

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

4A24
Revision 9
Atlantic Coast Seaplanes LLC
G-21C, G-21D
G-21E, G-21G

April 14, 2008

TYPE CERTIFICATE DATA SHEET NO.4A24

This data sheet which is a part of type certificate No. 4A24 prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Civil Air Regulations.

Type Certificate Holder Atlantic Coast Seaplanes LLC
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Type Certificate Holder Record: A.G. McKinnon transferred 4A24 to Viking Air Limited on June 6, 1984
Viking Air Limited transferred 4A24 to Aero Planes, Inc on September 4, 1998
TC 4A24 was reissued to Aero Planes, LLC on May 5, 2000
Aero Planes, LLC transferred 4A24 to Atlantic Coast Seaplanes LLC on
September 27, 2007.
TC 4A24 reissued to Atlantic Coast Seaplanes LLC on March 7, 2008.

I - Model G-21C (Normal Category) Approved 7 November 1958

Engines	Four Lycoming GSO-480-B2D6			
Fuel	100/130 minimum grade aviation gasoline			
Engine limits	(Straight line manifold pressure variation with altitudes as shown).			
	<u>H.P.</u>	<u>R.P.M.</u>	<u>MP</u>	<u>ALT.</u>
	340	3400	48.0	S.L.
	340	3400	44.5	8000
	320	3200	45.0	S.L.
	320	3200	43.0	7500
Propeller and propeller limits	Four Hartzell constant speed propellers, hubs HC-83XF-3A, blades 9333CH-0. Diameter: Max. 93 in., min. allowable for repairs 91 in. No further reduction permitted. Pitch settings at 30 in. station: Low 17.5°, feathered 85°, reverse -23° Placard required: "Avoid continuous operation between 2800 and 3100 R.P.M."			
Airspeed limits	Vne Never exceed	264 m.p.h. (229 knots)		
	Vno Maximum structural cruising	211 m.p.h. (183 knots)		
	Va Maneuvering	174 m.p.h. (151 knots)		
	Vfe Flaps extended	137 m.p.h. (119 knots)		
	Vlo Landing gear operation	211 m.p.h. (183 knots)		
	Vle Landing gear extended	211 m.p.h. (183 knots)		
	Vmc Minimum control	123 m.p.h. (107 knots)		
C. G. range* (Landing gear extended)	(+22.0) (17.0% MAC) to (+29.6) (24.9% MAC) <i>*NOTE: The main gear retracts parallel to the wing reference axis; hence, this has no effect on airplane C.G.</i>			
Empty weight C.G. range	None			

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I - Model G-21C (cont'd)

Maximum weights	Takeoff	12499 lb.		
	Landing (on land)	12000 lb.		
	Landing (on water)	12499 lb.		
	Maximum zero fuel weight	11500 lb.		
Minimum crew	One			
No. of seats	9. (2 at -5, 2 at +24, 2 at +62, 1 at +118, 1 at +127, and 1 at +136)			
Maximum baggage	Fwd. compartment	300 lb. (-65)		
	Aft compartment	400 lb. (+169)		
Fuel capacity	See NOTE 1(b) for information relative to usable fuel.			
		<u>Total</u>		<u>Usable</u>
	2 main tanks	184 gal. ea. (+30)		183 gal. ea.
	1 aux. tank	82 gal. (+30)		81 gal.
	Total usable fuel			447 gal.
Oil capacity	24 gal. (6 gal. per engine) (+3)			
Control surface movements	Wing flaps		Down	40°
	Main surfaces	Aileron	Up 22°	Down 17°
		Elevator	Up 26°	Down 21°
		Rudder	Right 23°	Left 17°
	**Tabs	Elevator	Up 16-1/2°	Down 22-1/2°
		Rudder	Right 17-1/2°	Left 21°
	**Set rudder tab 2-1/2° to the left, with indicator (in cockpit) set on 0° or takeoff position. Left and right travel taken from this position.			
Serial Nos. eligible	1202, 1204			

II - Model G-21D (Normal Category) Approved 29 June 1960

The Model G-21D differs from the Model G-21C in that the bow has been lengthened 36 in. to accommodate increased passenger loading and the horizontal stabilizer and rudder tab have been increased in span for the increased controllability.

Engines	Four Lycoming GSO-480-B2D6			
Fuel	100/130 minimum grade aviation gasoline			
Engine limits	(Straight line manifold pressure variation with altitudes as shown).			
		<u>H.P.</u>	<u>R.P.M.</u>	<u>MP</u>
	Takeoff (5 minutes)	340	3400	48.0
	Takeoff (5 minutes)	340	3400	44.5
	Maximum continuous	320	3200	45.0
	Maximum continuous	320	3200	43.0
Propeller and propeller limits	Four Hartzell constant speed propellers, hubs HC-83XF-3A, blades 9333CH-0. Diameter: Max. 93 in., min. allowable for repairs 91 in. No further reduction permitted.			
	Pitch setting at 30 in. station: Low 17.5°, feathered 85°, reverse -23°			
	Placard required: "Avoid continuous operation between 2800 and 3100 R.P.M."			

II - Model G-21D (cont'd)

Airspeed limits	Vne Never exceed	264 m.p.h. (229 knots)
	Vno Maximum structural cruising	211 m.p.h. (183 knots)
	Va Maneuvering	174 m.p.h. (151 knots)
	Vfe Flaps extended	137 m.p.h. (119 knots)
	Vlo Landing gear operation	211 m.p.h. (183 knots)
	Vle Landing gear extended	211 m.p.h. (183 knots)
	Vmc Minimum control	123 m.p.h. (107 knots)
C. G. range* (Landing gear extended)	(+19.6) (14.5% MAC) to (+29.5) (24.8% MAC) *NOTE: The main gear retracts parallel to the wing reference axis; hence, this has no effect on airplane C.G.	
Empty weight C.G. range	None	
Maximum weights	Takeoff	12499 lb.
	Landing (on land)	12000 lb.
	Landing (on water)	12499 lb.
	Maximum zero fuel weight	11500 lb.
No. of seats	14, (2 at -100.5, 2 at -64.5, 2 at -5, 2 at +29, 2 at +91, 2 at +147.5, and 2 at +177)	
Maximum baggage	Fwd. compartment	300 lb. (-80)
Fuel capacity	See NOTE 1(b) for information relative to unusable fuel.	
	<u>Total</u>	<u>Usable</u>
	2 main tanks	170 gal. ea. (+30)
	Total usable fuel	168.5 gal. ea. 337 gal.
Oil capacity	24 gal. (6 gal. per engine) (+3)	
Control surface movements	Wing flaps	Down 40°
	Main surfaces	Aileron Up 22° Down 17°
		Elevator Up 26° Down 21°
		Rudder Right 23° Left 17°
	**Tabs	Elevator Up 16-1/2° Down 22-1/2°
		Rudder Right 17-1/2° Left 21°
	**Set rudder tab 6° to the left, with indicator (in cockpit) set on 0° or takeoff position. Left and right travel taken from this position.	
Serial Nos. eligible	1251 through 1255	

III - Model G-21E (Normal Category) Approved July 17, 1969

The Model G-21E is similar to the Model G-21C except for the engine installation and related changes. A Model G-21C that has been modified in accordance with Supplemental Type Certificate No. SA1320WE is identical to the Model G-21E.

Engines 1. Two United Aircraft of Canada Lts. PT6A-20

Fuel	JP-4 and JP-5 fuels conforming to Pratt & Whitney Aircraft Specification No. 522.
Oil	Refer to UACL PT6 Engine Service Bulletin No. 1001 for eligible oils. (Not eligible with MIL-L-7808 type oils.)

III - Model G-21E (cont'd)

Engine ratings		(Static Sea Level)			
		Shaft Horse- power	Jet Thrust Lb.	Equivalent Shaft Horsepower	Propeller Speed RPM
	For all operations except reverse	550	72	579	2200
	For reverse (one min.)	500			2100
Engine limits for all operations		Torque Lb-Ft	Propeller RPM	Gas Generator RPM	Inter Turbine Temperature Deg. Cent.
		1315	2200	38,100*	750**

*Maximum gas generator overspeed limit - 38,500 rpm for 10 seconds.

**Maximum inter turbine temperature during starting - 1994°F. (1090°C) for two seconds.

Oil temperature Minus 40°F. (-40°C) Minimum
Plus 210°F. (99°C) Maximum

Oil pressure At 28,000 rpm gas generator speed and higher - 65 psi Minimum
85 psi Maximum
Below 28,000 rpm gas generator speed - 40 psi Minimum

2. Two United Aircraft of Canada Ltd. PT6A-27 installed in accordance with the McKinnon Master Drawing List MPD 90996 dated May 1, 1970, or subsequent FAA approved revisions.

Fuel JP-4 and JP-5 fuels conforming to Pratt & Whitney Aircraft Specification No. 522.

Oil Refer to UACL PT6 Engine Service Bulletin No. 1 for eligible oils. (Not eligible with MIL-L-7808 type oils.)

Engine ratings		(Static Sea Level)			
		Shaft Horse- power	Jet Thrust Lb.	Equivalent Shaft Horsepower	Propeller Speed RPM
	For all operations except reverse	680	90	715	2200
	For reverse (one min.)	620			2100
Engine limits (Max for all operations unless noted otherwise)		Torque Lb-Ft	Propeller RPM	Gas Generator RPM	Inter Turbine Temperature Deg. Cent.
		1628	2200	38,100*	1336°F. (725°C)**

*Maximum gas generator overspeed limit - 38,500 rpm for 10 seconds.

Minimum gas generator speed for idle - 19,000 rpm

**Maximum inter turbine temperature during starting - 1994°F. (1090°C) for two seconds.

Maximum inter turbine temperature for idle - 122 F. (660°C.)

III - Model G-21E (cont'd)

Oil temperature	Minus 40°F. (-40°C.) Minimum Plus 210°F. (99°C.) Maximum	
Oil pressure	At 27,000 rpm gas generator speed and higher: and oil temperature of 140 - 160°F	80 psi Minimum 100 psi Maximum
	Below 27,000 rpm gas generator speed	40 psi Minimum
Propeller and propeller limits	Two Hartzell constant speed propellers, hubs HC-B3TN-3, blades T10178HB. Diameter: Max. 96 in. No further reduction permitted. Pitch setting at 30 in. station: Low (flight idle) 20° +0° -0.5°, high (feather) 86° ± 1°, reverse -11.0° ± 0.5°	
Airspeed limits	Maximum operating speed	*211 m.p.h. (183 knots)
	Maneuvering speed	174 m.p.h. (151 knots)
	Flaps extended speed	110 m.p.h. (96 knots)
	Landing gear operating speed	160 m.p.h. (139 knots)
	Landing gear extended speed	160 m.p.h. (139 knots)
	*236 m.p.h. (205 knots) when PT6A-27 engines are installed	
C.G. range	With PT6A-20 engines +21.5 to +29.5 at 10,500 lb. +19.6 to +29.5 at 8,562 lb. Straight line variation between points given	
	With PT6A-27 engines +22.0 to +29.5 at all weights	
Empty weight C.G. range	None	
Maximum weights	Takeoff	10,500 lb.
	Landing (on land)	10,500 lb.
	Landing (on water)	10,500 lb.
	Zero fuel weight, land & water	10,182 lb.
Minimum crew	One	
No. of seats	9. (2 at -5, 2 at +24, 2 at +62, 1 at +118, 1 at +127, and 1 at +136)	
Maximum baggage	Fwd. compartment	602 lb. (-65)
	Aft compartment	400 lb. (+169)
Fuel capacity	1. Two main tanks (+30) Total 110 gal., 715 lb. each Usable 108.5 gal., 705 lb. each	
	2. Two outboard auxiliary tanks (+30) Total 60 gal., 390 lb. each Usable 60 gal., 390 lb. each	
	3. Optional Main Tanks in lieu of Item 1 above (+30) Total 168 gal., 1092 lb. each Usable 166.5 gal., 1082 lb. each	

NOTE: Fuel quantity must not exceed weights shown.
See NOTE 1 for system fuel.

III - Model G-21E (cont'd)

Oil capacity 4.6 gallons total in two integral engine tanks of 2.3 gallons each
3.0 gallons total usable

See NOTE 1 for system oil.

Control surface movements All controls plus (+) or minus (-) 1°
 Aileron Up 20° Down 20°
 Elevator Up 23° Down 20°
 Rudder Right 27° Left 26°
 Flaps Down 60°
 Elevator tab Up 10° Down 30°
 *Rudder tab Right 15° Left 25°

*Set rudder tab 2-1/2° to the left, with indicator (in cockpit) set on 0° (takeoff position). Left and right travel taken from this position.

Control surface mass balane Elevator + 90 ± 21 in. lb.
 Rudder +130 + 20 in. lb.
 Aileron 0 + 10
 - 13.6 in. lb.

Serial Nos. eligible 1211 through 1225

IV - Model G-21G (Normal Category) Approved August 29, 1969

The Model G-21G is similar to the Model G-21E except for the engine installation, revised fuel system, increased weights and airspeed limits, and related changes.

Engines Two United Aircraft of Canada Ltd. PT6A-27
 Optional: Two United Aircraft of Canada Ltd. PT6A-28

Fuel JP-4 and JP-5 fuels conforming to Pratt & Whitney Aircraft Specification No. 522.

Oil Refer to UACL PT6 Engine Service Bulletin No. 1001 for eligible oils. (Not eligible with MIL-L-7808 type oils.)

Engine ratings (Static Sea Level)

	Shaft Horse- power	Jet Thrust Lb.	Equivalent Shaft Horsepower	Propeller Speed RPM
For all operations except reverse	680	90	715	2200
For reverse (one min.)	620			2100

Engine limits (Max. for all operations unless noted otherwise.)	Torque Lb-Ft	Propeller RPM	Gas Generator RPM	Inter Turbine Temperature Deg. Cent.
PT6A-27:	1628	2200	38,100*	1336°F. (725°C)**
PT6A-28:	1628	2200	38,100*	1382°F. (750°C)**

*Maximum gas generator overspeed limit - 38,500 rpm for 10 seconds.

Minimum gas generator speed for idle - 19,000 rpm

**Maximum inter turbine temperature during starting - 1994°F. (1090°C) for two seconds.

Maximum inter turbine temperature for idle - 122 F (660°C.)

IV - Model G-21G (cont'd)

Oil temperature	Minus 40°F. (-40°C) Minimum Plus 210°F. (99°C) Maximum
Oil pressure	At 27,000 rpm gas generator speed and higher; - 80 psi Minimum and oil temperature of 140 - 160°F. 100 psi Maximum Below 27,000 rpm gas generator speed - 40 psi Minimum
Propeller and propeller limits	Two Hartzell constant speed propellers, hubs HC-B3TN-3, blades T10178HB. Diameter: 96 in. No further reduction permitted. Pitch settings at the 30 in. station: Low (flight idle) 20° +0° -0.5°, High (feather) 86° ± 1°, reverse -11.0° ± 0.5°
Airspeed limits (EAS)	Maximum operating speed 236 m.p.h. (205 knots) Maneuvering speed 174 m.p.h. (151 knots) Flaps extended speed 110 m.p.h. (96 knots) Landing gear operating speed 160 m.p.h. (139 knots) Landing gear extended speed 160 m.p.h. (139 knots)
C.G. range	(+22.0) (17.0% MAC) to (+29.9% MAC)
Empty weight C.G. range	None
Maximum weights	Takeoff 12,500 lb. Landing (on land) 12,000 lb. Landing (on water) 12,500 lb. Zero fuel weight, land & water 10,182 lb. Alternate weight limits for airplanes assembled without full main cabin floor sealing. Takeoff (on land) 12,500 lb. Takeoff (on water) 10,500 lb. Landing (on land) 12,000 lb. Landing (on water) 10,500 lb. Zero fuel weight, land & water 10,182 lb.
Minimum crew	One
No. of seats	Ten. (2 at -5, 2 at +29, 2 at +91, 2 at +147.5, and 2 at +177)
Maximum baggage	Fwd. compartment 602 lb. (-65)
Fuel capacity	1. Two inboard main tanks (+30) Total 168 gal., 1092 lb. each Usable 166.5 gal., 1082 lb. each 2. Two outboard main tanks (+30) Total 125 gal., 812 lb. each Usable 118 gal., 767 lb. each 3. Optional outboard tanks in lieu of Item 2 above (+30) Two outboard auxiliary tanks (+30) Total 60 gal., 390 lb. each Usable 60 gal., 390 lb. each Total fuel for items 1 and 2: 586 gal. with 569 gal useable Total fuel for items 1 and 3: 456 gal. with 453 gal useable See NOTE 1(b) for system fuel.
Oil capacity	4.6 gallons total in two integral engine tanks of 2.3 gallons each 3.0 gallons total usable See NOTE 1(c) for system oil
Maximum operating altitude	20,000 ft.

IV - Model G-21G (cont'd)

Control surface movements	All controls plus (+) or minus (-) 1°			
	Aileron	Up	20°	Down 20°
	Elevator	Up	30°	Down 20°
	Rudder	Right	27°	Left 26°
	Flaps			Down 60°
	Elevator tab	Up	10°	Down 30°
	Rudder tab*	Right	15°	Left 25°
	Set rudder tab 2-1/2° to the left, with the indicator (in cockpit) set on 0° takeoff position. Left and right travel taken from this position.			
Control surfaces	Elevator	+90 ± 21.0 in. lb.		
mass balance	Rudder	+130 ± 20.0 in. lb.		
	Aileron	0 ± 10.0 in. lb.		
		- 13.6 in. lb.		
Serial Nos. eligible	1201, 1203, 1205, 1226 through 1250			

DATA PERTINENT TO ALL MODELS

Datum	Wing leading edge at side of fuselage (+5.7 in forward MAC leading edge where length = 95.9 in MAC)
Leveling means	6 in above floor at sta. 9 (Instrument Panel) and sta. 11. Wing level right side fuselage at sta. 12.
Certification basis	Models G-21C and G-21D CAR 3 effective May 15, 1956 with no amendments. Models G-21E and G-21G (1) For the powerplant installation - FAR 23 including Amendments 23-1 through 23-6 (2) For areas other than the powerplant installation - CAR 3 effective May 15, 1956 with no amendments. (3) Special Conditions dated May 5, 1969. (4) Exemption No. 555 from FAR 21.19(b) issued July 6, 1966. Type Certificate No. 4A24 issued November 7, 1958, amended June 29, 1960, amended July 17, 1958, amended August 29, 1969. Application for type certificate dated February 21, 1957.
Production basis	Production Certificate No. 409. Since the Model G-21C, G-21D, G-21E and G-21G are conversion of the basic Grumman Models G-21 and G-21A (Type Certificate No. 654), the applicable portions of the following Airworthiness Directives must be complied with: 49-16-1, 53-20-2, 53-24-1, and 63-27-2.
Equipment	The basic required equipment as prescribed in the applicable Airworthiness Regulations (see Certification Basis) must be installed in the aircraft for certification. In addition, the following items of equipment are required: (1) Approved equipment as shown in the following McKinnon Reports: (a) Model G-21C - No. MC-3-3-29 (b) Model G-21D - No. MC-14-20 (c) Model G-21E - No. MPD-90010 (d) Model G-21G - No. MPD-90110 (2) FAA Approved Airplane Flight Manual.

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- NOTE 1.
- (a) Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions when necessary must be in each aircraft at the time of original certification and at all times thereafter except in the case of operators having an approved weight control system.
 - (b) The certificated empty weight and corresponding center of gravity location must include system fuel (unusable) of 18 lb. at (+30) for Models G-21C and G-21D and 20 lb. at (+30) for Model G-21E and 110 lb. at (+30) for the Model G-21G with 586 gal total fuel and 20 lb at (+30) for the Model G-21G with 456 gal total fuel.
 - (c) The certificated empty weight and corresponding center of gravity locations must include system oil (unusable) of 12 lb. at (-42.5) for Models G-21E and G-21G.

NOTE 2. The following placards must be installed in full view of the pilot unless noted otherwise:

- (1) "This airplane must be operated as a normal category airplane in compliance with the FAA Approved Airplane Flight Manual. No acrobatic maneuvers including spins are approved."
- (2) Model G-21C only - "Use auxiliary tank for cruise only."
- (3) Model G-21C and G-21D with Lycoming GSO-480-B2D6 engine - "Avoid continuous operation between 2800 and 3100 rpm."
- (4) Models G-21C and G-21D only - "Maximum capacity 300 lb." adjacent to forward baggage compartment.
- (5) Models G-21E and G-21G only - "Maximum capacity 602 lb." adjacent to forward baggage compartment.
- (6) Models G-21C and G-21E only - "Maximum capacity 400 lb." adjacent to rear baggage compartment.

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