1-185 EC-
SN — 183
N1182

OWNER — FLIGHT — SERVICE

MANUAL

Citabria

UNIVAIR AIRCRAFT CORP.

2500 Himalaya Road. Aurora, CO 80011, Telephone (303) 364-7661

1-007ECOM

SECTION I

(DETAIL DESCRIPTION)

One of the first steps in obtaining the utmost performance, service, and flying enjoyment from your Citabria is to familiarize yourself with your airplane's equipment, systems, and controls. You will want to inspect the airplane thoroughly, noting the location of all equipment and its function. The purpose of this section is to aid in this initial familiarization.

ENGINE: One horizontally-opposed, four cylinder, Lycoming engine, rated at either 115 HP at 2800 RPM; or 150 HP at 2700 RPM powers your Citabria. The engine utilizes wet sump oil system, dual magneto, dual ignition systems, pressure-type fuel systems, and a direct, low back-pressure exhaust system.

ENGINE COOLING: Engine cooling air is admitted at the front of the engine cowling and directed around the cylinders. In this cooling system an increase in power causes a corresponding increase in the flow of cooling air throughout the engine compartment.

ENGINE CONTROL QUADRANT: The engine control quadrants are built into the Citabria. Each is conveniently located on the left side of the cockpit. A friction nut is provided under the quadrant and can be tightened if necessary to prevent throttle creeping. These two engine control quadrants contain the throttles and carburetor alternate air knobs.

MIXTURE CONTROL: The mixture control is located on the extreme left of the instrument panel. Full in position of the control is full rich; full out position of the control is full lean. Manual leaning is accomplished by placing the control between the two positions.

CARBURETOR ALTERNATE AIR KNOBS: The carburetor alternate air knobs are located on the two engine control quadrants. When knobs are full aft, heated air is supplied to the carburetor. When the knobs are forward, cold filtered air is supplied.

> NOTE: The carburetor alternate air knobs should either be in the full aft position or full forward position when selecting carburetor air. Do not use the intermediate positions.

Through the use of the carburetor alternate air knobs, heated air may be selected as required to prevent carburetor icing and to assure smooth engine operation.

IGNITION SWITCHES: There are two toggle type ignition switches on the upper left panel. Each of these switches is of the On-Off type. Both switches should be in the "On" position for normal engine operation. See your engine operating manual for allowable drops of RPM when checking your magnetos.

ENGINE PRIMER: The engine primer is the direct pump type, so that fuel is directed through the lines to the primer jets located in each cylinder.

STARTER: The starter is the push-button type on either of the Lycoming O-235-C1 or O-320-A2B engine. Propeller range is as follows:

O-235-C1	O-320-A2B
72 inches--46 pitch	72 inches--50 pitch
72 inches--50 pitch	72 inches--60 pitch

OIL SYSTEM: Oil for engine lubrication is supplied from a sump located at the bottom of the engine. In the oil system, oil is picked up by the engine-driven oil pump and forced through the engine. Oil returns to the sump by gravity flow. Oil temperature and pressure is indicated on individual guage units.

OIL SPECIFICATION AND GRADE:

Temperature above 60 degrees F .....SAE 50
Temperature 30 degrees to 90 degrees F ...SAE 40
Temperature 0 to 70 degrees F ..... SAE 30
Temperature below 10 degrees F ..... SAE 20

It is recommended that the lubricating oil be changed every 50 flying hours.

Minimum safe quantity of lubricating oil in entire system--2 quarts.

Minimum Oil Pressure: Idling .....25 lbs. per sq. in.
Cruise..... 65 lbs. per sq. in.
Maximum Oil Pressure: ..... 85 lbs. per sq. in.

NOTE: Engine is warm enough for take-off when the throttle can be opened without back-firing or skipping of the engine.

NOTE: To obtain correct oil level readings, it is important that the engine be shut down for at least 5 minutes prior to the oil check. This permits the oil to drain out of the oil passages into the sump.

Oil should be added if below 5 quarts and should be full if an extended flight is planned.

FUEL SYSTEM: Fuel is supplied from two fuel tanks—one in each wing. All 150 HP engine Citabrias carry 39 gallons. The 115 HP Citabrias carry 26 gallons as standard, but may incorporate the use of the 39 gallon total as optional long range systems. Consult your equipment list and loading schedule.

Both tanks feed fuel to the front manifold located on the firewall from the front section of each tank and also from the rearmost bottom portion of the tanks to a manifold located aft of the baggage compartment bulkhead and then to the front manifold on the firewall. The system has an on-off valve with the control knob located under the instrument panel on the left side.

Draining may be accomplished either at the rear manifold drain valve or the gascolator on the firewall.

A fuel tank sump drain is located on the underside of each wing for each tank. These valves are used to drain off any water that may have collected in either of the main tanks.

NOTE: Drain a small amount of fuel from each tank every 100 hours, or as required.

MASTER SWITCH: A master switch is provided on the electrical panel. The separate master switch is provided as a means of checking for a malfunctioning generator circuit, and to permit such a circuit to be cut off. If a generator circuit is found to be malfunctioning, it should be turned off. Equipment can be operated at short intervals and for a limited time on the battery circuit alone.

CIRCUIT BREAKER & FUSED SYSTEM: One overload circuit breaker is provided between the generator and battery. All other systems are fused with provision for spares for easy in-flight access.

FLIGHT CONTROL SYSTEM: Conventional stick and rudder pedal controls are provided to operate the primary flight control surfaces from either the front or back seat.

ELEVATOR TRIM TAB CONTROL: The elevator trim tab control is mounted on a quadrant on the left side panel. Movement forward pitches the nose down. Movement rearward pitches the nose up. Control of the trim tab can be operated from either seat.

WING FLAP SYSTEM: The wing flaps are of the single slotted type and can be extended to 35 degrees. The use of the flaps causes a steeper glide angle without increasing the forward speed. Full flap may be used for landing. Flaps may be extended at any speed under 90 MPH-CAS and may be retracted quickly without undue loss of altitude or controllability.

The flaps are manually controlled by a handle located to the left of the pilot's seat. A push-button on the top of the flap handle releases the positioning lock, and allows the selection of flap degree.

LANDING GEAR: Two types of landing gear are available. Either the steel spring gear which allows trouble-free maintenance and better taxiing condition with the use of skis; or a combination spring and oleo is used. There is very little maintenance with the spring and oleo gear, with the exception of periodic checks to make sure the oleo fluid level is correct as indicated on the gear strut. Fluid level and filling instructions are available in service letter No. 42 of this manual.

STEERING SYSTEM: The tailwheel is steerable with the rudder pedals up to 25 degrees, either right or left of center. When you need to make short turns while taxiing, use a little throttle and maintain some braking. When the tail wheel becomes airborne it extends to a straight locked position and will turn with rudder use. Maximum 90 degrees crosswind velocity demonstrated—40 MPH.

BRAKE SYSTEM: There are hydraulic brakes on both main wheels, and are actuated by heel pedals both in the front and rear seats.

Dual master brake cylinders are used—one for each wheel—and are serviced by rolling the carpet back in the front cockpit. Access to the reservoir is made through holes in the floorboard. Standard bleed fitting is at the bottom of the brake on each wheel.

Parking brake is located under the instrument panel on the right side. Heel brakes are depressed first and held. Parking brake is then pulled on.

PITOT-STATIC SYSTEM: The pitot-static system provides pitot and static pressure to operate the airspeed indicator; and the static presure to operate the rate of climb indicator and altimeter. The system consists of pitot tube, external static pressure ports, and the associated plumbing necessary to connect the instruments to the source.

NOTE: The static pressure openings should be kept free of polish wax and dirt for proper instrument operation. It is well to note that heated system is not available.

SEATS: Both front and rear seats are bolted to the fuselage frame for positive mounting. Seat belts are provided and attach to the seat. Removal of the seat cushion allows room for seat pack type parachutes.

HEATING SYSTEM: A cabin heating system is provided as standard equipment. Fresh air is picked up from the opening in the nose of the plane, heated by shrouds on the exhaust system, and ducted to the front cabin compartment. Heat from the shroud is ducted to an outlet for the back seat as optional equipment. Both heaters are operated by controls mounted on the instrument panel. Rear seat heater is inoperative when carburetor heat is on.

LIGHTING SYSTEM: Conventional wing tip and tail navigation lights are provided. The navigation light switch is fused and located on the electric panel.

Landing light is standard and is located on the nose of the airplane. Fused control is on the electric panel.

Instrument lights are of the rheostat variety and are mounted on the left-hand side of the cockpit. They may be turned in any direction. The switch is on the electric panel.

BAGGAGE COMPARTMENT: A baggage compartment is located aft of the rear seat. Access is from inside the cabin. Load limit is 100 pounds.

WINDOWS & WINDSHIELD: Plexiglass is used throughout, assuring a minimum of discoloration due to exposure.

When cleaning plexiglass, all grit, and foreign particles should be flushed off with clear water. Remove oil or grease with cloth soaked in kerosene. After cleaning, apply a thin coat of hard polishing wax. Rub lightly with a soft, dry cloth.

SHIMMY DAMPENER: A tailwheel shimmy dampener is provided at no extra cost. During the 100 hour inspection, this dampener should be inspected and tightened to forstall any tailwheel chatter and/or swivel.

TIRES: 7.00 x 6, 4 ply tires are used and should be inflated to 24 lbs. per square inch pressure, depending upon load in airplane. Tires should be inspected periodically for wear, particularly when your Citabria is operated off concrete runways.

SECTION II

(NORMAL OPERATING PROCEDURES)

ENGINE STARTING:

1. Gas on (Prime as necessary)
2. Engine mixture—full rich
3. Carburetor heat—cold
4. Master switch—on
5. Magneto switches—both on
6. Engage starter
7. Engine oil pressure—Min.—25 lbs. per sq. in.
   Max.—85 lbs. per sq. in.

Priming can be accomplished by pumping the throttle control. Excessive pumping may over-prime engine, making starting difficult.

As soon as engine starts, the oil pressure should be checked. If minimum pressure is not reached within thirty seconds, stop the engine and determine trouble.

Warm up engine at 800 to 1000 RPM for approximately two minutes in warm weather—four minutes in cold weather. If electrical power is needed from the generator, the engine can be warmed at 1200 RPM. The magnetos should be checked at 1800 RPM, the drop not to exceed 125 RPM on either magneto.

50 to 125 drop is desirable on application of carburetor heat. Carburetor heat should not be used on the ground with the exception of checking. Carburetor heat should be used in flight occasionally when outside air temperatures are between 20 and 70 degrees fahrenheit to determine if icing is occurring in the carburetor. In most cases when engine loses RPM without apparent cause, the use of carburetor heat will correct the condition.

TAKE-OFF, CLIMB, AND STALLS: Before take-off, the following should be checked:

1. Controls free
2. Tab set
3. Mixture rich
4. Carburetor heat—off
5. Fuel on
6. Engine gauges normal.

In the event of engine failure during take-off beyond a point where

landing on the runway cannot be made and the best rate of climb speed (69 MPH-IAS) has been established, immediately check all instruments for proper operation. Glide speed of 60 to 65 MPH-IAS should be established and emergency spot picked out for landing. In the event of engine failure below pattern altitude, immediately drop the nose and land as close to straight forward as possible.

The gross weight stall speed is 50 MPH-IAS without flaps. The stall speed decreases about 1 MPH for each lower flap speed or degree setting. All controls are effective at any speed down to the stalling speed. Stalls are not excessive.

CRUISING: The cruise speed of the Citabria is determined by many factors including available continuous power, altitude, temperature, load, and extra equipment installed on the airplane. Consult engine manual for maximum continuous operating RPM recommended.

Use of the mixture control in cruising flight reduces the fuel consumption. Aircraft will vary somewhat but your Citabria should be leaned at altitudes over 5,000 ft.

LANDING: The amount of flap used during landings and the speed of the aircraft at contact should be varied according to the wind, the landing surface, and other factors. It is always best to contact the ground at the minimum practicable speed consistent with landing conditions.

Normally, the best technique for short and slow landings is to use full flap and a small amount of power, holding the nose up as long as possible, before and after ground contact. In high wind conditions, particularly in strong cross winds, it is desirable to approach the ground at higher than normal speeds, with less than full flaps.

Slipping with the low wing into the wind is easily accomplished with your Citabria-maintaining slightly higher than normal airspeed and maintaining directional control with the rudders.

Check List:

1. Mixture-rich
2. Carburetor heat-off (unless icing conditions exist)
3. Flaps down-as desired

WEIGHT & BALANCE: For weight and balance data, see the weight and balance sheet supplied with the airplane, which gives the exact weight of the airplane and permissible loading conditions. Sample

equipment list and loading schedule is contained in this manual for your edification. Exact equipment list and loading schedule supplied with your Citabria should be used in every case.

MANEUVERS: The following maneuvers are approved and entrance speeds are applicable:

Chandelles, Lazy Eights, and Steep Turns	120 MPH	104 CAS
Barrel or Slow Roll	120 MPH	104 CAS
Immelmann	145 MPH	126 CAS
Loop or Clover Leaf	140 MPH	122 CAS
Split S	60 MPH	52 CAS
Snap Roll	65 MPH	56 CAS
Vertical Reverse	60 MPH	52 CAS
Cuban Eight	145 MPH	126 CAS
Spins	Slow Deceleration	

NOTE: Caution: Continuous inverted flight will cause loss of oil and oil pressure.

AIRCRAFT SPECIFICATIONS
NORMAL, UTILITY, ACROBATIC CATAGORY
CERTIFICATION BASIS: CAR 4a

Model	7ECA	7GCAA	7GCBC	7GCBC	7KCAB
No. Seats	2	2	2	2	2
Engine, Make, Model	Lyc. 0-235-C1	Lyc. 0-320-A2B	Lyc. 0-320-A2B	Lyc. 0-235-C1	Lyc. I0-320-E21
HP @ RPM	108-2600	150-2700	150-2700	108-2600	150-2700
Propeller	1C90ALM	1C172AGM	1C172AGM	1C90ALM	1C172AGM
Gross Weight, lbs.	1650	1650	1650	1650	1650
Empty Weight, lbs.	980	1037	1075	1025	1100
Useful Load, lbs.	670	612	575	625	550
Useful % of Gross Weight	40.6	37.1	34.8	37.9	33.4
Standard Fuel Capacity, gals.	26	39	39	26	39
Optional Fuel Capacity, gals.	39	--	--	39	--
Oil Capacity, qts.	6	8	8	6	8
Stall Speed, MPH	50	50	50	50	50
Stall Speed, Flaps, MPH	--	--	45	45	--
Top Speed, MPH	117	130	128	116	133
Cruise Speed, 75% HP MPH Alt.	112-7500	125-8000	125-8000	112-7500	125-8000
Range, 75% HP gals., miles, hrs.	39-728-6.5	39-537-4.3	39-537-4.3	39-728-6.5	39-537-4.3
Fuel Consumption 75% HP gph	6	9	9	6	8.5
Rate of Climb, MPH fpm	73-725	73-1120	70-1145	73-775	73-1120
Service Ceiling	12,000	17,000	17,000	12,000	17,000
Take-off Run, ft.	450	375	296	425	375
Take-off, Over 50 ft. obstacle, ft.	890	630	525	860	630
Landing Roll	400	400	310	310	400
Landing Dist. over 50 ft. obstacle	755	755	690	690	755
Wing Area, sq. ft.	165	165	170.2	170.2	165
Wing Loading, lbs. per sq. ft.	10	10	9.69	9.69	10
Power Loadings, lbs. per HP	15.3	11	11	15.3	11
Span, ft., inches	33' 5"	33' 5"	34' 5.4"	35' 5.4"	33' 5"
Length, ft., inches	22' 7"	22' 8"	22' 8"	22' 7"	22' 8"
Height, ft., inches	6' 7¾"	6' 7¾"	6' 7¾"	6' 7¾"	6' 7¾"
Baggage Capacity, lbs.	100	100	100	100	100

Note: Performance is for gross weight at sea level unless noted.

AIRCRAFT SPECIFICATION: A 759

PRODUCTION CERTIFICATE: 315

AIRWORTHINESS CLASSIFICATION: Standard

CATEGORY: Normal, Utility, Acrobatic

CERTIFICATION BASIS: 4a

AIRCRAFT GROSS WEIGHT: 1650 lbs.

MAJOR AIRPLANE DIMENSIONS, FEET, INCHES

MODEL	7ECA	7GCAA	7GCBC
Length Overall (Level)	22-7	22-8	22-8
Height Overall (3 Point)	6-10	6-10	6-10
Height Overall (Level)	8-1	8-1	8-1
Wing Span	33-5	33-5	34-5.4
Aspect Ratio	6.72	6.72	6.97
Wing Chord	0-60	0-60	0-60
Stabilizer Span	10-2.2	10-2.2	10-2.2
Wheel Tread (Static)	6-4.4	6-4.2	6-4.2
Wheel Base (Static, Level)	16-1	16-1	16-1
Wheel Base (3 point)	16-4	16-4	16-4

CERTIFICATION DATA
CHAMPION MODEL 7ECA
"CITABRIA"

Certification Basis	CAR 4a	
Categories Certificated	Normal, Acrobatic	
Max. Design Level Flight Speed (V_L)	120 MPH	
Max. Design Dive or Glide Speed (V_G)	180 MPH	
Placard Dive or Glide Speed (V_{NE})	162 MPH	
Max. Weight—Either Category	1650 lbs.	
Min. Empty Weight—Standard Equip.	950 lbs.	
Min. Flying Weight—Standard Equip.	1181 lbs.	
	Limit	Ultimate
Design Positive Maneuver Wing Load Factor @ Max. Weight	5.07	7.61
Design Positive Maneuver Wing Load Factor @ Min. Flying	5.76	8.64
Design Negative Maneuver Wing Load Factor @ Max. Weight	2.30	3.45
Design Negative Maneuver Wing Load Factor @ Min. Flying	2.70	4.05

The Limit load factor shown allows this "G" loading without detrimental permanent deformations of structure.

The Ultimate load factor shown allows this "G" loading without failure of structure.

These values have been proven. Higher values may be tolerated but have not been proven.

See placard on instrument panel for approved acrobatic maneuvers.

CHAMPION AIRCRAFT CORPORATION

L. G. Nelson, V.P., Engineering

AJOR SURFACE AREAS—FEET

7ECA—7GCAA		7GCBC
165.00		170.22
16.54		16.54
		18.36
14.08	13.05	14.05
11.92	12.95	12.95
0.83		0.83
7.02		7.02
6.83		6.83

+ 2 degrees

+ 1 degree

- 5 degrees

0.5 in. Left

ENGINE—BATTERY—FUEL SYSTEM

MODEL	ENGINE	HP @ RPM	PROPELLER (McCauley)	STATIC RPM LIMITS	BATTERY AND LOCATION (Exide)	STD. FUEL SYSTEM (Gallons)
7ECA	Lycoming O-235-C1	108 @ 2600	1C90ALM 7246	2425	AC 54	26
7GCBC	Lycoming O-235-C1	108 @ 2600	1C90ALM 7250	2225	AC 54	26
7GCAA 7GCBC	Lycoming O-320-A2B	150 @ 2700	1C172AGM 7250 1C172AGM 7260	2580 2240	AC 66	40

CHAMPION AIRCRAFT CORPORATION
Osceola, Wisconsin

EQUIPMENT LIST AND LOADING SCHEDULE

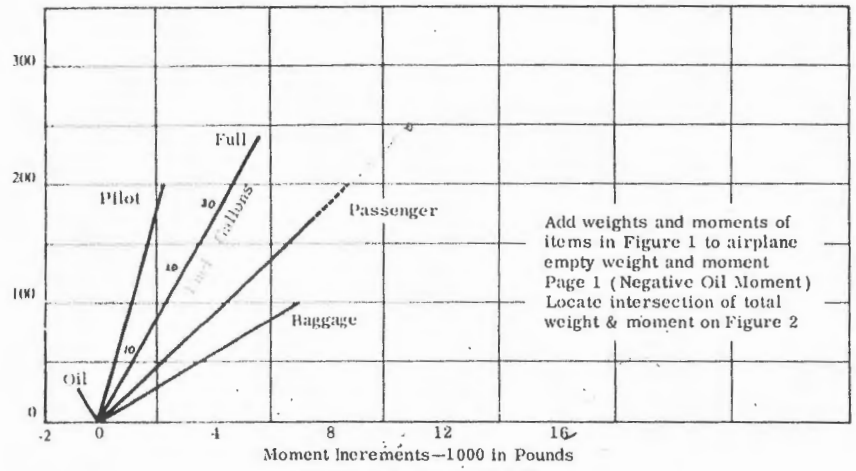


FIGURE 1 LOADING GRAPH

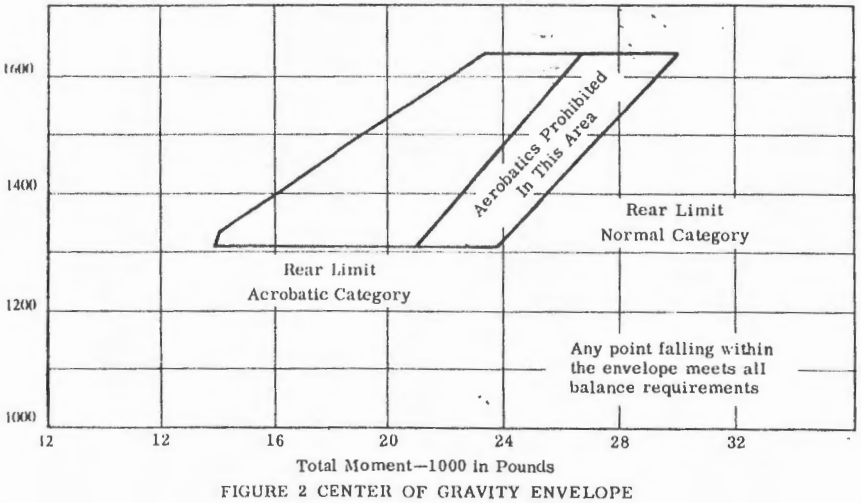
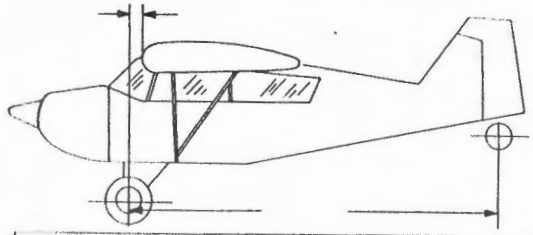


FIGURE 2 CENTER OF GRAVITY ENVELOPE

EQUIPMENT LIST AND LOADING SCHEDULE



1. Main Wheels	
2. Tail Wheel	
3. Total Wt. Empty Plus Oil	
4. Corrected Main Wheel Wt. (1) - 17.7	
5. Corrected Tail Wheel Wt. (2) + 2.7	
6. Wt. Empty (less oil) (4) + (5)	
7. Useful Load	
8. Gross Weight	

Empty Weight C. G. Aft L. E. = (5) ( ) - = ( ) ( ) - = In.

Approved Equipment List

Spec. No.	Item	Wt.	Arm	

Empty Airplane Moment _____ In. Lbs

Spec. No.	Item	Wt.	Arm	

RIGGING INSTRUCTIONS

DATUM: Wing Leading Edge

LEVELING MEANS: Drop plum line from wing leading edge so that top oleo retaing bolt center line is 1/4 inch forward of wing leading edge.

WING RIGGING: Dihedral—The plus 2 degree angle of dihedral is fixed by the length of the front strut. Angle of Incidence—The plus 1 degree angle of incidence is fixed in the manufacture of the airplane, at the wing root fittings on the fuselage. The angle of incidence at the rib nearest the strut point attachment fitting of the wing may be corrected to agree with the angle of incidence at the root, by adjusting the screw adjustment at the lower end of the rear strut where it attaches to the front strut. This provides zero washout. If the airplane seems to have a tendency toward wing heaviness, the necessary wash in or wash out may be secured by adjusting the rear strut at its lower attachment point. Wash out (reduce tip incidence) the high (light) wing one degree; then, if necessary, wash in the low (heavy) wing.

CAUTION: Only a FAA licensed aircraft mechanic should attempt the assembly and rigging of wings, struts, and control surfaces.

AILERON RIGGING: Adjust travel thru aileron push rod at aileron. Adjust cable tension by turnbuckles in cabin section. Ailerons neutral stick centered. Aileron droop—0 to 3/16 in.

ELEVATOR RIGGING: Adjust travel thru stop bolts inside tail cover. Adjust cable tension (elevator down) by turnbuckles aft of torque tube assembly. Be certain the stick clears the front and rear seat.

ELEVATOR TAB RIGGING: Adjust down travel thru stop bolt at tab arm and by adjusting turnbuckles. Adjust up travel by stop plate at tab control quadrant in cabin. Adjust cable tension thru turnbuckles with elevators and tab in neutral.

RUDDER RIGGING: Adjust travel by filing or building up of stops on vertical fin post. Cable tension:

1. Lock rudder in neutral—cable tension left and right to be within 3 lbs. of each other.
2. Hold full left rudder—check cable tension of right cable.

3. Hold full right rudder—check cable tension of right cable.
4. Cable tension to be within 3 lbs. of each other.
5. Adjustments for equal cable tensions may be made by adjusting plates at rear rudder pedals.

FLAP RIGGING: Adjust neutral (flaps up, Ref. wing but rib) thru push rods in left and right wing gap. Adjust down travel thru adjusting bolt in left wing gap. Adjust cable turnbuckle, (with flap handle and flap in down position) to coincide with down stop. Cable tension approximately 30-45 lbs.

CONTROL SURFACE RIGGING

CONTROL SURFACE	MODEL	TRAVEL LIMITATIONS (in degrees from neutral)	CABLE TENSION
Ailerons	7ECA 7GCAA 7GCBC	Up $27.5^{o} + 0^{o} - 2^{o}$ Down $19.0^{o} +)^{o} - 2^{o}$	15-22 lbs. 20-30 lbs.
Elevators	7ECA	Up $24.0^{o} + 0^{o} - 2^{o}$ Down $24.0^{o} + 2^{o} - 2^{o}$	25-30 lbs.
	7GCAA	(1) Up $28.0^{o} + 1^{o} - 1^{o}$	
	7GCBC	Down $24.0^{o} + 2^{o} - 2^{o}$	
Elevator Tab	7ECA	Up $17.5^{o} + 2^{o} - 0^{o}$ Down $37.5^{o} + 2^{o} - 0^{o}$	15-20 lbs.
	7GCAA	(2) Up $17.5^{o} + 2^{o} - 0^{o}$	
	7GCBC	Down $44.0^{o} + 1^{o} - 1^{o}$	
Rudder	7ECA 7GCAA 7GCBC	Left $25.0^{o} + 0^{o} - 2^{o}$ Right	See Rudder Rigging Procedure
Flaps	7GCBC	Down $35.0^{o} + 1^{o} - 1^{o}$	See Flap Rigging Procedure

NOTES: Use bubble protractor on control surface to obtain correct surface travel angle. Use a cable tensionmeter to obtain correct cable tension.

(1) With adjustable seat installation, up elevator travel limitations $24.0^{0} + 0^{0} - 2^{0}$.

(2) Model 7GCBC with Lyc. O-235-C1 engine, up tab travel limitations $10.0^{0} + 0^{0} - 2^{0}$.

LUBRICATION

CONTROLS AND CONTROL SYSTEM: Lubricate all controls, surface hinges, pulley, bushings, bearings, bearing blocks, bolt or bushing pivot points and bowden controls with MIL-I-3545 or equivilant grease, SAE 20 oil mixed with graphite or SAE 20 oil.

LANDING GEAR: Main Gear Oleo-8½ fluid oz. of MIL-H5606 petroleum based oil.

WARNING: Do not overfill, Ref. Champion service letter No. 42.

Wheel bearings, bushing, bolt pivot points, and zerk fittings. MIL-I-3545 or equivalent grease.

Brake Fluid-MIL-H-5606 petroleum base oil.

Engine: Refer to engine manufacturer's service manual for service and lubrication instruction.

SERVICE LETTER NO. 42

Revised February 1966
FAA Approved

To: All Champion Aircraft owners, dealers, distributors and operators

From: Champion Engineering Service Department

Subject: Importance of keeping landing gear oleo assemblies at the proper fluid level

Aircraft Affected: Model 7 aircraft manufactured after 1954

It has been brought to our attention that numerous Champion aircraft are being operated with either low or incorrect fluid levels in their landing gear assemblies.

Continued operation under these conditions could result in failure of the oleo and/or gear attachment fitting or complete failure of the landing gear. This applies to main, nose, and aft gear installations.

We recommend that:

1. A fluid level check be made at least during every periodic aircraft inspection but should be checked more often is any evidence of leaking is determined. An immediate check would assume proper fluid at the present time.

   8 1/2 fluid ounces are added to the oleo at the factory. (MIL-H-5606 fluid conforming to specification is used.) This type fluid or equivalent hydraulic fluid is important and should be substituted with any other type. A placard giving this information is attached to each oleo at the factory.

3. The following procedure should be used for determining proper main gear oleo fluid level:

   A. With oleo in inverted position, remove cap by first loosening lock ring.

   B. The oleo should be lightly tapped so that the fluid will fill all lower portions of the mechanism. Tap until bubbles cease to appear in the oil.

   C. At this point with the taxi spring resting on the piston, the fluid should be 1 5/8 in. below the cylinder end.

D. Overfilling will cause a hydraulic lock and should be avoided.

4. The following procedure should be used for determining proper nose and/or aft gear oleo fluid levels:

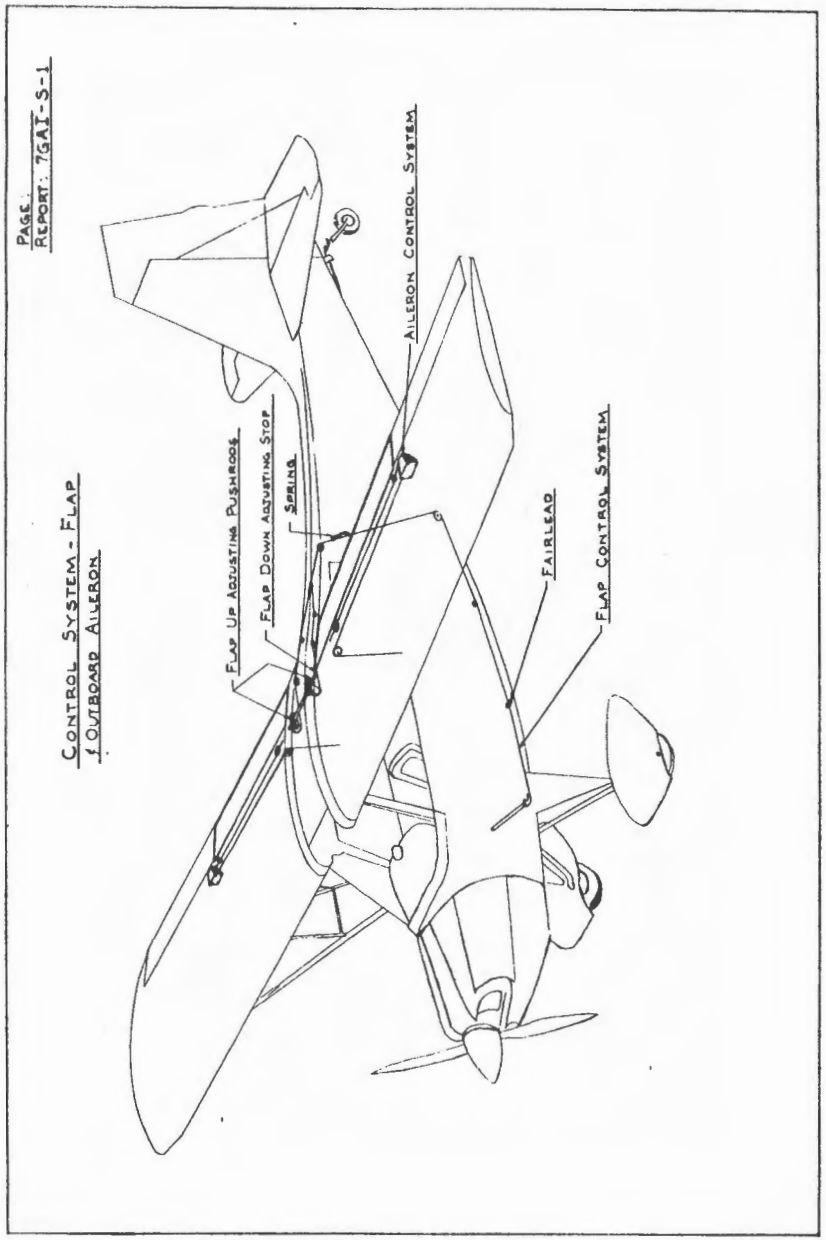
   A. With oleo in inverted position, remove brass fill plug. Insert wire or other device and check fluid level.

   B. Follow step 3B above.

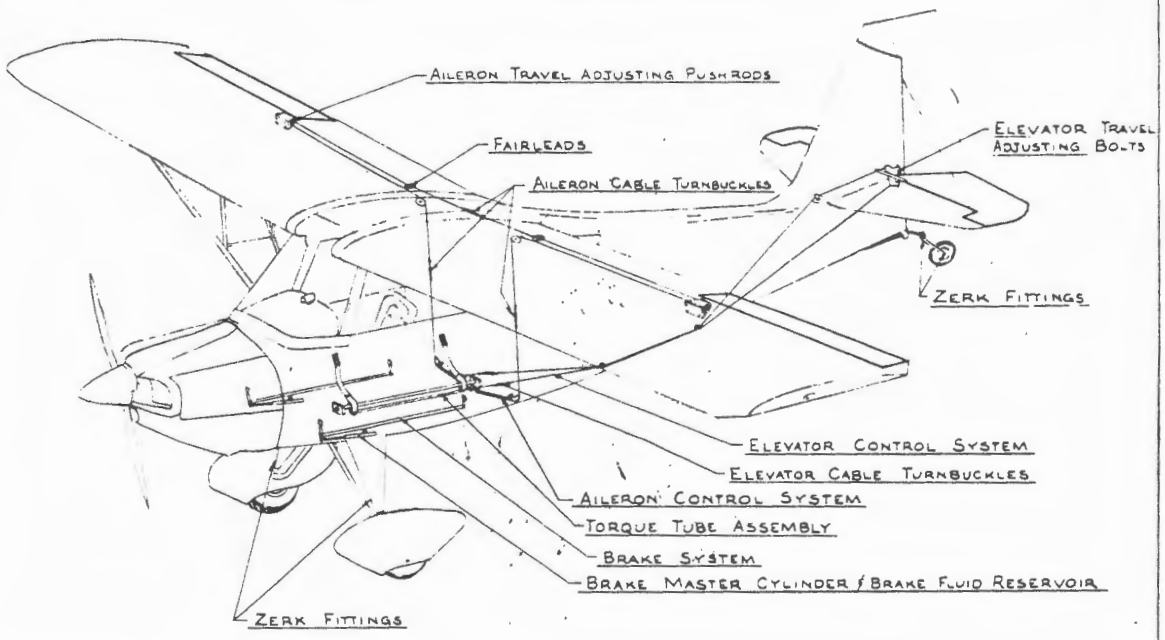
   C. Check fluid level again. The proper level should be 3 1/8 in. below the cylinder end.

5. If an oleo is completely disassembled in the field, 8 1/2 fluid ounces (15.35 cubic inches) must be added to the oleo upon reassembly.

Periodic inspection and proper maintenance of the oleo assemblies will result in better landing characteristics, longer oleo life and elimination of possible failure due to insufficient or incorrect fluid levels.



CONTROL SYSTEM-AILERON, ELEVATOR & BRAKE



CONTROL SYSTEM-RUDDER, ELEVATOR TRIM THROTTLE & CARB. HEAT