DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

A19SO Revison 10 Piper Aircraft, Inc

PA-44-180 (pg 1) PA-44-180T (pg 4)

August 7, 2006

TYPE CERTIFICATE DATA SHEET NO. A19SO

This data sheet, which is part of Type Certificate No. A19SO, prescribes conditions and limitations under which the product for which type certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder Piper Aircraft, Inc.

2926 Piper Drive

Vero Beach, Florida 32960

Type Certificate Holder Record The New Piper Aircraft, Inc transferred TC A19SO to Piper Aircraft, Inc on August 7,

2006.

IA. - Model PA-44-180, Seminole, 4 PCLM (Normal Category), Approved March 10, 1978.

Engine 1 Lycoming O-360-E1A6D with carburetor setting 10-5092, 10-5219, or

10-6019 (Left Side)

1 Lycoming LO-360-E1A6D with carburetor setting 10-5092, 10-5219, or

10-6019 (Right Side)

<u>Fuel</u> 100 or 100LL aviation grade fuel

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

Propeller and Propeller Limits Left Engine:

1 Hartzell, Hub Model HC-C2Y(K, R) -2CEUF, Blade Model FC7666A-2R

or Hub Model HC-C3YR-2EUF, Blade Model FC7663-5R

Right Engine:

1 Hartzell, Hub Model HC-C2Y(K, R) -2CLEUF, Blade Model FJC7666A-2R

or Hub Model HC-C3YR-2LEUF, Blade Model FJC7663-5R

Pitch Setting at 30" Station:

<u>Two-Blade</u> <u>Three-Blade</u>

High 79° - 81° , Low $12.4^{\circ} \pm 0.2^{\circ}$ High 81° - 83° , Low $10.6 \pm .1^{\circ}$ Diameter: Not over 74 inches

Not under 72 inches Not under 72 inches

Spinner:

<u>Two-Blade</u> <u>Three-Blade</u>

Hartzell P/N C2285-3 Spinner Assy Hartzell P/N C4558 Spinner Assy

(Left) (Left)

Hartzell P/N C2285-3L Spinner Assy Hartzell P/N C4558 Spinner Assy

(Right) (Right) See NOTE 4. See NOTE 4.

Governor Assembly: 1 Hartzell Hydraulic Governor Model E-3-2 (Left)

1 Hartzell Hydraulic Governor Model E-3-2L (Right)

or

1 Hartzell Hydraulic Governor Model E-8-2L (Right) with synchrophaser (Piper Drawing No. 36889 Synchrophaser

Installation, S/N 44-7995278 and up)

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Airspeed Limits	VA (Maneuv VA (Maneuv VFE (Maximi VLO (Maximi Exter Retra VLE (Maximi Exter	um Structural Covering 3800 lb.) vering 2700 lb.) um Flaps Extend um Landing Geansion uction um Landing Geansion	202 KIAS 169 KIAS 135 KIAS 112 KIAS 111 KIAS 140 KIAS 140 KIAS 140 KIAS 56 KIAS		
C.G. Range	(+85.0) to				
	LB			LE	3
		89	9.0	93.0 38	00
	3400			2.4	00
	2800 84.0			28	
	1800			18	00
	1000	INCHES			
Empty Weight C.G. Range	None	II(CILS			
Maximum Weight	Ramp 3816 l Takeoff 3800 l Landing 3800 l	b.			
Number of Seats	4 (2 at +80.5, 2 at +	-118.1)			
Maximum Baggage	200 lb. at +142.8				
Fuel Capacity	110 gallons (2 nace (See NOTE 1 for da			s usable)	
Oil Capacity	6 quarts per engine (See NOTE 1 for da				
Control Surface Movements	Ailerons Stabilator Rudder Stabilator Trim Tab Wing Flaps Rudder Trim Tab Nose Wheel Travel	Up 15 Left 37 Down 9° (Up 0° Left 26	$^{\circ}$ (±1°) $^{\circ}$ $^{\circ}$ (±1°) $^{\circ}$ $^{\circ}$ (+1°, -0°) $^{\circ}$ $^{\circ}$ $^{\circ}$ (±1°) $^{\circ}$ $^{\circ}$ $^{\circ}$ (±1°) $^{\circ}$ $^{\circ}$ (±2°) $^{\circ}$ $^{\circ}$ (Rudder neutral)	Oown Down Light Jp) Oown Light	17° (±2°) 3° (±1°) 37° (+1°, -0°) 4° (±1°) 10°, 25°, 40° (±2°) 26° (±2°) 30° (±1°)

<u>Manufacturer's Serial Numbers</u> 44-7995001 through

44-7995001 through 44-8195026 (See NOTE 5 for airworthiness certification eligibility in the United States)

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IB. - Model PA-44-180, Seminole, 4 PCLM (Normal Category), Approved March 10, 1978.

Engine 1 Lycoming O-360-A1H6 with carburetor setting 10-5219 or 10-6019 (Left Side)

1 Lycoming LO-360-A1H6 with carburetor setting 10-5219 or 10-6019 (Right Side)

<u>Fuel</u> 100 or 100LL aviation grade fuel

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

Propeller and Propeller Limits

Left Engine:

1 Hartzell, Hub Model HC-C2Y(K, R) -2CEUF, Blade Model FC7666A-2R

Right Engine:

1 Hartzell, Hub Model HC-C2Y(K, R) -2CLEUF, Blade Model FJC7666A-2R

Pitch Setting at 30" Station: High 79 $^{\circ}$ - 81 $^{\circ}$, Low 12.4 $^{\circ}$ \pm 0.2 $^{\circ}$ Diameter: Not over 74 inches Not under 72 inches

Not under 72 menes

Spinner: Hartzell P/N C2285-3 Spinner Assy (Left)

Hartzell P/N C2285-3L Spinner Assy (Right)

See NOTE 4.

Governor Assembly: 1 Hartzell Hydraulic Governor Model U-3-15 (Left) with

unfeathering accumulator

1 Hartzell Hydraulic Governor Model U-3-15L (Right) with

202 KIAS 169 KIAS

unfeathering accumulator

Airspeed Limits	v_{NE}	(Never Exceed)	
	v_{NO}	(Maximum Structural Cruise)	
	V_{Δ}	(Maneuvering - 3800 lb.)	

(+89.0)

(+85.0)

 V_A (Maneuvering - 3800 lb.) 135 KIAS V_A (Maneuvering - 2700 lb.) 112 KIAS V_{FF} (Maximum Flaps Extended) 111 KIAS

V_{IO} (Maximum Landing Gear Operation)

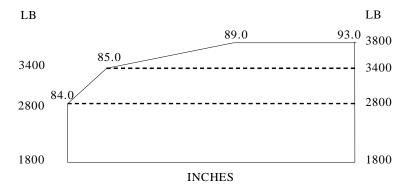
Extension 140 KIAS
Retraction 109 KIAS
VLE (Maximum Landing Gear Extended) 140 KIAS
VMC (Minimum Control Speed) 56 KIAS

V_{MC} (Minimum Control Speed)

to (+93.0) at 3800 lb. to (+93.0) at 3400 lb. to (+93.0) at 2800 lb. or less

(+84.0) to (+93.0) at 28 Straight line variation between points given.

Moment change due to retracting landing gear (+819 in-lb.)



C.G. Range

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Empty Weight C.G. Range None

Maximum Weight Ramp 3816 lb.

Takeoff 3800 lb. Landing 3800 lb.

Number of Seats 4 (2 at +80.5, 2 at +118.1)

Maximum Baggage 200 lb. at +142.8

Fuel Capacity 110 gallons (2 nacelle tanks) at +95.0 (108 gallons usable)

(See NOTE 1 for data on system fuel)

Oil Capacity 8 quarts per engine (6 quarts per engine usable)

(See NOTE 1 for data on system oil)

(Stabilator neutral)

Wing Flaps Up $0^{\circ} (\pm 1^{\circ})$ Down $10^{\circ}, 25^{\circ}, 40^{\circ} (\pm 2^{\circ})$

Rudder Trim Tab Left $26^{\circ} (\pm 2^{\circ})$ Right $26^{\circ} (\pm 2^{\circ})$

(Rudder neutral)

Nose Wheel Travel Left $30^{\circ} (\pm 1^{\circ})$ Right $30^{\circ} (\pm 1^{\circ})$

Manufacturer's Serial Numbers 4495001 through 4495013, and 4496001 and up

II. - Model PA-44-180T, Turbo Seminole, 4 PCLM (Normal Category), Approved November 29, 1979.

Engine 1 Lycoming TO-360-E1A6D with carburetor setting 10-5256

1 Lycoming LTO-360-E1A6D with carburetor setting 10-5256

<u>Fuel</u> 100 or 100LL aviation grade fuel

Engine Limits For all operations, 36.5 in. Hg at 2575 r.p.m. (180 hp)

Propeller and Propeller Limits Left Engine:

1 Hartzell, Hub Model HC-C2YR -2C ()UF, Blade Model FC7666A-2R or

FC7666AB-2R

Right Engine:

1 Hartzell, Hub Model HC-C2YR-2CL () UF, Blade Model FJC7666A-2R or

FJC7666AB-2R

Governor Assembly:

1 Hartzell Hydraulic Governor Model E-3-5 (Left)

or 1 Hartzell Hydraulic Governor Model U-3-10 (Left) with unfeathering accumulator

1 Hartzell Hydraulic Governor Model E-3-5L (Right)

or 1 Hartzell Hydraulic Governor Model U-3-10L (Right) with unfeathering

accumulator

or 1 Hartzell Hydraulic Governor Model E-8-5L (Right) with Synchrophaser

Installation, Piper Dwg. 86818-2

or 1 Hartzell Hydraulic Governor Model U-8-10L (Right) with unfeathering

accumulator and Synchrophaser Installation, Piper Dwg. 86818-2

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Propeller and Propeller Limits (continued)

Pitch Setting at 30" Station:

High 79° - $\overline{8}$ 1°, Low 13.1° \pm 0.2° Diameter: Not over 74 inches Not under 72 inches

Spinner: Hartzell P/N C2285-3 Spinner Assy (Left)

Hartzell P/N C2285-3L Spinner Assy (Right)

See NOTE 4.

Left Engine:

1 Hartzell, Hub Model HC-C3YR -2 ()UF, Blade Model FC7663-5R or FC7663B-5R

Right Engine:

1 Hartzell, Hub Model HC-C3YR-2L () UF, Blade Model FJC7663-5R or FJC7663B-5R

Governor Assembly:

1 Hartzell Hydraulic Governor Model E-3-5 (Left)

or 1 Hartzell Hydraulic Governor Model U-3-10 (Left) with unfeathering accumulator

1 Hartzell Hydraulic Governor Model E-3-5L (Right)

or 1 Hartzell Hydraulic Governor Model U-3-10L (Right) with unfeathering accumulator

or 1 Hartzell Hydraulic Governor Model E-8-5L (Right) with Synchrophaser Installation, Piper Dwg. 86818-2

or 1 Hartzell Hydraulic Governor Model U-8-10L (Right) with unfeathering accumulator and Synchrophaser Installation, Piper Dwg. 86818-2

Pitch Setting at 30" Station:

High 81° - $\overline{83}$ °, Low 11.2° \pm 0.1° Diameter: Not over 73 inches Not under 72 inches

Spinner:

Hartzell P/N C4558 Spinner Assy (Left) Hartzell P/N C4558 Spinner Assy (Right) See NOTE 4.

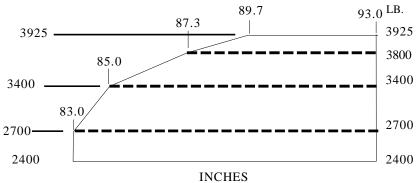
Airspeed Limits

(Never Exceed)	202 KIAS
(Maximum Structural Cruise)	170 KIAS
(Maneuvering - 3925 lb.)	137 KIAS
(Maneuvering - 2700 lb.)	112 KIAS
(Maximum Flaps Extended)	111 KIAS
(Maximum Landing Gear Operation)	
Extension	140 KIAS
Retraction	109 KIAS
(Maximum Landing Gear Extended)	140 KIAS
(Minimum Control Speed)	57 KIAS
	(Maximum Structural Cruise) (Maneuvering - 3925 lb.) (Maneuvering - 2700 lb.) (Maximum Flaps Extended) (Maximum Landing Gear Operation) Extension Retraction (Maximum Landing Gear Extended)

[&]quot;Avoid continuous operation at manifold pressures below 15" Hg above 12,000 feet altitude."

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C.G. Range	(+89.7) (+87.3) (+85.0) (+83.0)	to to to	(+93.0) (+93.0) (+93.0) (+93.0)	at at at at	3925 lb. 3800 lb. 3400 lb. 2700 lb. or less	
	3925 —			87.	89.7	93.



Empty Weight C.G. Range

None

Maximum Weight

Ramp 3943 lb. Takeoff 3925 lb. Landing 3800 lb.

Number of Seats

4 (2 at +80.5, 2 at +118.1)

Maximum Baggage

200 lb. at +142.8

Fuel Capacity

110 gallons (2 nacelle tanks) at +95.0 (108 gallons usable)

(See NOTE 1 for data on system fuel)

Oil Capacity

6 quarts per engine (4 quarts per engine usable)

(See NOTE 1 for data on system oil)

Maximum Operating Altitude

20,000 feet

Control Surface Movements

Ailerons	(±2°)	Up 23°	Down	17°
Stabilator	(±1°)	Up 15°	Down	3°
Rudder	$(+1^{\circ}, -0^{\circ})$	Left 37°	Right	37°
Stabilator Trim Tab	(±1°)	Up 4°	Down	9°
		(Stabilator neutral)		
Wing Flaps	(±2°)	Up 0°	Down	40°
Rudder Trim Tab	(±2°)	Left 26°	Right	26°
		(Rudder neutral)	_	
Nose Wheel Travel	(±1°)	Left 30°	Right	30°

Manufacturer's Serial Numbers

 $44\text{-}8107001 \ through} \ 44\text{-}8207020$

DATA PERTINENT TO ALL MODELS

<u>Datum</u>

78.4" forward of wing leading edge at wing station 106.

Leveling Means

Two screws left side fuselage below window.

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Certification Basis

Type Certificate No. A19SO issued March 10, 1978. Date of application for Type Certificate, January 17, 1976.

<u>PA-44-180</u>: Federal Aviation Regulations (FAR) Part 23 effective February 1, 1965, through Amendment 23-16 effective February 14, 1975; FAR 23.1557(c)(1) as amended by Amendment 23-18 effective May 2, 1977; and FAR 36 effective December 1, 1969, through Amendment 36-4.

Equivalent Safety Finding: FAR 23.1545(a).

PA-44-180T: FAR 23 effective February 1, 1965, through Amendment 23-16 effective February 14, 1975; FAR 23.207 and 23.1091 as amended by Amendment 23-7 effective September 14, 1969; FAR 23.201 and 23.203 as amended by Amendment 23-14 effective December 20, 1973; FAR 23.1093 and 23.1557(c)(1) as amended by Amendment 23-18 effective May 2, 1977; FAR 23.1581(b)(2) as amended by Amendment 23-21 effective March 1, 1978; FAR 23.1545(a) as amended by Amendment 23-23 effective December 1, 1978; and FAR 36 effective December 1, 1969, through Amendment 36-9 effective January 15, 1979. Compliance with FAR 23.1441 as amended by Amendment 23-9 effective June 17, 1970, shown with optional supplemental oxygen.

For PA-44-180 aircraft equipped with Piper factory installed Avidyne Entegra Systems (see Piper Report VB-1940), the additional certification basis for installation specific items only is: FAR 23.1301, 23.1327, and 23.1335 as amended by Amendment 23-20 effective September 1, 1977; FAR 23.1501 and 23.1541(a)(b) as amended by Amendment 23-21 effective March 1, 1978; FAR 23.603 and 23.605(a) as amended by Amendment 23-23 effective October 10, 1978; FAR 23.1529 as amended by Amendment 23-26 effective October 14, 1980; FAR 23.1523 as amended by Amendment 23-34 effective February 17, 1987; FAR 23.1322, 23.1331 and 23.1357(a)(2)(b)(c)(d) as amended by Amendment 23-43 effective May 10, 1993; FAR 23.305, 23.613, 23.773(a)(1)(2), 23.1525 and 23.1549(a)(b)(c) as amended by Amendment 23-45 effective September 7, 1993; FAR 23.301, 23.337(a)(1)(b)(1), 23.341(a), 23.473, 23.561(b)(3)(e), 23.607 and 23.611 as amended by Amendment 23-48 effective March 11, 1996; FAR 23.1303(a)(b)(f), 23.1307, 23.1309(a)(1)(3)(b)(c)(1)(2)(i)(iii)(3)(d)(e), 23.1311, 23.1321, 23.1323(a)(c), 23.1329(d)(e)(f)(g)(h), 23.1351(a)(1)(2)(i)(b)(1)(i)(2)(3)(d), 23.1353(d)(h), 23.1359(c), 23.1361(a)(b),23.1365(a)(b)(d)(e)(f) and 23.1431(a)(b)(d)(e) as amended by Amendment 23-49 effective March 11, 1996; FAR 23.1325(a)(b)(1)(2)(i)(3), 23.1543(b)(c), 23.1545(a)(b), 23.1553, 23.1555(a)(b), 23.1581(a)(b)(2)(3)(f), 23.1583(m) and 23.1585(j) as amended by Amendment 23-50 effective March 11, 1996; FAR 23.777(a)(b), 23.955(a)(3) and 23.1337(a)(b)(1)(4)(c) as amended by Amendment 23-51 effective March 11, 1996; 23.1305(a)(1)(2)(3)(b)(2)(3)(i)(4)(i)(5) as amended by Amendment 23-52 effective July 25, 1996; and Special Condition for HIRF (Docket No. CE238, Special Condition 23-178-SC), January 13, 2006. Eligible Serial Numbers 4496174, 4496224 and up.

Production Basis

Production Certificate No. 206. Production Limitation Record issued and the manufacturer authorized to issue airworthiness certificate under the Delegation Option provisions of FAR 21.

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:

<u>PA-44-180</u>: POH and FAA Approved AFM, VB-860, approved March 23, 1978, for S/N 44-7995001 through 44-8195026.

POH and FAA approved AFM, VB-1380, approved July 20, 1989, for S/N 4495001 through 4495013.

POH, VB-1616, approved July 12, 1995, for S/N 4496001 and up. POH, VB-1942, approved May 26, 2006, for S/N 4496174 and 4496224 and up when Avidyne Entegra System (See Piper Report VB-1940) is installed

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<u>PA-44-180T</u>: POH and FAA approved AFM, VB-1100, approved March 14, 1980, for S/N 44-8107001 through 44-8207020.

NOTE 1.

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

The certificated empty weight and corresponding center-of-gravity locations must include undrainable system oil (not included in oil capacity) and unusable fuel as noted below:

Fuel: 12.0 lb. at (+95.0) Oil: 3.6 lb. at (+68.8)

NOTE 2.

All placards required in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual must be installed in the appropriate locations.

NOTE 3.

The service life of the wing and associated structure has been established as 14663 hours maximum.

NOTE 4.

The PA-44-180, S/N 44-7995001 through 44-8195026, may be operated without spinner domes or without spinner domes and rear bulkheads, except when equipped with three-bladed propellers and air conditioning, in which case only the spinner dome may be removed.

The PA-44-180, S/N 4495001 through 4495013, and 4496001 and up, may be operated with only the spinner dome removed.

NOTE 5.

The following serial numbers are not eligible for airworthiness certification in the United States: 44-7995235 and 44-7995298.

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