DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

1A21
Revision 11
AERO COMMANDER
(Volaire) 10
(Volaire) 10A
(Aero Commander) 100
(Aero Commander) 100A
(Aero Commander) 100-180

August 11, 1989

TYPE CERTIFICATE DATA SHEET NO. 1A21

This data sheet which is a part of Type Certificate No. 1A21 prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Civil Air Regulations/Federal Aviation Regulations.

Type Certificate Holder — Dynac Aerospace Corporation (See Note X)
672 S Washington St.
Afton, Wyoming 83110

I. Volaire Model 10, 3 PCLM (Normal Category), 2 PCLM (Utility Category), approved November 30, 1961. Aero Commander Model 100A, 3PCLM (Normal Category), 2 PCLM (Utility Category) Volaire Model 10 designations changed to Aero Commander Model 100A on September 30, 1965.

Engine — Lycoming O-290-D2C (Carburetor setting #10-3561-1)

Fuel — 80/87 minimum grade aviation gasoline

Engine Limits — For all operations, 2600 r.p.m. (135 hp)

Propeller and Propeller Limits — Sensenich (fixed pitch) Model M74DM 31.5 lb. (-62.3)
Static r.p.m. at maximum permissible throttle setting:
Not over 2240, not under 2190
No additional tolerance permitted.
Diameter: Not over 74 in., not under 71.5 in.

Airspeed Limits (CAS)

V_{ne}	(never exceed)	155.0 m.p.h. (135.0 knots)
V_{no}	(max. structural cruising)	135.0 m.p.h. (117.0 knots)
V_p	(maneuvering)	99.5 m.p.h. (86.5 knots) (normal category)
		108.0 m.p.h. (94.0 knots) (utility category)
V_{fe}	(flaps extended)	80.0 m.p.h. (69.0 knots)

C.G. Range

Normal	(14.35) to (18.90) at 1900 lbs.
	(11.75) to (18.90) at 1560 lbs.
Utility	(12.45) to (15.20) at 1650 lbs.
	(11.75) to (15.20) at 1560 lbs.

Straight line variation between points given.

Empty Wt. C.G. Range — None

Maximum Weight

Normal	1900 lbs.
Utility	1650 lbs.

No. of Seats — 3 - (2 at +13.4, 1 at +48.4)

Maximum Baggage	188 lbs. maximum with rear seat removed.
Fuel Capacity	32 gal. total, 31.2 gal. usable. (Two 16 gal. tanks in wing at +23.4)
Oil Capacity	2 gal. (-43.6)

Control Surface Movements

Aileron	Up	18°	Down	17°
Elevator tab	Up	15°	Down	30°
Elevator	Up	25°	Down	32°
Rudder	Left	26°	Right	26°
Flap	Up	0°	Down	40°

Serial Nos. Eligible

Volaire Model 10:
10-012, 10-013, and 10-014

Aero Commander Model 100A:
010, 011, 015 through 025

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:

(a) FAA Approved Airplane Flight Manual dated November 30, 1961, revised February 7, 1962.

(b) Pre-stall warning device, Model 164R manufactured by Safe Flight Instrument Corporation.

Datum: Leading edge of wing

II. Volaire Model 10A, 4 PCLM (Normal Category), approved June 1, 1965.
Aero Commander Model 100, 4 PCLM (Normal Category)

Volaire Model 10A designation changed to Aero Commander Model 100 on September 30, 1965.

Engine	Lycoming O-320-A2B or O-320-A2C (carburetor setting 10-3678-32)
Fuel	80/87 minimum grade aviation gasoline
Engine Limits	For all operations, 2700 rpm (150 hp)
Propeller and Propeller Limits	Sensenich (fixed pitch metal) M74DM Sensenich Spinner No. 2 (32 lb. (-61.6) Static rpm at maximum permissible throttle setting: Not over 2385, not under 2235 Diameter: Not over 74 in., not under 72.5 in.

Airspeed Limits (CAS)

V_{ne} (never exceed)	170 m.p.h.	(147.5 knots)
V_{no} (max. structural cruising)	135 m.p.h.	(117.0 knots)
V_p (maneuvering)	111 m.p.h.	(96.4 knots)
V_{fe} (flaps extended)	105 m.p.h.	(91.1 knots)

C.G. Range	(14.35) to (18.9) at 2250 lbs. (11.75) to (18.9) at 1700 lbs. Straight line variation between points given.
Maximum Weight	2250 lbs.
No. of Seats	4 - (2 at +13.4, 2 at +48.4)

Maximum Baggage	120 lbs.
Fuel Capacity	44 gal. total, 40 gal. usable (two 22 gal. tanks in wing at +24.0)
Oil Capacity	2 gal. (-40.4)

Control Surface Movements

Aileron	Up	19° ± 2°	Down	17° ± 2°
Elevator tab	Up	20° ± 2°	Down	20° ± 2°
Elevator	Up	25° ± 2°	Down	20° ± 2°
Rudder	Left	25° ± 2°	Right	25° ± 2°
Flap	Up	0°	Down	30° ± 2°

Serial Nos. Eligible

Volaire Model 10A:
10A-026, 10A-027, 10A-028, 10A-029
10A-030 and 10A-033

Aero Commander Model 100:
031, 032, 034-039, 041, 042, 044-067, 069 and up

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:

(a) Pre-stall warning device, Model 164R, manufactured by Safe Flight Instrument Corporation.

(b) FAA Approved Airplane Flight Manual dated July 8, 1965.

(c) Sensenich Spinner No. 2 installed in accordance with Volaire Drawing No. A1-11-100.

Datum: Leading edge of wing

III. Aero Commander Model 100-180, 4 PCLM (Normal Category), approved September 26, 1967.

Engine: Lycoming O-360-A2F, MA-4-5 (carburetor setting 10-3878)

Fuel: 100 minimum grade aviation gasoline

Engine Limits: For all operations, 2700 r.p.m. (180 hp)

Propeller and Propeller Limits

McCauley 1A170/CFA
35.0 lbs. (-47.0)
Static rpm at maximum permissible throttle setting: Not over 2410, not under 2310
Diameter: 76 in.

Airspeed Limits (CAS)

V_{ne}	(never exceed)	176 m.p.h. (154 knots)
V_{no}	(max. structural cruising)	140 m.p.h. (121 knots)
V_p	(maneuvering)	116 m.p.h. (100 knots)
V_{fe}	(flaps extended)	105 m.p.h. (91.1 knots)

C.G. Range

Serial Nos. 068 and 5001 through 5100
(36.15) at 2100 lbs., varying linearly to (40.55) at 2450 lbs.
(46.25) at 2450 lbs., aft limit at maximum allowable weight

Serial No. 5101 and above
(36.15) at 2100 lbs., varying linearly to (40.95) at 2475 lbs.
(46.25) at 2475 lbs., aft limit at maximum allowable weight

Maximum Weight	Serial Nos. 068 and 5001 through 5100 2450 lbs. Serial No. 5101 and above 2475 lbs.
No. of Seats	4 - (2 at +39.2, 2 at +74.2)
Maximum Baggage	120 lbs. (+152.4)
Fuel Capacity	44 gal. total, 40 gal. usable (two 22 gal. tanks in wing at +49.8)
Oil Capacity	2 gal. (-21.0)

Control Surface Movements

Aileron	Up	19° ± 2°	Down	17° ± 2°
Elevator tab	Up	20° ± 2°	Down	20° ± 2°
Elevator	Up	25° ± 2°	Down	20° ± 2°
Rudder	Left	25° ± 2°	Right	25° ± 2°
Flap	Up	0°	Down	30° ± 2°

Serial Nos. Eligible	Aero Commander Model 100-180 068, 5001 and up.
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: (a) Pre-stall warning device, Dialco 82-1312-0111-201. (b) FAA Approved Airplane Flight Manual dated September 25, 1967.
Datum	Front face of engine firewall.

Specifications Pertinent to all Models

Leveling Means	Top of fuselage immediately aft of cabin.
Certification Basis	CAR 3 dated May 15, 1956, including Amendments 3-1 to 3-4 inclusive. Type Certificate No. 1A21 issued November 30, 1961. Date of application for Type Certificate January 26, 1959.
Production Basis	None

NOTE 1. Current weight and balance report including list of equipment included in the certificated empty weight and loading instructions when necessary, must be provided for each aircraft at the time of original certification.

(a) For the Volaire Model 10 and Aero Commander Model 100A, the certificated empty weight and corresponding center of gravity location must include unusable fuel of 6 lb. at (+23.4) and unusable oil of 7.5 at (-43.6).

(b) For the Volaire Model 10A and the Aero Commander Model 100, the certificated empty weight and corresponding center of gravity must include unusable fuel of 24 lbs. at (+24.0) and unusable oil of 6 lbs. at (-40.4).

(c) For the Aero Commander Model 100-180, the certificated empty weight and corresponding center of gravity must include unusable fuel of 24 lbs. at (+50.6) and unusable oil of 6 lbs. at (-21.0).

NOTE 2. The following placards must be displayed:

(a) Volaire Model 10 and Aero Commander Model 100A
(1) On the instrument panel in full view of the pilot:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL OR UTILITY CATEGORY AIRPLANE IN COMPLIANCE WITH THE APPROVED AIRPLANE FLIGHT MANUAL."

"NO ACROBATIC MANEUVERS (INCLUDING SPINS) ARE APPROVED FOR NORMAL CATEGORY OPERATIONS."

"RETRACT FLAPS IMMEDIATELY IF SPIN IS INADVERTENTLY ENTERED."

(2) On the center of the rear deck panel fairing, facing forward:

"BAGGAGE CAPACITY = 50 LBS. WITH MAXIMUM LOAD AT REAR SEAT NOT EXCEEDING 138 LBS."

(b) Volaire Model 10A and Aero Commander Model 100

(1) On the instrument panel in full view of the pilot:

"ALL INTENTIONAL ACROBATIC MANEUVERS INCLUDING SPINS PROHIBITED. RETRACT FLAPS IMMEDIATELY IF SPIN IS INADVERTENTLY ENTERED. OPERATE IN NORMAL CATEGORY IN COMPLIANCE WITH APPROVED FLIGHT MANUAL."

(2) On the center of the rear deck panel fairing, facing forward:

"BAGGAGE CAPACITY 120 LBS."

(c) Aero Commander Model 100-180

(1) On the instrument panel in full view of the pilot:

"ALL INTENTIONAL ACROBATIC MANEUVERS INCLUDING SPINS PROHIBITED. RETRACT FLAPS IMMEDIATELY IF SPIN IS INADVERTENTLY ENTERED. OPERATE IN NORMAL CATEGORY IN COMPLIANCE WITH APPROVED FLIGHT MANUAL."

(2) On inboard side of baggage door:

"MAXIMUM WEIGHT IN BAGGAGE COMPARTMENT NOT TO EXCEED 120 LBS. SEE WEIGHT AND BALANCE INFORMATION FOR ALLOWABLE LOADING."

NOTE 3. The Aero Commander Model 100 aircraft prior to S/N 153 are approved for day VFR operations only. This restriction removed upon approved installation of Aero Commander Kit No. SBK 1007.

NOTE 4. The Volaire Model 10A and Aero Commander Model 100 may be operated with the right door removed in accordance with the FAA approved Airplane Flight Manual revised June 1967.

NOTE 5. All operations are approved with or without the propeller spinner for the Model 100-180.

NOTE 6. Christen Industries, Inc., P.O. Box 547, Afton, Wyoming 83110, is licensed by Dynac Aerospace Corporation to manufacture and obtain airworthiness certificates for Models 100, 100A, and 100-180 airplanes listed in this type certificate data sheet.

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