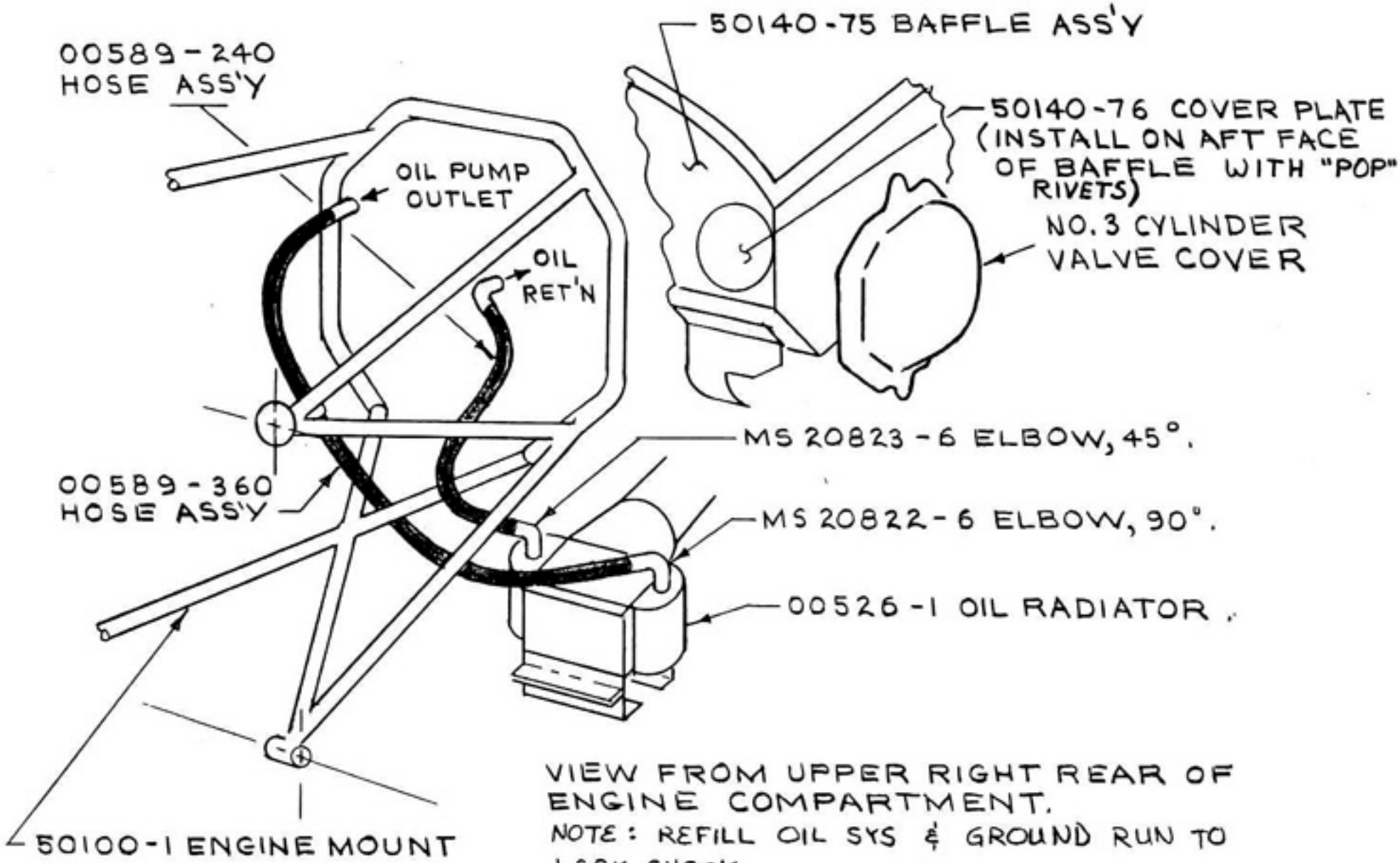


SECTION A ~ A

FAA P.S.

McRKEL

OIL COOLER SYSTEM INSTALLATION SCHEMATIC

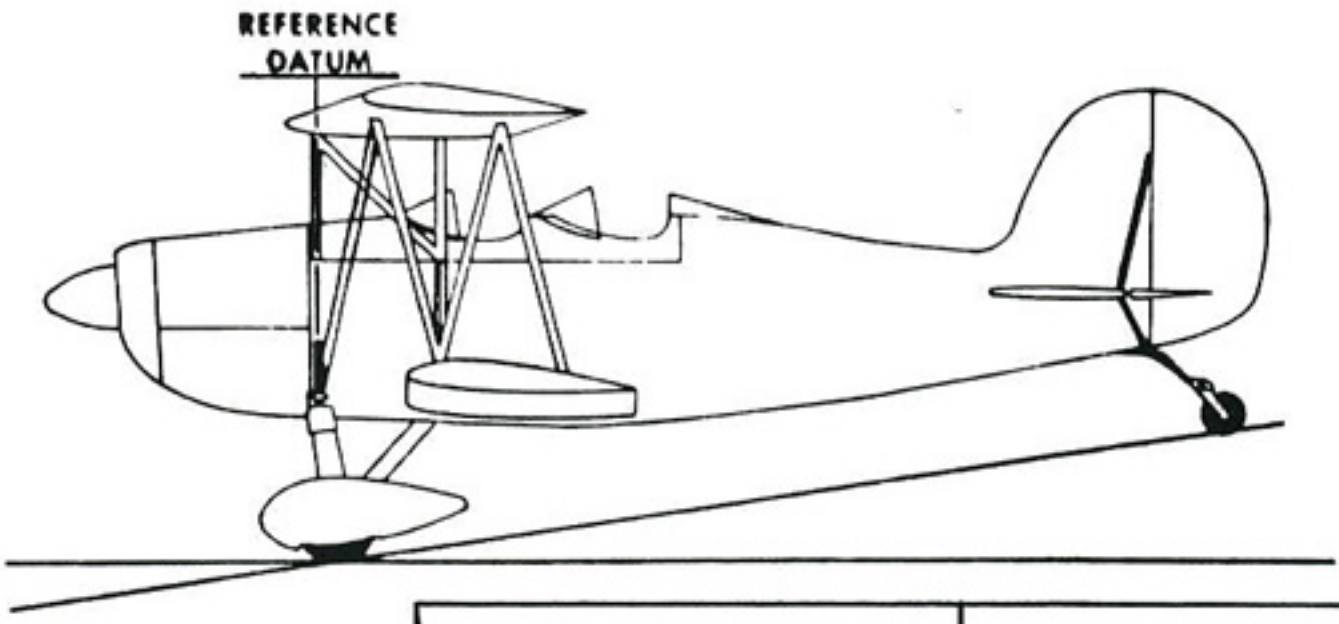


VIEW FROM UPPER RIGHT REAR OF ENGINE COMPARTMENT.

NOTE: REFILL OIL SYS & GROUND RUN TO LEAK CHECK.

MERKEL

WEIGHT AND BALANCE



SAMPLE LOADING PROBLEM	OLD OIL COOLER		NEW OIL COOLER	
	Weight and Balance Sample Airplane		Weight and Balance Your Airplane	
	Weight (pounds)	Moment (Inch pounds)	Weight (pounds)	Moment (Inch pounds)
Licensed Empty Weight	1260	18,137		
Oil - 8qts. (assume full)	15	-360		
Total (empty weight plus oil)	1275	17,777		
Fuel (26.7 gal. at 6 lb. per gal.)	160	2080		
Pilot (include chute, if used)	190	11,685		
Passenger (include chute, if used)	190	5,225		
New Oil Cooler System (Old system removed)	0		.7	-103
Total (weight and moment)	1800	36,767	1800.7	36,664
Loading is acceptable, if weight and moment fall within "center of gravity-moment" envelope				
Center of gravity location from reference datum	$\overline{X} = \frac{36,767}{1800} = 20.43"$		$\overline{X} = \frac{36,664}{1800.7} = 20.36"$	

The new oil cooler installation will displace the C.G. of the airplane .070 inch forward.

GREAT LAKES AIRCRAFT COMPANY

Drawer A
Eastman, Georgia 31023
(912) 374-5535

FAA APPROVED

March 24, 1981
GLAC SERVICE BULLETIN #12

TO: ALL GREAT LAKES OWNERS

SUBJECT: INSPECTION OF THE OUTER MAIN WHEEL BEARING HUB AND REPLACEMENT OF SEAL ASSEMBLIES.

APPLICABILITY: THIS IS DIRECTED TO ALL GREAT LAKES MODELS 2T-1A-1 AND 2T-1A-2 PRODUCED SINCE 1973, SERIAL NUMBERS 501 AND UP.

Please contact your A&P mechanic for the following items.

It is recommended that before further flight both main wheels be removed and a visual inspection be performed on both outboard wheel bearing grease seals and the main landing gear axles in order to accomplish the following (Remove both wheel fairings if installed):

1. Inspect the interior relief of the wheel hubs for any damage due to the wheel retention nuts being installed against the outer grease seal washer.

2. Determine if any foreign materials are present in the main wheel bearings (repacking will be required).

3. Remove the -13 or -14 inner spacer; clean and inspect the axle.

INSTALL THE FOLLOWING HARDWARE:

1. Remove the flat type grease seal with its respective washers and replace with a U-type (saddle) seal assembly. Cleveland part numbers as follows (see page 2):

Part Number	Description	Quantity
153-01500	Ring-Grease Seal	1
153-00300	Ring-Grease Seal (WASHER)	1
154-01300	Felt-Grease Seal	1
*155-00100	Snap Ring	1

* May be reused of not damaged or suspect.

2.a. If a 20101-14 inner spacer is installed, it must be replaced with a -15. (A -14 has reduced diameters on both ends).
b. If a 20101-13 is installed (identified by a reduced diameter on one end only) replace it with the reduced dia. on the INBOARD side.

3. Reassemble wheel & torque retaining nut to remove axial play. Ensure that the nut contacts the washer and clamps down on the bearing.

FAA APPROVED

"CLEVELAND AIRCRAFT" WHEELS & BRAKES

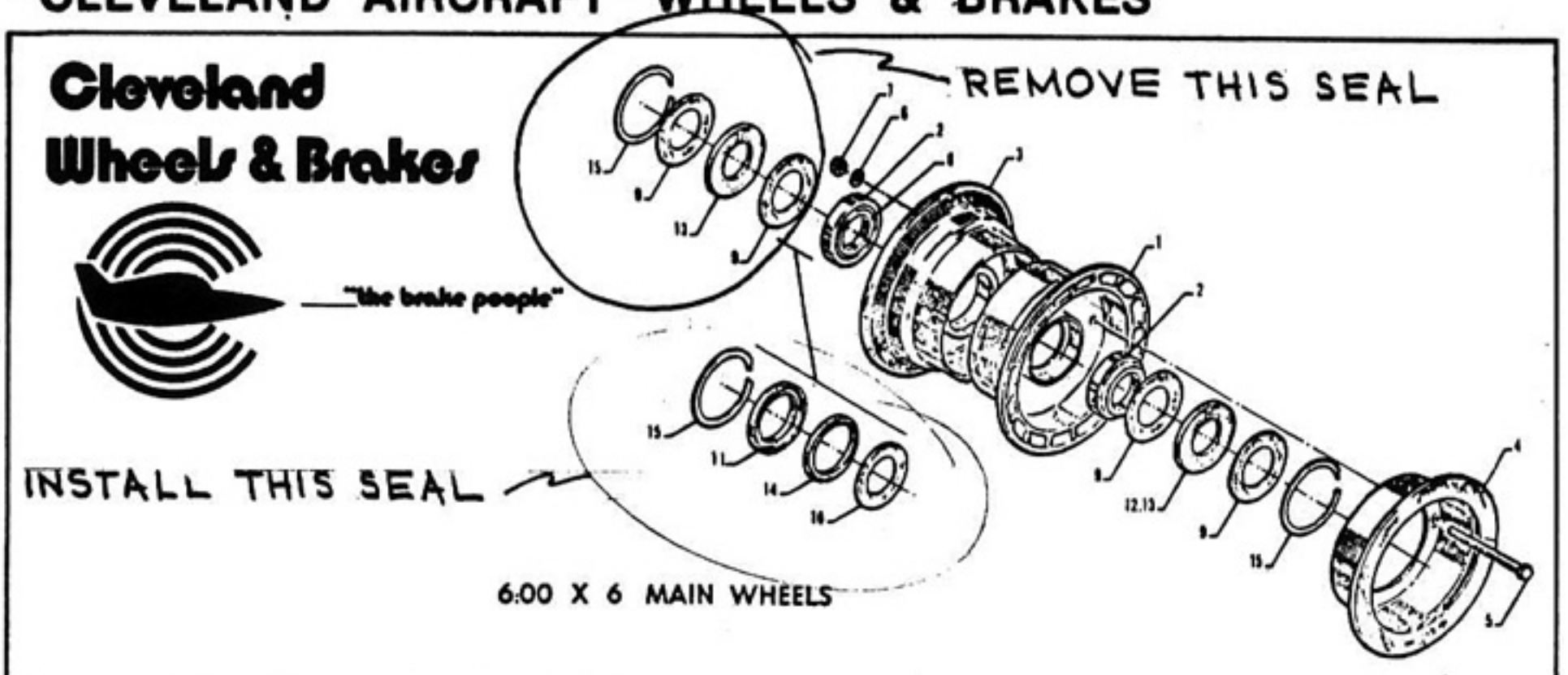


FIG	OLD PART NUMBER	PART NUMBER	DESCRIPTION	ASSEMBLY NUMBER	PER ASSY. 40-113	40-113A	40-113C
1		161-04900	Inner Wheel Half Assy.		1	1	1
2	13836	214-00100	Cup - Bearing		1	1	1
3		162-04700	Outer Wheel Half Assy.		1	1	1
2	13836	214-00100	Cup - Bearing		1	1	1
4		164-04000	Brake Disc Assy.		1		
		164-04300	Brake Disc Assy.			1	1
5	AN4-36A	103-11060	Bolt		3	3	3
6	AN960-416	095-10400	Washer		3	3	3
7	AN365-428	094-10300	Nut		3	3	3
8	13869	214-00200	Cone - Bearing		2	2	2
9	3022	153-00400	Ring-Grease Seal		2		2
		153-00900	Ring-Grease Seal			4	
10	A39070	153-00300	Ring-Grease Seal		1		1
11	153-15	153-01500	Ring-Grease Seal		1		1
12	3021	154-00300	Felt-Grease Seal		1		1
13		154-00800	Felt-Grease Seal			2	
14	154-13	154-01300	Felt-Grease Seal		1		1
15	3023	155-00100	Ring Snap		2	2	2

(Use tube-type tire)

4. Install cotter pin, ensuring ends are bent so that it will not catch on the seal snap-ring.

NOTE: It is estimated that 3 man-hours will be required for the above inspection and reassembly.

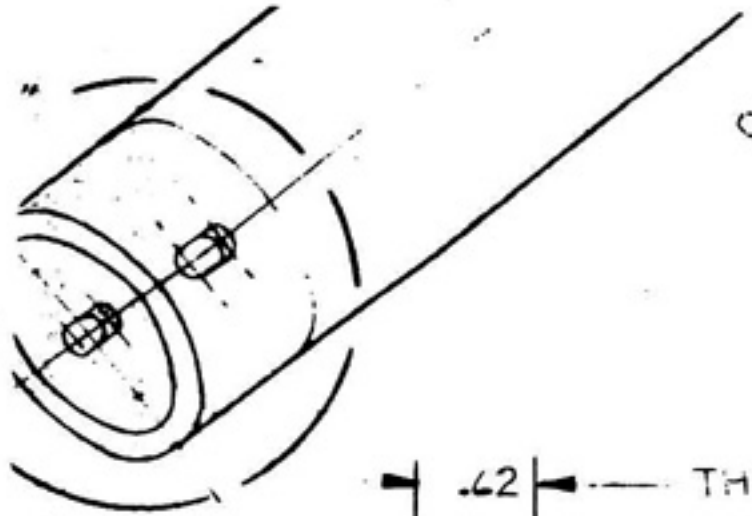
NOTE: Aircraft serial numbers 828 and up will be supplied with items 1 and 2 above by Great Lakes Aircraft in Eastman, Georgia. Please contact Customer Service at (912) 374-5535 for any further information.

Please forward this bulletin to new owner if aircraft is no longer in your possession!

60403-04
OUTER AXLE (L.H.)

FAA APPROVED

912-374-5535



DETAILS; MAIN LANDING GEAR AXLE (DRAWING NO. 2010L)

* REPLACES -13 AND -14 SPACERS

GREAT LAKES AIRCRAFT COMPANY

Drawer A
Eastman, Georgia 31023
(912) 374-5535

January, 1982

SERVICE BULLETIN #13

TO: ALL GREAT LAKES OWNERS

SUBJECT: INSPECTION OF AIR INTAKE DUCT (HOSE)

APPLICABILITY: ALL 2T-1A-1 & -2, SERIAL NUMBER 501 AND UP

"To prevent the possible loss of engine power caused by the collapse of the engine air intake duct, accomplish the following:

a. Before further flight and thereafter at every preflight, inspect the engine air intake duct (AERODUCT CAT-12) for airworthy condition.

b. Within the next 100 hours time in service or within the next six months, whichever occurs first, and thereafter at intervals not to exceed 100 hours time in service or six months, whichever occurs first, remove the air intake duct (Great Lakes Aircraft Company Part Number 00552-121) from the aircraft for a thorough 100 percent inspection.

Inspections a and b above shall continue until a more durable duct has been FAA approved and installed on the aircraft.

If either repetitive inspection a or b above reveals that the duct has become oil-soaked or has suffered the effects of age, such as the exterior-wrapped fiber-glass cord being worn, damaged, loose or broken, replace the duct before further flight."

PLEASE FORWARD THIS BULLETIN TO NEW OWNERS IF AIRCRAFT IS NO LONGER IN YOUR POSSESSION.

GREAT LAKES AIRCRAFT SERVICE BULLETIN #14

SUBJECT: Engine Mount Inspection

AIRCRAFT AFFECTED: All factory-built Models 2T-1A, aircraft SN 501 and higher

DATE: May 1, 2000

RECOMMENDED COMPLIANCE TIME: Pilot Action-Prior to Flight; Maintenance Action-Prior to or during annual inspection

CONTACT: John Duncan
P. O. Box 21, Palmer Lake, CO 80133 (U.S. Mail)
(719) 481-0105 (telephone and fax)
johnaduncan@msn.com (e-mail), preferred

BACKGROUND: It has been brought to the attention of Great Lakes Aircraft Corporation that some aircraft have developed cracks in welded portions of the tubular engine mount, GLAC part number 50100. These cracks have been detected in aircraft subjected to severe and extreme aerobatic service, possibly outside the aerobatic envelope. Some indications that a cracked engine mount exists are: an unusual vibration during engine operation, contact between the starter and the engine cowl, or the prop spinner not centered within the engine cowl.

PILOT ACTION: During the next pre-flight inspection, carefully inspect the position of the starter and prop spinner relative to the engine cowl. If any misalignment is noted, notify maintenance personnel. The engine mount must be inspected prior to flight.

If any unusual vibration is noted during engine operation, land at the nearest suitable airport. The engine mount must be inspected prior to further flight.

MAINTENANCE ACTION: Prior to removing the engine cowl, inspect the position of the starter and prop spinner relative to the engine cowl. Both starter and prop spinner should be centered, and no cowl or baffle erosion should be evident. Remove the engine cowl and conduct a careful, complete, and detailed visual inspection of the welded portion of the engine mount tubular web at the four (4) firewall attach points, and at the four (4) engine attach points. The inspection will require a flashlight, mirror, and a steady hand; the cracks have been found inside the web, a location that is difficult to see.

If no cracks are found, make the following notation in the aircraft maintenance log: "GLAC SERVICE BULLETIN #14 has been complied with and no engine mount cracks were found. " The aircraft may be returned to service.

If any cracks are found, the aircraft must be grounded, the engine mount removed/ repaired/reinstalled prior to flight. Contact GLAC at the above address for repair instruction. After repairs have been made, make the following notation in the aircraft maintenance log: "GLAC SERVICE BULLETIN #14 has been complied with and the engine mount repaired in accordance with GLAC drawing #50100-20A." The aircraft may then be returned to service.