

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

1A13
Revision 27
Revo, Inc.
COLONIAL C-1
COLONIAL C-2
LAKE LA-4
LAKE LA-4A
LAKE LA-4P
LAKE LA-4-200
LAKE MODEL 250

December 1,2004

TYPE CERTIFICATE DATA SHEET NO. 1A13

<u>Type Certificate Holder.</u>	Revo, Incorporated 1396 Grandview Boulevard Kissimmee, FL 34744
Type Certificate Holder Record	Colonial Aircraft Company transferred TC 1A13 to Lake Aircraft Corporation on December 23, 1959. Lake Aircraft Corporation transferred TC 1A13 to Consolidated Aeronautics, Inc. on May 7, 1963. Consolidated Aeronautics, Inc. transferred TC 1A13 to Revo, Incorporated on October 29, 1986. Revo, Incorporated transferred TC 1A13 to Global Amphibians, LLC on October 28, 2002. Global Amphibians, LLC transferred TC 1A13 to Revo, Incorporated on September 30, 2004

I. Colonial Model C-1, 3 PCAmM (Normal Category), Approved 19 September 1955

Engine	Lycoming O-320-A2A	
Fuel	80/87 minimum grade aviation gasoline	
Engine Limits	For all operations, 2700 r.p.m. (150 hp)	
Propeller and Propeller Limits	<ol style="list-style-type: none"> 1. Hartzell, hub HC82XG-6L, blades L8046-6 Diameter: not over 74 in., not under 72.5 in. Pitch setting at 30 in. sta.: Normal operation 11.7° to 20.0° 2. Woodward hydraulic governor 210065 	
Airspeed Limits (CAS)	V_{ne} (never exceed) V_{fe} (flaps extended) V_{le}, V_{lo} (maximum landing gear extended, operating) V_p (maneuvering) V_{no} (maximum structural cruising)	142 mph (123 knots) 125 mph (109 knots) 125 mph (109 knots) 113 mph (98 knots) 113 mph (98 knots)
C.G. Range	(+105.0) to (+109.0) at 2150 lb. (+105.0) to (+109.6) at 1980 lb. or less Straight line variation in aft C.G. between weights shown.	

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I. Colonial Model C-1 (cont'd)

Empty Wt. C.G. Range	None		
Datum	Hull Sta. 0. (Hull Sta. 0 is 90.75 in. forward of the leading edge of the wing at side of hull).		
Maximum Weight	2150 lb.		
Minimum Crew	1		
No. of Seats	3. 2 at (+74), 1 at (+97)		
Maximum Baggage	200 lb. (+97)		
Fuel Capacity	40 gal. (+118)		
Oil Capacity	2 gal. (6 qt. usable) (+111)		
Control Surface Movements	Elevator	Up 18.5°	Down 20°
	Ailerons	Up 29°	Down 15°
	Rudder	Right 25°	Left 25°
	Flaps		Down 20°
Manufacturer's Serial Numbers	1 through 14, 16 through 20, 22 through 25		
Certification Basis	Type Certificate No. 1A13 (CAR 03, 15 December 1946, and Amendments 3-1 and 3-2).		
Equipment	The basic required equipment as prescribed in the applicable airworthiness requirements (see Certification Basis) must be installed in the aircraft for certification including the FAA-approved Airplane Flight Manual with its latest revision and appropriate supplements. Refer to the equipment portion of Aircraft Specification 1A13, Revision 17, for additional required equipment.		

II. Colonial Model C-2, 4 PCAmM (Normal Category), Approved 24 December 1957

(Same as Model C-1 except for engine installation, cockpit arrangement, horizontal tail surfaces, longitudinal trim system, modified tip floats, and structural modifications to engine pylon and wing.)

Engine	Lycoming O-360-A1A	
Fuel	91/96 minimum grade aviation gasoline	
Engine Limits	For all operations, 2700 r.p.m. (180 hp)	
Propeller and Propeller Limits	1.	Hartzell, hub HC92ZK-6DL-1, blades L8447-12A Diameter: not over 72 in., not under 70.5 in. Pitch setting at 30 in. sta.: Normal operation 11.5° to 23.4°
	or 2.	Hartzell, hub HC92WK-8L, blades LW8447-12A Diameter: not over 72 in., not under 70.5 in. Pitch setting at 30 in. sta.: Normal operation 11.5° to 23.4°
	3.	Woodward hydraulic governor C210105
Airspeed Limits (CAS)	V _{ne} (never exceed)	146 mph (127 knots)
	V _{fe} (flaps extended)	125 mph (109 knots)
	V _{le} , V _{lo} (maximum landing gear extended, operating)	125 mph (109 knots)
	V _p (maneuvering)	121 mph (105 knots)
	V _{no} (maximum structural cruising)	122 mph (106 knots)

II. Colonial Model C-2 (cont'd)

C.G. Range	(+102.5) to (+106.0) at 2350 lb. (+102.0) to (+108.0) at 1950 lb. or less Straight line variation in aft C.G. between weights shown.		
Empty Wt. C.G. Range	None		
Datum	Hull Sta. 0. (Hull Sta. 0 is 90.75 in. forward of the leading edge of the wing at side of hull).		
Maximum Weight	2350 lb.		
Minimum Crew	1		
No. of Seats	4. 2 at (+66), 2 at (+92)		
Maximum Baggage	200 lb. (+97), 20 lb. (+118)		
Fuel Capacity	40 gal. (+118)		
Oil Capacity	2 gal. (6 qt. usable) (+111)		
Control Surface Movements	Elevator	Up 26°	Down 23°
	Ailerons	Up 29°	Down 15°
	Rudder	Right 25°	Left 25°
	Flaps	Down 20°	
Manufacturer's Serial Numbers	115, 126 through 243.		
Certification Basis	Type Certificate No. 1A13 (CAR 03, 15 December 1946, and Amendments 3-1 and 3-2).		
Equipment	The basic required equipment as prescribed in the applicable airworthiness requirements (see Certification Basis) must be installed in the aircraft for certification including the FAA-approved Airplane Flight Manual with its latest revision and appropriate supplements. Refer to the equipment portion of Aircraft Specification 1A13, Revision 17, for additional required equipment.		

III. Lake Model LA-4, Approved 26 July 1960; Lake Model LA-4A, Approved 1 June 1960; Lake Model LA-4P, Approved 21 June 1960; 4 PCAmM (Normal Category)

Model LA-4 Same as Colonial Model C-2 except four feet added to wing span; each aileron lengthened by 1 ft., 17 inches added to bow; rear wing-to-fuselage attachment revised; gross weight increased; nose gear doors modified due to increase in bow extension; and reinforcement of wing and wing-to fuselage carry-through structure. (See Note 4.)

Model LA-4A Same as LA-4 except the bow is the same as the Colonial Model C-2.

Model LA-4P (Prototype) Same as Model LA-4 except that rear wing-to-fuselage attachment was not revised and reinforcement of wing and wing-fuselage carry-through structure was not added.

Engines	Lycoming O-360-A1A or O-360-A1D		
Fuel	91/96 minimum grade aviation gasoline		
Engine Limits	For all operations, 2700 r.p.m. (180 hp)		
Propeller and Propeller Limits	1.	Hartzell, hub HC92ZK-8, blades L8447-12A Diameter: not over 72 in., not under 70.5 in. Pitch setting at 30 in. sta.: Normal operation 11.5° to 23.4°	
	or 2.	Hartzell, hub HC92WK-8L, blades LW8447-12A Diameter: not over 72 in., not under 70.5 in. Pitch setting at 30 in. sta.: Normal operation 11.5° to 23.4°	

III. Lake Model LA-4, Lake Model LA-4A, and Lake Model LA-4P (cont'd)

	3. Woodward hydraulic governor C210105		
	or 4. Hartzell hydraulic governor F-2.		
Airspeed Limits (CAS)	V_{ne} (never exceed)	146 mph	(127 knots)
	V_{fe} (flaps extended)	125 mph	(109 knots)
	V_{le} , V_{lo} (maximum landing gear extended, operating)	125 mph	(109 knots)
	V_p (maneuvering)	121 mph	(105 knots)
	V_{no} (maximum structural cruising)	122 mph	(106 knots)
C.G. Range	(+102.5) to (+106.0) at 2400 lb. (+102.5) to (+108.0) at 1950 lb. or less Straight-line variation in aft C.G. between weights shown		
Empty Wt. C.G. Range	None		
Datum	Hull Sta. 0. (Hull Sta. 0 is 90.75 in. forward of the leading edge of the wing at side of hull).		
Maximum Weight	2400 lb.		
Minimum Crew	1		
No. of Seats	4. 2 at (+63), 2 at (+92)		
Maximum Baggage	200 lb. (+118)		
Fuel Capacity	40 gal. (+118)		
Oil Capacity	2 gal. (6 qt. usable) (+117)		
Control Surface Movements	Elevator	Up $26^\circ \pm 1^\circ$	Down $23^\circ \pm 1^\circ$
	Ailerons	Up $29^\circ + 2^\circ, -1^\circ$	Down $15^\circ \pm 1^\circ$, neutral $\pm 2^\circ$
	Rudder	Right $25^\circ \pm 1^\circ$	Left $25^\circ \pm 1^\circ$
	Flaps		Down $20^\circ \pm 1^\circ$
	Trim Tab	Up $36^\circ \pm 1^\circ$	Down $24^\circ \pm 1^\circ$
Aileron Cable Rigging Tension	25 lb. \pm 3 lb.		
Manufacturer's Serial Numbers	Model LA-4:	246 through 421, 423 through 429, 445, and 446	
	Model LA-4A:	244 and 245 only	
	Model LA-4P:	121 only	
Certification Basis	Type Certificate No. 1A13 (CAR 03, 15 December 1946, and Amendments 3-1 and 2).		
Equipment	The basic required equipment as prescribed in the applicable airworthiness requirements (see Certification Basis) must be installed in the aircraft for certification including the FAA-approved Airplane Flight Manual with its latest revision and appropriate supplements. Refer to the equipment portion of Aircraft Specification 1A13, Revision 17, for additional required equipment.		

IV. Lake Model LA-4-200; 4 PCAmM (Normal Category) Approved 26 May 1970

(Same as LA-4 except for engine installation.)

Engines	Lycoming IO-360-A1B or Lycoming IO-360-A1B6						
Fuel	100/130 minimum octane aviation gasoline						
Engine Limits	For all operations, 2700 r.p.m. (200 hp)						
Propeller and Propeller Limits	<ol style="list-style-type: none"> 1. Hartzell, hub HC-C2YK-1BL, blades L7666A-2 or L7666-2 Diameter: not over 74 in., not under 72 in. Pitch setting at 30 in. sta.: low 14° min., high 27° to 31° NOTE: Avoid continuous operations between 2000 and 2350 r.p.m. or 2. Hartzell, hub HC-C2YK-1BLF, blades FL7666A-2 Diameter: not over 74 in., not under 72 in. Pitch setting at 30 in. sta.: low 14° min., high 27° to 31° NOTE: Avoid continuous operations between 2000 and 2350 r.p.m. 3. Woodward hydraulic governor C210105 or 4. Hartzell hydraulic governor F-2-6A. 						
Airspeed Limits (CAS)	<p>V_{ne} (never exceed) (See Note 5) For aircraft:</p> <table> <tr> <td>S/N 422-1036</td> <td>146 mph (127 knots)</td> </tr> <tr> <td>S/N 1037-Subsequent</td> <td>154 mph (134 knots)</td> </tr> <tr> <td>*S/N 422-1036</td> <td>154 mph (134 knots)</td> </tr> </table> <p>* With Consolidated Aeronautics Kit K-137 installed.</p> <p>V_{fe} (flaps extended) 125 mph (109 knots) V_{le}, V_{lo} (maximum landing gear extended, operating) 125 mph (109 knots) V_p (maneuvering) 121 mph (105 knots) V_{no} (maximum structural cruising) 122 mph (106 knots)</p>	S/N 422-1036	146 mph (127 knots)	S/N 1037-Subsequent	154 mph (134 knots)	*S/N 422-1036	154 mph (134 knots)
S/N 422-1036	146 mph (127 knots)						
S/N 1037-Subsequent	154 mph (134 knots)						
*S/N 422-1036	154 mph (134 knots)						
C.G. Range	<p>(+102.5) to (+106.0) at 2600 lb. (+102.5) to (+108.0) at 1950 lb. or less Straight-line variation in aft C.G. between weights shown (See Note 6 for 2690 lb. C.G. Range)</p>						
Empty Wt. C.G. Range	None						
Datum	Hull Sta. 0. (Hull Sta. 0 is 90.75 in. forward of the leading edge of the wing at side of hull).						
Maximum Weight	2600 lb. (See Note 6)						
Minimum Crew	1						
No. of Seats	4. 2 at (+61), 2 at (+92)						
Maximum Baggage	200 lb. (+118)						
Fuel Capacity	40 gal. (+118) Main Tank 14 gal. (+118) Aux. Fuel Tanks Optional (See Notes 6 and 9)						

IV. Lake Model LA-4-200 (cont'd)

Oil Capacity	2 gal. (6 qt. usable) (+117)				
Control Surface Movements	Elevator	Up	$26^{\circ} \pm 1^{\circ}$	Down	$23^{\circ} \pm 1^{\circ}$
	Ailerons	Up	$29^{\circ} + 2^{\circ}, - 1^{\circ}$	Down	$15^{\circ} \pm 1^{\circ}$
	Rudder	Right	$25^{\circ} \pm 1^{\circ}$	Left	$25^{\circ} \pm 1^{\circ}$
	Flaps			Down	$20^{\circ} \pm 1^{\circ}$
	Trim Tab	Up	$36^{\circ} + 2^{\circ}, - 1^{\circ}$	Down	$24^{\circ} + 2^{\circ}, - 1^{\circ}$
Aileron Cable Rigging Tension	25 lb. \pm 3 lb.				
Manufacturer's Serial Numbers	422, 430 through 444, 447 and up.				
Certification Basis	Type Certificate No. 1A13 (CAR 03, 15 December 1946, and Amendments 3-1 and 3-2.				
Equipment	The basic required equipment as prescribed in the applicable airworthiness requirements (see Certification Basis) must be installed in the aircraft for certification including the FAA-approved Airplane Flight Manual with its latest revision and appropriate supplements. Refer to the applicable equipment list for additional approved equipment.				

V. Lake Model 250; 4 PCAmM (Normal Category) Approved 30 June 1983; 6 PCAmM (Normal Category) Approved 12 April 1984

Lake Model 250, 4-place is the same as LA-4-200 except for engine installation, vertical and horizontal tail surface configuration, horizontal tail trim surface, rudder trim tab, hull length, cargo door, landing gear "footprint" geometry, structural modification to engine pylon and wing, and gross weight.

Lake Model 250-6-place is the same as Model 250, 4-place except for rear seat, auxiliary fuel (wing float) tanks are optional, increase in nose ballast, and tail ballast compartment.

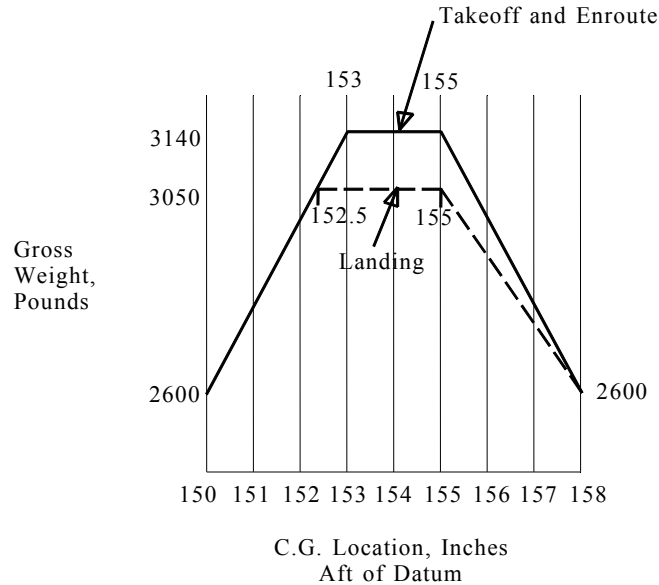
Engine	Lycoming IO-540-C4B5 (See Note 8.)			
Fuel	Minimum grade: aviation gasoline 100 or 100LL			
Engine Limits	For all operations, 2575 r.p.m. (250 hp)			
Propeller and Propeller Limits	1.	TRW Hartzell, hub HC-E3YR-1RLF, blades FL7663D-2Q Diameter: 76 inches (no outoff allowed) Pitch setting at 30 in. sta.: low 10.5° high 26.0° 36.6° optional		
	2.	TWR Hartzell hydraulic governor F-2-6A, F-2-6AZ or V3-3; or Woodward N210681.		
Airspeed Limits (CAS)	V_{ne} (never exceed)	170 mph (148 knots)		
	V_{fe} (flaps extended)	125 mph (109 knots)		
	V_{le}, V_{lo} (maximum landing gear extended, operating)	125 mph (109 knots)		
	V_a (maneuvering)	135 mph (117 knots)		
	V_{no} (maximum structural cruising)	135 mph (117 knots)		

V. **Lake Model 250** (cont'd)

C.G. Range

<u>C.G.</u>	<u>Gross Weight</u>
150 in.	2600 lb. or less
152.5 in.	3050 lb.
153 in.	3140 lb.
155 in.	3050 lb. (Landing)
155 in.	3140 lb. (Takeoff and Enroute)
158 in.	2600 lb. or less

Straight Line Variation Between Points Shown.



Empty Wt. C.G. Range	See Note 7.
Datum	Hull Sta. 0. (Hull Sta. 0 is 140.75 in. forward of the leading edge of the wing at side of hull).
Maximum Weight	Ramp: 3151 lb. Takeoff and Enroute: 3140 lb. Landing: 3050 lb.
Minimum Crew	1
No. of Seats	4-place: 2 at (+96), 2 at (+126) 6-place: 2 at (+96), 2 at (+126), 2 at (+147) (Total weight of rear seat occupants limited to 200 lb. maximum).
Maximum Baggage	200 lb. (+168)
Fuel Capacity	Main tank (+168) : 40.5 gal. total; 40 gal. usable Wing float tanks (optional on 6-place) (+168): 14.5 gal. total; 14 gal. usable. (See Note 9.)
Oil Capacity	12 qt. (+172)

V. **Lake Model 250** (cont'd)

Control Surface Movements	Rudder	Right	$25^{\circ} \pm 1^{\circ}$	Left	$20^{\circ} \pm 1^{\circ}$	
	Rudder Trim Tab	L/R	$33^{\circ} \pm 3^{\circ}$			
	Elevator	Up	$25^{\circ} + 1^{\circ}, -2^{\circ}$	Down	$27^{\circ} \pm 1^{\circ}$	
	Trim Surface	Up	$36^{\circ} + 2^{\circ}, -1^{\circ}$	Down	$24^{\circ} + 2^{\circ}, -1^{\circ}$	
	Flaps			Down	$20^{\circ} \pm 1^{\circ}$	
	Flaps Up:		1/2° min., 1° max. droop relative to bottom surface of wing at wing sta. 39 3/4			
	Ailerons	Up	$29^{\circ} + 2^{\circ}, -1^{\circ}$	Down	$15^{\circ} \pm 1^{\circ}$	
	Ailerons Neutral:		Up 5/8 in. \pm 1/8 in. from alignment with fixed outboard portion of wing trailing edge			
	Aileron Cable Rigging Tension	25 lb. \pm 3 lb.				
	Manufacturer's Serial Numbers	Model 250, 4-place: 1, 2, 3, and 4 Model 250, 6-place: 5 and up				
Certification Basis	<ol style="list-style-type: none"> 1. 14 CFR Part 23, 18 December 1964, Amendments 23-1 to and including 23-23, Subparts A, B, D, E, F, and G. 2. CAR 03, 15 December 1946, Amendments 3-1 and 3-2 as follows: <ol style="list-style-type: none"> a. 03.2 (03.20 to and including 03.254) with exception that Part 23.427(c) be complied with for tail surfaces. b. 03.02, Airplane Categories - Normal c. 03.3811, Emergency Provisions - Protection 3. 14 CFR Part 36, Appendix F, 18 December 1964, Amendments 36-1 to and including 36-10. 					

DATA PERTINENT TO ALL MODELS

Leveling Means Base of canopy, left or right side.

Production Basis None. Prior to original certification, an FAA representative must perform a detailed inspection for workmanship, materials, and conformity with the approved technical data, a final inspection of the completed aircraft, and a check of the flight characteristics.

NOTES

NOTE 1. All Models: Current weight and balance report, including list of equipment included in certificated empty weight, and loading instructions, must be in each aircraft at the time of original certification and at all times thereafter. The loading instructions are contained in the FAA-approved Airplane Flight Manual.

NOTE 2. Models C-1, C-2, LA-4, LA-4A, LA-4P, LA-4-200
The following placards must be displayed in full view of the pilot:

“THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE APPROVED AIRPLANE FLIGHT MANUAL.”

“NO ACROBATIC MANEUVERS, INCLUDING SPINS, APPROVED.”

All placards required in the approved airplane flight manual must be installed in the appropriate location.

- NOTE 2. (cont'd) Model 250
The following placards must be displayed in full view of the pilot:
- Operating Limitations:
“THE MARKINGS AND PLACARDS INSTALLED IN THIS AIRPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE NORMAL CATEGORY. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY ARE CONTAINED IN THE AIRPLANE FLIGHT MANUAL.”
- “THIS AIRPLANE IS CERTIFICATED FOR DAY OR NIGHT VFR OPERATIONS, AND MAY BE EQUIPPED FOR DAY OR NIGHT IFR OPERATIONS.”
- “FLIGHT INTO KNOWN ICING CONDITIONS IS PROHIBITED.”
- “NO ACROBATIC MANEUVERS, INCLUDING SPINS, APPROVED.”
- All placards required in the approved airplane flight manual must be installed in the appropriate location.
- NOTE 3. Reserved.
- NOTE 4. Model LA-4: Seaplane version is a Lake LA-4 modified in accordance with STC SA781EA approved 8 July 1969 and amended 28 November 1969, issued to Revo, Inc., P.O. Box 312, Sanford, Maine 04073, now located at 1396 Grandview Blvd., Kissimmee, Florida 34744.
- NOTE 5. Model LA-4-200: No structural change to LA-4-200 Type Design required for increase of V_{ne} speed. Increase of V_{ne} speed for aircraft S/N 422-1036 requires installation of Consolidated Aeronautics Kit K-137 and a compatibility investigation of previously approved modifications, alterations, or equipment installations, other than FAA- approved type certificate holder’s changes to the Type Design, in relation to the increase of V_{ne} speed.
- NOTE 6. Model LA-4-200: Maximum gross weight up to 2690 pounds is permitted when auxiliary fuel tanks (optional) are installed in accordance with weight and center of gravity limitations specified in Consolidated Aeronautics Flight Manual Supplement No. 4, December 28, 1973, as revised.
- NOTE 7. Model 250, 4-place: No empty weight C.G. range.
Model 250, 6-place: See Loading Instructions in approved airplane flight manual. Maximum removable ballast structural limitation: nose (+54.5) 130 lb.; tail (+284) 50 lb.
- NOTE 8. Model 250: Turbocharged version is a Lake Model 250 modified in accordance with STC AS469NE approved September 19, 1986 and amended March 31, 1988, issued to Revo, Inc., P.O. Box 312, Sanford, Maine 04073, now located at 1396 Grandview Blvd., Kissimmee, Florida 34744.
- NOTE 9. 34 gal. total usable fuel available in wing tanks (17 gal. each) installed in accordance with STC SA264NE approved May 23, 1984, and amended February 21, 1985, issued to Revo, Inc., P.O. Box 312, Sanford, Maine 04073, now located at 1396 Grandview Blvd., Kissimmee, Florida 34744.
- NOTE 10. 4-place version available for Lake Model 250, 6-place modified in accordance with STC SA745NE approved April 19, 1990, issued to Revo, Inc., P.O. Box 312, Sanford, Maine 04073, now located at 1396 Grandview Blvd., Kissimmee, Florida 34744.

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