DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A23SO
Revision 13
PIPER

PA-42
PA-42-720
PA-42-1000

November 4, 1996

TYPE CERTIFICATE DATA SHEET NO. A23SO

This data sheet, which is part of Type Certification No. A23SO, 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 — The New Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, Florida 32960

I. - Model PA-42 (Cheyenne III), 6 - 11 PCLM (Normal Category), Approved December 18, 1979.

Engine — 2 United Aircraft of Canada, Ltd. or Pratt & Whitney PT6A-41 (turboprop)

Fuel — JP-4, JP-5, commercial kerosene, Jet A, A-1 and B fuels conforming to Pratt & Whitney Specification 522, or Service Bulletin 3044. (Fuels shall conform to the specifications as listed or to subsequent revisions thereto). See NOTE 6 for emergency fuel.

Oil (engine & gearbox) — UACL PT6 Engine Service Bulletin No. 3001 lists approved brand oils.

Engine Limits

	Shaft Horsepower	N_1 Gas Generator Speed	Prop Shaft Speed	Maximum Permissible Turbine Interstage Temp. (° C)
Takeoff & Max. continuous	**720	101.5%	2000*	750
Max. climb & cruise	**720	101.5%	2000*	750
Starting transient (5 sec.)	-----	-----	-----	1000
Max. reverse (1 Min.)	200	-----	1900	750

*See NOTE 4(a)
**Available to ISA +37°C

At most altitudes and low ambient temperatures the engines will produce more power at takeoff than that for which the airplane has been certificated. Under all conditions the placarded torquemeter limitations shall not be exceeded.

Oil temperatures: - 40° C, minimum starting
- 40° C to 99° C, low idle
10°C to 99°C, maximum continuous
104° C for 5 min. or 102° C for 10 min.

Propeller and Propeller Limits — 2 Hartzell HC-B3TN-3B or 2 Hartzell HC-B3TN-3K hubs with Hartzell T10173AB-6Q and/or T10173ANB-6Q blades.
Diameter: 95 inches. No reduction permitted.
Pitch settings at
Low Pitch Stop - See NOTE 5(a)
Reverse - See NOTE 5(b)
Feathered - See NOTE 5(c)

Propeller Governor

2 Woodward 8210-027 or 8210-024 propeller governors

Airspeed Limits

		KCAS	KIAS
V_{MO}	(Max. Operating)	246	245
	(Up to 17,400 ft. See V_{MO} chart for speeds above 17,400 ft. in Flight Manual.)		
V_A	(Maneuvering)		
	(Minimum Weight - 6,662 lb.)	142	140
	(Max. Weight - 11,200 lb.)	175	174
V_{FE}	(Max. Flaps Extended)		
	10° Flaps	196	195
	30° Full Flaps	152	151
V_{LO}	(Max. Landing Gear Operating)		
	(Extend)	174	173
	(Retract)	156	154
V_{LE}	(Max. Landing Gear Extended)	174	173
V_{MC}	(Minimum Control Speed)	98	97

C. G. Range

(+126.0) to (+137.5) at 7,330 lb. or less
(+130.3) to (+137.5) at 11,200 lb.
Straight line variation between points given.
Moment change due to retracting landing gear +1146 in.-lb.

Empty Weight C. G. Range

None

Maximum Weight

Ramp:	11,285 lb.
Takeoff:	11,200 lb.
Landing:	10,330 lb.
Zero Fuel:	9,350 lb.
Centerline:	9,150 lb.

Minimum Crew

One pilot

Number of Seats

Executive Configuration:
2 seats at +99.0 in.
2 seats at +137.7 in.
2 seats at +184.7 in.
2 seats at +218.7 in.
1 seat at +277.9 in.

High Density Configuration:
2 seats at +99.0 in.
2 seats at +131.2 in.
2 seats at +167.7 in.
2 seats +201.7 in.
2 seats at +235.7 in.
1 seat at +270.7 in.

Maximum Baggage

Nose Baggage	300 lb. at +6.0 in.
Aft Area 1	200 lb. at +291.0 in. (High Density Configuration)
	200 lb. at +301.0 in. (Executive Configuration)
Aft Area 2	100 lb. at +321.0 in.
Wing Lockers	100 lb. each locker at +180.0 in.

Fuel Capacity

562 gallons
See NOTE 1(a) for unusable fuel data

Oil Capacity

26 quart total at +86 in. (includes 12 quart usable in two integral engine tanks)

Control Surface Movements (All measurements taken at trailing edge from neutral position for elevator and rudder, neutral position for aileron down 2°)	Aileron	(+1.0°,-0°)	29°	Up	(+1.0°,-0°)	15°	Down
	Aileron Tab (Aileron Neutral)	(+1.0°,-0°)	18.5°	Up	(+1.0°,-0°)	18.5°	Down
	Elevator	(+0.5°,-0°)	12°	Up	(+1.0°,-0°)	20°	Down
	Elevator Tab (Elevator Neutral)	(+1.0°,-2.0°)	7°	Up	(+1.0°,-0°)	30°	Down
	Rudder	(+1.0°,-0°)	30°	Right	(+1.0°,-0°)	20°	Left
	Rudder Tab (Rudder Neutral)	(+1.0°,-0°)	10°	Right	(+1.0°,-0°)	20°	Left
	Flaps	(+1.0°,-0°)	0°	Up	(+1.0°,-0°)	30°	Down

Maximum Operating Altitude 33,000 feet

Serial Numbers Eligible 42-7800001 through 42-8001106 (See NOTE 9)

II. - Model PA-42-720 (Cheyenne IIIA), 6 - 11 PCLM (Normal Category), Approved March 24, 1983.

Engine 2 United Aircraft of Canada, Ltd., or Pratt & Whitney PT6A-61 (turboprop)

Fuel JP-4, JP-5, commercial kerosene, Jet A, A-1 and B fuels conforming to Pratt & Whitney Specification 522, or Service Bulletin 3044. (Fuels shall conform to the specifications as listed or to subsequent revisions thereto). See NOTE 6(a) for emergency fuel.

Oil (engine & gearbox) UACL PT6 Engine Service Bulletin No. 13001 lists approved brand oils

Engine Limits

	Shaft Horsepower	N_1 Gas Generator Speed	Prop Shaft Speed	Maximum Permissible Turbine Interstage Temp. (°C)
Takeoff, Max. continuous, Max. Cruise, & Max. Climb	**720	104.0%	2000*	800
Starting transient (5 sec.)	- -	- -	- -	1000
Max. reverse (1 Min.)	200	- -	1900	800

*See NOTE 4(b)
**Available to ISA + 37°C

At most altitudes and low ambient temperatures the engines will produce more power at takeoff than that for which the airplane has been certificated. Under all conditions the placarded torquemeter limitations shall not be exceeded.

Oil temperatures: - 40° C, minimum starting
- 40° C to 99° C, low idle
10° C to 99° C, max. continuous
104° C for 10 min.

Propeller and Propeller Limits 2 Hartzell HC-B3TN-3B or 2 Hartzell HC-B3TN-3K hubs
with Hartzell T10173AB-6Q and/or T10173ANB-6Q blades.
Diameter: 95 inches. No reduction permitted.
Pitch settings at
Low Pitch Stop - See NOTE 5(a)
Reverse - See NOTE 5(b)
Feathered - See NOTE 5(d)

Propeller Governor

2 Woodward 8210-027 propeller governors

Airspeed Limits

		KCAS	KIAS
V_{MO}	(Max. Operating) (Up to 22,200 ft. See V_{MO} chart for speeds above 22,200 ft. in Flight Manual.)	246	244
V_A	(Maneuvering)		
	(Minimum Weight - 6,662 lb.)	142	140
	(Max. Weight - 11,200 lb.)	175	173
V_{FE}	(Max. Flaps Extended)		
	(10° Flaps)	196	194
	(30° Full Flaps)	152	150
V_{LO}	(Max. Landing Gear Operating)		
	(Extend)	174	172
	(Retract)	156	154
V_{LE}	(Max. Landing Gear Extended)	174	172
V_{MC}	(Minimum Control Speed without Autofeather)	98	96
V_{MC}	(Minimum Control Speed - Autofeather Operation)	93	91

C. G. Range

(+126.0) to (+137.5) at 7,330 lb. or less
(+130.3) to (+137.5) at 11,200 lb.
Straight line variation between points given
Moment change due to retracting landing gear +1146 in.-lb.

Empty Weight C. G. Range

None

Maximum Weight

Ramp:	11,285 lb.
Takeoff:	11,200 lb.
Landing:	10,330 lb.
Zero Fuel:	9,350 lb.
Centerline:	9,150 lb.

Minimum Crew

One pilot

Number of Seats

Executive Configuration:
2 seats at +99.0 in.
2 seats at +138.5 in.
2 seats at +187.3 in.
2 seats at +223.3 in.
2 seats at +279.0* in.
*Alternate location +264.1 in. (side facing)

High Density Configuration:
2 seats at +99.0 in.
2 seats at +131.3 in.
2 seats at +164.0 in.
2 seats at +199.5 in.
2 seats at +235.5 in.
1 seat at +265.2 in.

Maximum Baggage

Nose Baggage	300 lb. at +6.0 in.
Aft Area 1	200 lb. at +291.0 in. (High Density Configuration)
	200 lb. at +301.0 in. (Executive Configuration)
Aft Area 2	100 lb. at +321.0 in.
Wing Lockers	100 lb. each locker at +180.0 in.

Fuel Capacity — 562 gallons
See NOTE 1(a) for unusable fuel data

Oil Capacity — 26 quart total at +86 in. (includes 12 quart usable in two integral engine tanks)

Control Surface Movements (All measurements taken at trailing edge from neutral position for elevator and rudder, neutral position for aileron down 2°)	Aileron	(+1.0°,-0°)	29°	Up	(+1.0°,-0°)	15°	Down
	Aileron Tab (Aileron Neutral)	(+1.0°,-0°)	18.5°	Up	(+1.0°,-0°)	18.5°	Down
	Elevator	(+0.5°,-0°)	12°	Up	(+1.0°,-0°)	20°	Down
	Elevator Tab (Elevator Neutral)	(+1.0°,-2.0°)	7°	Up	(+1.0°,-0°)	30°	Down
	Rudder	(+1.0°,-0°)	30°	Right	(+1.0°,-0°)	20°	Left
	Rudder Tab (Rudder Neutral)	(+1.0°,-0°)	10°	Right	(+1.0°,-0°)	20°	Left
	Flaps	(+1.0°,-0°)	0°	Up	(+1.0°,-0°)	30°	Down

Maximum Operating Altitude — 35,000 feet

Serial Numbers Eligible — 42-8301001, 42-8301002, 42-5501003 through 42-5501060
(except 42-5201024, 42-5501028, 42-5501032, 42-5501034 through 42-5501038)

III. - Model PA-42-1000 (Cheyenne 400LS), 6 - 11 PCLM (Normal Category), Approved July 13, 1984.

Engine — 1 Garrett Turbine Engine Company TPE-331-14A
1 Garrett Turbine Engine Company TPE-331-14B

Fuel

Aviation turbine fuels	AiResearch Specification
Type A	EMS53111
Type A-1	EMS53112
Type JP-5	EMS53116

(Fuel shall conform to the specifications as listed or to subsequent revisions thereof.) Cheyenne 400LS not approved for aviation gasoline or JP-4

Oil — MIL-L-23699 conforming to AiResearch Manufacturing Company Specification EMS53110 Type II

Exhaust Gas

Engine Limits

	Shaft Horsepower	Prop Shaft Speed	Temperature (EGT)°C
Takeoff & Max. continuous	**1000	*1540	VRL***
Starting Limit (1 sec.)	-----	-----	700
Max. reverse	-----	-----	VRL***

*See NOTE 4(c)
**Available to ISA +66° F
*** Variable redline dependent on engine operating conditions. During manual mode refer to POH for limits.

Oil Temps — - 40° C to 110° C (normal operations)
- 40° C to 127° C (ground operations only)

Propeller and Propeller Limits

Dowty Rotol - R339/4-123-F/8
Eligible on TPE-331-14A

Dowty Rotol R341/4-123-F/9
Eligible on TPE-331-14B

Diameter: 106 inches
Pitch at 36.278 station
Start locks: 0.9° ± 1°
Flight idle: 10° ± 30'
Feathered: 86° 25' ± 15"
Reverse: 10° ± 1°

Propeller Governor

2 Woodward 8210-103 propeller governors

Airspeed Limits

		KCAS	KIAS
V_{MO}	(Max. Operating) (Up to 25,300 feet. See V_{MO} Chart for speeds above 25,300 ft. in Flight Manual.)	246	244
V_A	(Maneuvering)		
	(Minimum Weight - 7,600 lb.)	157	155
	(Max. Weight - 12,050 lb.)	189	187
V_{FE}	(Max. Flaps Extended)		
	(10° Flaps)	196	194
	(39° Full Flaps)	169	167
V_{LO}	(Max. Landing Gear Operating)		
	(Extend)	172	170
	(Retract)	172	170
V_{LE}	(Max. Landing Gear Extended)	172	170
V_{MC}	(Minimum Control Speed)	101	99

C. G. Range

(+126.5)	to	(+133.1)	at	7,000 lb.
(+126.5)	to	(+135.1)	at	8,750 lb.
(+127.4)	to	(+136.0)	at	9,500 lb.
(+130.3)	to	(+136.0)	at	12,050 lb.

Straight line variation between points given.
Moment change due to retracting landing gear +1207 in.-lb.

Empty Weight C. G. Range

None

Maximum Weight

Ramp: 12,135 lb.
Takeoff: 12,050 lb.
Landing: 11,100 lb.

Minimum Crew

One pilot

Number of Seats

Executive Configuration:
2 seats at +99.0 in.
2 seats at +138.5 in.
2 seats at +187.3 in.
2 seats at +223.3 in.
2 seats at +265.2 in. (Std. Fwd. Facing)*
*Alternate Locations +275.0 in. (Fwd. Facing)
+264.1 in. (Side Facing)

Maximum Baggage	Nose Baggage Area 1	150 lb. at +2.0 in.
	Nose Baggage Area 2	150 lb. at +34.0 in.
	Aft Area 1	200 lb. at +301.0 in
	Aft Area 2	100 lb. at +321.0 in.

Fuel Capacity: 582 gallons
See NOTE 1(b) for unusable fuel data

Oil Tank Capacity: 14.9 quart total at (+63.1) (includes 13.26 quarts usable in two integral engine tanks)

Control Surface Movements (All measurements taken at trailing edge from neutral position for elevator and rudder, neutral position for aileron down 2°)	Aileron	(+1.0°,-0°)	26°	Up	(+1.0°,-0°)	15°	Down
	Aileron Tab (Aileron Neutral)	(+1.0°,-0°)	14°	Up	(+1.0°,-0°)	14°	Down
	Elevator	(+0.5°,-0°)	12°	Up	(+1.0°,-0°)	20°	Down
	Elevator Tab (Elevator Neutral)	(+1.0°,-2.0°)	7°	Up	(+1.0°,-0°)	30°	Down
	Rudder	(+1.0°,-0°)	25°	Right	(+1.0°,-0°)	25°	Left
	Rudder Tab (Rudder Neutral)	(+1.0°,-0°)	15°	Right	(+1.0°,-0°)	15°	Left
	Flaps	(+1.0°,-0°)	0°	Up	(+1.0°,-0°)	30°	Down

Maximum Operating Altitude: 41,000 feet.

Serial Numbers Eligible: 42-5527002 through 42-5527040.

DATA PERTINENT TO ALL MODELS

Datum: 137 inches forward of the main spar centerline.

Leveling Means: Lateral: Seat tracks station 280 inside cabin doors.
Longitudinal: Two rivnuts on right hand side of fuselage above and forward of the wing leading edge.

	MODELS		
Certification Basis	PA-42	PA-42-720	PA-42-1000
FAR Part 23, effective February 1, 1965, as amended by Amendment 23-16, effective February 14, 1975.	X	X	X
And Paragraph 23.45, 23.49, 23.65, 23.67, 23.77, and 23.1581 as amended by Amendment 23-21, effective March 1, 1978.	X	X	X
And Paragraph 23.1385(c) as amended by Amendment 23.17, effective February 1, 1977.	X	X	X
And Paragraph 23.1145 as amended by Amendment 23.18, effective May 2, 1977.	X	X	X
And Paragraph 23.1145(a) as amended by Amendment 23-23, effective December 1, 1978.	X	X	X
FAR 25.977 as amended by Amendment 25-26, effective October 14, 1980.	X	X	X

Certification Basis (cont'd)	PA-42	PA-42-720	PA-42-1000
And Special Condition No. 23-90-SO-3 Amendment 1, Docket No. 19591.	X	X	X
And SFAR 23, Paragraph 55, effective January 20, 1970.	X	X	X
And Special Condition No. 23-ACE-27 Docket No. 027CE.	X	X	X
And fuel venting section of SFAR 27-1, effective January 1, 1975.	X	X	X
And the FAA Southern Region Engineering and Manufacturing Branch letter of August 7, 1980, showing the equivalent level of safety finding to FAR 23.201(e).	X	X	
And the FAA Atlanta Aircraft Certification Office letter of July 9, 1984, showing the equivalent level of safety findings to FAR 23.201, FAR 23.203, FAR 23.205 and FAR 23.207.			X
And FAR Part 36, including Amendments 1 thru 6, effective January 25, 1977.	X	X	
And FAR Part 36, including Amendments 1 thru 12, effective August 1, 1981.			X
And Paragraph 23.1447(c) and (d) as amended by Amendment 23-20, effective September 1, 1977.		X	X
And Paragraph 23.1111 as amended by Amendment 23-17, effective February 1, 1977.			X
And Paragraph 23.1327 and 23.1547 as amended by Amendment 23-20, effective September 1, 1977.			X
Compliance with ice protection has been demonstrated in accordance with FAR 23.1419 as amended by Amendment 23-14, effective December 20, 1973.	X	X	X
Application for Type Certificate	7/21/75	2/25/82	11/25/81
Type Certificate	12/18/79	3/24/83	7/13/84

Production Basis — Production Certificate No. 206 (See NOTE 8).
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:

1. FAA approved Airplane Flight Manual Piper Report No. LK-1221, Appendix B dated 12/18/79, for PA-42, S/N 42-7800001 through 42-8001011, unless modified in accordance with Piper Drawing No. 72722.

2. DOA No. SO-2 approved Pilot's Operating Handbook and FAA approved Airplane Flight Manual Report No. LK-1213. For PA-42, Serial Number 42-8001012 through 42-8001106, and for S/N 42-7800001 through 42-8001011 if modified in accordance with Piper Drawing No. 72722.

3. DOA No. SO-2 approved Pilot's Operating Handbook and FAA approved Airplane Flight Manual Report No. LK-1394 for PA-42-720, Serial Number 42-8001001, 42-8301002, 42-5501003 through 42-5501060.

4. DOA No. SO-2 approved Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Report No. LK-1414 for PA-42-1000, S/N 42-5527002 through 42-5527040.

5. DOA No. SO-1 approved Pilot's Operating Handbook and FAA approved Airplane Flight Manual Report No. VB-1314 for PA-42-720, S/N 42-5501041 through 42-5501047.

NOTE 1.

(a) Models PA-42 and PA-42-720:
Current weight and balance data, loading information, and a list of equipment included in empty weight must be provided for each airplane at the time of original certification. Basic empty weight includes unusable fuel of 13.4 lb. at (+132.5 in.).

(b) Model PA-42-1000:
Current weight and balance data, loading information, and a list of equipment included in empty weight must be provided for each airplane at the time of original certification. Basic empty weight includes unusable fuel of 67 lb. at (+132.5 in.).

NOTE 2.

All placards required in the FAA approved Airplane Flight Manual must be installed in the appropriate location.

NOTE 3.

The life limits on components that were determined by a full scale fatigue test, are contained in the Maintenance Manual and are listed below:

(a) Models PA-42 and PA-42-720 Component Life Limits:
  (1) Wing - 25,000 hrs.
  (2) Empennage - 25,000 hrs.
  (3) Fuselage - 15,000 hrs.

(b) Model PA-42-1000 Component Life Limits:
  (1) Wing - 20,000 hrs.
  (2) Empennage - 20,000 hrs.
  (3) Fuselage - 15,000 hrs.

Other life limited components are listed in the PA-42, PA-42-720 and PA-42-1000 Maintenance Manuals and Service Publications.

NOTE 4.

(a) Model PA-42:
The maximum propeller shaft overspeed limit for the PT6A-41 is 100% (2200 r.p.m.) of all ratings. 91% propeller shaft speed is defined as 2000 r.p.m. and is the normal steady state operating limit. Gas generator speeds up to 102.6% are permissible for 10 seconds and to 101.5% for unlimited periods subject to applicable temperature and other limits. 100% gas generator speed is defined as 37,500 r.p.m.

(b) Model PA-42-720:
The maximum propeller shaft overspeed limit for the PT6A-61 is 100% (2200 r.p.m.) of all ratings. 91% propeller shaft speed is defined as 2000 r.p.m. and is the normal steady state operating limit. Gas generator speeds up to 104.0% are permissible for unlimited periods subject to applicable temperature and other limits. 100% gas generator speed is defined at 39,000 r.p.m.

(c) Model PA-42-1000:
The maximum propeller shaft overspeed limit is 1,632 r.p.m. (106%) for 5 seconds and 1,563 r.p.m. (101.5%) for 5 minutes. 100% is defined as 1,540 r.p.m.

NOTE 5.

(a) Models PA-42 and PA-42-720:
Propeller low pitch is set so that at 1900 r.p.m. there shall be an indicated 1154 ± 30 ft.-lb. torque corrected to sea level standard day.

(b) Models PA-42 and PA-42-720:
Propeller reversed pitch setting is adjusted to provide reversed power of 180 SHP ± 20 (SHP = torque x prop rpm x 0.00019).

(c) Model PA-42:
Feathered angle shall be adjusted to prevent rotation while feathered at 115 knots.

(d) Model PA-42-720:
Feathered angle shall be adjusted to prevent rotation while feathered at 119 knots.

NOTE 6.

(a) Aviation Gasoline MIL-G-5572 Grades 80/87, 91/98, 100/130 and 115/145 are permitted for a total time period not to exceed 150 hours time between turbine hot section inspections. It is not necessary to purge the unused fuel from the system when switching fuel types.

(b) MIL-I-27686 Fuel System Icing Inhibitor or equivalent may be used in the fuel in amount up to 0.15% by volume.

NOTE 7.

Model PA-42-1000:
Top and lower wing surfaces from front spar to rear spar between STA 87.5 and 109.5 and between STA 221 and 239 are limited to a maximum of 2.5 mil. total paint thickness to maintain lightning protection integrity.

NOTE 8.

Model PA-42:	S/N 42-7800001 through 42-8001106 were manufactured under Production Certificate No. 4SO.
Model PA-42-720:	S/N 42-8001001, 42-8301002, 42-5501003 through 42-5501027, 42-5501029, 42-5501030 were manufactured under Production Certificate 4SO.
Model PA-42-1000:	S/N 42-5527003 through 42-5527029 were manufactured under Production Certificate No. 4SO.

NOTE 9.

Model PA-42, S/N 42-8001059, is not eligible for airworthiness certification in the United States.

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