DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A18EA
Revision 9

2T-1A
2T-1A-1
2T-1A-2

August 17, 1993

TYPE CERTIFICATE DATA SHEET A18EA

This data sheet which is a part of Type Certificate No. A18EA prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder	Chaparral Motors, Inc. P.O. Box 21 Palmer Lake, Colorado 80133

I - Model 2T-1A, 1 or 2 POLB, Approved 1/14/72

Engine	American Cirrus Mark III	
Fuel	73 minimum octane aviation gas	
Engine limits	Takeoff	2100 r.p.m. (100 hp.)
	Maximum Continuous	2100 r.p.m. (100 hp.)
Propeller and propeller limits	Fixed pitch wood or adjustable metal (Hamilton Standard 7020 hub, 25V2 blades) See NOTE 4	
Airspeed limits (CAS)	Maximum speed (S.L.)	100 m.p.h.. (95.5 knots)
	Landing speed	40 m.p.h. (34.8 knots)
	Cruising speed	90 m.p.h. (78.2 knots)
M.A.C.	45.75 in. (L.E. of MAC is 10 in. forward of leading edge of lower wing)	
Maximum weight	1618 lb.	
Minimum Crew	1 (pilot)	
No. of seats	Two	
Maximum baggage	13 lb. as 2-place 200 lb. as 1-place (Pay load includes 2 parachutes, 20 lb. each)	
Fuel capacity	26 gal. (+60.5)	
Oil capacity	8 qt. (+22.5)	

Control surface movements	Aileron	(±1°)	Up	24°	Down	22°
	Stabilizer	(±1/2°)	Up	7-1/4°	Up	1/4°
	Elevator	(±1°)	Up	21°	Down	29°
	Rudder	(±1°)	Left	35°	Right	35°

Serial Nos. eligible: 0501 and 0502
See NOTE 5

II - Model 2T-1A-1, 1 or 2 POLB (Acrobatic Category) (See NOTE 6), Approved 12/17/73

Engine: Lycoming O-320-E2A installed per Great Lakes Dwg. 50123; or Lycoming IO-360-B1F6 or AEIO-360-B1G6 installed per Great Lakes Dwg. 50148

Fuel: Lycoming O-320-E2A, 80/87 minimum grade aviation fuel

Lycoming IO-360-B1F6 and AEIO-360-B1G6, 91/96 minimum grade aviation fuel

Engine limits:

Lycoming O-320-E2A

Takeoff2	2450 r.p.m. (140 hp.)
Maximum Continuous	2450 r.p.m. (140 hp.)

Lycoming IO-360-B1F6 and AEIO-360-B1G6

Takeoff	2700 r.p.m. (180 hp.)
Maximum continuous	2700 r.p.m. (180 hp.)

Propeller and propeller limits:

Lycoming O-320-E2A
McCauley 1C160-EGM 7654
Diameter: Not over 76 in., not under 74.5 in.
Static r.p.m. at maximum permissible throttle setting:
Not over 2350 r.p.m., not under 2250 r.p.m.
No additional tolerance permitted.

Lycoming IO-360-B1F6 and AEIO-360-B1G6,
(a) Hartzell HC-C2YK-4F/FC7666A-2
Diameter: 74.0 in.
No reduction allowed
Pitch settings at 30 in. sta.:
low 12.5°, high 26.8°
(b) Hartzell Spinner P/N 835-41
(c) Hartzell Hydraulic Governor No. F6-31

Airspeed limits (CAS):

	Landplane
Never exceed	142 m.p.h. (124 knots)
Max. structural cruise	120 m.p.h. (105 knots)
Maneuvering	120 m.p.h. (105 knots)

M.A.C.: 46.0 in. (L.E. of MAC is Sta. 9.0)

C.G. Range:
(15.7) at 1600 lb. or less
(18.9 to 23.0) at 1750 lb.
Straight line variation between points given

Empty Wt. C.G.: None

Maximum weight: 1750 lb.

No. of seats: 2 (1 at 27.5, 1 at 61.5)

Maximum baggage	40 lb. (+92.0)
Fuel capacity	27.4 gal. (+26.7 gal. usable, one 26.0 gal. tank in top wing at +13.0 and one 1.4 gal. header tank in fuselage at +5.0). (Lycoming IO-360-B1F6 and AEIO-360-B1G6) See NOTE 1 for data on unusable fuel 26 gal. (26.0 gal. usable, one 26 gal. tank in top wing at +13.0) (Lycoming O-320-E2A) See NOTE 1 for data on unusable fuel
Oil capacity	8 qt. (-24.0) (4 qt. usable) Lycoming IO-360-B1F6 and AEIO-360-B1G6 8 qt. (-24.0) (6 qt. usable) Lycoming O-320-E2A See NOTE 1 for data on oil system

Control surface movements

Aileron	(±1°)	Up	24°	Down	22°
for both 2-aileron and 4-aileron configuration					
Stabilizer	(±1/2°)	Up	7-1/4°	Up	1/4°
Elevator	(±1°)	Up	21°	Down	29°
Rudder	(±1°)	Left	35°	Right	35°

Serial Nos. eligible	0503 and 0699 See NOTE 5

I - Model 2T-1A-2, 1 or 2 POLB (Acrobatic Category) (See NOTE 6) Approved 7/25/74

Engine	Lycoming IO-360-B1F6 or AEIO-360-B1G6 installed per Great Lakes Dwg. 50148 or Lycoming O-320-E2A installed per Great Lakes Dwg. 50123
Fuel	Lycoming IO-360-B1F6 and AEIO-360-B1G6, 91/96 minimum grade aviation fuel Lycoming O-320-E2A, 80/87 minimum grade aviation fuel
Engine limits	Lycoming IO-360-B1F6 and AEIO-360-B1G6 Takeoff 2700 r.p.m. (180 hp.) Maximum Continuous 2700 r.p.m. (180 hp.) Lycoming O-320-E2A Takeoff 2450 r.p.m. (140 hp.) Maximum continuous 2450 r.p.m. (140 hp.)
Propeller and propeller limits	Lycoming IO-360-B1F6 and AEIO-360-B1G6, (a) Hartzell HC-C2YK-4F/FC7666A-2 Diameter: 74.0 in. No reduction allowed Pitch settings at 30 in. sta.: low 12.5°, high 26.8° (b) Hartzell Spinner P/N 835-41 (c) Hartzell Hydraulic Governor No. F6-31 Lycoming O-320-E2A McCauley 1C160-EGM 7654 Diameter: Not over 76 in., not under 74-5 in. Static r.p.m. at maximum permissible throttle setting: Not over 2350 r.p.m., not under 2250 r.p.m. No additional tolerance permitted.

Airspeed limits	Landplane Never exceed 153 m.p.h. (133 knots) Max. structural cruise 120 m.p.h. (105 knots) Maneuvering 120 m.p.h. (105 knots)
C. G. range	(+15.7) at 1600 lb. or less (+20.0) to (+23.8) at 1800 lb. Straight line variation between points given
Empty Wt. C.G.	None
Maximum weight	1800 lb.
No. of seats	2 (1 at 27.5, 1 at 61.5)
Maximum baggage	40 lb. (+92.0)
Fuel capacity	27.4 gal. (26.7 gal. usable, one 26.0 gal. tank in top wing at +13.0 and one 1.4 gal. header tank in fuselage at +5.0). (Lycoming IO- 360-B1F6 and AEIO-360-B1G6) See NOTE 1 for data on unusable fuel 26 gal. (26.0 gal. usable, one 26 gal. tank in top wing at +13.0) (Lycoming O-320-E2A) See NOTE 1 for data on unusable fuel
Oil capacity	8 qt. (-24.0) (4 qt. usable) Lycoming IO-360-B1F6 and AEIO-360-B1G6 See NOTE 1 for data on oil system 8 qt. (-24.0) (6 qt. usable (Lycoming O-320-E2A)

Control surface movements						
Aileron	(±1°)	Up	24°	Down	22°
Stabilizer	(±1/2°)	Up	7-1/4°	Up	1/4°
Elevator	(±1°)	Up	21°	Down	29°
Rudder	(±1°)	Left	35°	Right	35°

Serial Nos. eligible	0701 and up

Data Pertinent to all Models

Datum	Fuselage Sta. (00) is center of most forward lateral fuselage tube. A pin is located on the lower side of landing gear streamline tube to indicate datum.
Leveling means	Upper Longeron at cockpit
Certification basis	Aeronautics Bulletin No. 7-A dated October 1, 1934; FAR 23 dated February 1, 1967, Amendments 23-1 through 23-7 for powerplant installation; Type Certificate A18EA issued January 14, 1972. Great Lakes Company obtained Exemption No. 1163 which granted an exemption from Section 21.17 of the FAR to permit the issuance of the Type Certificate incorporating the type design portion of ATC-228.
Production basis	None. Prior to original certification of each aircraft manufactured subsequent to May 5, 1982, an FAA representative must perform a detailed inspection for workmanship, materials, and conformity with the approved technical data, and a check of the flight characteristics.

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. FAA approved Airplane Flight Manual as follows:
   a. Serial Nos. 0501 and 0502, approval date July 13, 1973, or later FAA approved revision as required by STC SA941CE.

   b. Serial Nos. 0503 through 0699; approval date Nov. 9, 1973, or later FAA approved revision.

   c. Serial Nos. 0701 and up; approval date July 25, 1974, or later FAA approved revision.

NOTE 1. Current weight and balance report together with list of equipment included in certificated empty weight must be provided for each aircraft at time of original certification. The certificated empty weight and corresponding center of gravity location must include unusable fuel of 0.0 lb. at (+13.0) and system oil of 1.0 lb. at (-4.0) for airplanes with Lycoming O-320-E2A engines. Certificated empty weight and corresponding center of gravity location must include unusable fuel of 4.0 lb. at (+5.0) and system oil of 1.0 lb. at (-4.0) for airplanes with Lycoming IO-360-B1F6 and AEIO-360-B1G6 engines.

NOTE 2. All placards specified in FAA Approved Airplane Flight Manual must be displayed in the airplane.

NOTE 3. Reserved.

NOTE 4. Reference CAR 04.61 Dated May 31, 1938, to determine propeller diameter and static r.p.m. limits.

NOTE 5. Serial Nos. 0501 and 0502 are modified by installation of the Lycoming O-320-E2A engine per STC SA941CE; and Cleveland 20-80 wheels and brakes, Cleveland IO-5 master cylinders, and Scott tail wheel per STC SA942CE. These airplanes eligible for certification as 2T- 1A-1 airplanes when Identification Plate 00120-1 and FAA Approved Airplane Flight Manual for the 2T-1A-1 dated November 9, 1973 with Rev. "B" dated April 22, 1975, or later FAA approved revision are installed.

NOTE 6. The certification basis for these airplanes does not contain operating categories, i.e., normal, utility or acrobatic, as listed in current certification regulations. However, since certain of these models were designed to perform and have demonstrated the capability to perform the acrobatic maneuvers listed in the approved airplane flight manual plus those maneuvers not exceeding the load factors listed below, the words "acrobatic category" are included so that those persons concerned with these airplanes understand their capacity in terms of current practices. Maneuvering load factors are as follows:

A. 2T-1A-1 +5.05 to -2.05
B. 2T-1A-2 +5.40 to -4.00

For the above reasons, the airworthiness certificate for 2T-1A-1 and 2T-1A-2 airplanes are to be issued in the acrobatic category.

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