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To print the report or selected pages of the report, click on File and select Print. Then select the page or range of pages you wish to print.

Each report is current as of the date of issuance meaning that all AD's released by the FAA or published in the Federal Register on or before that date have been considered in creating this report.

INTERNET AD SEARCH™ REPORT

Cover Page

Search Limitations

1. Search Report

Applicable AD's

N/A AD's

Supporting Documents

Summary of Recurring Requirements

AD's Issued in Past 12 Months

Proposed AD's

Historical AD's

Index to AD's in This Report

2. Sign-Off Sheets

Worksheets

Recurring AD Signoff

N/A Sign-off Sheet

Superseded List

3. Documents

Copies of New AD's

Copies of Proposed AD's

Type Certificates

Airframe

Engine

Propeller



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Monday, October 08, 2007

AD Search Report

Airframe

Engines

Propellers

N Number:	Demo1	Eng 1 MFG:	Lycoming	Prop 1 MFG:	Hartzell
A/C MFG:	Piper	Eng 1 Model:	TIO-540-J2BD	Prop 1 Model:	HC-E3YR-2
A/C Model:	PA-31-350	Eng 1 S/N:	RL-3123-61A	Prop 1 S/N:	BU-487
A/C S/N:	31-7852247	Eng 2 MFG:	Lycoming	Prop 2 MFG:	Hartzell
		Eng 2 Model:	LTIO-540-J2BD	Prop 2 Model:	HC-E3YR-2
		Eng 2 S/N:	L-1144-68A	Prop 2 S/N:	BU-488

This report is presented in 8 sections:

Section 1 - A numerical listing of the AD's that apply to the above airframe, engine(s) and propeller(s) together with any conditions that affect or create applicability.

Section 2 - A listing of AD's that may appear to apply but do not.

Section 3 - A listing of service bulletins or other manufacturer supplied documentation affecting the AD's cited in Section 1 of this report.

Section 4 - A summary of recurring AD requirements.

Section 5 - A listing of AD's new or revised since the last report was issued or dating from a specific date.

Section 6 - A listing of proposed rules (NPRM's) that will have likely applicability when and if issued as AD's.

Section 7 - A listing of appliance AD's apparently outmoded by time or usage.

Section 8 - An indexed numerical listing of AD's and NPRM's covered in this report.

SCOPE:

Whenever possible, airframes, engines, propeller hubs and accessories are searched by serial numbers to determine applicability. For this reason each AD report is aircraft specific and users should not infer applicability between different aircraft simply because they may appear similar.

LIMITATIONS:

Specific engines, propellers, carburetors and magnetos. The search covers the airframe and all engines, propellers, carburetors and magnetos installed on the aircraft. The printed report does not distinguish between which individual item caused the AD to appear in the report. For example, one engine may trigger an AD by its serial number where the other one on the aircraft does not. The AD will be shown on the report, but usually without indication as to which component is affected.

337's. Aircraft modifications made under authority of FAA Form 337, Major Repair and Alteration, are not searched. It is therefore possible for Airworthiness Directives not shown in this report to apply to aircraft modified in this manner.

Historical AD's. Certain AD's are considered obsolete by time, application or regulation. Because this is a subjective evaluation errors may exist. Users are urged to review this list carefully.

Not Applicable. This section shows AD's that are near misses. These may be either superseded, N/A by S/N, N/A by STC or N/A by Service Bulletin or for other reasons. Because an aircraft serial number series is used by the search process, some AD's that apply to other models in the serial number series may appear in this section.

Combinations. Some AD's apply as a result of combining certain airframes, engines and/or propellers. On multi-engine aircraft only engine #1 and propeller #1 are tested for AD's applicable by combination. It is therefore possible, although not very likely, that only engine #2 and/or propeller #2 may be involved in a combination AD and will thus not be shown in the report.

CONDITIONS:

Because many AD's have subjective interpretations and/or varying methods of compliance, and because computer systems in general and this database system in particular are highly complex by nature, there may be inaccuracies, errors or omissions in the database or search methodology. Therefore, the information provided in this report should be regarded as informational and advisory only. It is the responsibility of the aircraft owner, operator or other person returning the aircraft to service to ensure that all applicable Airworthiness Directives have been complied with. No mechanical aid can replace the knowledge and experience of a trained aviation maintenance professional in determining applicability and compliance.

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THE AD SEARCH REPORT

This report is designed to provide aircraft owners, operators and maintenance personnel with a comprehensive survey of Airworthiness Directive (AD) applicability. It may be used as a guide for certifying an aircraft as airworthy and as a log for recording compliance with the various applicable AD's.

The report is presented in eight sections, as follows:

Section 1 – Applicable - A listing of AD's that are likely to apply to this particular combination of airframe, engine(s) and propeller(s) together with any condition that affects or creates applicability.

Section 2 – Not Applicable - A listing of AD's that seem to be applicable, but are not for various reasons.

Section 3 – Documents - A listing of service documents (Service Bulletins, etc.) cited by the AD's listed in Section 1.

Section 4 – Recurring Summary - A summary of AD's with more than a one time compliance requirement

Section 5 – New AD's - A listing of AD's newly issued or revised since the last report on this aircraft or, alternatively, within the past calendar year.

Section 6 – Proposed - A listing of proposed AD's that would have likely applicability to this aircraft if and when they are issued.

Section 7 – Index - A numerical index of AD's covered in this report.

Section 8 - Historical AD's - A listing of appliance AD's that are considered obsolete by age or application. While it is not likely that any of these have present applicability, they are still active and should be regarded as such.

A multi-page worksheet/sign-off report covering applicable and possibly applicable AD's is included. This report may be used to record observations pertinent to the AD's on this aircraft or, alternatively, as evidence of compliance by signing-off the various requirements.

APPLICABLE AD'S

Aircraft: Piper	PA-31-350	Demo1 S/N 31-7852247
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AD's checked through release of 10/8/2007 - (06-21 and later)

The following AD's have likely applicability to this airframe, engine(s) and propeller(s) if the listed condition is met.

Airframe

		Recurring
79-12-02	Elevator travel stop bolt inspection	No
79-14-02	Control wheel shaft stud security	No
79-20-07	Cigar lighter wiring If having 3 cigar lighters & voltage dropping	No
80-17-02	Elevator balance weight inspection	No
80-17-06	Airspeed placards	No
82-16-05 R1	Turbocharger exhaust coupling failure If having 455-301, 555-376, -411 or -36 turbo couplings	Yes
85-08-05	Landing gear strut inspection	No
87-21-01	Fuel filler opening modification	No
92-27-05	Improper aileron cable connection	No
93-23-13	Engine baffle seals inspect/replace	Yes
93-24-02 R1	Elevator control tube	No
96-10-14	MLG sidebrace inspections/modifications If not having improved sidebraces installed	Yes
96-10-15	Flap track area inspections/modifications If not having kit 763 986 installed	Yes
96-12-12	Inspect/modify FS 317.75 bulkhead If not incorporating kit 764-028 or 763-917	No
96-21-03	Aileron hinge bracket inspect/replace If not having aileron hinge brackets 74461-02 & -03	Yes
96-21-04	Hydraulic hose replacement If having hoses P/N 17766-02 or 465-138	No
96-21-11	MLG reinforcement bracket failure	No
97-07-03	Cleveland wheels inspect/replace	Yes
98-08-18	Elevator bungee spring inspection/replace	Yes
98-09-25	Lower wing splice plate replacement	No
99-06-01	Horizontal stabilizer inspections	Yes
99-12-05	Elevator spar inspections and replacement If elevators cited in Piper Service Bulletin No. 998A	Yes
99-14-01	POH/AFM revisions re: icing conditions	No
2000-06-06	Anti-icing procedures If equipped with deicing boots	No
2000-25-01	MLG door inspect/replace	Yes

APPLICABLE AD'S

Aircraft: Piper

PA-31-350

Demo1

S/N 31-7852247

AD's checked through release of 10/8/2007 - (06-21 and later)

The following AD's have likely applicability to this airframe, engine(s) and propeller(s) if the listed condition is met.

2001-06-01	Elevator inspections	Yes
2003-24-07	Rudder torque tube corrosion inspection	Yes

APPLICABLE AD'S

Aircraft: Piper

PA-31-350

Demo1

S/N 31-7852247

AD's checked through release of 10/8/2007 - (06-21 and later)

The following AD's have likely applicability to this airframe, engine(s) and propeller(s) if the listed condition is met.

Airframe Accessories

			Recurring
70-22-04	Defective Wood Electric Circuit Breakers	With 105-108, 147, 152, 254, 447, & 2100 series Circuit Breakers	No
74-24-13	Defective United Instruments altimeters	If having 99009 or series 322, 450, 550, altimeter - See AD	No
75-12-10	Collins multiple autopilot servo failure	If having Collins AP106 autopilot	No
75-22-22	Defective Pressed Steel compressed gas c	If having certain DOT-3HT-300 gas cylinders - See AD	No
76-07-09	Erroneous VOR bearings on Collins RMI	If having Collins332C-10 RMI	No
76-07-12	Defective Bendix ignition switch	If having certain Bendix ignition switches - see AD	Yes
78-05-06	Goodyear flexible fuel cell leakage	If having Goodyear BTC-39 fuel cells	No
78-25-03	Defective Deutsch Co. hoses	If having 4Q77 or 1Q78 Deutsch hoses	No
80-05-04	EON seat belts and harnesses	If equipped with EON E2900 and E8000 seat belts & harnesses	No
81-01-06	Bendix autopilot servo magnetic clutch failur	If having Bendix M-4 autopilot - See AD	No
84-02-08	Defective Scott oxygen cylinders	If having certain Scott Aviation oxygen cylinders	No
85-26-03	Defective Scott oxygen connectors	If having Scott Aviation Connectors P/N 289-56 & 289-56-1	No
86-05-02	Bad United Instruments 5394 srs altimeters	If equipped with P/N 5934xxx United Instrument altimeter	No
87-04-19	Defective EON safety belt assemblies	If fitted with EON TSO C22 safety belts with E6000 buckle	No
87-06-09	Defective Mechanical Products circuit break	If equipped with 4001, 4200, 4310 or 8500 series circuit breakers	No
87-17-06	AM-Safe safety belt connector	If equipped with certain AM-Safe seat belt connectors	No
87-20-05	Pacific Scientific weak restraint systems	If equipped with Pacific Scientific P/N 1107177 lap belt assemblies	No
89-09-02	Defective Davis seat belts	If fitted with certain Davis seat belts with black ultem latch-cover	No
93-05-06	Defective ACS or Gerdes ignition switches	If having ACS or Gerdes ignition switch - see AD	Yes
93-12-04	Precise Flight, Inc. pulselites	If Pulselights installed IAW STC SA40005NM	No
94-21-06	Pacific Scientific safety belt malfunctions	If having seat belts mentioned in Pacific Scientific S/B's - See AD	No
95-01-01	Terra transponder problems with TCAS	If equipped with Terra (Trimble) TRT 250 transponder	No
97-16-10	Rapco Defective instrument air filters	See AD for RAPCO model and P/N's	No
98-14-03	KT 76A transponder altitude discrepancy	If equipped with AlliedSignal KT 76A transponder	No
98-21-21 R1	Defective inflatable door seals	If having Bob Fields door seal IAW STC SA4385WP	Yes

APPLICABLE AD'S

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The following AD's have likely applicability to this airframe, engine(s) and propeller(s) if the listed condition is met.

98-23-01	Defective dry air pump flexible coupling	If having listed Parker Hannifin dry air pump or kit	No
98-25-10 R1	Defective seat belt locking systems	See AD for affected Aircraft Belts models.	No
99-24-10	Standby vac system inspection/placards	If having Precise Flight III SVS standby vacuum system	Yes
2001-14-51	Incorrect radial bearing on VHF Nav/Com	If having Apollo SL30 VHF Nav/Comm Receiver	No
2001-23-17	Inaccuracies in Garmin GNS 430 units	If having Garmin GNS 430	No
2003-26-14	Defective hand held halon fire extinguishers	If having Kidde hand held fire extinguisher P/N 898052	No
2004-08-16	Transponder failure	If having NARCO AT150 transponder with Chassis Level A, S/N 1	No
2004-13-20	Apollo GX series GPS navigation units	If having Garmin Apollo GX Series GPS	No
2004-21-04	Defective trancesivers	If having Becker AR 4201 tranceiver S/N 0150-0499	No
2004-25-16 R1	Combustion heater fuel valve leakage	Affects B1500, B2030, B2500, B3040, B3500, B4050, B4500	Yes
2005-01-19	Mandatory Software Revision	If having Garmin GTX-33/33D/330/33D transponder	No
2005-11-05	Defective standby vacuum systems	If having Precise Flight SVS I or IA standby vacuum system	No
2005-25-08	Erroneous ADC readout	If having Shadin ADC-2000 installed	No
2006-03-08	Defective vacuum pumps	If having Aero Advantage vacuum pump	No

APPLICABLE AD'S

Aircraft: Piper

PA-31-350

Demo1

S/N 31-7852247

AD's checked through release of 10/8/2007 - (06-21 and later)

The following AD's have likely applicability to this airframe, engine(s) and propeller(s) if the listed condition is met.

Engine

			Recurring
75-09-15	Bendix fuel flow divider cover gasket replac	If having certain Bendix fuel injector flow dividers - See AD	No
78-23-10	Fuel injector bellows seal	See AD for injectors affected	No
79-04-05	Separation of fuel regulator diaphragm stem	If equipped with certain RS-5 or RS-10 injectors	No
83-22-04	Bendix fuel injectors	If having RSA-10DB1 or 2 or RSA-10ED1 or 2 fuel injectors	No
91-08-07	Fuel pump vent restrictor		No
92-12-05	Piston pin failure	If piston pin LW-14077 purchased 6/18/91 to 8/5/91	No
95-07-01	Defective engine bolts	If con rod bolts replaced by Superior Air Parts bolts after 2-15-94	No
97-15-11	Defective piston pins	If overhauled or reman between 12-15-95 and 1-21-97	No
2002-12-07	Oil filter gasket/kit inspect and/or replace	If overhauled or oil kit or gasket replaced 4-1-99 to 10-4-00	Yes
2002-19-03	Defective crankshafts		No
2002-26-01	Fuel line inspection and/or replace		Yes
2003-14-03	Fuel pump torque inspections	If having Lear/Romec fuel pump RG9080, RG9570 or RG17980	Yes
2004-05-24	Defective crankshaft retaining bolts	If having P/N STD-2209 crankshaft bolt	No
2004-10-14	Crankshaft retaining bolt looseness	Required at overhaul or after sudden stoppage	Yes
2005-19-11	Defective crankshafts	If < 301 HP, new or rebuilt since 1 March 1999	No
2006-10-21	Defective connecting rods	If having Eci connecting rods, P/N AEL11488	No
2006-12-07	With ECI AEL65102 Series Cylinders	If having ECI cylinder P/N AEL65102	No
2006-20-09	Defective crankshaft replacement	If having crankshaft replaced/installed after March 1, 1997.	No

APPLICABLE AD'S

Aircraft: Piper	PA-31-350	Demo1 S/N 31-7852247
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AD's checked through release of 10/8/2007 - (06-21 and later)

The following AD's have likely applicability to this airframe, engine(s) and propeller(s) if the listed condition is met.

Engine Accessories

			Recurring
65-21-01	Bendix starter jaw ratcheting	See AD for list of affected Bendix/Garwin starters	No
79-13-08	Airborne dry air pump failure	See AD for affected Airborne dry air pumps	No
79-21-08	Bendix fuel injection system fuel flow cutoff	If having certain Bendix RS-5, -7 or -10 fuel injection system	No
79-26-03	Bendix fuel injector regulator stem	If having injector RSA-5AD1 P/N 2524145-8, -9	No
81-12-06 R1	Loose magneto distributor gear electrodes		No
81-15-03	Brackett inlet air filter retainer screen	If having Brackett air filter per STC SA693CD or SA71GL	No
82-27-03	Roto Master turbocharger housing cracks	If having Roto Master 325E10 or 3ATEE10J2 turbocharger	Yes
84-26-02	Paper induction air filters	If equipped with paper induction air filter	Yes
86-01-06	Defective Parker Hannifin dry air pumps	See AD for affected Airborne dry air pumps	No
93-11-11	Defective AC, Textron and Rajay fuel pump	If having AC, TCM or Rajay modified HP fuel pump	No
94-06-09	Ungrounded TCM magnetos	If fitted after 10/27/93 w/capacitor 10-349276 datecode 93-40/93-	No
97-01-04	S-A-P Defective cylinders	See AD for list of affected Superior Air Parts cylinders	Yes

Propeller

			Recurring
2002-09-08	Blade shank cracks	If having 'Y' shank blades	No
2005-14-11	Defective propeller overhauls	If overhauled by So. Cal Propeller	No
2005-18-20	Defective propeller deicers	If having Goodrich FastProp deicer	Yes

NOT APPLICABLE

Aircraft: Piper

PA-31-350

Demo1

S/N 31-7852247

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The following AD's may appear to be applicable, but are not for the reason stated.

Airframe

70-26-06	Elevator & rudder spar & rib cracks	Superseded by AD 2001-06-01 on 12/29/1970
74-26-10	Magneto switch guard installation	N/A by S/N
75-06-04	Forward rudder control cable inspection	N/A by S/N
75-09-10	Elevator push pull tube inspection	N/A by S/N
76-03-01	Elevator trim tab control system	Superseded by AD 2001-06-01 on 2/9/1976
76-04-10	Battery drain and vent relocation	N/A by S/N
76-04-11	Control shaft bolt looseness	N/A by S/N
76-15-07	Loose elevator balance weights	N/A by S/N
77-01-06	Horizontal stabilizer rivet attachments	N/A by S/N
77-07-03	Electrical terminals shorting over relay cover	N/A by S/N
77-08-02	Microphone and phone jack electrical shorts	N/A by S/N
77-09-10	Electric trim switch modification	N/A by S/N
77-14-14	Defective right wing front spar channel	N/A by S/N
77-19-06	Arcing between battery and aileron cables	N/A by S/N
77-24-01	Horizontal stabilizer and fin rivets	N/A by S/N
78-01-02	Elevator bungee tension	N/A by S/N
78-05-05	Cabin door latch modification	N/A by S/N
78-26-11	Elevator control system modification	N/A by S/N
79-01-04	Elevator bungee spring failure	Superseded by AD 98-08-18 on 1/5/1979
79-12-03	Turbocharger exhaust coupling failure	Superseded by AD 82-16-05 R1 on 4/11/1986
80-02-15	Elevator butt rib cracks	Superseded by AD 2001-06-01 on 1/29/1980
80-13-06	Alternate air door magnetic catch security	N/A by S/N
80-14-06	Flap track area inspections/modifications	Superseded by AD 96-10-15 on 6/27/1996
80-18-10	Fuel valves and cables inspect/overhaul	N/A by S/N
80-22-04	Inspect/modify FS 317.75 bulkhead	Superseded by AD 96-12-12 on 7/16/1996
80-26-05	Landing gear door attachment failure	Superseded by AD 2000-25-01 on 12/19/1980
81-11-04	Cleveland wheels inspect/replace	Superseded by AD 97-07-03 on 5/15/1997
81-15-04 R1	Horizontal stabilizer rear spar inspection	Superseded by AD 99-06-01 on 3/19/1999
82-27-13 R2	Asymmetric flap extension	N/A by S/N

NOT APPLICABLE

Aircraft: Piper

PA-31-350

Demo1

S/N 31-7852247

AD's checked through release of 10/8/2007 - (06-21 and later)

The following AD's may appear to be applicable, but are not for the reason stated.

86-17-07	Hydraulic hose replacement	Superseded by AD 96-21-04 on 12/10/1996
88-05-05	MLG sidebrace inspections/modifications	Superseded by AD 96-10-14 on 6/27/1996
93-02-13	Engine baffle seals inspect/replace	Superseded by AD 93-23-13 on 1/21/1994
93-25-08	MLG reinforcement bracket failure	Superseded by AD 96-21-11 on 12/16/1996
96-24-13	MLG forward attachment cable modifications	N/A by S/N
98-04-27	POH/AFM revisions re: icing conditions	Superseded by AD 99-14-01 on 8/17/1999

Airframe Accessories

2004-10-15	Mandatory software revision	Superseded by AD 2005-01-19 on 7/9/2004
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Engine

73-23-01 R4	Piston pin failures	N/A by S/N
91-14-22	Crankshaft gear retaining bolt	Superseded by AD 2004-10-14 on 8/19/1991
93-02-05	Inspect/replace fuel injection lines	Superseded by AD 2002-26-01 on 6/14/1993
93-05-22	Inspect fuel injection lines for support integrity	Superseded by AD 2002-26-01 on 5/11/1993
97-01-03	Defective piston pins	Superseded by AD 97-15-11 on 8/12/1997
98-18-12	Fuel pump torque inspections	Superseded by AD 2003-14-03 on 9/28/1998
2002-17-53	Crankshaft removal	Superseded by AD 2002-19-03 on 8/16/2002
2002-20-51	Defective crankshaft retaining bolts	N/A to single drive dual magneto engines
2002-23-06	Defective crankshaft retaining bolts	Superseded by AD 2004-05-24 on 11/19/2002
2005-26-10	Defective cylinders	Superseded by AD 2006-12-07 on 1/31/2006

Engine Accessories

70-26-02	Defective Woodward propeller governor	Superseded by AD 2001-06-01 on 12/27/1970
78-25-05	Brackett inlet air filter retainer screen	Superseded by AD 81-15-03 on 7/20/1981
93-05-21	Defective AC, Textron and Rajay fuel pumps	Superseded by AD 93-11-11 on 6/21/1993
2005-12-06	Magneto impulse couplings inspections	N/A to this mag-engine combination

Propeller

2001-07-03	Defective overhauls by BASCO	N/A by S/N
2006-24-07	Defective overhauls	N/A by S/N

SERVICE DOCUMENTS

Aircraft: Piper

PA-31-350

Demo1

S/N 31-7852247

AD's checked through release of 10/8/2007 - (06-21 and later)

The following manufacturer service documents apply to the mentioned AD.

	Manufacturer	Type	Number	Date
70-22-04	Wood Electric	Dwng	99-001, Rev. 1	6/26/1970
70-22-04	Wood Electric	Dwng	4-008, Rev. 2	6/26/1970
70-22-04	Boeing	SB	707/7202693 Rev. 3	7/1/1970
70-22-04	Boeing	SB	72724-35 Rev. 3	7/1/1970
70-22-04	Boeing	SB	73724-1019	7/20/1970
75-09-15	Bendix	SB	RS-43	
75-09-15	Lycoming	SB	382	1/17/1975
75-12-10	Collins	SB	6	2/16/1976
76-07-12	Bendix	SB	583	4/1/1976
78-05-06	Israel	SB	WW-20	
78-05-06	Beech	SI	0895	
78-05-06	Israel	SB	CJ-17	
78-05-06	Piper	SB	591	
78-05-06	Rockwell	SB	165	
78-05-06	Cessna	SL	ME78-7	
78-23-10	Bendix	SB	RS-54, Rev. 2	5/10/1978
78-23-10	Bendix	SB	RS-52, Rev. 2	5/12/1978
78-23-10	Bendix	SB	RS-53, Rev. 2	5/12/1978
78-23-10	Lycoming	MSB	429	7/28/1978
78-23-10	Lycoming	MSB	430, Supplement 1	7/29/1979
78-23-10	Lycoming	MSB	428, Supplement 1	8/17/1979
79-04-05	Bendix	SB	RS-57, Rev. 1	
79-04-05	Lycoming	SB	433, Rev. A	1/12/1979
79-12-02	Piper	SB	649	3/29/1979
79-14-02	Piper	SB	651	2/11/1979
79-21-08	Bendix	SB	RS-68	8/20/1979
79-21-08	Bendix	SB	RS-70	8/20/1979
79-21-08	Bendix	SB	RS-69	8/20/1979
79-26-03	Bendix	SB	RS-68	9/6/1979
80-17-02	Piper	SB	690	7/7/1980

SERVICE DOCUMENTS

Aircraft: Piper

PA-31-350

Demo1

S/N 31-7852247

AD's checked through release of 10/8/2007 - (06-21 and later)

The following manufacturer service documents apply to the mentioned AD.

	Manufacturer	Type	Number	Date
80-17-06	Piper	SB	688	7/1/1980
81-01-06	King	SB	M-4D-060	11/1/1980
81-12-06 R1	Bendix	SB	618	6/1/1981
81-12-06 R1	Bendix	SB	619	6/1/1981
81-15-03	Brackett	SB	3, Rev.1	3/1/1979
81-15-03	Brackett	SB	6, Rev.1	6/29/1981
82-16-05 R1	Piper	SB	644, Rev. D	5/29/1986
82-27-03	Roto Master	SL	27 Rev. A	8/24/1982
83-22-04	Bendix	SB	RS-85, Supp.1	8/10/1983
83-22-04	Bendix	SB	RS-88, Supp.1	8/10/1983
83-22-04	Lycoming	SB	467, Supp. 2	11/11/1983
85-08-05	Piper	SB	779, Rev. A	7/16/1984
85-26-03	Scott	SB	289-35-10	5/27/1985
86-01-06	Airborne	SB	30	11/11/1985
86-05-02	United Instruments	SB	2	2/24/1986
87-17-06	AM Safe	SB	AS001	11/5/1986
87-21-01	Piper	SB	797B	9/1/1987
91-08-07	Lycoming	SI	1446	8/9/1989
91-08-07	Lycoming	SB	497	11/15/1990
92-12-05	Lycoming	SB	501, Rev. B	11/15/1991
93-05-06	Cessna	SB	SEB91-5, Rev.1	6/14/1991
93-05-06	ACS	SB	92-01	8/15/1992
93-11-11	Aero Accessories	MSB	001	8/21/1992
93-11-11	Aero Accessories	MSB	002	2/25/1993
93-12-04	Precise Flight	SB	PL9303001	3/10/1993
93-23-13	Piper	Kit	764 093	11/11/1980
94-06-09	TCM	CSB	641	2/1/1994
94-06-09	TCM	SB	94-1	2/1/1994
94-06-09	Lycoming	SB	517	2/25/1994
94-21-06	Pacific Scientific	SB	1108435-25-01	4/28/1994

SERVICE DOCUMENTS

Aircraft: Piper

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AD's checked through release of 10/8/2007 - (06-21 and later)

The following manufacturer service documents apply to the mentioned AD.

	Manufacturer	Type	Number	Date
94-21-06	Pacific Scientific	SB	1108460-25-01	4/28/1994
95-01-01	Terra	SB	SB-104 Rev. 1	6/27/1994
95-07-01	Superior Air Parts	SB	95-002	3/3/1995
96-10-14	Piper	SB	845A	10/9/1987
96-10-15	Piper	Kit	763 986	4/15/1991
96-12-12	Piper	SB	636A	8/26/1980
96-21-03	New Piper	SB	967	1/24/1994
96-21-04	New Piper	SB	974	10/19/1994
97-01-04	Superior Air Parts	MSB	96-002, Rev. A	12/17/1996
97-07-03	Piper	SB	700, Rev. A	10/21/1981
97-15-11	Lycoming	SB	527, Rev. C	4/18/1997
98-08-18	Piper	SB	626C	2/28/1997
98-08-18	Piper	SB	1002	6/5/1997
98-14-03	AlliedSignal	SB	SB KT 76A-7	7/1/1996
98-23-01	Airglas Engineering	SB	LW3600-3, Amendment	10/10/1997
98-23-01	Parker Hannifin	SL	48	10/20/1998
99-06-01	Piper	SB	1007	9/30/1997
99-12-05	Piper	SB	998A	8/4/1997
2000-25-01	Piper	SB	682	7/24/1980
2001-06-01	Piper	SB	477A	11/3/1975
2001-06-01	Cessna	SIL	ME83-33, Rev1	12/2/1983
2001-06-01	Piper	Kit	760 465, Revised	10/25/1989
2001-06-01	Piper	SB	897B	7/15/1997
2001-06-01	Piper	SB	1008	9/30/1997
2001-23-17	Garmin	SB	9905, Rev. A	9/17/1999
2002-09-08	Hartzell	SB	SB-118A	
2002-09-08	Hartzell	SB	69, Sup.1	9/19/1962
2002-09-08	Hartzell	SB	SB-101D	12/19/1974
2002-12-07	Lycoming	SI	1453	5/9/1991
2002-12-07	Lycoming	MSB	543A	8/30/2000

SERVICE DOCUMENTS

Aircraft: Piper

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The following manufacturer service documents apply to the mentioned AD.

	Manufacturer	Type	Number	Date
2002-19-03	Lycoming	MSB	552	8/16/2002
2002-26-01	Lycoming	SB	342, Rev. B	10/22/1993
2002-26-01	Lycoming	SB	342, Rev. D	7/10/2001
2003-14-03	Lycoming	SB	529B	6/10/2002
2003-24-07	Piper	SB	1105A	9/22/2003
2004-05-24	Lycoming	MSB	554	9/30/2002
2004-05-24	Lycoming	MSB	554, Sup. 5	8/15/2003
2004-08-16	Narco	SB	AT150 No. 1 AT150 No. 6	7/29/1977
2004-08-16	Narco	SB	AT150 No. 6 AT150 No. 6	1/31/2003
2004-10-14	Lycoming	MSB	475, Rev. C	1/30/2003
2004-13-20	Garmin	SB	561-4002-001	4/19/2002
2005-18-20	Goodrich	SB	30-60-00-1	11/15/2004
2005-18-20	TCM	MSB	MSB94-4E	1/24/2005
2005-19-11	Lycoming	MSB	566	7/11/2005
2005-25-08	Shadin	SB	SB28-05-002, Rev C	6/29/2005
2006-12-07	Eci	SB	05-08, Rev 2	2/28/2006
2006-20-09	Lycoming	MSB	569A	4/11/2006

RECURRING AD'S SUMMARY

Aircraft: Piper

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The following AD's contain a multiple compliance requirement. An entry in the "Inspect each:" column indicates a required periodic inspection that is ended by accomplishing the action in the "Terminating Action" column. An entry in the "Rekurs each" column indicates a continuing compliance requirement known to be present as of the date of this report.

AD #:	Description:	Inspection interval:	Terminating Actio	Rekurs each:
76-07-12	Defective Bendix ignition switch			100 hours
82-16-05 R1	Turbocharger exhaust coupling failure			100 hours
82-27-03	Roto Master turbocharger housing cracks	200 hours	P/N 600510-04 is installed	
84-26-02	Paper induction air filters			500 hours
93-05-06	Defective ACS or Gerdes ignition switche			2000 hours
93-23-13	Engine baffle seals inspect/replace	50 hours	Thicker baffle seals installed	
96-10-14	MLG sidebrace inspections/modifications	100 hours	Improved MLG braces installed	
96-10-15	Flap track area inspections/modifications	100 hours	Piper Kit 783 986 installed	
96-21-03	Aileron hinge bracket inspect/replace	100 hours	Brackets replaced or 1000 hrs	
97-01-04	S-A-P Defective cylinders	25 hours	Defective cylinders are replaced	
97-07-03	Cleveland wheels inspect/replace	Varies - See AD	Cleveland wheels are replaced	
98-08-18	Elevator bungee spring inspection/replace	100 hours	Bungee spring is replaced	1000 hours
99-06-01	Horizontal stabilizer inspections	100 hours	Kit 766-646 is installed	
99-12-05	Elevator spar inspections and replacemen	100 hours	Elevators or spars are replaced	
99-24-10	Standby vac system inspection/placards			12/24 months
2000-25-01	MLG door inspect/replace			Varies - See AD
2001-06-01	Elevator inspections	100 hours	Kit 760 465 installed	
2002-12-07	Oil filter gasket/kit inspect and/or replace	50 hours	gasket or kit replaced	
2002-26-01	Fuel line inspection and/or replace			100 hours
2003-14-03	Fuel pump torque inspections	50 hrs/6 months	Torgue values stabilize or pump replac	
2003-24-07	Rudder torque tube corrosion inspection			12 monhs
2004-25-16 R1	Combustion heater fuel valve leakage			100 hrs/12 mos
2005-18-20	Defective propeller deicers			Daily

NEW or REVISED AD'S

Aircraft: Piper

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The following AD's are new or revised since

08-Oct-06

Engine

2006-20-09

Defective crankshaft replacement

11/3/2006



PROPOSED AD'S

Aircraft: Piper

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AD's checked through release of 10/8/2007 - (06-21 and later)

Recur
Code

The following NPRM's will have likely applicability if and when they are issued as AD's:.

Published in Federal Register:

Supersedes or revises:



HISTORIC AD'S

The following outdated appliance AD's are listed separately because of their apparent lack of current applicability.

Ag Ops

48-34-02	None	Adjustments for sulphur dusting	01-Oct-48
57-25-01	None	Spray pressure regulator diaphragm	31-Dec-57

Avionics

50-48-02	Collins	Collins Model 51R-1 receiver malfunctioning	31-Dec-50
52-13-01	Collins Radio	Collins tone localizer filters failure in radios	01-Nov-52
60-04-01	Bendix	Improper resistors in Bendix PA speaker	31-Dec-60
62-06-02	EDO	Spurious radiation from EDO loran receiver	10-Apr-62
62-13-01	Andrea Radio	Defective volume control on Andrea intercom sets	01-Jun-62
65-14-06	United Data Control, Inc.	United Date flight data recorder malfunctioning	31-Dec-65
73-07-02	Garrett	Defective Garrett ELT's	29-Mar-73
74-18-15	Leigh Systems	Leigh magnesium battery gassing	23-Jan-75
74-19-02	Pathfinder	Corrosion damage to Pathfinder ELT	13-Sep-74
74-20-10	Leigh Systems	Corrosion in Leigh ELT	30-Dec-77
74-24-07	Chromalloy	Defective Chromalloy rescue locator beacon battery pack	15-Nov-74
76-07-09	Collins Radio	Erroneous VOR bearings on Collins RMI	19-Apr-76
77-02-08	Narco	Narco ELT battery corrosion	01-Feb-77
80-19-19	Jet Electronics	Jet Electronics area navigation system	24-Apr-80
81-21-05	Artex	Artex battery pack failure	19-Oct-81

Electrical

50-04-01	Briggs/Stratton	Briggs & Stratton ignition switch failure	31-Dec-50
72-15-02	Prestolite	Prestolite alternator cooling fan failure	01-Sep-72
75-05-04	Whelan	Whelen strobe light flash tube fire hazard	31-Dec-75
76-02-07	Prestolite	Prestolite alternator slip ring bearings	02-Feb-76
79-07-02	ESB Wisco	Defective ESB-Wisco batteries	03-Apr-79
79-18-05	None	Lithium sulfur dioxide batteries	28-Feb-80

Engine

54-04-01	AC	AC LS-87 spark plug prohibition	01-Mar-54
77-12-05	Champion	Oil filter bypass valve failure	12-May-78

Fuel

54-21-01	AC	AC diaphragm type fuel pumps	31-Dec-54
55-26-02	Thompson	Thompson engine driven fuel pump failure	31-Dec-55
63-09-01	Bendix	Fuel flow transmitter cracks	11-Dec-63
66-07-03	Edison & Garwin	Defective Edison fuel pressure gauges	03-Apr-66
70-22-02	Airborne	Airborne fuel selector valve	04-Nov-70

Installed Equipment

51-26-02	Lear	Lear autopilot servo clutch	01-Jan-52
52-23-01	Edison	Defective Edison fire detector wiring	01-Jan-53
54-02-02	Federal Skis	Federal wheel ski pitch down during flight	31-Dec-54
55-04-01	Federal Skis	Federal ski pitch down during flight	31-Dec-55
59-06-08	Graviner	Graviner automatic fire extinguishers	31-Dec-59
62-11-03	Graviner	Fire extinguishing system igniter wire corrosion	22-May-62
64-01-01	Airborne	Airborne vacuum pump drive coupling	09-Jan-64
65-01-03	Lockheed	Lockheed flight data recorder improvements	31-Dec-65
67-23-05	Graviner	Automatic Gravinefire extinguisher container inspection	12-Aug-67
70-20-02	Woodward	Airspeed gauge glass alignment	26-Oct-70
73-26-05	Scott	Scott chemical oxygen generators	31-Dec-73

HISTORIC AD'S

The following outdated appliance AD's are listed separately because of their apparent lack of current applicability.

76-16-02	Airborne	Airborne vacuum pump failure	11-Aug-76
77-16-10	EDO-Aire Mitchell	Mitchell navigation situation display errors	08-Sep-77
78-14-09	Pyrotector	Defective Pyrotector fire detectors	08-Aug-78

Instruments

65-18-02	Schwien	Schwien turn & bank indicator fatigue failure	30-Oct-65
69-24-05	Kollsman	False Kollsman altimeter signal	04-Dec-69
75-05-07	King Radio	Defective King gyro induced navigation errors	28-Feb-75
75-05-14	Kollsman	Incorrect altitude readings on Kollsman altimeters	06-Mar-75
77-15-10	Filotechnica	Erroneous airspeed indications on Filotechnica	04-Aug-77

Seats and Belts

50-18-03	Air Assoc.	See FAR 91.33(b)(12) & 91.205(b)(12) of 12/4/81	31-Dec-50
54-20-01	Aircraft Belt	Under strength seat belt	31-Dec-54
55-08-01	Beechcraft	Safety belt buckle inspection	31-Dec-55
56-21-04	Russell Mfg.	See FAR 91.33(b)(12) & 91.205(b)(12) of 12/4/81	31-Dec-56
57-14-02	Davis	Davis model FDC-1650 seat belts	31-Dec-57
59-24-03	Brown Line	See FAR 91.33(b)(12) & 91.205(b)(12) of 12/4/81	31-Dec-59
61-20-01	Auto Crat	Under strength Auto Crat seat belts	24-Oct-61
61-20-03	Russell Mfg.	See FAR 91.33(b)(12) & 91.205(b)(12) of 12/4/81	31-Dec-61
62-23-01	Auto Crat	Non aircraft quality Auto Crat seat belt	19-Nov-62
62-24-05	Mareco	See FAR 91.33(b)(12) & 91.205(b)(12) of 12/4/81	31-Dec-62
64-10-03	Davis	Davis seat belt latching failure	08-Oct-69
67-18-05	Teco	TECO seat failure	30-Jun-67
79-16-02	Indiana Mills	Defective Indiana Mills seat belt assemblies	02-Aug-79

Wheels/Tires/Brakes

71-06-08	Cleveland	Separation of Cleveland brake disc	08-Jun-71
71-14-02	Goodrich	Defective Goodrich tires	02-Jul-71
72-04-02	Bendix	Bendix wheel half failure	04-Mar-72
78-20-12	Firestone	Defective Firestone tires	06-Sep-78
83-26-03	Goodrich	Defective Goodrich tires	23-Dec-83

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AD	Classification	Section	AD	Classification	Section
48-34-02	Historic	7	70-26-06	Superseded	2
50-04-01	Historic	7	71-06-08	Historic	7
50-18-03	Historic	7	71-14-02	Historic	7
50-48-02	Historic	7	72-04-02	Historic	7
51-26-02	Historic	7	72-15-02	Historic	7
52-13-01	Historic	7	73-07-02	Historic	7
52-23-01	Historic	7	73-23-01 R4	N/A by S/N	2
54-02-02	Historic	7	73-26-05	Historic	7
54-04-01	Historic	7	74-18-15	Historic	7
54-20-01	Historic	7	74-19-02	Historic	7
54-21-01	Historic	7	74-20-10	Historic	7
55-04-01	Historic	7	74-24-07	Historic	7
55-08-01	Historic	7	74-24-13	May Apply	1
55-26-02	Historic	7	74-26-10	N/A by S/N	2
56-21-04	Historic	7	75-05-04	Historic	7
57-14-02	Historic	7	75-05-07	Historic	7
57-25-01	Historic	7	75-05-14	Historic	7
59-06-08	Historic	7	75-06-04	N/A by S/N	2
59-24-03	Historic	7	75-09-10	N/A by S/N	2
60-04-01	Historic	7	75-09-15	May Apply	1
61-20-01	Historic	7	75-12-10	May Apply	1
61-20-03	Historic	7	75-22-22	May Apply	1
62-06-02	Historic	7	76-02-07	Historic	7
62-11-03	Historic	7	76-03-01	Superseded	2
62-13-01	Historic	7	76-04-10	N/A by S/N	2
62-23-01	Historic	7	76-04-11	N/A by S/N	2
62-24-05	Historic	7	76-07-09	Historic	7
63-09-01	Historic	7	76-07-09	May Apply	1
64-01-01	Historic	7	76-07-12	May Apply	1
64-10-03	Historic	7	76-15-07	N/A by S/N	2
65-01-03	Historic	7	76-16-02	Historic	7
65-14-06	Historic	7	77-01-06	N/A by S/N	2
65-18-02	Historic	7	77-02-08	Historic	7
65-21-01	May Apply	1	77-07-03	N/A by S/N	2
66-07-03	Historic	7	77-08-02	N/A by S/N	2
67-18-05	Historic	7	77-09-10	N/A by S/N	2
67-23-05	Historic	7	77-12-05	Historic	7
69-24-05	Historic	7	77-14-14	N/A by S/N	2
70-20-02	Historic	7	77-15-10	Historic	7
70-22-02	Historic	7	77-16-10	Historic	7
70-22-04	May Apply	1	77-19-06	N/A by S/N	2
70-26-02	Superseded	2	77-24-01	N/A by S/N	2

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AD	Classification	Section	AD	Classification	Section
78-01-02	N/A by S/N	2	84-26-02	May Apply	1
78-05-05	N/A by S/N	2	85-08-05	Applicable	1
78-05-06	May Apply	1	85-26-03	May Apply	1
78-14-09	Historic	7	86-01-06	May Apply	1
78-20-12	Historic	7	86-05-02	May Apply	1
78-23-10	May Apply	1	86-17-07	Superseded	2
78-25-03	May Apply	1	87-04-19	May Apply	1
78-25-05	Superseded	2	87-06-09	May Apply	1
78-26-11	N/A by S/N	2	87-17-06	May Apply	1
79-01-04	Superseded	2	87-20-05	May Apply	1
79-04-05	May Apply	1	87-21-01	Applicable	1
79-07-02	Historic	7	88-05-05	Superseded	2
79-12-02	Applicable	1	89-09-02	May Apply	1
79-12-03	Superseded	2	91-08-07	Applicable	1
79-13-08	May Apply	1	91-14-22	Superseded	2
79-14-02	Applicable	1	92-12-05	May Apply	1
79-16-02	Historic	7	92-27-05	Applicable	1
79-18-05	Historic	7	93-02-05	Superseded	2
79-20-07	May Apply	1	93-02-13	Superseded	2
79-21-08	May Apply	1	93-05-06	May Apply	1
79-26-03	May Apply	1	93-05-21	Superseded	2
80-02-15	Superseded	2	93-05-22	Superseded	2
80-05-04	May Apply	1	93-11-11	May Apply	1
80-13-06	N/A by S/N	2	93-12-04	May Apply	1
80-14-06	Superseded	2	93-23-13	Applicable	1
80-17-02	Applicable	1	93-24-02 R1	Applicable	1
80-17-06	Applicable	1	93-25-08	Superseded	2
80-18-10	N/A by S/N	2	94-06-09	May Apply	1
80-19-19	Historic	7	94-21-06	May Apply	1
80-22-04	Superseded	2	95-01-01	May Apply	1
80-26-05	Superseded	2	95-07-01	May Apply	1
81-01-06	May Apply	1	96-10-14	May Apply	1
81-11-04	Superseded	2	96-10-15	May Apply	1
81-15-03	May Apply	1	96-12-12	May Apply	1
81-15-04 R1	Superseded	2	96-21-03	May Apply	1
81-21-05	Historic	7	96-21-04	May Apply	1
82-16-05 R1	May Apply	1	96-21-11	Applicable	1
82-27-03	May Apply	1	96-24-13	N/A by S/N	2
82-27-13 R2	N/A by S/N	2	97-01-03	Superseded	2
83-22-04	May Apply	1	97-01-04	May Apply	1
83-26-03	Historic	7	97-07-03	Applicable	1
84-02-08	May Apply	1	97-15-11	May Apply	1

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AD	Classification	Section	AD	Classification	Section
97-16-10	May Apply	1	2005-25-08	May Apply	1
98-04-27	Superseded	2	2005-26-10	Superseded	2
98-08-18	Applicable	1	2006-03-08	May Apply	1
98-09-25	Applicable	1	2006-10-21	May Apply	1
98-14-03	May Apply	1	2006-12-07	May Apply	1
98-18-12	Superseded	2	2006-20-09	May Apply	1
98-21-21 R1	May Apply	1	2006-24-07	N/A by S/N	2
98-23-01	May Apply	1			
98-25-10 R1	May Apply	1			
99-06-01	Applicable	1			
99-12-05	May Apply	1			
99-14-01	Applicable	1			
99-24-10	May Apply	1			
2000-06-06	May Apply	1			
2000-25-01	Applicable	1			
2001-06-01	Applicable	1			
2001-07-03	N/A by S/N	2			
2001-14-51	May Apply	1			
2001-23-17	May Apply	1			
2002-09-08	May Apply	1			
2002-12-07	May Apply	1			
2002-17-53	Superseded	2			
2002-19-03	Applicable	1			
2002-20-51	N/A by Magnetos	2			
2002-23-06	Superseded	2			
2002-26-01	Applicable	1			
2003-14-03	May Apply	1			
2003-24-07	Applicable	1			
2003-26-14	May Apply	1			
2004-05-24	May Apply	1			
2004-08-16	May Apply	1			
2004-10-14	May Apply	1			
2004-10-15	Superseded	2			
2004-13-20	May Apply	1			
2004-21-04	May Apply	1			
2004-25-16 R1	May Apply	1			
2005-01-19	May Apply	1			
2005-11-05	May Apply	1			
2005-12-06	N/A by Magnetos	2			
2005-14-11	May Apply	1			
2005-18-20	May Apply	1			
2005-19-11	May Apply	1			

AIRWORTHINESS DIRECTIVE COMPLIANCE WORK SHEET

A1 Aero Service
1 Airport Road
East Last Chance, Oregon

Aircraft: Demo1

Make: Piper

Model: PA-31-350

S/N: 31-785224

AD Identification Date and Status	Description Applicability Condition	Recurring Status	Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
Airframe				
79-12-02 39-3501 02-Jul-79 Applicable	Elevator travel stop bolt inspection	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.		
Action:				
Final:				
Next Du				
79-14-02 39-3510 06-Jul-79 Applicable	Control wheel shaft stud security	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.		
Action:				
Final:				
Next Du				
79-20-07 39-3573 02-Oct-79 May Apply	Cigar lighter wiring	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
	If having 3 cigar lighters & voltage dropping	Term.		
Action:				
Final:				
Next Du				
80-17-02 39-3872 08-Aug-80 Applicable	Elevator balance weight inspection	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.		
Action:				
Final:				
Next Du				
80-17-06 39-3874 13-Aug-80 Applicable	Airspeed placards	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.		
Action:				
Final:				
Next Du				
82-16-05 R1 39-5278 11-Apr-86 May Apply	Turbocharger exhaust coupling failure	Inspect	100 hours	Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
	If having 455-301, 555-376, -411 or -36 turbo couplings	Term.		
Action:				
Final:				
Next Du				
85-08-05 39-5040 28-May-85 Applicable	Landing gear strut inspection	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.		
Action:				
Final:				
Next Du				

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AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
87-21-01 39-5739 02-Nov-87 Applicable	Fuel filler opening modification	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.			
		Action:			
		Final:			
		Next Du			
92-27-05 39-8438 29-Jan-93 Applicable	Improper aileron cable connection	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.			
		Action:			
		Final:			
		Next Du			
93-23-13 39-3925 21-Jan-94 Applicable	Engine baffle seals inspect/replace	Inspect	50 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.	Thicker baffle seals installed		
		Action:			
		Final:			
		Next Du			
93-24-02 R1 39-8810 15-Feb-94 Applicable	Elevator control tube	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.			
		Action:			
		Final:			
		Next Du			
96-10-14 39-9621 27-Jun-96 May Apply	MLG sidebrace inspections/modifications If not having improved sidebraces installed	Inspect	100 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.	Improved MLG braces installed		
		Action:			
		Final:			
		Next Du			
96-10-15 39-9622 27-Jun-96 May Apply	Flap track area inspections/modifications If not having kit 763 986 installed	Inspect	100 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.	Piper Kit 783 986 installed		
		Action:			
		Final:			
		Next Du			
96-12-12 39-9654 16-Jul-96 May Apply	Inspect/modify FS 317.75 bulkhead If not incorporating kit 764-028 or 763-917	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.			
		Action:			
		Final:			
		Next Du			
96-21-03 39-9780 10-Dec-96 May Apply	Aileron hinge bracket inspect/replace If not having aileron hinge brackets 74461-02 & -03	Inspect	100 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.	Brackets replaced or 1000 hrs		
		Action:			
		Final:			
		Next Du			

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
96-21-04 39-9781 10-Dec-96	Hydraulic hose replacement If having hoses P/N 17766-02 or 465-138	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply		Action: Final:			
		Next Du			
96-21-11 39-9788 16-Dec-96	MLG reinforcement bracket failure	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
Applicable		Action: Final:			
		Next Du			
97-07-03 39-9976 15-May-97	Cleveland wheels inspect/replace	Inspect	Varies - See AD		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.	Cleveland wheels are replaced		
Applicable		Action: Final:			
		Next Du			
98-08-18 39-10467 26-May-98	Elevator bungee spring inspection/replace	Inspect	100 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.	Bungee spring is replaced		
Applicable		Action: Final:	1000 hours		
		Next Du			
98-09-25 39-10506 18-Jun-98	Lower wing splice plate replacement	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
Applicable		Action: Final:			
		Next Du			
99-06-01 39-11065 20-Apr-99	Horizontal stabilizer inspections	Inspect	100 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.	Kit 766-646 is installed		
Applicable		Action: Final:			
		Next Du			
99-12-05 39-11189 23-Jul-99	Elevator spar inspections and replacement If elevators cited in Piper Service Bulletin No. 998A	Inspect	100 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.	Elevators or spars are replaced		
May Apply		Action: Final:			
		Next Du			
99-14-01 39-11209 17-Aug-99	POH/AFM revisions re: icing conditions	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
Applicable		Action: Final:			
		Next Du			

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
2000-06-06 39-11646 05-May-00	Anti-icing procedures	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If equipped with deicing boots	Term.			
		Action: Final: Next Du			
May Apply				Signature:	
2000-25-01 39-12035 19-Jan-01	MLG door inspect/replace	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
		Action: Final: Next Du	Varies - See AD		
Applicable				Signature:	
2001-06-01 08-May-01	Elevator inspections	Inspect	100 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.	Kit 760 465 installed		
		Action: Final: Next Du			
Applicable				Signature:	
2003-24-07 39-13376 09-Feb-04	Rudder torque tube corrosion inspection	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
		Action: Final: Next Du	12 monhs		
Applicable				Signature:	

AD Identification Date and Status	Description Applicability Condition	Recurring Status	Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
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Airframe Accessories

70-22-04 39-1207 19-May-71	Defective Wood Electric Circuit Breakers	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	With 105-108, 147, 152, 254, 447, & 2100 series Circuit Breakers	Term. Action: Final: Next Du		
May Apply				Signature:
74-24-13 39-2028 05-Dec-74	Defective United Instruments altimeters	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having 99009 or series 322, 450, 550, altimeter - See AD	Term. Action: Final: Next Du		
May Apply				Signature:
75-12-10 39-2232 15-May-75	Collins multiple autopilot servo failure	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Collins AP106 autopilot	Term. Action: Final: Next Du		
May Apply				Signature:
75-22-22 31-Dec-75	Defective Pressed Steel compressed gas cylinders	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having certain DOT-3HT-300 gas cylinders - See AD	Term. Action: Final: Next Du		
May Apply				Signature:
76-07-09 39-2570 19-Apr-76	Erroneous VOR bearings on Collins RMI	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Collins332C-10 RMI	Term. Action: Final: Next Du		
May Apply				Signature:
76-07-12 39-3024 30-Aug-77	Defective Bendix ignition switch	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having certain Bendix ignition switches - see AD	Term. Action: Final: Next Du	100 hours	
May Apply				Signature:
78-05-06 39-3249 30-Jun-78	Goodyear flexible fuel cell leakage	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Goodyear BTC-39 fuel cells	Term. Action: Final: Next Du		
May Apply				Signature:
78-25-03 39-3363 15-Jan-79	Defective Deutsch Co. hoses	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having 4Q77 or 1Q78 Deutsch hoses	Term. Action: Final: Next Du		
May Apply				Signature:

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
80-05-04 39-3706 10-Mar-80	EON seat belts and harnesses	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If equipped with EON E2900 and E8000 seat belts & harnesses	Action: Final: Next Du			Signature:
81-01-06 39-4008 12-Jan-81	Bendix autopilot servo magnetic clutch failure	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If having Bendix M-4 autopilot - See AD	Action: Final: Next Du			Signature:
84-02-08 09-Feb-84	Defective Scott oxygen cylinders	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If having certain Scott Aviation oxygen cylinders	Action: Final: Next Du			Signature:
85-26-03 30-Dec-85	Defective Scott oxygen connectors	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If having Scott Aviation Connectors P/N 289-56 & 289-56-1	Action: Final: Next Du			Signature:
86-05-02 39-5317 28-Feb-86	Bad United Instruments 5394 srs altimeters	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If equipped with P/N 5934xxx United Instrument altimeter	Action: Final: Next Du			Signature:
87-04-19 39-5552 18-Mar-87	Defective EON safety belt assemblies	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If fitted with EON TSO C22 safety belts with E6000 buckle	Action: Final: Next Du			Signature:
87-06-09 39-5585 27-Apr-87	Defective Mechanical Products circuit breakers	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If equipped with 4001, 4200, 4310 or 8500 series circuit breakers	Action: Final: Next Du			Signature:
87-17-06 39-5710 22-Sep-87	AM-Safe safety belt connector	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If equipped with certain AM-Safe seat belt connectors	Action: Final: Next Du			Signature:

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
87-20-05 39-5693 26-Oct-87	Pacific Scientific weak restraint systems	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If equipped with Pacific Scientific P/N 1107177 lap belt assemblies	Term.			
May Apply		Action: Final:			Signature:
		Next Du			
89-09-02 39-6102 24-May-89	Defective Davis seat belts	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If fitted with certain Davis seat belts with black ultem latch-cover	Term.			
May Apply		Action: Final:			Signature:
		Next Du			
93-05-06 39-8511 29-Apr-93	Defective ACS or Gerdes ignition switches	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having ACS or Gerdes ignition switch - see AD	Term.			
May Apply		Action: Final:	2000 hours		Signature:
		Next Du			
93-12-04 39-8610 26-Jul-93	Precise Flight, Inc. pulselites	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If Pulselights installed IAW STC SA40005NM	Term.			
May Apply		Action: Final:			Signature:
		Next Du			
94-21-06 25-Nov-94	Pacific Scientific safety belt malfunctions	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having seat belts mentioned in Pacific Scientific S/B's - See AD	Term.			
May Apply		Action: Final:			Signature:
		Next Du			
95-01-01 39-9112 06-Feb-95	Terra transponder problems with TCAS	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If equipped with Terra (Trimble) TRT 250 transponder	Term.			
May Apply		Action: Final:			Signature:
		Next Du			
97-16-10 39-10103 18-Sep-97	Rapco Defective instrument air filters	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	See AD for RAPCO model and P/N's	Term.			
May Apply		Action: Final:			Signature:
		Next Du			
98-14-03 39-10637 16-Aug-98	KT 76A transponder altitude discrepancy	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If equipped with AlliedSignal KT 76A transponder	Term.			
May Apply		Action: Final:			Signature:
		Next Du			

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
98-21-21 R1 39-11621 01-May-00	Defective inflatable door seals	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Bob Fields door seal IAW STC SA4385WP	Term. Action: Final: Next Du			
May Apply					Signature:
98-23-01 39-10882 29-Oct-98	Defective dry air pump flexible coupling	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having listed Parker Hannifin dry air pump or kit	Term. Action: Final: Next Du			
May Apply					Signature:
98-25-10 R1 39-11460 14-Jan-00	Defective seat belt locking systems	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	See AD for affected Aircraft Belts models.	Term. Action: Final: Next Du			
May Apply					Signature:
99-24-10 39-11434 14-Jan-00	Standby vac system inspection/placards	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Precise Flight III SVS standby vacuum system	Term. Action: Final: Next Du	12/24 months		
May Apply					Signature:
2001-14-51 39-12351 30-Jul-01	Incorrect radial bearing on VHF Nav/Com	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Apollo SL30 VHF Nav/Comm Receiver	Term. Action: Final: Next Du			
May Apply					Signature:
2001-23-17 39-12516 28-Dec-01	Inaccuracies in Garmin GNS 430 units	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Garmin GNS 430	Term. Action: Final: Next Du			
May Apply					Signature:
2003-26-14 39-13413 20-Feb-04	Defective hand held halon fire extinguishers	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Kidde hand held fire extinguisher P/N 898052	Term. Action: Final: Next Du			
May Apply					Signature:
2004-08-16 39-13586 01-Jun-04	Transponder failure	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having NARCO AT150 transponder with Chassis Level A,	Term. Action: Final: Next Du			
May Apply					Signature:

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
2004-13-20 39-13702 03-Aug-04	Apollo GX series GPS navigation units	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Garmin Apollo GX Series GPS	Term. Action: Final: Next Du			
May Apply					Signature:
2004-21-04 19-Nov-04	Defective tranceivers	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Becker AR 4201	Term. Action: Final: Next Du			
May Apply	tranceiver S/N 0150-0499				Signature:
2004-25-16 R 39-14076 20-Jun-05	Combustion heater fuel valve leakage	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	Affects B1500, B2030, B2500, B3040, B3500, B4050, B4500	Term. Action: Final: Next Du	100 hrs/12 mos		
May Apply					Signature:
2005-01-19 39-13944 23-Feb-05	Mandatory Software Revision	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Garmin GTX-33/33D/330/33D transponder	Term. Action: Final: Next Du			
May Apply					Signature:
2005-11-05 39-14107 08-Jul-05	Defective standby vacuum systems	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Precise Flight SVS I or IA standby vacuum system	Term. Action: Final: Next Du			
May Apply					Signature:
2005-25-08 39-14401 23-Jan-06	Erroneous ADC readout	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Shadin ADC-2000 installed	Term. Action: Final: Next Du			
May Apply					Signature:
2006-03-08 39-14472 10-Mar-06	Defective vacuum pumps	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
	If having Aero Advantage vacuum pump	Term. Action: Final: Next Du			
May Apply					Signature:

AD Identification Date and Status	Description Applicability Condition	Recurring Status	Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
Engine				
75-09-15 39-2187 30-Apr-75 May Apply	Bendix fuel flow divider cover gasket replace If having certain Bendix fuel injector flow dividers - See AD	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
78-23-10 39-3333 07-Nov-78 May Apply	Fuel injector bellows seal See AD for injectors affected	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
79-04-05 39-3570 26-Sep-79 May Apply	Separation of fuel regulator diaphragm stem If equipped with certain RS-5 or RS-10 injectors	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
83-22-04 39-4748 04-Nov-83 May Apply	Bendix fuel injectors If having RSA-10DB1 or 2 or RSA-10ED1 or 2 fuel injectors	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
91-08-07 39-6962 06-May-91 Applicable	Fuel pump vent restrictor	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
92-12-05 39-8265 10-Jul-92 May Apply	Piston pin failure If piston pin LW-14077 purchased 6/18/91 to 8/5/91	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
95-07-01 39-9183 12-Apr-95 May Apply	Defective engine bolts If con rod bolts replaced by Superior Air Parts bolts after 2-15-	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
97-15-11 39-10085 12-Aug-97 May Apply	Defective piston pins If overhauled or reman between 12-15-95 and 1-21-97	Inspect Term. Action: Final: Next Du		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off	
2002-12-07 39-12779 03-Jul-02	Oil filter gasket/kit inspect and/or replace	Inspect	50 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization	
	If overhauled or oil kit or gasket replaced 4-1-99 to 10-4-00	Term.	gasket or kit replaced			
May Apply		Action: Final:			Signature:	
	2002-19-03 39-12883 20-Sep-02	Defective crankshafts	Inspect			
Applicable		Term.		Signature:		
	2002-26-01 39-12986 31-Jan-03	Fuel line inspection and/or replace	Inspect			
Applicable		Term.		Signature:		
	2003-14-03 39-13222 14-Aug-03	Fuel pump torque inspections	Inspect	50 hrs/6 months		
May Apply		Term.	Torgue values stabilize or pump replaced	Signature:		
	2004-05-24 39-13519 30-Mar-04	Defective crankshaft retaining bolts	Inspect			
May Apply		Term.		Signature:		
	2004-10-14 39-13644 25-Jun-04	Crankshaft retaining bolt looseness	Inspect			
May Apply		Term.		Signature:		
	2005-19-11 39-14276 21-Oct-05	Defective crankshafts	Inspect			
May Apply		Term.		Signature:		
	2006-10-21 39-14604 22-Jun-06	Defective connecting rods	Inspect			
May Apply		Term.		Signature:		
	2003-14-03 39-13222 14-Aug-03	If having Lear/Romec fuel pump RG9080, RG9570 or RG17980	Action: Final:			
May Apply		Next Du		Signature:		
	2004-05-24 39-13519 30-Mar-04	If having P/N STD-2209 crankshaft bolt	Action: Final:			
May Apply		Next Du		Signature:		
	2004-10-14 39-13644 25-Jun-04	Required at overhaul or after sudden stoppage	Action: Final:			
May Apply		Next Du		Signature:		
	2005-19-11 39-14276 21-Oct-05	If < 301 HP, new or rebuilt since 1 March 1999	Action: Final:			
May Apply		Next Du		Signature:		
	2006-10-21 39-14604 22-Jun-06	If having Eci connecting rods, P/N AEL11488	Action: Final:			
May Apply		Next Du		Signature:		

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
2006-12-07 39-14632 11-Jul-06	With ECI AEL65102 Series Cylinders	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.			
	Action: Final:				
May Apply	If having ECI cylinder P/N AEL65102	Next Du			
2006-20-09 39-14778 03-Nov-06	Defective crankshaft replacement	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization Signature:
		Term.			
	Action: Final:				
May Apply	If having crankshaft replaced/installed after March 1,	Next Du			

AD Identification Date and Status	Description Applicability Condition	Recurring Status	Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
Engine Accessories				
65-21-01 39-2077 28-Jan-75	Bendix starter jaw ratcheting	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.		
May Apply	See AD for list of affected Bendix/Garwin starters	Action: Final: Next Du		Signature:
79-13-08 39-3507 07-Jun-79	Airborne dry air pump failure	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.		
May Apply	See AD for affected Airborne dry air pumps	Action: Final: Next Du		Signature:
79-21-08 39-3593 24-Oct-79	Bendix fuel injection system fuel flow cutoff	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.		
May Apply	If having certain Bendix RS-5, -7 or -10 fuel injection system	Action: Final: Next Du		Signature:
79-26-03 39-3636 26-Dec-79	Bendix fuel injector regulator stem	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.		
May Apply	If having injector RSA-5AD1 P/N 2524145-8, -9	Action: Final: Next Du		Signature:
81-15-03 39-4160 20-Jul-81	Brackett inlet air filter retainer screen	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.		
May Apply	If having Brackett air filter per STC SA693CD or SA71GL	Action: Final: Next Du		Signature:
82-27-03 39-4515 30-Dec-82	Roto Master turbocharger housing cracks	Inspect	200 hours	Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.	P/N 600510-04 is installed	
May Apply	If having Roto Master 325E10 or 3ATEE10J2 turbocharger	Action: Final: Next Du		Signature:
84-26-02 39-4966 29-Jan-85	Paper induction air filters	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.		
May Apply	If equipped with paper induction air filter	Action: Final: Next Du	500 hours	Signature:
86-01-06 39-5206 31-Jan-86	Defective Parker Hannifin dry air pumps	Inspect		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.		
May Apply	See AD for affected Airborne dry air pumps	Action: Final: Next Du		Signature:

AD Identification Date and Status	Description Applicability Condition	Recurring Status		Comments/Remarks - Status Information, etc. or Compliance Method	Compliance Sign-off
93-11-11 39-8584 21-Jun-93	Defective AC, Textron and Rajay fuel pumps	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If having AC, TCM or Rajay modified HP fuel pump	Action: Final:			
		Next Du			
94-06-09 39-8895 09-Mar-94	Ungrounded TCM magnetos	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If fitted after 10/27/93 w/capacitor 10-349276 datecode 93-40/93-42	Action: Final:			
		Next Du			
97-01-04 39-9977 22-Apr-97	S-A-P Defective cylinders	Inspect	25 hours		Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.	Defective cylinders are replaced		
May Apply	See AD for list of affected Superior Air Parts cylinders	Action: Final:			
		Next Du			

Propeller

2002-09-08 39-12741 13-Jun-02	Blade shank cracks	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If having 'Y' shank blades	Action: Final:			
		Next Du			
2005-14-11 39-14188 17-Aug-05	Defective propeller overhauls	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If overhauled by So. Cal Propeller	Action: Final:			
		Next Du			
2005-18-20 06-May-05	Defective propeller deicers	Inspect			Signed off by: Wilbur Wrenchbender Certificate Number: 123456789 Certificate Type: Inspection Authorization
		Term.			
May Apply	If having Goodrich FastProp deicer	Action: Final:	Daily		
		Next Du			

Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

76-07-12

Description

Condition

Defective Bendix ignition switch

If having certain Bendix ignition switches - see AD

Amendment: 39-3024

Effective: 30-Aug-77

Terminating Action:

Inspect:

Recurs 100 hours

Work Accomplished:	Time: _____ Date: _____ Next Due: _____ _____ Signature and Number
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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

82-16-05 R1

Description

Condition

Turbocharger exhaust
coupling failure

If having 455-301, 555-376, -411
or -36 turbo couplings

Amendment: 39-5278

Effective: 11-Apr-86

Inspect:

Recurs 100 hours

Terminating Action:

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

82-27-03

Description

Condition

Roto Master turbocharger housing cracks

If having Roto Master 325E10 or 3ATEE10J2 turbocharger

Amendment: 39-4515
Effective: 30-Dec-82

Terminating Action:

P/N 600510-04 is installed

Inspect: 200 hours
Rekurs

Work Accomplished:	Time: _____ Date: _____ Next Due: _____
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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

84-26-02

Description

Condition

Paper induction air filters

If equipped with paper induction air filter

Amendment: 39-4966

Effective: 29-Jan-85

Terminating Action:

Inspect:

Recurs 500 hours

Work Accomplished:	Time: _____ Date: _____ Next Due: _____ <hr/> Signature and Number
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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

93-05-06

Description

Condition

Defective ACS or Gerdes
ignition switches

If having ACS or Gerdes ignition
switch - see AD

Amendment: 39-8511

Effective: 29-Apr-93

Inspect:

Recurs 2000 hours

Terminating Action:

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

93-23-13

Description

Condition

Engine baffle seals
inspect/replace

Amendment: 39-3925
Effective: 21-Jan-94
Inspect: 50 hours
Rekurs

Terminating Action:

Thicker baffle seals installed

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

96-10-14

Description

Condition

MLG sidebrace inspections/modifications

If not having improved sidebraces installed

Amendment: 39-9621

Effective: 27-Jun-96

Terminating Action:

Improved MLG braces installed

Inspect: 100 hours

Rekurs

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

96-10-15

Description

Condition

Flap track area inspections/modifications

If not having kit 763 986 installed

Amendment: 39-9622

Effective: 27-Jun-96

Terminating Action:

Piper Kit 783 986 installed

Inspect: 100 hours

Rekurs

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

96-21-03

Description

Condition

Aileron hinge bracket
inspect/replace

If not having aileron hinge brackets
74461-02 & -03

Amendment: 39-9780
Effective: 10-Dec-96

Terminating Action:

Brackets replaced or 1000 hrs

Inspect: 100 hours
Rekurs

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

97-01-04

Description

Condition

S-A-P Defective cylinders

See AD for list of affected
Superior Air Parts cylinders

Amendment: 39-9977

Effective: 22-Apr-97

Terminating Action:

Defective cylinders are replaced

Inspect: 25 hours

Recurs

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

97-07-03

Description

Condition

Cleveland wheels
inspect/replace

Amendment: 39-9976

Effective: 15-May-97

Terminating Action:

Cleveland wheels are replaced

Inspect: Varies - See AD

Recurs

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

98-08-18

Description

Condition

Elevator bungee spring
inspection/replace

Amendment: 39-10467

Effective: 26-May-98

Terminating Action:

Bungee spring is replaced

Inspect: 100 hours

Recurs: 1000 hours

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Work Accomplished:

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Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

99-06-01

Description

Condition

Horizontal stabilizer inspections

Amendment: 39-11065

Effective: 20-Apr-99

Terminating Action:

Kit 766-646 is installed

Inspect: 100 hours

Recurs

Work Accomplished:	Time: _____ Date: _____ Next Due: _____ _____ Signature and Number
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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

99-12-05

Description

Condition

Elevator spar inspections
and replacement

If elevators cited in Piper Service
Bulletin No. 998A

Amendment: 39-11189

Effective: 23-Jul-99

Terminating Action:

Elevators or spars are replaced

Inspect: 100 hours

Recurs

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Work Accomplished:

Time: _____

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Next Due: _____

Signature and Number

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

99-24-10

Description

Condition

Standby vac system
inspection/placards

If having Precise Flight III SVS
standby vacuum system

Amendment: 39-11434

Effective: 14-Jan-00

Inspect:

Recurs 12/24 months

Terminating Action:

Work Accomplished:

Time: _____
Date: _____
Next Due: _____

Signature and Number

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Next Due: _____

Signature and Number

Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2000-25-01

Description

Condition

MLG door inspect/replace

Amendment: 39-12035

Effective: 19-Jan-01

Terminating Action:

Inspect:

Recurs Varies - See AD

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Work Accomplished:

Time: _____

Date: _____

Next Due: _____

Signature and Number

Work Accomplished:

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Next Due: _____

Signature and Number

Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2001-06-01

Description

Condition

Elevator inspections

Amendment:

Effective: 08-May-01

Terminating Action:

Kit 760 465 installed

Inspect: 100 hours

Recurs

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2002-12-07

Description

Condition

Oil filter gasket/kit inspect
and/or replace

If overhauled or oil kit or gasket
replaced 4-1-99 to 10-4-00

Amendment: 39-12779

Effective: 03-Jul-02

Terminating Action:

gasket or kit replaced

Inspect: 50 hours

Rekurs

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2002-26-01

Description

Condition

Fuel line inspection and/or
replace

Amendment: 39-12986

Effective: 31-Jan-03

Inspect:

Recurs 100 hours

Terminating Action:

Work Accomplished:	Time: _____ Date: _____ Next Due: _____ <hr/> Signature and Number
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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2003-14-03

Description

Condition

Fuel pump torque inspections

If having Lear/Romec fuel pump
RG9080, RG9570 or RG17980

Amendment: 39-13222

Effective: 14-Aug-03

Inspect: 50 hrs/6 months

Rekurs

Terminating Action:

Torgue values stabilize or pump replaced

Work Accomplished:	Time: _____ Date: _____ Next Due: _____ _____ Signature and Number
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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2003-24-07

Description

Condition

Rudder torque tube corrosion inspection

Amendment: 39-13376

Effective: 09-Feb-04

Inspect:

Recurs 12 monhs

Terminating Action:

Work Accomplished:	Time: _____ Date: _____ Next Due: _____ _____ Signature and Number
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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2004-25-16 R

Description

Condition

Combustion heater fuel valve leakage

Affects B1500, B2030, B2500, B3040, B3500, B4050, B4500

Amendment: 39-14076

Effective: 20-Jun-05

Inspect:

Recurs 100 hrs/12 mos

Terminating Action:

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Recurring AD Successive Compliance Actions

Piper PA-31-350 -- Demo1 -- S/N 31-7852247

2005-18-20

Description

Condition

Defective propeller deicers

If having Goodrich FastProp deicer

Amendment:

Effective: 06-May-05

Inspect:

Recurs Daily

Terminating Action:

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Work Accomplished:	Time: _____ Date: _____ Next Due: _____ <hr/> Signature and Number
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AIRWORTHINESS DIRECTIVE NOT APPLICABLE SHEET

Aircraft: Demo1 **Make:** Piper **Model** PA-31-350 **S/N:** 31-785224

70-26-02	Defective Woodward propeller governor
70-26-06	Elevator & rudder spar & rib cracks
73-23-01 R4	Piston pin failures
74-26-10	Magneto switch guard installation
75-06-04	Forward rudder control cable inspection
75-09-10	Elevator push pull tube inspection
76-03-01	Elevator trim tab control system
76-04-10	Battery drain and vent relocation
76-04-11	Control shaft bolt looseness
76-15-07	Loose elevator balance weights
77-01-06	Horizontal stabilizer rivet attachments
77-07-03	Electrical terminals shorting over relay cover
77-08-02	Microphone and phone jack electrical shorts
77-09-10	Electric trim switch modification
77-14-14	Defective right wing front spar channel
77-19-06	Arcing between battery and aileron cables
77-24-01	Horizontal stabilizer and fin rivets
78-01-02	Elevator bungee tension
78-05-05	Cabin door latch modification
78-25-05	Brackett inlet air filter retainer screen
78-26-11	Elevator control system modification
79-01-04	Elevator bungee spring failure
79-12-03	Turbocharger exhaust coupling failure
80-02-15	Elevator butt rib cracks
80-13-06	Alternate air door magnetic catch security
80-14-06	Flap track area inspections/modifications
80-18-10	Fuel valves and cables inspect/overhaul
80-22-04	Inspect/modify FS 317.75 bulkhead
80-26-05	Landing gear door attachment failure
81-11-04	Cleveland wheels inspect/replace
81-15-04 R1	Horizontal stabilizer rear spar inspection
82-27-13 R2	Asymmetric flap extension
86-17-07	Hydraulic hose replacement

AIRWORTHINESS DIRECTIVE NOT APPLICABLE SHEET

Aircraft: Demo1 **Make:** Piper **Model** PA-31-350 **S/N:** 31-785224

88-05-05	MLG sidebrace inspections/modifications
91-14-22	Crankshaft gear retaining bolt
93-02-05	Inspect/replace fuel injection lines
93-02-13	Engine baffle seals inspect/replace
93-05-21	Defective AC, Textron and Rajay fuel pumps
93-05-22	Inspect fuel injection lines for support integrity
93-25-08	MLG reinforcement bracket failure
96-24-13	MLG forward attachment cable modifications
97-01-03	Defective piston pins
98-04-27	POH/AFM revisions re: icing conditions
98-18-12	Fuel pump torque inspections
2001-07-03	Defective overhauls by BASCO
2002-17-53	Crankshaft removal
2002-20-51	Defective crankshaft retaining bolts
2002-23-06	Defective crankshaft retaining bolts
2004-10-15	Mandatory software revision
2005-12-06	Magneto impulse couplings inspections
2005-26-10	Defective cylinders
2006-24-07	Defective overhauls

AIRWORTHINESS DIRECTIVE NOT APPLICABLE SHEET

Aircraft: Demo1 Make: Piper Model PA-31-350 S/N: 31-785224

AD

AD

AD

The above ADs have been researched and I determined they do not apply to this aircraft at this time.

Date: 10/8/2007 Certificate # _____

Signature

AIRWORTHINESS DIRECTIVE SUPERSEDED SHEET

Aircraft: Demo1 **Make:** Piper **Model** PA-31-350 **S/N:** 31-785224

Airframe AD 70-26-06 was Superseded by AD 2001-06-01 on 12/29/1970
Airframe AD 76-03-01 was Superseded by AD 2001-06-01 on 2/9/1976
Airframe AD 79-01-04 was Superseded by AD 98-08-18 on 1/5/1979
Airframe AD 79-12-03 was Superseded by AD 82-16-05 R1 on 4/11/1986
Airframe AD 80-02-15 was Superseded by AD 2001-06-01 on 1/29/1980
Airframe AD 80-14-06 was Superseded by AD 96-10-15 on 6/27/1996
Airframe AD 80-22-04 was Superseded by AD 96-12-12 on 7/16/1996
Airframe AD 80-26-05 was Superseded by AD 2000-25-01 on 12/19/1980
Airframe AD 81-11-04 was Superseded by AD 97-07-03 on 5/15/1997
Airframe AD 81-15-04 R1 was Superseded by AD 99-06-01 on 3/19/1999
Airframe AD 86-17-07 was Superseded by AD 96-21-04 on 12/10/1996
Airframe AD 88-05-05 was Superseded by AD 96-10-14 on 6/27/1996
Airframe AD 93-02-13 was Superseded by AD 93-23-13 on 1/21/1994
Airframe AD 93-25-08 was Superseded by AD 96-21-11 on 12/16/1996
Airframe AD 98-04-27 was Superseded by AD 99-14-01 on 8/17/1999
Airframe Accessories AD 2004-10-15 was Superseded by AD 2005-01-19 on 7/9/2004
Engine AD 91-14-22 was Superseded by AD 2004-10-14 on 8/19/1991
Engine AD 93-02-05 was Superseded by AD 2002-26-01 on 6/14/1993
Engine AD 93-05-22 was Superseded by AD 2002-26-01 on 5/11/1993
Engine AD 97-01-03 was Superseded by AD 97-15-11 on 8/12/1997
Engine AD 98-18-12 was Superseded by AD 2003-14-03 on 9/28/1998
Engine AD 2002-17-53 was Superseded by AD 2002-19-03 on 8/16/2002
Engine AD 2002-23-06 was Superseded by AD 2004-05-24 on 11/19/2002
Engine AD 2005-26-10 was Superseded by AD 2006-12-07 on 1/31/2006
Engine Accessories AD 70-26-02 was Superseded by AD 2001-06-01 on 12/27/1970
Engine Accessories AD 78-25-05 was Superseded by AD 81-15-03 on 7/20/1981
Engine Accessories AD 93-05-21 was Superseded by AD 93-11-11 on 6/21/1993

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [71 FR 57407 No. 189, 09/29/2006]

<p>Lycoming Engines <u>AD 2006-20-09</u> Amendment 39-14778 Effective Nov. 3, 2006 Recurring: No</p>
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[Docket No. FAA-2006-24785; Directorate Identifier 2006-NE-20-AD; Amendment 39-14778; AD 2006-20-09] RIN 2120-AA64

Airworthiness Directives; Lycoming Engines (L)O-360, (L)IO-360, AEIO-360, O-540, IO-540, AEIO-540, (L)TIO-540, IO-580, and IO-720 Series Reciprocating Engines.

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain Lycoming Engines (L)O-360, (L)IO-360, AEIO-360, O-540, IO-540, AEIO-540, (L)TIO-540, IO-580, and IO-720 series reciprocating engines. This AD requires replacing certain crankshafts. This AD results from reports of 23 confirmed failures of similar crankshafts in Lycoming Engines 360 and 540 series reciprocating engines. We are issuing this AD to prevent failure of the crankshaft, which will result in total engine power loss, in-flight engine failure, and possible loss of the aircraft.

DATES: This AD becomes effective November 3, 2006. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of November 3, 2006.

ADDRESSES: You can get the service information identified in this ad from Lycoming, 652 Oliver Street, Williamsport, PA 17701; telephone (570) 323-6181; fax (570) 327-7101, or on the internet at <http://www.Lycoming.Textron.com>.

You may examine the AD docket on the Internet at <http://dms.dot.gov> or in Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Norm Perenson, Aerospace Engineer, New York Aircraft Certification Office, FAA, Engine & Propeller Directorate, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone (516) 228-7337; fax (516) 794-5531.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed airworthiness directive (AD). The proposed AD applies to certain Lycoming Engines (L)O-360, (L)IO-360, AEIO-360, O-540, IO-540, AEIO-540, (L)TIO-540, IO-580, AEIO-580, and IO-720 series reciprocating engines. We published the proposed AD in the Federal Register on May 25, 2006 (71 FR 30078, May 19, 2006). That action proposed to require replacing certain crankshafts.

Examining the AD Docket

You may examine the docket that contains the AD, any comments received, and any final disposition in person at the Docket Management Facility Docket Office between 9 a.m. and 5 p.m.,

Monday through Friday, except Federal holidays. The Docket Office (telephone (800) 647-5227) is located on the plaza level of the Department of Transportation Nassif Building at the street address stated in ADDRESSES. Comments will be available in the AD docket shortly after the DMS receives them.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Suggest to Only Reference 360-Series Engines

One private citizen suggests that since **Lycoming Mandatory Service Bulletin (MSB) No. 569A**, referenced in the proposed AD, only applies to 360-series engines with counterweighted crankshafts, the AD should do the same.

We agree. The commenter is correct that **MSB No. 569A** refers only to counterweighted (L)O-360 engines. We changed paragraph (c) to limit the applicability of this AD to only those engines listed in the tables in Lycoming **MSB No. 569A**. The MSB lists the specific engine models and serial numbers (SNs) for engines that have a suspect crankshaft. The MSB also lists the specific crankshaft SNs installed on engines after the engine entered service. We have made this change to limit the AD's applicability to only those engines with a suspect crankshaft.

Need To Correct the Table of Engine Models and Aircraft

One private citizen states that we need to correct the table in paragraph (c), "Applicability." The Lycoming O-540-J3C5D engine listed is actually used in the normally-aspirated Cessna R182, not the turbocharged TR182, as currently listed. The engine in the TR182 is the O-540-L3C5D.

We agree, and have corrected the table. We need to note, however, that the table is provided for information only and does not control whether the AD applies to a listed engine/aircraft combination. As we have noted in paragraph (c), the affected engines may or may not be installed in the listed aircraft models.

12-Year Overhaul Limit Not in Lycoming Engines Service Instruction (SI) No. 1009AR

One private citizen states that the 12-year overhaul limit referred to in the proposed rule is not in **Lycoming Engines SI No. 1009AR**, as we stated.

We do not agree. The Lycoming Engines service instruction states that engines that do not reach the recommended overhaul hours specified in that publication should be overhauled in the twelfth year. We note that this AD does not require an engine overhaul. We have incorporated **Lycoming Engines SI No. 1009AS**, dated May 25, 2006, only for the purpose of providing a maximum time by which crankshaft replacement must occur, if the engine has not required earlier maintenance that involves separating the crankcase. Therefore, crankshaft removal must occur at the earliest of maintenance involving crankcase separation, the time-in-service specified in **Lycoming Engines SI No. 1009AS** for engine overhaul, or 12 years from the time the crankshaft first entered service. For clarification, we have added to the AD new sub-paragraphs (j)(3) and (k)(3) that now directly specify the 12-year compliance end time for crankshaft removal.

Engine Model Included in Error in MSB

One commenter, Lycoming Engines, states that engine model TIO-540-U2A, SN L-4641-61A, was included in **MSB No. 569A** in error and it is not affected by the MSB and should not be

included in this AD. We agree and added new paragraph (i) in the AD that states that no action is required for this engine model. We have also added a new sub-paragraph (f)(5) to clarify that if the AD applies to an engine, but no action is required because the crankshaft on that engine is not identified as one needing replacement, the owner or operator of the aircraft may make an entry in the AD status log required by 14 CFR 91.417(a)(2)(v) that the AD required no action.

Engine Model Included in Error in Proposed AD

Since we issued the proposed AD, we have identified the engine model AEIO-580 as not type certified for operation in the United States. Although this engine is listed in Table 3 of **MSB No. 569A**, we have removed this engine model from the AD applicability.

Consider an Additional 100 Hours Operation

One private citizen suggests that for aircraft that are already beyond Lycoming's time-between-overhaul (TBO) that we provide an additional 100 hours of operation from the effective date of the AD, as this would give people time to get new crankshafts or overhauls lined up.

We do not agree. This final rule will not become effective until 35 days after it is published in the Federal Register. That should be ample time to prepare for compliance with the AD for those operators with engines that have operated past the Lycoming recommended TBO. If an operator needs additional time, that operator may request an alternative method of compliance (AMOC), using the procedures found in 14 CFR 39.19. We note that the AD does not require an engine overhaul, but only replacement of an identified crankshaft.

Deadline for Crankshaft Replacement Needs To Be at the Next Overhaul

One private citizen, states that the deadline for crankshaft replacement needs to be at the next overhaul.

We do not agree. The AD requires replacement of identified crankshafts at the earliest of the next time maintenance requires splitting the crankcase, or the time specified for the next engine overhaul listed in **Lycoming Engines SI No. 1009AS**, or 12 years from when the crankshaft entered service. An operator may request additional time through a request for an AMOC using the procedures found in 14 CFR 39.19. Note that the AD does not require the engine to be overhauled. It only requires replacing the affected crankshaft, which can be done with other maintenance.

Remove Calendar Time Compliance

One commenter, Cessna Pilots Association, states that there should be no calendar time mandated, and that compliance should be determined by the appropriate Federal Aviation Regulations for the type of operations for which the aircraft is used.

Another commenter, Aircraft Owners and Pilots Association, states that aircraft owners should be allowed to continue to operate their engine until reaching time-for-overhaul based on hours without any calendar end time.

We do not agree. We re-evaluated the risk that this unsafe condition presents to aircraft and have determined that adequate risk mitigation can only be achieved by establishing an end limit for crankshaft removal based on years since a crankshaft enters service. The variability of the size and orientation of the metallurgical anomalies present in the identified crankshafts, results in variation in the operating times at which failures could occur. Therefore, while we stated in the proposal that the unsafe condition was unrelated to calendar time, a compliance end-time is necessary to minimize the probability of a crankshaft failure at operating times less than the specified overhaul interval. The 12-

year calendar end time was selected to provide the necessary risk mitigation while minimizing the burden on owners and operators. We fully expect that few crankshafts will be replaced solely because of the 12-year calendar end time because crankshafts must be replaced earlier if maintenance requires splitting the crankcase or operations accumulate enough hours to meet the engine TBO.

However, if an owner (or) operator has data to justify an extension of the hourly limit and (or) the calendar end-limit, the owner (or) operator can request an AMOC using the procedures found in 14 CFR 39.19.

Determining crankshaft removal times by the type of operation would impose an overly complex record-keeping requirement on owners and operators. The identified crankshafts are installed in engines that are engaged in multiple types of operations ranging from personal use to commercial operations. We note that for some commercial operators the recommended TBO times may be mandated as a necessary component of their approved maintenance programs. For these operators, then, crankshaft replacement will be a part of the required engine overhaul unless earlier maintenance requires splitting the crankcase.

Evidence for AD Is Not Convincing Enough

One private citizen states that the evidence used to justify the proposed AD is not convincing enough to require parts replacement, and the lengthy compliance time (12 years) implies crankshaft replacement is not urgent, and, if it is urgent, the crankshafts should be replaced in a shorter time.

We do not agree. While we determined that the risk to safety of flight was not urgent enough to warrant publishing an emergency AD that would become effective immediately upon publication, we have sufficient data on which to conclude that an unsafe condition exists and that it is likely to exist or develop on other products of the same type design. We selected the compliance times in this AD because:

- The same metallurgical flaw that was found in 23 confirmed crankshaft failures in different groups of Lycoming 360 and 540 engines has been found in the crankshafts in this group of engines; and
- Because of the presence of the flaw, this group of crankshafts has a higher potential for failure than other crankshaft groups that do not have the flaw, and it may only take longer to fail; and
- The overhaul may be the first opportunity that the crankshaft is removed from the engine and the first opportunity to replace the crankshaft. As previously stated in another comment, we do not have the data to support an hourly or calendar time extension beyond the hourly times contained in **Lycoming Engines SI No. 1009AS**, or the 12-year compliance end-time.

Suggest Crankshaft Fractures Noted Are From an As-Yet Unidentified Cause

Three private citizens suggest that the 23 crankshaft fractures noted are from an as-yet unidentified cause, or causes, within the engine, which results in crankshaft fracture.

We do not agree. The proposal referred to 23 confirmed failures of similar crankshafts in Lycoming 360 and 540 series reciprocating engines. These are 23 crankshafts that exhibited the same, subsurface material flaw that progress to a fatigue failure. There were several other crankshaft failures that exhibited most of the same failure characteristics as the 23 confirmed failures, but the fracture surface was too badly damaged for a complete examination to confirm that they were the same. The two examples of crankshaft failures mentioned by the commenters were not examined by the Lycoming Materials Laboratory, or any of the other Materials Laboratories that participated in this investigation.

One is an Australian Transport Safety Bureau report of a Lycoming O-540 crankshaft failure, that is known to the FAA, but was not included in the 23 confirmed failures. The other example is the failure of a crankshaft identified as being from a Lycoming O-360 series engine. However, the laboratory failure report did not identify the engine model or SN. This crankshaft failed in two locations and neither of the locations are the same as the single failure location of the crankshafts in this investigation (the 23 confirmed failures and the unconfirmed failures all failed in the same location.) In addition, the report does not contain the engine type, type of engine operation, crankshaft part number, serial number, heat code, overhaul rework data, or overhaul assembly data. This makes it impossible to determine if the crankshaft was a Lycoming part or a PMA part, when the part was manufactured, or if the crankshaft was installed in an aerobatic engine and operated at a higher than certified horsepower. Based on the above, we cannot accept these examples as data to support their position that we have inadequate data on which to conclude that an unsafe condition exists and that it is likely to either exist or develop on other products of the same type design.

No Reason To Change Lycoming Engines Current Compliance Conditions

One commenter, Lycoming Engines, sees no reason to change its current compliance conditions, as there is no data to suggest any adjustment to the compliance terms.

We do not agree. Crankshafts from the group listed in **Lycoming Engines MSB No. 569A** have been found to have the same material flaws as those in the groups that were addressed by previous Lycoming Engines MSBs and FAA ADs. We selected a crankshaft replacement schedule that minimizes the burden on owners and operators by requiring replacement of the crankshaft only when accessible during engine maintenance or overhaul, but contains a compliance end-time of 12 years after the crankshaft enters service to provide the necessary risk mitigation. There is no current data to support an accelerated removal of the crankshafts, so we determined that the crankshafts can continue in service until the next engine overhaul as specified in **Lycoming Engines SI No. 1009AS**. However, if new data becomes available at a later date, we will re-evaluate our conclusion.

Lycoming Engines Should Pay Regardless of Calendar Time

Six commenters, the Cessna Pilots Association, the Aircraft Owners and Pilots Association, and four private citizens state that Lycoming Engines should pay for the complete replacement cost or extend the \$2,000 crankshaft kit price, regardless of when an owner replaces the crankshaft required to be removed to comply with this AD.

We view this comment as beyond the scope of this rulemaking. We have no authority to regulate when or by how much a manufacturer reimburses an owner for actions required as a result of compliance with an AD.

Update to Lycoming Engines SI No. 1009AR

We updated the references of **Lycoming Engines SI No. 1009AR**, dated June 22, 2004, to **Lycoming Engines SI No. 1009AS**, dated May 25, 2006, in this AD.

Conclusion

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

We estimate that this AD will affect 3,774 engines installed on airplanes of U.S. registry. Because the AD compliance interval coincides with engine overhaul or other engine maintenance, we estimate no additional labor hours will be needed to comply with this AD. Parts will cost about \$16,000 per engine. Based on these figures, we estimate the total cost of the AD to be \$60,384,000. Lycoming said it may provide the parts for \$2,000, until February 21, 2009, but will not extend the parts price beyond that date. In addition, since we issued the NPRM, Lycoming Engines has provided additional information on their Web site, explaining that engines affected by **MSB No. 569** or **MSB No. 569A**, which get overhauled at the Lycoming factory at any time within the FAA mandated 12-year limit, will receive a replacement crankshaft during overhaul at no additional charge.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866;
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 as follows:

PART 39--AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

Sec. 39.13 [Amended]

2. The FAA amends Sec. 39.13 by adding the following new airworthiness directive:

2006-20-09 LYCOMING ENGINES (formerly Textron Lycoming): Amendment 39-14778. Docket No. FAA-2006-24785; Directorate Identifier 2006-NE-20-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective November 3, 2006.

Affected ADs

- (b) None.

Applicability

- (c) This AD applies to those Lycoming Engines (L)O-360, (L)IO-360, AEIO-360, O-540, IO-540, AEIO-540, (L)TIO-540, IO-580, and IO-720 series reciprocating engines listed by engine model number and serial number in Table 1, Table 2, Table 3, or Table 4 of **Lycoming Mandatory Service Bulletin (MSB) 569A**, dated April 11, 2006, and those engines with crankshafts listed by crankshaft serial number in Table 5 of **Lycoming MSB 569A**, dated April 11, 2006. These applicable engines are manufactured new or rebuilt, overhauled, or had a crankshaft installed after March 1, 1997. These engines are installed on, but not limited to, the following aircraft:

Engine Model	Manufacturer	Aircraft Model
AEIO-360-A1B6	Moravan	Z242L Zlin
	Scottish Avia	Bulldog
	Valmet	Leko 70
AEIO-360-A1E6	Integrated Systems	Omega
IO-360-A1B6	Aircraft Manufacturing Factory	Mushshak
	Beech	C-24R Sierra or 200 Sierra
	Cessna	R-G Cardinal
	Korean Air	Chang Gong-91
	Partenavia	P-68C
	Saab	MFI-15 Safari, MFI-17 Supporter
	Scottish Avia	Bulldog
IO-360-A1B6D	Cessna	R-6 Cardinal
	Siai Marchetti	S-205

IO-360-A3B6	Mod Works	Trophy 212 Conversion
IO-360-A3B6D	Mooney	M20J-201
IO-360-B1G6	American	Blimp Spector 42
IO-360-C1C6	Piper Aircraft	PA-28-200R Arrow IV
	Ruschmeyer	MF-85
IO-360-C1D6	M.B.B.	Flamingo 223
	Rockwell	112
IO-360-C1E6	Piper	PA-34-200 Seneca I
IO-360-C1G6	Zeppelin	NT
IO-360-X178	Ly-Con	STC
(L)O-360-A1G6D	Beech	76 Duchess
(L)O-360-A1H6	Piper	PA-44 Seminole
O-360-A1F6	Cessna	177 Cardinal
O-360-A1F6D	Cessna	177 Cardinal
	Teal III	TSC 1A3
O-360-A1G6D	Beech	76 Duchess
O-360-A1H6	Piper	PA-44 Seminole
O-360-E1A6D	Piper	PA-44-180 Seminole
O-360-F1A6	Cessna	C-172RG Cutlass RG
AEIO-540-D4A5	Christen	Pitts S-2S, S-2B
	H.A.L.	HPT-32
	Siai-Marchetti	SF-260
	Slingsby	T3A Firefly
AEIO-540-L1B5	Extra-Flugzeugbau	Extra 300
	F.F.A.	FFA-2000 Eurotrainer
AEIO-540-L1D5	Apex	Apex
IO-540-AA1A5	Piper	602P Sequoia
IO-540-AB1A5	Cessna	C-182 Skylane
IO-540-AC1A5	Cessna	C-206 Stationair
IO-540-AE1A5	Robinson	R44
IO-540-C4B5	Aerofab	250 Renegade
	Avions Pierre Robin	HR100/250
	Bellanca	T-250 Aries
	Piper	Aztec C PA-23 "250", Aztec F
	Wassmer	WA4-21
IO-540-C4D5	S.O.C.A.T.A.	TB-20
IO-540-C4D5D	S.O.C.A.T.A.	TB-20 Trinidad

IO-540-D4A5	Piper	PA-24 260 Comanche
	Siai-Marchetti	SF-260
IO-540-D4B5	Cerva	CF-34 Guepard
IO-540-E1A5	Aero Commander	500-E
IO-540-E1B5	Aero Commander	500-U
	Poeschel	P-300
	Shrike	500-S
IO-540-J4A5	Piper	Aztec PA-23 "250"
IO-540-K1A5	Aeronautica Agricola Mexicana	Quail
	Celair	Eagle
	Embraer	EMB-720 Minuano, EMB-721 Sertanejo
	Piper	PA-32-300 Cherokee Six
IO-540-K1A5D	Piper	PA-32-300
IO-540-K1B5	Evangel-Air	Evangel-Air
	Pilotus Britton-Norman	BN-2B Islander
	Transavara	T-300 Skyfarmer
IO-540-K1E5	Bellanca	Bellanca
IO-540-K1F5	Ted Smith	Aerostar 600
IO-540-K1G5	Embraer	EMB-720 Minuano
	Piper	Saratoga PA-32-300, Brave 300
IO-540-K1G5D	Embraer	EMB-721 Sertanejo
	Piper	PA-32-300R Lance, SP PA-32-300R Saratoga
IO-540-K1H5	Seawind	Seawind
IO-540-K1J5	Piper	600A Aerostar
IO-540-K1J5D	Embraer	EMB-201 Ipanema
IO-540-K1K5	Piper	T35
IO-540-L1C5	Swearingen	SX300
IO-540-M1A5	Piper	PA-31-300 Navajo
IO-540-M1C5	King Engineering	Angel
IO-540-S1A5	Piper	601B Aerostar, 601P Aerostar
IO-540-T4A5D	General Aviation	Model 114
IO-540-T4B5	Commander	114B
IO-540-T4B5D	Rockwell	114
IO-540-V4A5	Aircraft Manufacturing Factory	Aircraft Manufacturing Factory
	Maule	MT-7-260, M-7-260
IO-540-W1A5	Maule	MX-7-235, MT-7-235, M7-235

IO-540-X160	Airship Management	Airship Management
IO-540-X170	Robinson	Robinson
O-540-A1A5	Helio	Military H-250
O-540-A1B5	Piper	PA-32 "250" Aztec, PA-24 "250" Comanche
O-540-A1C5	Piper	PA-24 "250" Comanche
O-540-A1D5	Piper	PA-24 "250" Comanche
O-540-A4D5	American Champion	American Champion
	Gomozig	Gomozig
	Avipro	Bearhawk
O-540-B1A5	Piper	PA-23 "235" Apache
O-540-B2B5	S.O.C.A.T.A.	235CA Rallye.
O-540-B2C5	Piper	PA-24 "235" Pawnee
O-540-B4B5	Embraer	EMB-710 Corioaca
	Maule	MX-7-235 Star Rocket, M-6-235 Super Rocket, M-7-235 Super Rocket
	Piper	PA-28 "235" Cherokee
	S.O.C.A.T.A.	235GT Rallye, 235C Rallye
O-540-E4A5	Aviamilano	F-250 Flamingo
	Piper	PA-24 "260" Comanche
	Siai-Marchetti	SF-260, SF-208
O-540-E4B5	Britton-Norman	BN-2
	Piper	PA-32 "260" Cherokee Six
O-540-E4C5	Pilotus Britton-Norman	BN-2A-26 Islander; BN-2A-27 Islander; BN-2B-26 Islander II; BN-2A-21 Islander; BN-2A-Mark III-2 Trislander
O-540-F1B5	Robinson	R-44
O-540-G1A5	Piper	PA-25 "260" Pawnee
O-540-J1A5D	Maule	MX-7-235 Star Rocket, M-6-235 Super Rocket, M-7-235 Super Rocket
O-540-J3A5	Robin	R-3000/235
O-540-J3A5D	Piper	PA-28-236 Dakota
O-540-J3C5D	Cessna	R-182 Skylane
O-540-L3C5D	Cessna	TR-182 Turbo Skylane
TIO-540-AA1AD	Aerofab Inc	270 Turbo Renegade
TIO-540-AB1AD	S.O.C.A.T.A.	TC TB-21 Trinidad
TIO-540-AE2A	Piper	PA-46-350P Mirage
TIO-540-AF1B	Mooney	TLS M20M

TIO-540-AG1A	Commander Aircraft	112TC
TIO-540-AH1A	Piper	TC PA-32-301T TurboSaratoga
TIO-540-AK1A	Cessna	T182T Turbo Skylane
TIO-540-C1A	Piper	PA-23-250 Turbo Aztec
TIO-540-J2B	Piper	T-1020
TIO-540-U2A	Piper	700P Aerostar
TIO-540-W2A	Aero Mercantil	Gavilan
TIO-540-X136	Schweizer	Schweizer
TIO-540-X155	Cessna	T182 (AK1A)
IO-720-D1B	Embraer	EMB-400 Ipanema, IAR-821
	Nauchang	N5
IO-720-D1C	Piper	PA-36-375 Brave

Unsafe Condition

- (d) This AD results from reports of 23 confirmed failures of similar crankshafts in Lycoming Engines 360 and 540 series reciprocating engines. We are issuing this AD to prevent failure of the crankshaft, which will result in total engine power loss, in-flight engine failure, and possible loss of the aircraft.

Compliance

- (e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

Engines for Which No Action Is Required

- (f) If your engine meets any of the following conditions, and you have not had the crankshaft replaced since meeting the condition, no further action is required:
- (1) Engines that are in compliance with **Lycoming MSB No. 552** (AD 2002-19-03) or **MSB No. 553** (AD 2002-19-03 Table 3 or Table 5); or
 - (2) Engines that are in compliance with Lycoming **MSB No. 566 AD** (2005-19-11); or
 - (3) Engines that are in compliance with **Lycoming Supplement No. 1 to MSB No. 566** (AD 2006-06-16); or
 - (4) Engines that are in compliance with the original issue of **Lycoming MSB No. 569, or MSB No. 569A**.
 - (5) For engines identified in paragraphs (f), (g), (h), or (i) of this AD, owners or operators may make an entry in the AD status log required by 14 CFR 91.417(a)(2)(v) that this AD required no action for compliance.
- (g) If Lycoming Engines manufactured new, rebuilt, overhauled, or repaired your engine, or replaced the crankshaft in your engine before March 1, 1997, and you have not had the crankshaft replaced, no further action is required.
- (h) If Table 1, Table 2, Table 3, or Table 4 of **Lycoming MSB No. 569A**, dated April 11, 2006, lists your engine serial number (SN), and Table 5 of **MSB No. 569A**, dated April 11, 2006, does not list your crankshaft SN, no further action is required.
- (i) For engine model TIO-540-U2A, SN L-4641-61A, no action is required.

Engines for Which Action Is Required

- (j) If Table 1, Table 2, Table 3, or Table 4 of **Lycoming MSB No. 569A**, dated April 11, 2006, lists your engine SN, and Table 5 of **MSB No. 569A**, dated April 11, 2006, lists your crankshaft SN, replace the affected crankshaft with a crankshaft that is not listed in Table 5 of **MSB No. 569A** at the earliest of the following:
- (1) The time of the next engine overhaul as specified in **Lycoming Engines Service Instruction No. 1009AS**, dated May 25, 2006; or
 - (2) The next separation of the crankcase; or
 - (3) No later than 12 years from the time the crankshaft first entered service or was last overhauled, whichever is later.
- (k) If Table 1, Table 2, Table 3, or Table 4 of **Lycoming MSB No. 569A**, dated April 11, 2006, does not list your engine SN, and Table 5 of **MSB No. 569A** does list your crankshaft SN (an affected crankshaft was installed as a replacement), replace the affected crankshaft with a crankshaft that is not listed in Table 5 of **MSB No. 569A** at the earliest of the following:
- (1) The time of the next engine overhaul as specified in **Lycoming Engines Service Instruction No. 1009AS**, dated May 25, 2006; or
 - (2) The next separation of the crankcase; or
 - (3) No later than 12 years from the time the crankshaft first entered service or was last overhauled, whichever is later.

Prohibition Against Installing Certain Crankshafts

- (l) After the effective date of this AD, do not install any crankshaft that has a SN listed in Table 5 of **Lycoming MSB No. 569A**, dated April 11, 2006, into any engine.

Alternative Methods of Compliance

- (m) The Manager, New York Aircraft Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

Material Incorporated by Reference

- (n) You must use the service information specified in Table 1 of this AD to perform the actions required by this AD. The Director of the Federal Register approved the incorporation by reference of the documents listed in Table 1 of this AD in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Lycoming, 652 Oliver Street, Williamsport, PA 17701; telephone (570) 323-6181; fax (570) 327-7101, or on the internet at <http://www.Lycoming.Textron.com> for a copy of this service information. You may review copies at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Table 1.--Incorporation by Reference

Service Information	Page	Revision	Date
Lycoming Engines Service Instruction No. 1009AS Total Pages: 4	All	AS	May 25, 2006
Lycoming Engines Mandatory Service Bulletin No. 569A	All	A	April 11, 2006

Issued in Burlington, Massachusetts, on September 20, 2006.

Francis A. Favara, Manager, Engine and Propeller Directorate, Aircraft Certification Service.

FOR FURTHER INFORMATION CONTACT: Norm Perenson, Aerospace Engineer,
New York Aircraft Certification Office, FAA, Engine & Propeller Directorate, 1600 Stewart Avenue,
Suite 410, Westbury, NY 11590; telephone (516) 228-7337; fax (516) 794-5531.

Manufacturer's Service Information:

Lycoming Mandatory Service Bulletin (MSB) No. 569 and [569A](#)

Lycoming Engines SI No. 1009AS

[Lycoming MSB No. 552](#)

[Lycoming MSB No. 556](#)

[Lycoming MSB No. 566](#)

You can get the service information identified in this ad from Lycoming, 652 Oliver Street,
Williamsport, PA 17701; telephone (570) 323-6181; fax (570) 327-7101.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A20SO Revision 11 Piper Aircraft, Inc PA-31 PA-31-300 PA-31-325 PA-31-350 (See NOTE 7) August 7, 2006

TYPE CERTIFICATE DATA SHEET NO. A20SO

This data sheet, which is a part of Type Certificate A20SO, 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: Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, Florida 32960

Type Certificate Holder Record The New Piper Aircraft, Inc transferred TC A20SO to Piper Aircraft, Inc on August 7, 2006.

I. - Model PA-31 (Navajo), 6 - 8 PCLM (Normal Category), Approved February 24, 1966 (Reissued July 25, 1966, See NOTE 3).

Engine 2 Lycoming TIO-540-A1A, TIO-540-A1B, TIO-540-A2A, or TIO-540-A2B (Applicable to S/N 31-2 through S/N 31-659 and S/N 31-661 through 31-751); or
2 Lycoming TIO-540-A2B (Applicable to S/N 31-660 with nacelle wing lockers only); or
2 Lycoming TIO-540-A2C (Applicable to S/N 31-712 through S/N 31-751 with nacelle wing lockers only and S/N 31-752 through S/N 31-8312019)
See NOTE 4.

Fuel 100/130 minimum grade aviation gasoline

Engine Limits Applicable to S/N 31-2 through 31-751 (TIO-540-A1A, TIO-540-A1B, TIO-540-A2A, or TIO-540-A2B):
2,575 r.p.m., 310 hp. from sea level to 15,000 ft. altitude. Full throttle operations at all altitudes. Maximum 43 in. hg. manifold pressure cumulative total with automatic density control and altitude adjustment.

Applicable to S/N 31-712 through 31-900, and 31-7300901 through 31-7912124 (TIO-540-A2C):
2,575 r.p.m., 310 hp. from sea level to 15,800 ft. altitude. Maximum 46.0 in. hg. manifold pressure cumulative total with automatic density control and altitude adjustment. Do not exceed the following manifold pressure limitations: 46.0 in. hg. manifold pressure at and below 15,800 ft. altitude, 31.0 in. hg. manifold pressure at 24,000 ft. altitude. Straight line variation between points given.

Applicable to S/N 31-8012001 through 31-8312019 (TIO-540-A2C):
Maximum continuous power
2,575 r.p.m. at 310 hp. from sea level to 15,800 ft. altitude. Maximum 46.0 in. hg. manifold pressure cumulative total with automatic density control and altitude adjustment. Do not exceed the following manifold pressure limitations: 46.0 in. hg. manifold pressure at and below 15,800 ft. altitude, 31.0 in. hg. manifold pressure at 24,000 ft. altitude. Straight line variation between points given.

Page No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rev. No.	11	10	7	9	7	10	7	10	10	5	9	8	9	10	10

Engine Limits
(continued)

Maximum normal operating power

Do not exceed the following r.p.m. and manifold pressures: 2,400 r.p.m., 39.5 in. hg. manifold pressure at and below 19,700 ft. altitude, 2,400 r.p.m., 31.0 in. hg. manifold pressure at 24,000 ft. altitude. Straight line variation between points given.

Propeller and Propeller Limits

Hartzell Hub and Blade Models:

Eligible on TIO-540-A1A, TIO-540-A1B engines only:

HC-E2YK-2B/C8475-4 (2 Bld)
HC-E2YK-2BT/C8475-4 (2 Bld)

Eligible on TIO-540-A1A, TIO-540-A1B, TIO-540-A2A, TIO-540-A2B engines only:

HC-E2YR-2B/C8475-4 (2 Bld)
HC-E2YR-2BT/C8475-4 (2 Bld)
HC-E2YR-2BTF/FC8475-4 (2Bld)

Eligible on TIO-540-A2A, TIO-540-A2B, TIO-540-A2C engines only:

HC-E3YR-2/C8468-6R (3 Bld)
HC-E3YR-2T/C8468-6R (3 Bld)
HC-E3YR-2A/C8468-6R (3 Bld)
HC-E3YR-2AT/C8468-6R (3 Bld)

Eligible on TIO-540-A2A, TIO-540-A2B, TIO-540-A2C engines only:

HC-E3YR/2AF/FC8468-6R (3 Bld)
HC-E3YR-2ATF/FC8468-6R (3 Bld)

Pitch (2 Bld): High $81^\circ \pm 1.0^\circ$ (feathered), Low $14.5^\circ \pm 0.1^\circ$ at 30 in. station.
Pitch (3 Bld): High $82^\circ \pm 1.0^\circ$ (feathered), Low $13^\circ \pm 0.1^\circ$ (TIO-540-A2A and TIO-540-A2B engines) or Low $13.2^\circ \pm 0.1^\circ$ (TIO-540-A2C engines) at 30 in. station.
Diameter: Not over 80 in., not under 78 in.
No further reduction permitted.

Propeller Governor

2 Hartzell F-6-24Z Propeller Governors or
2 Hartzell F-6-11S or F-6-11A Propeller Governors per Piper Drawing 24622-7
See Notes 13 & 14

Airspeed Limits (CAS)

Applicable to all S/N:

V _{NE}	(Never Exceed)	272 mph	(236 knots)
V _{NO}	(Max. Structural Cruise)	216 mph	(188 knots)
V _{FE}	(Flaps Extended) 40°	150 mph	(130 knots)
V _{MC}	(Minimum Control)	85 mph	(74 knots)

Applicable to S/N 31-2 through 31-711:

V _A	(Maneuvering)	188 mph	(163 knots)
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Applicable to S/N 31-712 through 31-900 and 31-7300901 through 31-8312019:

V _A	(Maneuvering)	183 mph	(159 knots)
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Applicable to S/N 31-2 through 31-900 and 31-7300901 through 31-7712106:

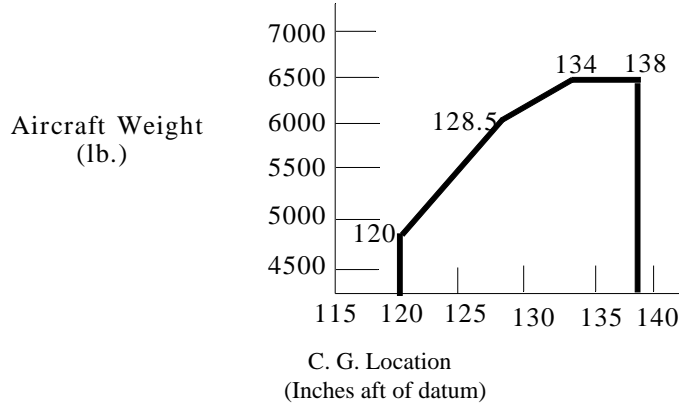
V _{FE}	(Flaps Extended) 15°	175 mph	(152 knots)
V _{LO}	(Landing Gear Operating)		
	Extension and Retraction	150 mph	(130 knots)
V _{LE}	(Landing Gear Extended)	150 mph	(130 knots)

Airspeed Limits (CAS)

Applicable to S/N 31-7812001 through 31-8312019:
 V_{FE} (Flaps Extended) 25° 184 mph (160 knots)
 V_{LO} (Landing Gear Operating)
 Extension 180 mph (156 knots)
 Retraction 150 mph (130 knots)
 V_{LE} (Landing Gear Extended) 180 mph (156 knots)

C.G. Range (Gear Extended)

(+134.0) to (+138.0) at 6,500 lb.
 (+128.5) to (+138.0) at 6,000 lb.
 (+120.0) to (+138.0) at 4,800 lb. or less.
 Straight line variation between points given.
 Moment due to retracting landing gear: + 860 in.-lb.



Empty Weight C.G. Range

None

Maximum Weight

6,500 lb. - Takeoff; 6,200 lb. - Landing (S/N 31-2 through 31-711)
 6,500 lb. - Takeoff or Landing (S/N 31-712 through 31-900 and
 31-7300901 through 31-8312019)

No. of Seats

6 - 8 seats (2 at +119.0, 2 at +166.0, 2 at +198.0)
 (2 optional, 1 at +229.0, 1 at +234.0)

Maximum Baggage

Without Nacelle Lockers:
 Total: 350 lb.
 Fuselage: 150 lb. at +43; 200 lb. at +255

 With Nacelle Lockers:
 Total: 650 lb.
 Fuselage: 150 lb. at +43; 200 lb. at +255
 Nacelle Lockers: 150 lb. each side at +168

Fuel Capacity

Total - 192 gallons
 56 gallons in each of 2 wing tanks at +126.8
 40 gallons in each of 2 wing tanks at +148.0
 See NOTE 1 for unusable fuel data.

Oil Capacity

Total - 6 gallons at (+77)
 (3 gallons each engine - 2 ¾ qt. unusable each engine)

<u>Control Surface Movements</u> (All measurements taken at trailing edge from neutral position)	Aileron	($\pm 1.0^\circ$)	Up	24°	Down	14°
	Aileron Tab	($\pm 1.0^\circ$)	Up	15°	Down	20°
	(Aileron neutral)					
	Elevator	($\pm 1.0^\circ$)	Up	25°	Down	20°
	Elevator Tab	($\pm 1.0^\circ$)	Up	16°	Down	29°
	(Elevator neutral)					
	Rudder	($\pm 1.0^\circ$)	Right	30°	Left	30°
	Rudder Tab	($\pm 1.0^\circ$)	Right	18°	Left	40°
	(Rudder neutral)					
	Flaps	($\pm 1.0^\circ$)			Down	40°

Maximum Operating Altitude 24,000 ft. pressure altitude

Serial Numbers Eligible 31-2 through 31-900 and 31-7300901 through 31-8312019 (See NOTES 5 and 6 for airworthiness certification eligibility in the United States).

II. - Model PA-31-300 (Navajo), 6 - 8 PCLM (Normal Category), Approved June 12, 1967.

Engine 2 Lycoming IO-540-M1A5

Fuel 100/130 minimum grade aviation gasoline

Engine Limits For all operations, 2700 r.p.m. (300 hp)
"Do not exceed 23 in. manifold pressure below 2,250 r.p.m."

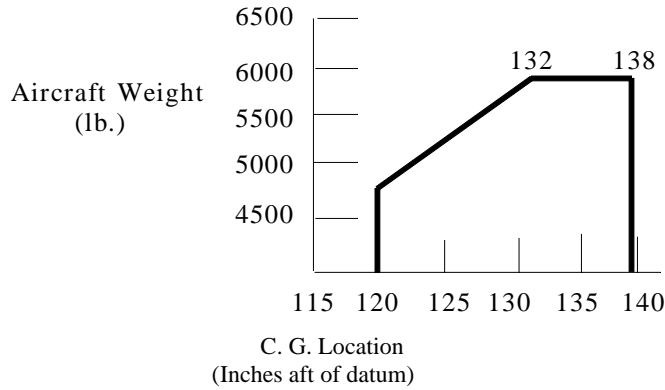
Propeller and Propeller Limits Hartzell Hub and Blade Models:
HC-E2YR-2B/C8475A-4
HC-E2YR-2BT/C8475A-4
HC-E2YR-2BTF/FC8475A-4

Pitch: High $81^\circ \pm 1.0^\circ$ (feathered), Low $12.5^\circ \pm 0.1^\circ$ at 30 in. station.
Diameter: Not over 80 in., not under 78 in.
No further reduction permitted.

Propeller Governor 2 Hartzell F-6-15A Propeller Governors

<u>Airspeed Limits (CAS)</u>	V_{NE}	(Never Exceed)	272 mph	(236 knots)
	V_{NO}	(Max. Structural Cruise)	216 mph	(188 knots)
	V_A	(Maneuvering)	188 mph	(163 knots)
	V_{FE}	(Flaps Extended) 40°	150 mph	(130 knots)
	V_{LO}	(Landing Gear Operating)	150 mph	(130 knots)
	V_{LE}	(Landing Gear Extended)	150 mph	(130 knots)
	V_{MC}	(Minimum Control)	85 mph	(74 knots)

C.G. Range (Gear Extended) (+132.0) to (+138.0) at 6,000 lb.
 (+120.0) to (+138.0) at 4,800 lb. or less.
 Straight line variation between points given.
 Moment due to retracting landing gear: + 860 in.-lb.



Empty Weight C.G. Range None

Maximum Weight 6,000 lb.

No. of Seats 6 - 8 seats (2 at +119.0, 2 at +166.0, 2 at +198.0)
 (2 optional, 1 at +229.0, 1 at +234.0)

Maximum Baggage Total: 400 lb. (200 lb. at +43, 200 lb. at +255)

Fuel Capacity Total: 192 gallons
 56 gallons in each of 2 wing tanks at +126.8
 40 gallons in each of 2 wing tanks at +148.0
 See NOTE 1 for unusable fuel data.

Oil Capacity Total - 6 gallons at (+77)
 (3 gallons each engine - 2 ¾ qt. unusable each engine)

Control Surface Movements

Aileron	(±1.0°)	Up	24°	Down	14°
Aileron Tab	(±1.0°)	Up	15°	Down	20°
(Aileron neutral)					
Elevator	(±1.0°)	Up	25°	Down	20°
Elevator Tab	(±1.0°)	Up	16°	Down	29°
(Elevator neutral)					
Rudder	(±1.0°)	Right	30°	Left	30°
Rudder Tab	(±1.0°)	Right	18°	Left	40°
(Rudder neutral)					
Flaps	(±1.0°)			Down	40°

Maximum Operating Altitude 24,000 ft. pressure altitude

Serial Numbers Eligible 31-2 through 31-900 and 31-7300901 through 31-8312019 (See NOTES 5 and 6 for airworthiness certification eligibility in the United States).

III. - Model PA-31-350 (Chieftain), and (T-1020), 6 - 11 PCLM (Normal Category), Approved May 3, 1972.Engine

1 Lycoming TIO-540-J2BD (Chieftain, S/N 31-5001 through 31-5004 and 31-7305005 through 31-8452024)
 1 Lycoming LTIO-540-J2BD (Chieftain, S/N 31-5001 through 31-5004 and 31-7305005 through 31-8452024)
 1 Lycoming TIO 540-J2B (T1020, S/N 31-8253001 through 31-8553002)
 1 Lycoming LTIO-540-J2B (T1020, S/N 31-8253001 through 31-8553002)

Fuel

100/130 minimum grade aviation gasoline

Engine Limits

Applicable to S/N 31-5001 through 31-5004 and 31-7305005 through 31-7952250: 2,575 r.p.m., 350 hp. from sea level to 15,000 ft. altitude. Full throttle operations at all altitudes. Maximum 49 inches hg. manifold pressure cumulative total with automatic density control and altitude adjustment. Do not exceed the following manifold pressure limitations: 49.0 inches hg. manifold pressure at and below 15,000 ft. altitude, 44.3 inches hg. manifold pressure at 22,300 ft., 40.5 inches hg. manifold pressure at 24,000 ft. altitude. Straight line variation between points given.

Applicable to S/N 31-8052001 through 31-8553002:

Maximum continuous power

2,575 r.p.m., 350 hp. from sea level to 15,000 ft. altitude. Full throttle operations at all altitudes. Maximum 49 inches hg. manifold pressure cumulative total with automatic density control and altitude adjustment. Do not exceed the following manifold pressure limitations: 49.0 inches hg. manifold pressure at and below 15,000 ft. altitude, 44.3 inches hg. manifold pressure at 22,300 ft., 40.5 inches hg. manifold pressure at 24,000 ft. altitude. Straight line variation between points given.

Maximum normal operating power

Do not exceed the following r.p.m. and manifold pressures: 2,400 r.p.m., 40.0 inches hg. manifold pressure at and below 18,700 ft. altitude, 2,400 r.p.m., 31.0 inches hg. manifold pressure at 24,000 ft. altitude. Straight line variation between points given.

Propeller and Propeller Limits

Hartzell Hub and Blade Models:

Eligible on TIO-540-J2BD engine:

HC-E3YR-2A/C8468-6R
 HC-E3YR-2AT/C8468-6R
 HC-E3YR-2AF/FC8468-6R
 HC-E3YR-2ATF/FC8468-6R

Eligible on LTIO-540-J2BD engine:

HC-E3YR-2ALT/JC8468-6R
 HC-E3YR-2AL/JC8468-6R
 HC-E3YR-2ALF/FJC8468-6R
 HC-E3YR-2ALTF/FJC8468-6R

Eligible on TIO-540-J2B engine:

HC-E3YR-2ATF/FC8468-6R

Eligible on LTIO-540-J2B engine:

HC-E3YR-2ALTF/FJC8468-6R

Pitch: High $82^\circ \pm 1.0^\circ$ (feathered), Low $13.4^\circ \pm 0.1^\circ$ at 30 in station.

Diameter: Not over 80 in., not under 78 in.

No further reduction permitted.

Propeller Governor

1 Hartzell F-6-24LZ and 1 Hartzell F-6-24Z Propeller Governors

See Notes 8, 9 & 10

Airspeed Limits (CAS)

Applicable to all S/N:

V _{NE}	(Never Exceed)	272 mph	(236 knots)
V _{NO}	(Max. Structural Cruise)	216 mph	(187 knots)
V _A	(Maneuvering)	186 mph	(162 knots)
V _{FE}	(Flaps Extended) 40°	150 mph	(130 knots)
V _{MC}	(Minimum Control)	90 mph	(78 knots)

Applicable to S/N 31-5001 through 31-5004 and 31-7305005 through 31-7752201:

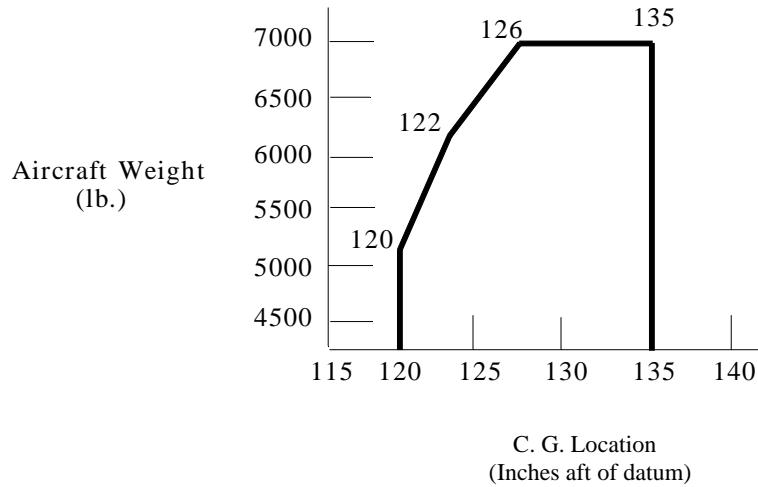
V _{FE}	(Flaps Extended) 15°	175 mph	(152 knots)
V _{LO}	(Landing Gear Operating)		
	Extension and Retraction	150 mph	(130 knots)
V _{LE}	(Landing Gear Extended)	150 mph	(130 knots)

Applicable to S/N 31-7852001 through 31-8553002:

V _{FE}	(Flaps Extended) 25°	184 mph	(160 knots)
V _{LO}	(Landing Gear Operating)		
	Extension	180 mph	(156 knots)
	Retraction	150 mph	(130 knots)
V _{LE}	(Landing Gear Extended)	180 mph	(156 knots)

C.G. Range (Gear Extended)

(+126.0) to (+135.0) at 7,000 lb.
 (+122.0) to (+135.0) at 6,200 lb.
 (+120.0) to (+135.0) at 5,200 lb. or less
 Straight line variation between points given.
 Moment due to retracting landing gear: + 860 in.-lb.



Empty Weight C.G. Range

None

Maximum Weight

7,000 lb. - Takeoff; 7,000 lb. - Landing

No. of Seats

2 seats at +95.0
 6 optional (2 at +132/137 (reversed), 2 at +195.0, 1 at +229.0, 1 at +242.0)
 8 optional (2 at +132.0, 2 at +163.5, 2 at +195.0, 1 at +229.0, 1 at +242.0)
 9 optional (T1020, S/N 31-8253001 through 31-8553002: 2 at +130.9, 2 at +164.6, 2 at +193.6, 1 at +222.6, 2 at +253.5)

Maximum Baggage

Total: 700 lb.
 Fuselage: 200 lb. at +19.0
 200 lb. at +255
 Nacelle Lockers: 150 lb. each side at +168.0

Chieftain, S/N 31-5001 through 31-5004 and 31-7305005 through 31-8452024:
 With optional nacelle fuel tanks

Total: 500 lb.
 Fuselage: 200 lb. at +19.0
 200 lb. at +255
 Nacelle Lockers: 50 lb. each side at +192.0

T1020, S/N 31-8253001 through 31-8553002:

Total: 600 lb.
 Fuselage: 200 lb. at +23.0
 100 lb. at +268
 Nacelle Lockers: 150 lb. each side at +168.0

Fuel Capacity

T1020, S/N 31-8253001 through 31-8553002:
 Total - 112 gallons
 56 gallons in each of 2 wing tanks at +126.8

Chieftain, S/N 31-5001 through 31-5004 and 31-7305005 through 31-8452024:

Total - 192 gallons
 56 gallons in each of 2 wing tanks at +126.8
 40 gallons in each of 2 wing tanks at +148.0

Chieftain, S/N 31-5001 through 31-5004 and 31-7305005 through 31-8452024:
 With optional nacelle fuel tanks

Total - 246 gallons
 56 gallons in each of 2 wing tanks at +126.8
 27 gallons in each of 2 nacelle tanks at +142.8
 40 gallons in each of 2 wing tanks at +148.0

See NOTE 1 for unusable fuel data.

Oil Capacity

Total - 6 gallons at (+77)
 (3 gallons each engine - 2 ¾ qt. unusable each engine)

Control Surface Movements

(All measurements taken at
 trailing edge from neutral position)

Aileron	(±1.0°)	Up	24°	Down	14°
Aileron Tab	(±1.0°)	Up	15°	Down	20°
(Aileron neutral)					
Elevator	(±1.0°)	Up	16°	Down	20°
Elevator Tab	(±1.0°)	Up	9°	Down	36°
(Elevator neutral)					
Rudder	(±1.0°)	Right	30°	Left	30°
Rudder Tab	(±1.0°)	Right	18°	Left	40°
(Rudder neutral)					
Flaps	(±1.0°)			Down	40°

Maximum Operating Altitude

24,000 ft. pressure altitude

Serial Numbers Eligible

31-5001 through 31-5004 and 31-7305005 through 31-8553002 (See NOTES 5 and 6 for airworthiness certification eligibility in the United States).

IV. - Model PA-31-325 (Navajo C/R), 6 - 8 PCLM (Normal Category), Approved May 31, 1974.

<u>Engine</u>	1 Lycoming TIO-540-F2BD 1 Lycoming LTIO-540 F2BD																																								
<u>Fuel</u>	100/130 minimum grade aviation gasoline																																								
<u>Engine Limits</u>	<p>Applicable to S/N 31-7400990, 31-7512001 through 31-7912124: <u>Maximum continuous power</u> 2,575 r.p.m., 325 hp. from sea level to 14,000 ft. altitude, maximum 49.0 in. hg. manifold pressure cumulative total with automatic density control and altitude adjustment. Do not exceed the following manifold pressure limitations: 49.0 in. hg manifold pressure at and below 14,000 ft. altitude, 31.0 in. hg manifold pressure at 25,000 ft altitude. Straight line variation between points given.</p> <p>Applicable to S/N 31-8012001 through 31-8312019: <u>Maximum continuous power</u> 2,575 r.p.m., 325 hp. from sea level to 14,000 ft. altitude, maximum 49.0 in. hg. manifold pressure cumulative total with automatic density control and altitude adjustment. Do not exceed the following manifold pressure limitations: 49.0 in. hg manifold pressure at and below 14,000 ft. altitude, 31.0 in. hg manifold pressure at 24,000 ft. altitude. Straight line variation between points given.</p> <p><u>Maximum normal operating power</u> Do not exceed the following r.p.m. and manifold pressures: 2,400 r.p.m., 39.5 in. hg manifold pressure at and below 19,700 ft. altitude, 2,400 r.p.m., 31.0 in. hg manifold pressure at 24,000 ft. altitude. Straight line variation between points given.</p>																																								
<u>Propeller and Propeller Limits</u>	<p>Hartzell Hub and Blade Models:</p> <p>HC-E3YR-2AF/FC8468-6R (Eligible on TIO-540-F2BD engines) HC-E3YR-2ATF/FC8468-6R HC-E3YR-2ATF/FC8468-7R</p> <p>HC-E3YR-2ALTF/FJC8468-6R (Eligible on LTIO-540-F2BD engines) HC-E3YR-2ALF/FJC8468-6R HC-E3YR-2ALTF/FJC8468-7R</p> <p>Pitch: High $82^{\circ} \pm 1.0^{\circ}$ (feathered), Low $13.2^{\circ} \pm 0.1^{\circ}$ at 30 in station. Diameter: Not over 80 in., not under 78 in. No further reduction permitted.</p>																																								
<u>Propeller Governor</u>	2 Hartzell F-6-24Z Propeller Governors See Notes 11 & 12																																								
<u>Airspeed Limits (CAS)</u>	<p>Applicable to all S/N:</p> <table border="0"> <tr> <td>V_{NE}</td> <td>(Never Exceed)</td> <td>272 mph</td> <td>(236 knots)</td> </tr> <tr> <td>V_{NO}</td> <td>(Max. Structural Cruise)</td> <td>216 mph</td> <td>(188 knots)</td> </tr> <tr> <td colspan="4">Above 21,000 ft. reduce V_{NO} speed 3 mph per 1,000 ft.</td> </tr> <tr> <td>V_A</td> <td>(Maneuvering)</td> <td>183 mph</td> <td>(159 knots)</td> </tr> <tr> <td>V_{FE}</td> <td>(Flaps Extended) 40°</td> <td>150 mph</td> <td>(130 knots)</td> </tr> <tr> <td>V_{MC}</td> <td>(Minimum Control)</td> <td>85 mph</td> <td>(74 knots)</td> </tr> </table> <p>Applicable to S/N 31-7400990, 31-7512001 through 31-7712106:</p> <table border="0"> <tr> <td>V_{FE}</td> <td>(Flaps Extended) 15°</td> <td>175 mph</td> <td>(152 knots)</td> </tr> <tr> <td>V_{LO}</td> <td>(Landing Gear Operating)</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Extension and Retraction</td> <td>150 mph</td> <td>(130 knots)</td> </tr> <tr> <td>V_{LE}</td> <td>(Landing Gear Extended)</td> <td>150 mph</td> <td>(130 knots)</td> </tr> </table>	V_{NE}	(Never Exceed)	272 mph	(236 knots)	V_{NO}	(Max. Structural Cruise)	216 mph	(188 knots)	Above 21,000 ft. reduce V_{NO} speed 3 mph per 1,000 ft.				V_A	(Maneuvering)	183 mph	(159 knots)	V_{FE}	(Flaps Extended) 40°	150 mph	(130 knots)	V_{MC}	(Minimum Control)	85 mph	(74 knots)	V_{FE}	(Flaps Extended) 15°	175 mph	(152 knots)	V_{LO}	(Landing Gear Operating)				Extension and Retraction	150 mph	(130 knots)	V_{LE}	(Landing Gear Extended)	150 mph	(130 knots)
V_{NE}	(Never Exceed)	272 mph	(236 knots)																																						
V_{NO}	(Max. Structural Cruise)	216 mph	(188 knots)																																						
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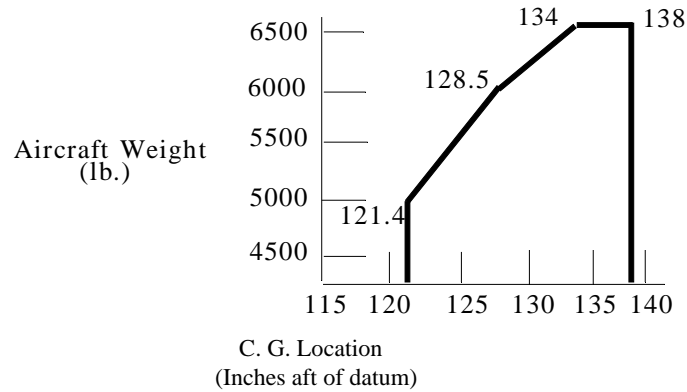
Airspeed Limits (CAS)

Applicable to S/N 31-7812001 through 31-8312019:

V _{FE}	(Flaps Extended) 25°	184 mph	(160 knots)
V _{LO}	(Landing Gear Operating)		
	Extension	180 mph	(156 knots)
	Retraction	150 mph	(130 knots)
V _{LE}	(Landing Gear Extended)	180 mph	(156 knots)

C.G. Range (Gear Extended)

(+134.0) to (+138.0) at 6,500 lb.
 (+128.5) to (+138.0) at 6,000 lb.
 (+121.4) to (+138.0) at 5,000 lb. or less
 Straight line variation between points given.
 Moment due to retracting landing gear: + 860 in.-lb.

Empty Weight C.G. Range

None

Maximum Weight

6,500 lb. - Takeoff or Landing

No. of Seats

6 - 8 seats (2 at +119.0, 2 at +166.0, 2 at +198.0)
 (2 optional, 1 at +229.0, 1 at +234.0)

Maximum Baggage

Total: 650 lb.
 Fuselage: 150 lb. at +43.0
 200 lb. at +255
 Nacelle Lockers: 150 lb. each side at +168.0
 With optional nacelle fuel tanks.

Total: 450 lb.
 Fuselage: 150 lb. at +43.0
 200 lb. at +255.0
 Nacelle Lockers: 50 lb. each side at +192.0

Fuel Capacity

Total - 192 gallons
 56 gallons in each of 2 wing tanks at +126.8
 40 gallons in each of 2 wing tanks at +148.0
 With optional nacelle fuel tanks.

Total - 246 gallons
 56 gallons in each of 2 wing tanks at +126.8
 27 gallons in each of 2 nacelle tanks at +142.8
 40 gallons in each of 2 wing tanks at +148.0

See NOTE 1 for unusable fuel data.

Oil Capacity

Total - 6 gallons at (+77)
 (3 gallons each engine - 2 3/4 qt. unusable each engine)

<u>Control Surface Movements</u> (All measurements taken at trailing edge from neutral position)	Aileron	(±1.0°)	Up	24°	Down	14°	
	Aileron Tab	(±1.0°)	Up	15°	Down	20°	
	(Aileron neutral)						
	Applicable to S/N 31-7400990, 31-7512001 through 31-7912124:						
	Elevator	(±1.0°)	Up	20°	Down	20°	
	Elevator Tab	(±1.0°)	Up	1°	Down	40°	
	(Elevator neutral)						
	Applicable to S/N 31-8012001 through 31-8312019:						
	Elevator	(±1.0°)	Up	20°	Down	20°	
	Elevator Tab	(±1.0°)	Up	5°	Down	40°	
(Elevator neutral)							
Rudder	(±1.0°)	Right	30°	Left	30°		
Rudder Tab	(±1.0°)	Right	18°	Left	40°		
(Rudder neutral)							
Flaps	(±1.0°)			Down	40°		
<u>Maximum Operating Altitude</u>	24,000 ft. pressure altitude.						
<u>Serial Numbers Eligible</u>	31-7400990, and 31-7512001 through 31-8312019 (See NOTES 5 and 6 for airworthiness certification eligibility in the United States).						

DATA PERTINENT TO ALL MODELS

<u>Datum</u>	137 inches forward of the main spar centerline.
<u>Leveling Means</u>	Top of two rivnuts on right side of nose, near access door.
<u>Certification Basis</u>	Type Certificate No. A20SO issued March 6, 1978, (originally issued February 24, 1966, under Type Certificate A8EA) obtained by the manufacturer under the delegation option authorization. Date of Type Certificate application March 15, 1962. CAR 3 effective May 15, 1956, through Amendment 3-8, effective December 18, 1962; and FAR 23.205, 23.1545, 23.1563 and 23.1585 as amended by Amendment 23-3, effective November 11, 1965; and FAR 23.1557(c) as amended by Amendment 23-7, effective September 14, 1969. Eastern Region Engineering and Manufacturing Branch letter of December 6, 1965, addresses the showing of equivalent safety with regard to CAR 3.682, 3.771, and 3.772. In addition: <u>Model PA-31-350</u> : FAR 23.75(a), 23.77, 23.145, 23.161, 23.175(d), and 23.1527 as amended by Amendment 23-7, effective September 14, 1969. <u>Model PA-31-325</u> : FAR 23.75(a), 23.77(a), 23.145, 23.161, 23.175(a), 23.175(b), 23.175(c), 23.175(d), and 23.1527 as amended by Amendment 23-7, effective September 14, 1969. <u>Model PA-31 and PA-31-325 (S/N 31-8012001 through 31-8312019), and Model PA-31-350 (S/N 31-8052001 through 31-8553002)</u> : FAR 36 as amended by Amendments 1 through 6, effective January 24, 1977. Compliance with ice protection requirements have been demonstrated in accordance with FAR 23.1419 as amended by Amendment 23-14, effective December 20, 1973, when ice protection equipment is installed in accordance with the airplane equipment list.

Certification Basis
(continued)

Model PA-31-350 (S/N 31-7652124 through 31-7952250):

Compliance with ice protection requirements have been demonstrated in accordance with FAR 23.1419 as amended by Amendment 23-14, effective December 20, 1973, when ice protection equipment is installed in accordance with Piper Drawing 71983.

Production Basis

Approved for manufacture of spare parts only under Production Certificate Number 206.

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. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1362 for Model PA-31, S/N 31-2 through 31-659, 31-661 through 31-711.
2. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1470 for Model PA-31-300, S/N 31-2 through 31-511.
3. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1655 for Model PA-31, S/N 31-712 through 31-751.
4. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1653 for Model PA-31 with nacelle wing lockers and TIO-540-A2B engines, Serial Number 31-660.
5. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1686 for Model PA-31 with nacelle wing lockers and TIO-540-A2C engines, Serial Number 31-712 through 31-751.
6. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1702 for Model PA-31, S/N 31-752 through 31-900 and 31-7300901 through 31-7612110.
7. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1750 for Model PA-31-350, S/N 31-5001 through 31-5004 and 31-7305005 through 31-7652176.
8. D.O.A. No. EA-1 Approved Airplane Flight Manual per PAC Report No. 1860 for Model PA-31-325, S/N 31-7300932 through 31-7612110.
9. D.O.A. No. EA-1 Approved Pilot's Operating Handbook per PAC Report No. 2045 for Model PA-31, S/N 31-7712001 through 31-7812073.
10. D.O.A. No. EA-1 Approved Pilot's Operating Handbook per PAC Report No. 1964 for Model PA-31-325, S/N 31-7712001 through 31-7812072.
11. D.O.A. No. EA-1 Approved Pilot's Operating Handbook per PAC Report No. 2046 for Model PA-31-350, S/N 31-7752001 through 31-7852079.
12. D.O.A. No. SO-1 Approved Pilot's Operating Handbook per PAC Report No. 2045 for Model PA-31, S/N 31-7812074 through 31-7912124.
13. D.O.A. No. SO-1 Approved Pilot's Operating Handbook per PAC Report No. 1964 for Model PA-31-325, S/N 31-7812073 through 31-7912124.
14. D.O.A. No. SO-1 Approved Pilot's Operating Handbook per PAC Report No. 2046 for Model PA-31-350, S/N 31-7852080 through 31-7952250.
15. D.O.A. No. SO-1 Approved Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Report No. LK-1206 for Model PA-31, S/N 31-8012001 through 31-8312019.
16. D.O.A. No. SO-1 Approved Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Report No. LK-1207 for Model PA-31-325, Serial Number 31-8012001 through 31-8312019.
17. D.O.A. No. SO-1 Approved Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Report No. LK-1208 for Model PA-31-350, Serial Number 31-8052001 through 31-8553002.
18. D.O.A. No. SO-1 Approved Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Report No. LK-1345 for PA-31-350, Serial Number 31-8253001 through 31-8553002.

NOTE 1. Current weight and balance report including list of equipment included in certified empty weight and loading instructions when necessary, must be provided for each aircraft at the time of original certification. All the fuel and oil can be drained. However, the certified empty weight and corresponding center of gravity location must include unusable fuel as follows:

For PA-31	S/N 31-3 thru 31-659, 31-661 thru 31-711	16 lb. at (+129)
For PA-31	S/N 31-660, 31-712 thru 31-751 (with wing lockers)	16 lb. at (+129)
For PA-31	S/N 31-712 thru 31-751 (without wing lockers)	16 lb. at (+129)
For PA-31	S/N 31-752 thru 31-7612110	16 lb. at (+129) or 28.2 lb. at (+129)
For PA-31	S/N 31-7712001 thru 31-7912124	51.6 lb. at (+136.6)
For PA-31	S/N 31-8012001 and UP	51.6 lb. at (+136.6)
For PA-31-300	S/N 31-228, 31-230, 31-231, 31-270, 31-279, 31-316, 31-339, 31-375, 31-415, 31-426, 31-451, 31-455, 31-483 & 31-511	16 lb. at (+129)
For PA-31-325	S/N 31-7512006 thru 31-7612110	51.6 lb. at (+136.6)
For PA-31-325	S/N 31-7712001 thru 31-7912124	51.6 lb. at (+136.6)
For PA-31-325	S/N 31-8012001 and UP	51.6 lb. at (+136.6)
For PA-31-325	S/N 31-8112001 (with Optional Nayak Nacelle Fuel System)	51.6 lb. at (+136.6)
For PA-31-350	S/N 31-5000 thru 31-7652177	36 lb. at (+126.8) 24 lb. at (+148)
For PA-31-350	S/N 31-7752001 thru 31-7952250	36 lb. at (+126.8) 24 lb. at (+148)
For PA-31-350	S/N 31-8052001 and UP	36 lb. at (+126.8) 24 lb. at (+148)
For PA-31-350	S/N 31-8152001 and UP (with Optional Nayak Nacelle Fuel System)	36 lb. at (+126.8) 24 lb. at (+148)

NOTE 2 All placards required in the approved Airplane Flight Manual must be installed in the appropriate locations.

In addition, the following placard must be displayed on the instrument panel in full view of the pilot:
 "THIS AIRCRAFT MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS, AND MANUALS. NO ACROBATIC MANEUVERS (INCLUDING SPINS) APPROVED."

NOTE 3 Model PA-31 Type Certificate A20SO approved February 24, 1966, for a maximum gross weight of 6,200 lb. takeoff or landing. For Model PA-31 aircraft, S/Ns 31-2 through 31-900 and 31-7300901 through 31-8312019, Type Certificate A20SO reissued July 25, 1966, for maximum gross weight of 6,500 lb. takeoff and 6,200 lb. landing.

NOTE 4 Model PA-31 with nacelle wing lockers is only approved with TIO-540-A2B or TIO-540-A2C engines and with three-blade propellers listed under Propeller and Propeller Limits section.

NOTE 5 Any aircraft with a letter prefix on the serial number is not eligible for airworthiness certification in the United States. Example: AR31-XXXXXXXX.

NOTE 6 The following serial numbers are not eligible for airworthiness certification in the United States:

PA-31, PA-31-300, and PA-31-325:

31-7400991, 31-7512002, 31-7512026, 31-7812011, 31-7812053, 31-7812070, 31-7812080, 31-7812101, 31-7812116, 31-7812122, 31-8012045, 31-8012056, 31-8012067, 31-8012071, 31-8012083, 31-8012089, 31-8012101, 31-8012102, 31-8112037, 31-8112044, 31-8112052, 31-8112061, 31-8112072, 31-8112073, 31-8112077, 31-8212023, 31-8212024, 31-8212028, 31-8212029, 31-8212034, 31-8212036, 31-8312002, and 31-8312007.

PA-31-350:

31-7405218, 31-7405238, 31-7405485, 31-7405490, 31-7552043, 31-7552073, 31-7552076, 31-7652099, 31-7652144, 31-7852014, 31-7852042, 31-7852081, 31-7852110, 31-7852123, 31-7852133, 31-7852169, 31-7952067, 31-7952140, 31-7952184, 31-7952231, 31-8052009, 31-8052083, 31-8052145, 31-8052217, 31-8052218, 31-8052219, 31-8152067, 31-8152068, 31-8152122, 31-8152123, 31-8152144, 31-8152145, 31-8152201, 31-8152202, 31-8152203, 31-8252024, 31-8252037, 31-8252046, 31-8252058, 31-8252070, 31-8252071, 31-8252084, 31-8252085, 31-8352002, 31-8352003, and 31-8352036.

NOTE 7 This Type Certificate Data Sheet reflects the certification basis and approval for all PA-31, PA-31-300, PA-31-325, and PA-31-350 aircraft. The following aircraft were produced under Type Certificate A8EA:

PA-31	S/N 31-2 through 31-900 and 31-7300901 through 31-7812073
PA-31-300	S/N 31-2 through 31-511
PA-31-325	S/N 31-7300932 through 31-7812072
PA-31-350	S/N 31-5001 through 31-5004 and 31-7305005 through 31-7852079

This note reflects a split in the original Type Certificate for administrative purposes. The information on this Type Certificate Data Sheet applies to all Piper Models PA-31, PA-31-300, PA-31-325, and PA-31-350, including:

- (a) Those serial numbered aircraft listed above, manufactured under FAA Type Certificate A8EA, at Lock Haven, Pennsylvania, and
- (b) Those aircraft subsequent to the above serial numbers, manufactured under this Type Certificate at Lakeland, Florida. NOTE 8 For aircraft that received the optional 52947-2 Propeller Synchrophaser Installation the F-6-24 LH Side (Piper P/N 24622-18) and F-8-24L RH Side (Piper P/N 24622-14) governors are approved.

NOTE 9 For aircraft that received the optional 49694-4 (Rev. D and higher) Propeller Synchrophaser Installation the F-6-24Z LH Side (Piper P/N 24622-24) and F-8-48LZ RH Side (Piper P/N 24622-26) governors are approved.

NOTE 10 For aircraft that received the optional 49694-4 (pre Rev. D) Propeller Synchrophaser Installation the F-6-24 LH Side (Piper P/N 24622-18) and F-8-24L RH Side (Piper P/N 24622-21) governors are approved.

NOTE 11 For aircraft that received the optional 49694-3 (Rev. D and higher) Propeller Synchrophaser Installation the F-6-24Z LH Side (Piper P/N 24622-24) and F-8-48LZ RH Side (Piper P/N 24622-26) governors are approved.

NOTE 12 For aircraft that received the optional 49694-3 (pre Rev. D) Propeller

Synchrophaser Installation the F-6-24 LH Side (Piper P/N 24622-18) and F-8-24L RH Side (Piper P/N 24622-21) governors are approved.

NOTE 13 For aircraft that received the optional 49694 -2 (Rev. D and higher) Propeller Synchrophaser Installation the F-6-24Z LH side (Piper P/N 24622-24), F-6-11S LH side or F-6-11A LH side (Piper P/N 24622-7) LH side and F-8-48Z RH Side (Piper P/N 24622-25) governors are approved.

NOTE 14 For aircraft that received the optional 49694 -2 (pre Rev. D) Propeller Synchrophaser Installation the F-6-24 LH side (Piper P/N 24622-18), F-6-11S LH side or F-6-11A LH side (Piper P/N 24622-7) LH side and F-8-48 RH Side (Piper P/N 24622-20) governors are approved.

...END...

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

E14EA Revision 20 Lycoming Engines TIO-540-A1A, -A1B, -A2A, -A2B, -A1C, -A2C, -C1A, -E1A, -F2BD, -G1A, -H1A, -J2B, -J2BD, -K1AD, -N2BD, -R2AD, -S1AD, -T2AD, -U2A, -V2AD, -W2A, -AA1AD, -AB1AD, -AB1BD -AE2A, -AF1A, -AF1B, -AG1A, -AH1A, -AJ1A, AK1A LTIO-540-F2BD-J2B, -J2BD, -K1AD, -N2BD, -R2AD, -U2A, -V2AD, -W2A September 26, 2006
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TYPE CERTIFICATE DATA SHEET NO. E14EA

Engines of models described herein conforming with this data sheet (which is a part of type certificate No. E14EA) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certification aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Civil Air Regulations/Federal Aviation Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manual and other approved instructions.

Type Certificate Holder	Lycoming Engines, An operating Division of Avco Corporation Williamsport, Pennsylvania 17701
Type Certificate Holder Record	Textron Lycoming, AVCO Corporation transferred TC E14EA to Lycoming Engines, An Operating Division of Avco Corporation on December 17, 2003.

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Rev. No.	20	20	14	14	14	14	14	20	17	16	16	16	16	17	20

Model	Lycoming	TIO-540-A1A, -A1B, -A2A, -A2B	TIO-540-A1C, -A2C	TIO-540-E1A
Type 6HOA Direct Drive Turbocharged				
Rating (See Notes 4 and 13)				
Maximum continuous hp., rpm, in. Hg. at:				
Standard density critical alt. ft.		310-2575-40.2-15,000	310-2575-42.-15,000	260-2575-36.0-15000
Standard density sea level alt. ft.		310-2575-38.6-S.L.	310-2575-40.0-S.L.	260-2575-34.1-S.L.
Takeoff (5 min.) hp., rpm, in. Hg. at:				
Standard density critical alt. ft.		310-2575-40.2-15,000	310-2575-41.5-15,000	260-2575-36.0-15000
Standard density sea level alt., ft.		310-2575-38.6-S.L.	310-2575-40.0-S.L.	260-2575-34.1-S.L.
Fuel (minimum grade aviation gasoline)				
		100/100LL	--	--
Lubricating oil (lubrication should conform to the specification as listed or to subsequent revisions thereto)				
		Lycoming Spec. No. 301-F Service Instruction No. 1014	--	--
Bore and stroke, in.				
		5.125 X 4.375	--	--
Displacement, cu. in.				
		541.5	--	--
Compression ratio				
		See Note 10.	--	--
Weight (dry) lb.				
		See Note 10.	--	--
C.G. location (with starter and alternator installed)				
From front face of prop. mounting flange, in.		22.22	--	19.47
Off crankshaft C.L., in.		0.88 below & 0.18 right	--	3.00 below & 0.11 left
Propeller shaft flange, SAE A.S. 127				
		Type 2 modified	--	--
Crankshaft dampers (torsional)				
		One 5th order	--	--
		One 6th order	--	One 6th order (Note 8)
Fuel injection				
		Note 10	--	--
Turbocharger				
		Note 10	--	--
Ignition, dual				
		Note 10	--	--
Ignition timing °BTC				
		20	--	--
Spark plugs				
		Note 6	--	--
Oil sump capacity, qt.				
		12	--	--
Usable oil, qt. (20° nose up or down)				
		9 1/4	--	--
NOTES - as applicable				
		1-7, 9, 10	1-7, 9, 10	1-10

“- -” indicates “same as preceding model.”

Model	Lycoming	TIO-540-H1A	TIO-540-F2BD LTIO-540-F2BD	TIO-540-J2B, -J2BD, -N2BD, LTIO-540-J2B, -J2BD, -N2BD
Type 6HOA Direct Drive Turbocharged Rating (See Notes 4 and 13)				
Maximum continuous hp., rpm, in. Hg. at:				
Standard density critical alt. ft.		270-2575-37.5-15,000	325-2575-46.0-15000	350-2575-46.0-15000
Standard density sea level alt. ft.		270-2575-35.9-S.L.	325-2575-43.5-S.L.	350-2575-43.0-S.L.
Takeoff (5 min.) hp., rpm, in. Hg. at:				
Standard density critical alt. ft.		270-2575-37.5-15,000	325-2575-46.0-15000	350-2575-46.0-15000
Standard density sea level alt. ft.		270-2575-35.9-S.L.	325-2575-43.5-S.L.	350-2575-43.0-15000
Fuel (minimum grade aviation gasoline)		100/100LL	--	--
Lubricating oil (lubrication should conform to the specification as listed or to subsequent revisions thereto)		Lycoming Spec. No. 301-F Service Instruction No. 1014	--	--
Bore and stroke, in.		5.125 X 4.375	--	--
Displacement, cu. in.		541.5	--	--
Compression ratio		See Note 10.	--	--
Weight (dry) lb.		See Note 10.	--	--
C.G. location (with starter and alternator installed)				
From front face of prop. mounting flange, in.		19.47	22.19	22.75
Off crankshaft C.L., in.		3.00 below & 0.11 left	0.88 below & 0.18 right	0.75 below & 0.16 right
Propeller shaft flange, SAE A.S. 127		Type 2 modified	--	--
Crankshaft dampers (torsional)		One 5th order	--	--
		One 6th order (Note 8)	One 6th order	--
Fuel injection		Note 10	--	--
Turbocharger		Note 10	--	--
Ignition, dual		Note 10	--	--
Ignition timing °BTC		20	--	--
Spark plugs		Note 6	--	--
Oil sump capacity, qt.		12	--	--
Usable oil, qt. (20° nose up or down)		9 1/4	--	--
NOTES -- as applicable		1-10	1-7, 9, 10	1-7, 9, 10

“- -” indicates “same as preceding model.”

Model	Lycoming	TIO-540-R2AD LTIO-540-R2AD	TIO-540-C1A, -G1A	TIO-540-K1AD LTIO-540-K1AD
Type 6HOA Direct Drive Turbocharged				
Rating (See Note 4)				
Maximum continuous hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	340-2575-44.0-15000	250-2575-34.0-15000	250-2575-34.0-15000	
Standard density sea level alt. ft.	350-2575-44.0-S.L.	250-2575-33.0-S.L.	250-2575-34.0-S.L.	
Takeoff (5 min.) hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	340-2575-44.0-15000	250-2575-34.0-15000	250-2575-34.0-15000	
Standard density sea level alt., ft.	350-2575-44.0-S.L.	250-2575-33.0-S.L.	250-2575-34.0-S.L.	
Fuel (minimum grade aviation gasoline)	100/100LL	--	--	
Lubricating oil (lubrication should conform to the specification as listed or to subsequent revisions thereto)	Lycoming Spec. No. 301-F Service Instruction No. 1014	--	--	
Bore and stroke, in.	5.125 X 4.375	--	--	
Displacement, cu. in.	541.5	--	--	
Compression ratio	See Note 10.	--	--	
Weight (dry) lb.	See Note 10.	--	--	
C.G. location (with starter and alternator installed)				
From front face of prop. mounting flange, in.	22.75	19.27	21.0	
Off crankshaft C.L., in.	0.75 below & 0.16 right	2.30 below & 0.23 left	0.50 below & 0.31 left	
Propeller shaft flange, SAE A.S. 127	Type 2 modified		--	
Crankshaft dampers (torsional)	One 5th order One 6th order	-- One 6th order (Note 8)	-- --	
Fuel injection	Note 10	--	--	
Turbocharger	Note 10	--	--	
Ignition, dual	Note 10	--	--	
Ignition timing °BTC	20	--	--	
Spark plugs	Note 6	--	--	
Oil sump capacity, qt.	12	--	8	
Usable oil, qt. (20° nose up or down)	9 1/4	--	6	
NOTES - as applicable	1-7, 9, 10, 11, 13	1-10	1-10	

“- -” indicates “same as preceding model.”

Model	Lycoming	TIO-540-S1AD	TIO-540-T2AD	TIO-540-U2A LTIO-540-U2A
Type 6HOA Direct Drive Turbocharged				
Rating (See Note 4)				
Maximum continuous hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	295-2700-36.0-16000	330-2400-43.0-12000	350-2500-42.2-12000	
Standard density sea level alt. ft.	300-2700-36.0-S.L. & 12000 ft.	330-2400-40.5-S.L.	350-2500-41.2-S.L.	
Takeoff (5 min.) hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	295-2700-36.0-16000	330-2400-43.0-12000	350-2500-42.2-12000	
Standard density sea level alt., ft.	300-2700-36.0-S.L. & 12000 ft.	330-2400-43.0-S.L.	350-2500-41.2-S.L.	
Fuel (minimum grade aviation gasoline)	100/100LL	--	--	
Lubricating oil (lubrication should conform to the specification as listed or to subsequent revisions thereto)	Lycoming Spec. No. 301-F Service Instruction No. 1014	--	--	
Bore and stroke, in.	5.125 X 4.375	--	--	
Displacement, cu. in.	541.5	--	--	
Compression ratio	See Note 10.	--	--	
Weight (dry) lb.	See Note 10.	--	--	
C.G. location (with starter and alternator installed)				
From front face of prop. mounting flange, in.	18.58	22.75	20.38	
Off crankshaft C.L., in.	1.31 below & 1.00 right	0.75 below & 0.16 right	1.4 below & 0.25 right	
Propeller shaft flange, SAE A.S. 127	Type 2 modified	--	--	
Crankshaft dampers (torsional)	One 5th order	--	--	
	One 6th order (Note 8)	--	--	
Fuel injection	Note 10	--	--	
Turbocharger	Note 10	--	--	
Ignition, dual	Note 10	--	--	
Ignition timing °BTC	20	--	--	
Spark plugs	Note 6	--	--	
Oil sump capacity, qt.	12	--	--	
Usable oil, qt. (20° nose up or down)	9 3/4	--	--	
NOTES - as applicable	1-10	1-7, 9, 10	1-7, 9, 10	

“- -” indicates “same as preceding model.”

Model	Lycoming	TIO-540-V2AD LTIO-540-V2AD (See Note 14)	TIO-540-W2A LTIO-540-W2A (See Note 14)	TIO-540-AA1AD* TIO-540-AB1AD TIO-540-AB1BD
Type 6HOA Direct Drive Turbocharged				
Rating (See Note 4)				
Maximum continuous hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	340-2600-42.0-18000	350-2600-44.2-15000	250-2575-32.5-15000	
Standard density sea level alt. ft.	350-2600-42.0-S.L.	350-2600-44.2-S.L.	250-2575-32.5-S.L.	
Takeoff (5 min.) hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	340-2600-42.0-18000	350-2600-44.2-15000	250-2575-32.5-15000	
Standard density sea level alt., ft.	350-2600-42.0-S.L.	350-2600-44.2-S.L.	250-2575-32.5-S.L.	
Fuel (minimum grade aviation gasoline)	100/100LL	--	--	
Lubricating oil (lubrication should conform to the specification as listed or to subsequent revisions thereto)	Lycoming Spec. No. 301-F Service Instruction No. 1014	--	--	
Bore and stroke, in.	5.125 X 4.375	--	--	
Displacement, cu. in.	541.5	--	--	
Compression ratio	See Note 10.	--	--	
Weight (dry) lb.	See Note 10.	--	--	
C.G. location (with starter and alternator installed)				
From front face of prop. mounting flange, in.	23.05	22.10	18.91	
Off crankshaft C.L., in.	0.59 below & 0.14 right	0.10 below & 0.48 right	2.20 below & 0.67 left	
Propeller shaft flange, SAE A.S. 127	Type 2 modified	--	--	
Crankshaft dampers (torsional)	One 5th order	--	--	
	One 6th order	--	--	
Fuel injection	Note 10	--	--	
Turbocharger	Note 10	--	--	
Ignition, dual	Note 10	--	--	
Ignition timing °BTC	20	--	--	
Spark plugs	Note 6	--	--	
Oil sump capacity, qt.	12	--	-- **	
Usable oil, qt. (20° nose up or down)	9 1/4	--	-- ***	
NOTES - as applicable	1-7, 9, 10, 14	1-7, 9, 10, 14	1-7, 9, 10, 15	

“-” indicates “same as preceding model.”

*TIO-540-AA1AD Model is approved with an alternate rating of 270hp/2575 rpm from S.L. to 15,000 ft.

** 10 for AA1AD

*** 7 1/4 for AA1AD.

Model	Lycoming	TIO-540-AE2A	TIO-540-AF1A TIO-540-AF1B	TIO-540-AG1A
Type 6HOA Direct Drive Turbocharged Rating (See Note 4) Maximum continuous hp., rpm, in. Hg. at:				
Standard density critical alt. ft.		350-2500-42.0-20000	270-2575-36.5-20000	270 - 2575 - 36.5 -15000
Standard density sea level alt. ft.		350-2500-42.0-S.L.	270-2575-35.0-S.L.	270 - 2575 - 36.5 - SL
Takeoff (5 min.) hp., rpm, in. Hg. at:				
Standard density critical alt. ft.		350-2500-42.0-20000	270-2575-36.5-20000	270 - 2575 - 36.5 -15000
Standard density sea level alt., ft.		350-2500-42.0-S.L.	270-2575-35.0-S.L.	270 - 2575 - 36.5 - SL
Fuel (minimum grade aviation gasoline)		100/100LL	--	--
Lubricating oil (lubrication should conform to the specification as listed or to subsequent revisions thereto)		Lycoming Spec. No. 301-F Service Instruction No. 1014	--	--
Bore and stroke, in.		5.125 X 4.375	--	--
Displacement, cu. in.		541.5	--	--
Compression ratio		See Note 10.	--	--
Weight (dry) lb.		See Note 10.	--	--
C.G. location (with starter and alternator installed)				
From front face of prop. mounting flange, in.		18.88	18.30	19.00
Off crankshaft C.L., in.		0.95 below & 0.63 left	2.30 below & 0.64 left	1.75 below & 1.20 left
Propeller shaft flange, SAE A.S. 127		Type 2 modified	--	--
Crankshaft dampers (torsional)		One 5th order	--	--
		One 6th order	--	--
Fuel injection		Note 10	--	--
Turbocharger		Note 10	--	--
Ignition, dual		Note 10	--	--
Ignition timing °BTC		20	--	--
Spark plugs		Note 6	--	--
Oil sump capacity, qt.		12	10	10
Usable oil, qt. (20° nose up or down)		9 1/4	7 1/4	5
NOTES - as applicable		1-7, 9, 10, 11	1-7, 9, 10	1-10, 12

“- -” indicates “same as preceding model.”

Model	Lycoming	TIO-540-AH1A	TIO-540-AJ1A	TIO-540-AK1A
Type 6HOA Direct Drive Turbocharged				
Rating (See Note 4)				
Maximum continuous hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	300 - 2500 - 38.0 -12000	310 - 2500 - 39.0 - 14000	235 - 2400 - 32.0 -15000	
Standard density sea level alt. ft.	300 - 2500 - 38.0 - SL	310 - 2500 - 39.0 - SL	235 - 2400 - 32.0 - SL	
Takeoff (5 min.) hp., rpm, in. Hg. at:				
Standard density critical alt. ft.	300 - 2500 - 38.0 -12000	310 - 2500 - 39.0 - 14000	235 - 2400 - 32.0 -15000	
Standard density sea level alt., ft.	300 - 2500 - 38.0 - SL	310 - 2500 - 39.0 - SL	235 - 2400 - 32.0 - SL	
Fuel (minimum grade aviation gasoline)	100/100LL	--	--	
Lubricating oil (lubrication should conform to the specification as listed or to subsequent revisions thereto)	Lycoming Spec. No. 301-F Service Instruction No. 1014	--	--	
Bore and stroke, in.	5.125	--	--	
Displacement, cu. in.	4.375	--	--	
Compression ratio	See Note 10.	--	--	
Weight (dry) lb.	See Note 10.	--	--	
C.G. location (with starter and alternator installed)				
From front face of prop. mounting flange, in.	18.70	18.50*	18.94*	
Off crankshaft C.L., in.	1.87 below & 1.00 right	0.75 below & 1.13 left*	1.50 below & 1.25 left*	
Propeller shaft flange, SAE A.S. 127	Type 2 modified	--	--	
Crankshaft dampers (torsional)	One 5th order One 6th order	--	--	
Fuel injection	Note 10	--	--	
Turbocharger	Note 10	--	--	
Ignition, dual	Note 10	--	--	
Ignition timing °BTC	20	--	23**	
Spark plugs	Note 6	--	--	
Oil sump capacity, qt.	12	11	8	
Usable oil, qt. (20° nose up or down)	9 1/4	5 1/2	4	
NOTES - as applicable	1-10, 12	--	--	

“- -” indicates “same as preceding model.”

* No alternator installed

** See Note 16

Certification Basis:

Regulations and Amendments

CAR 13 effective June 15, 1956
as amended by 13-1, 13-2, 13-3, 13-4

Model

TIO-540-A1A
TIO-540-A1B
TIO-540-A2A
TIO-540-A2B
TIO-540-C1A
TIO-540-E1A
TIO-540-G1A
TIO-540-A1C
TIO-540-A2C
TIO-540-H1A
TIO-540-F2BD

Date of Application

May 26, 1964
October 6, 1967
March 26, 1968
March 26, 1968
September 7, 1967
September 3, 1970
September 2, 1970
November 17, 1970
November 17, 1970
April 8, 1971
April 20, 1970

Date Type Certificate

E14EA Issued/Revised
December 6, 1965
October 9, 1967
April 1, 1968
April 1, 1968
June 6, 1968
September 18, 1970
September 18, 1970
January 6, 1971
January 6, 1971
April 16, 1971
July 23, 1971

Certification Basis: (cont'd)

Regulations and Amendments

<u>Model</u>	<u>Date of Application</u>	<u>Date Type Certificate E14EA Issued/Revised</u>
LTIO-540-F2BD	February 9, 1972	February 16, 1972
L/TIO-540-J2BD	August 25, 1971	April 7, 1972
L/TIO-540-K1AD	December 4, 1973	February 28, 1974
L/TIO-540-N2BD	January 29, 1973	February 16, 1973
TIO-540-R2AD	April 23, 1975	September 25, 1975
LTIO-540-R2AD	October 7, 1977	October 13, 1977
TIO-540-S1AD	January 31, 1977	June 14, 1977
TIO-540-T2AD	February 17, 1981	March 5, 1981
L/TIO-540-U2A	June 2, 1981	February 12, 1982
L/TIO-540-J2B	August 20, 1981	September 9, 1981
L/TIO-540-V2AD	December 22, 1981	January 31, 1983
L/TIO-540-W2A	October 29, 1982	August 17, 1984
TIO-540-AB1AD	June 14, 1984	January 16, 1985
TIO-540-AA1AD	February 20, 1985	June 25, 1985
TIO-540-AE2A	March 9, 1987	August 12, 1988
TIO-540-AF1A	September 13, 1988	June 23, 1989
TIO-540-AB1BD	May 18, 1993	August 11, 1993
TIO-540-AG1A	December 1, 1994	June 20, 1995
TIO-540-AF1B	December 7, 1995	January 25, 1996
TIO-540-AH1A	February 12, 1997	June 25, 1997
TIO-540-AJ1A	March 5, 1998	April 30, 1998
TIO-540-AK1A	February 22, 2000	February 2, 2001

Production basis: Production Certificate No. 3.

NOTE 1.

Maximum permissible temperatures:

Cylinder head (well type thermocouple)	500°F (480°F model - W2A, -V2AD, -AJ1A)
Cylinder base	Note 5
Oil inlet	245°F
Exhaust gas	*1650° F (See Note 4 for turbo inlet location)
Fuel injector inlet air	400°F
Compressor temperature rise	Not applicable (see Note 4)
*TIO-540-AE2A, -AF1A, -AF1B models are approved for 1750°F E.G.T.	
model TIO-540-AJ1A approved for 1675°F E.G.T., model TIO-540-AK1A approved for 1685°F E.G.T.	

NOTE 2.

Pressure Limits:

<u>Fuel pressure (p.s.i. above injector inlet air pressure)</u>	<u>Minimum (p.s.i.)</u>	<u>Maximum (p.s.i.)</u>	<u>Idle (min p.s.i.)</u>
at inlet to fuel injector (-A models except -A1C, -A2C)	25	45	12
at inlet to fuel injector (-A1C, -A2C, -AJ1A models)	25	55	12
at inlet to fuel injector (-C, -E, -G, -H models)	18	45	12
at inlet to fuel injector (-F model)	30	65	12
at inlet to fuel injector (-J, -N model)	34	65	12
at inlet to fuel injector (-K model)	20	45	12
at inlet to fuel injector (-R model)	34	65	12
at inlet to fuel injector (-S model)	25	65	12
at inlet to fuel injector (-T model)	34	65	12
at inlet to fuel injector (-U model)	30	65	12
at inlet to fuel injector (-V, -AH models)	27	65	12
at inlet to fuel injector (-W model)	31	65	12
at inlet to fuel injector (-AB1AD, -AB1BD models)	20	65	12
at inlet to fuel injector (-AA1AD model)	20	65	12
at inlet to fuel injector (-AE2A model)	29	65	12
at inlet to fuel injector (-AF1A, -AF1B models)	24	55	12
at inlet to fuel injector (-AG1A, -AK1A models)	20	55	12

NOTE 2. (cont'd)

Fuel Pressure (p.s.i. above ambient air pressure)	Minimum (p.s.i.)	Maximum (p.s.i.)	Idle (min p.s.i.)
at inlet to engine fuel pump (-A, -F, -R, -S, -U, -V, -W) (-J, -N, -T, -AE2A, -AH1A, -AJ1A models)	-2	65	--
at inlet to engine fuel pump (-C, -E, -G, -H, -K -AF1A,) (-AF1B, -AG1A, -AK1A models)	-2	55	--
Manifold Pressure (cumulative total with altitude adjustment)	Maximum (in. Hg Abs)		
-A models (except -A1C, -A2C)	45		
-A1C, -A2C models	46		
-C, -E, -G models	39.5		
-H models	40.7		
-F, -J, -N models	49		
-K models	34.5		
-R models	44		
-S models	36		
-T models	45.2		
-U models, AE2A	42.0		
-W models	50.6		
-AA1AD, -AB1AD, -AB1BD, -AF1A, -AF1B, -AH1A models	38		
-AG1A, -AJ1A models	39		
-AK1A model	32		
Oil Pressure	Minimum (p.s.i.)	Maximum (p.s.i.)	
Normal (all models)	55	95	
Idle (all models)	25	--	
Starting and warm-up (all models)	--	115	
Turbocharger exhaust back pressure		0.5	

NOTE 3. The following accessory provisions are available:

Accessory	-A1A, -A1B, -A2A, -A2B, -A1C, -A2C, -C1A, -E1A, -G1A, -H1A, -J2B, -U2A,				-F2BD, -J2BD, -N2BD, -R2AD, -S1AD, -T2AD, -U2A, -V2AD, -W2A, -J2B, -AB1AD, -AA1AD,				Rotating Facing Drive Pad		Speed Ratio to Crankshaft	Maximum Torque in. lb.		Maximum Overhang Moment in.-lb.
	-W2A	AK1A -AJ1A	-AE2A	-AF1A -AF1B	-AG1A, -AH1A	-AB1BD	-K1AD	TIO	LTIO	Cont.		Static		
Starter	*	*	*	*	*	*	*	CC	C	16.556:1	---	450	150	
Alternator	*	--	--	--	*	*	*	C	CC	3.200:1	60	120	175	
Alternator	-	--	*	--	-	-	-	C	-	3.800:1	60	120	175	
Vacuum pump	**	*	*	*	*	*	*	CC	C	1.300:1	70	450	25	
Hydraulic pump	**	*	*	*	--	--	--	C	CC	1.385:1	100	800	40	
Hydraulic pump	--	--	--	--	*	--	*	C	CC	1.300:1	100	800	40	
Tachometer	*	*	--	*	*	*	*	C	CC	0.500:1	7	50	5	
Propeller governor***	*	--	--	--	--	--	*	C	CC	0.895:1	125	1200	25	
Propeller governor****	*	*	*	*	*	--	--	C	CC	0.947:1	125	2200	25	
Propeller governor****	--	--	--	--	--	*	--	C	CC	1.3000:1	125	2200	25	
Fuel pump	-	*	-	-	*	*	*	C	CC	1.000:1	25	450	25	
Fuel pump	*	--	*	*	--	--	--	CC	C	1.000:1	25	450	25	
Freon comp.	--	--	-	-	--	--	**	C	CC	1.300:1	180	2200	150	
Freon comp.	--	--	*	*	**	*	--	C	CC	1.462:1*****	Limited by belt.			

“C” Clockwise, “CC” Counter Clockwise

*Standard

**Optional

***Narrow deck engines

****Wide deck engines

*****With compressor pulley diameter of 6.00 inches.

- NOTE 4. The Turbocharger meets the containment requirements of CAR 13.116 and does not require external protection.
- Measure exhaust gas temperature at inlet location shown on Lycoming Drawing No. 63232(-A1A, -A2A, -A1B, -A2B, -A1C, -A2C), 63281 (-C1A, -E1A, -G1A, -H1A), 63393 (-F2BD), 63397 (-J2B/D), 63433 (-N2BD), 63416 (K1AD), 63444(-R2AD), 63517 (-T2AD), 63533 (-U2A), 63534 (-V2AD), 63537 (-W2A), 63545 (-AB1AD), 63582 (-AB1BD), 63546 (-AA1AD), 04D63570(-AE2A), 04063573 (-AF1A, -AF1B), 63583 (-AG1A), 63592 (-AH1A), 04D63594 (-AJ1A), 04D63601 (-AK1A).
- Performance data for these engines are presented on Lycoming Curves No. 12993 (-A1A, -A2A, -A1B, -A2B), 13195-B(-A1C, -A2C), 13107-B(-C1A), 13172(-E1A), 13190-A(-G1A), 13208 (-H1A), 13201-A (-F2BD), 13215 (-J2BD, -N2BD), 13257-A (-K1AD), 13296 (-R2AD), and 13329(-S1AD), 13395 (-T2AD), 13399 (-U2A), 13415 (-V2AD), 13441 (-W2A), 13455 (-AB1AD, -AB1BD, -AA1AD), 13482(-AE2A), 13491(-AF1A -AF1B), 13509 (-AG1A), 13525 (-AH1A), 13538 (-AJ1A), 13556 (AK1A).
- Maximum turbocharger speed is now being governed by manifold pressure rather than temperature rise. Maximum manifold pressure versus altitude are presented on Lycoming Curve Numbers 13166-A (-A1A), -A2A, -A1B, -A2B), 13196-C (-A1C, -A2C), 13197-A (-C1A, -G1A), 13209 (-H1A), 13202-B (-F2BD), 13216-C (-J2B/D, -N2BD), 13297 (-R2AD), 13263 (-K1AD), 13330 (-S1AD), 13396 (-T2AD), 13416 (-V2AD), 13442 (-W2A), 13456 (-AB1AD, -AB1BD, -AA1AD), 13483 (-AE2A), 13492 (-AF1A, -AF1B), 13510 (-AG1A), 13537 (AH1A), 13540-A (-AJ1A), 13558 (AK1A).
- NOTE 5. Cylinder base temperature limits are not applicable to engine models which incorporate internal piston cooling oil jets.
- NOTE 6. Spark plugs approved for use on these engines are listed in the latest revision of Textron Lycoming Service Instruction No. 1042.
- NOTE 7. These engines incorporate the following similarities or differences:
- | | |
|---------------|--|
| TIO-540-A1A | Basic model. Six cylinder, air-cooled, horizontally-opposed, direct drive, fuel injected, top exhaust, turbocharged engine incorporating internal piston cooling oil jets. Uses two-blade propeller. |
| TIO-540-A1B | Similar to -A1A but has density controller with faster temperature response. |
| TIO-540-A2A | Similar to -A1A except has propeller flange bushings which accommodate either a two-blade or three-blade propeller. |
| TIO-540-A2B | Similar to -A1B except has propeller flange bushings which accommodate either a two-blade or three-blade propeller. |
| TIO-540-A1C | Similar to -A1B except BSFC is increased to .67/bhp-hr and the manifold pressure increased to 40.0 inches Hg. |
| TIO-540-A2C | Similar to -A2B except BSFC is increased to .67/bhp-hr and the manifold pressure increased to 40.0 inches Hg. |
| TIO-540-C1A | Differs from -A1A with lower compression ratio, different counterweights, and parallel valve cylinders. |
| TIO-540-E1A | Similar to -C1A except rating is increased, different turbocharger control setting and uses Bendix S6LN-1227 magneto instead of S6LN-1208 magneto. |
| TIO-540-G1A | Similar to -C1A except for higher compression ratio. |
| TIO-540-H1A | Similar to -E1A except rating is increased. |
| TIO-540-F2BD | Similar to -A2B except rated power is increased and incorporates the Bendix Dual Magneto. |
| LTIO-540-F2BD | Similar to -F2DB except that it has counter-clockwise (reversed) rotation. |
| TIO-540-J2BD | Similar to TIO-540-F2BD except rated power is increased and is equipped with an Air Research Model THO8460 turbocharger. |
| LTIO-540-H2BD | Similar to TIO-540-J2BD except that it has counter-clockwise (reverse) rotation. |
| L/TIO-540-J2B | Similar to L/TIO-J2BD except for two single Bendix Magnetos instead of a dual Bendix Magneto. |
| TIO-540-K1AD | Similar to -E1A except increased compression ratio, dual magneto, pressure controller, provision for cabin bleed air has the turbocharger mounted to the rear of the engine. |
| LTIO-540-K1AD | Similar to TIO-540-K1AD except that it has counter-clockwise (reverse) rotation. |
| TIO-540-N2BD | Similar to -J2BD except turbocharger is moved 1/2 inch to the left when viewed from the rear. |

LTIO-540-N2BD	Similar to TIO-540-N2BD except that it has counter-clockwise (reverse) rotation.
TIO-540-R2AD	Similar to -J2BD except lower rated speed and power, provision for cabin bleed and type of turbocharger controllers.
LTIO-540-R2AD	Similar to TIO-540-R2AD except that it has counter-clockwise (reverse) rotation.
TIO-540-S1AD	Similar to IO-540-M2A5D (1E4) except has a manually controllable turbocharger, front air inlet, lower compression ratio and provision for a controllable propeller.
TIO-540-T2AD	Similar to TIO-540-J2BD except for modified turbocharger transition section and lower rated power.
TIO-540-U2A	Similar to IO-540-AA1A5 except has thin wall, high crush bearings, narrow connecting rods, an intercooler (remote mounted) and a Rotomaster (Rajay) turbocharger package.
LTIO-540-U2A	Similar to TIO-540-U2A except that it has counter-clockwise (reverse) rotation.
TIO-540-V2AD	Similar to -J2BD except has down exhaust and top intake cylinder heads, employs an intercooler and the crankshaft, connecting rods and bearing combination similar to the -U2A.
LTIO-540-V2AD	Similar to the TIO-540-V2AD except that it has counter-clockwise (reverse) rotation.
TIO-540-W2A	Similar to the -V2AD except equipped with (2) Bendix S-1200 series magnetos, a density differential controller, not equipped with an induction intercooler nor any provisions for cabin bleed air.
LTIO-540-W2A	Similar to the TIO-540-W2A except that it has counter-clockwise (reverse) rotation.
TIO-540-AB1AD	Similar to the -K1AD except for the relocation of the turbocharger and has a density-differential controller. Also, the dual magneto is equipped with an impulse coupling instead of retard breaker.
TIO-540-AB1BD	Similar to the -AB1AD except the prop governor is on the accessory housing, scavenger pump on upper accessory pad and more effective counterweights.
TIO-540-AA1AD	Similar to the model -AB1AD except for a rear mounted prop governor drive, uses the -K1AD turbocharger mounting and has no provisions for cabin bleed.
TIO-540-AE2A	Similar to the TIO-540-U2A except with (2) Slick retard breaker, pressurized magnetos, twin AiResearch turbochargers with individual intercoolers, and a single wastegate modulated by a variable absolute pressure controller. Two sonic nozzles are provided for cabin pressurization.
TIO-540-AF1A	Similar to the TIO-540-AA1AD except equipped with (2) Slick pressurized magnetos, an intercooler, drives for (2) alternators and a different model Garrett turbocharger.
TIO-540-AF1B	Similar to the TIO-540-AF1A except incorporates exhaust valve guide oilers
TIO-540-AG1A	Similar to the TIO-540-AA1AD except equipped with (2) Slick pressurized magnetos, and a different model Garrett turbocharger which has been relocated.
TIO-540-AH1A	Similar to the TIO-540-A except equipped with (2) Slick pressurized magnetos, down exhaust heads and a different model Garrett turbocharger which has been relocated.
TIO-540-AJ1A	Similar to the TIO-540-W2A except equipped with a different model Garrett turbocharger and slope controller.
TIO-540-AK1A	Similar to TIO-540-AG1A except that it has a relocated AiResearch model TAO411 turbocharger, bottom mounted fuel injector and a lower rating

NOTE 8. The TIO-540-C1A, -E1A, -G1A, -H1A, -K1AD and LTIO-540-K1AD are equipped with special 5th and 6th order counterweights making them eligible for use with Hartzell "compact" propeller. When the TIO-540-G1A is used with a Hartzell HC-E2YK-2R/8465-7R propeller, the manifold pressure is limited in the 2000 rpm speed range to a maximum of 27 inches Hg.

NOTE 9. Starter, generators, and alternators approved for use on these engines are listed in the latest revision of Textron Lycoming Service Instruction No. 1154.

NOTE 10. The following tabulation shows turbocharger, fuel injector, weight, compression ratio and ignition.

Model	Turbocharger	Fuel Injection	Weight (dry) lb.	Compression Ratio	Ignition, Dual *
TIO-540-A1A	TE0659	RSA-10AD1	509	7.30:1	TCM** S6LN-1208, S6LN-1209
-A1B	TE0659	RSA-10AD1	509	7.30:1	S6LN-1208, S6LN-1209
-A2A	TE0659	RSA-10AD1	509	7.30:1	S6LN-1208, S6LN-1209
-A2B	TE0659	RSA-10AD1	509	7.30:1	S6LN-1208, S6LN-1209
-A1C	TE0659	RSA-10AD1	511	7.30:1	S6LN-1208, S6LN-1209
-A2C	TE0659	RSA-10AD1	511	7.30:1	S6LN-1208, S6LN-1209
-C1A	TE0659	RSA-5AD1	456	7.20:1	S6LN-1208, S6LN-1209

NOTE 10. (cont'd) The following tabulation shows turbocharger, fuel injector, weight, compression ratio and ignition.

Model	Turbocharger	Fuel Injection	Weight (dry) lb.	Compression Ratio	Ignition, Dual *
-E1A	TE0659	RSA-5AD1	453	7.20:1	TCM** S6LN-1227, S6LN-1209
-G1A	TE0659	RSA-5AD1	456	8.50:1	S6LN-1208, S6LN-1209
-H1A	TE0659	RSA-5AD1	453	7.20:1	S6LN-1227, S6LN-1209
-F2BD	TE0659	RSA-10ED1	514	7.30:1	D6LN-3200, /2230
-J2B	TH08A60	RSA-10ED1	558	7.30:1	S6LN-1208, S6LN-1209
-J2BD	TH08A60	RSA-10ED1	518	7.30:1	D6LN-3200, /2230
-K1AD	TE0695	RSA-5AD1	459	8.00:1	D6LN-3200, /2230
-N2BD	TE08A60	RSA-10ED1	518	7.30:1	D6LN-3200, /2230
-S1AD	TE0659	RSA-10ED1	502	7.30:1	D6LN-3000, /2231
-R2AD	TH08A69	RSA-10EB1	524	7.30:1	D6LN-3200, /2230
-T2AD	TH08A60	RSA-10ED1	549	7.30:1	D6LN-3200, /2230
-U2A	3AU(V)2ME60H3	RSA-10ED1	578	7.30:1	S6LN-1258, S6LN-1259
-J2B	TH08A60	RSA-10ED1	558	7.30:1	S6LN-1208, S6LN-1209
-V2AD	TH08A69	RSA-10DB2	565	7.30:1	D6LN-3200
-W2A	TH08A69	RSA-10ED1	554	7.30:1	S6LN-1208, S6LN-1209
-AB1AD	TE0659	RSA-5AD1	474	8.00:1	D6LN-3000
-AB1BD	TE0659	RSA-5AD1	474	8.00:1	D6LN-3000
-AA1AD	TE0659	RSA-5AD1	483	8.00:1	D6LN-3200
-AE2A	TA0411(2)	RSA-10ED1	595	7.30:1	Slick 6263, 6260 (right)
-AF1A	TA0413	RSA-10ED1	473	8.00:1	Slick 6261, 6260 (right)
-AF1B	TA0413	RSA-10ED1	473	8.00:1	Slick 6261, 6260 (right)
-AG1A	TA0413	RSA-5AD1	485	8.00:1	Slick 6361, 6360 (right)
-AH1A	TA0413	RSA-10ED1 or FM-250	542	7.30:1	Slick 6361, 6360 (right)
-AJ1A	TA6102	RSA-10ED1	532	7.30:1	Slick 6361, 6360 (right)
-AK1A	TA0411	RSA-5AD1	464	8.00:1	Slick 6361 (2)
LTIO-540-					
F2BD	TE0659	RSA-10ED1	514	7.30:1	D6RN-3200, /2230
-J2BD	TH08A60	RSA-10ED1	518	7.30:1	D6RN-3200, /2230
-K1AD	TE0695	RSA-5AD1	459	8.00:1	D6LN-3200, /2230
-N2BD	TH08A60	RSA-10ED1	518	7.30:1	D6RN-3200, /2230
-U2A	3AU(V)2ME60H3	RSA-10ED1	578	7.30:1	S6LN-1258, S6LN-1259
-J2B	TH08A60	RSA-10ED1	558	7.30:1	S6LN-1208, S6LN-1209
-V2AD	TH08A69	RSA-10DB2	565	7.30:1	D6LN-3200
-W2A	TH08A69	RSA-10ED1	549	7.30:1	S6LN-1208, S6LN-1209

* For alternate magnetos see latest edition of Textron Lycoming Service Instruction No. 1443

** TCM formally Bendix

NOTE 11. Air from the compressor of the AiResearch Turbocharger is suitable for cabin pressurization. The installation must provide for cabin air temperature control from 300°F to 20,000 feet hot day condition under maximum engine power. For cabin air outlet flange dimensions see Textron Lycoming Drawing No. 63444 for -R2AD model.

A sonic nozzle must be provided to preclude affecting engine performance by cabin air bleed. TIO-540-AE2A model is equipped with two sonic nozzles to supply air for cabin pressurization, reference Lycoming Drawing No. 04D63570.

NOTE 12. All models equipped with one impulse coupling magneto may use two impulse coupling magnetos as optional equipment.

NOTE 13. TIO-540-R2AD and LTIO-540-R2AD have an alt. rating of 340 hp at 2500 rpm and 44.0 in.Hg at S.L. and 325 hp at 2500 rpm and 44.0 in HG at 15,000 feet.

NOTE 14. The maximum continuous ratings for these engines have been specified with 10 horsepower extracted at the accessory drives.

NOTE 15. The TIO-540-AB1BD has more effective counterweights for use with a McCauley propeller.

NOTE 16. Engines produced prior to September 25, 2006 may have 20 degree timing. Owners and/or operators should refer to the engine dataplate for the correct timing setting.

.....END.....

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

P33EA
Revision 17
Hartzell
HC-E3Y, HC-I3Y
PHC-I3Y
December 19, 2006

TYPE CERTIFICATE DATA SHEET NO. P33EA

Propellers of models described herein conforming with this data sheet (which is part of Type Certificate No. P33EA) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate Holder Hartzell Propeller Inc.
 Piqua, OH 45356

Type Constant speed; hydraulic (See Notes 3 and 4)
Engine shaft Special flange (See Note 1)
Hub material Aluminum Alloy
Blade material See Below
Number of blades Three
Hub models HC-E3YR-1, HC-E3YR-2, HC-E3YR-7
 HC-I3YR-1, HC-I3YR-2, PHC-I3YF-1, PHC-I3YF-2

Blades (See Note 2)	Maximum Continuous		Takeoff		Diameter Limits (See Note 2)	Approx. Max. Wt. Complete (For Reference Only) (See Notes 3 and 7)	Blade Construction (See Note 10)
	HP	RPM	HP	RPM			
<u>Non-Counterweighted Propellers HC-E3YR-1, HC-I3YR-1, PHC-I3YF-1</u>							
7392-0 to 7392-10	350	2850	350	2850	75" to 65" (-0 to -10)	80.0 lb.	Aluminum Alloy
7468-0 to 7468-10	350	2700	350	2700	76" to 66" (-0 to -10)	80.0 lb.	Aluminum Alloy
7479-2 to 7479-8	380	2900	380	2900	74" to 68" (-2 to -8)	82.5 lb.	Aluminum Alloy
7590-0 to 7590-10	350	2850	350	2850	77" to 67" (-0 to -10)	80.5 lb.	Aluminum Alloy
7663-0 to 7663-10	310	2800	310	2800	78" to 68" (-0 to -10)	75.5 lb.	Aluminum Alloy
7666-0 to 7666-10	310	2700	310	2700	78" to 68" (-0 to -10)	79.5 lb.	Aluminum Alloy
7673-0 to 7673-10	310	2700	310	2700	78" to 68" (-0 to -10)	77.5 lb.	Aluminum Alloy
7693-0 to 7693-10	350	2700	350	2700	78" to 68" (-0 to -10)	80.0 lb.	Aluminum Alloy
7854-0 to 7854-8	400	2650	400	2650	80" to 72" (-0 to -8)	82.0 lb.	Aluminum Alloy
8068+2 to 8068-10	350	2700	350	2700	84" to 72" (+2 to -10)	83.5 lb.	Aluminum Alloy
8459-0 to 8459-14	400	2700	400	2700	86" to 72" (-0 to -14)	77.5 lb.	Aluminum Alloy

Blades (See Note 2)	Maximum Continuous		Takeoff		Diameter Limits (See Note 2)	Approx. Max. Wt. Complete (For Reference Only) (See Notes 3 and 7)	Blade Construction (See Note 10)
	HP	RPM	HP	RPM			
8465-0 to 8465-14	400	2700	400	2700	86" to 72" (-0 to -14)	80.5 lb.	Aluminum Alloy
8467-0 to 8467-14	400	2575	400	2575	86" to 72" (-0 to -14)	84.5 lb.	Aluminum Alloy
8468-0 to 8468-14	400	2700	400	2700	86" to 72" (-0 to -14)	81.5 lb.	Aluminum Alloy
8470-0 to 8470-14	400	2700	400	2700	86" to 72" (-0 to -14)	80.5 lb.	Aluminum Alloy
8475-0 to 8475-14	400	2650	400	2650	86" to 72" (-0 to -14)	84.5 lb.	Aluminum Alloy
8477-0 to 8477-14	400	2575	400	2575	86" to 72" (-0 to -14)	87.5 lb.	Aluminum Alloy
9587-6 to 9587-22	350	2575	350	2575	91" to 75" (-6 to -22)	84.5 lb.	Aluminum Alloy
9684-12 to 9684-18	330	2400	330	2400	84" to 78" (-12 to -18)	91.5 lb.	Aluminum Alloy
<u>Non-Counterweighted Propellers HC-E3YR-1, HC-I3YR-1</u>							
7690	350	2850	350	2850	78"	63.0 lb.	Aramid Composite
<u>Non-Counterweighted Propellers HC-E3YR-1, HC-I3YR-1</u>							
7890	400	2700	400	2700	80"	70.0 lb.	Aramid Composite
<u>Counterweighted Propellers HC-E3YR-2, HC-E3YR-7, HC-I3YR-2, PHC-I3YF-2</u>							
C7468-0 to C7468-10	350	2700	350	2700	76" to 66" (-0 to -10)	85.5 lb.	Aluminum Alloy
C7479-2 to C7479-8	380	2900	380	2900	74" to 68" (-2 to -8)	88.0 lb.	Aluminum Alloy
C7663-0 to C7663-10	310	2800	310	2800	78" to 68" (-0 to -10)	81.0 lb.	Aluminum Alloy
C7666-0 to C7666-10	310	2700	310	2700	78" to 68" (-0 to -10)	85.0 lb.	Aluminum Alloy
C7673-0 to C7673-10	310	2700	310	2700	78" to 68" (-0 to -10)	83.0 lb.	Aluminum Alloy
C7854-0 to C7854-8	400	2650	400	2650	80" to 72" (-0 to -8)	82.0 lb.	Aluminum Alloy
C8459-0 to C8459-14	400	2700	400	2700	86" to 72" (-0 to -14)	83.0 lb.	Aluminum Alloy
C8465-0 to C8465-14	400	2700	400	2700	86" to 72" (-0 to -14)	86.0 lb.	Aluminum Alloy
C8467-0 to C8467-14	400	2575	400	2575	86" to 72" (-0 to -14)	90.0 lb.	Aluminum Alloy

Blades (See Note 2)	Maximum Continuous		Takeoff		Diameter Limits (See Note 2)	Approx. Max. Wt. Complete (For Reference Only) (See Notes 3 and 7)	Blade Construction (See Note 10)
	HP	RPM	HP	RPM			
C8468-0 to C8468-14	400	2700	400	2700	86" to 72" (-0 to -14)	87.0 lb.	Aluminum Alloy
C8470-0 to C8470-14	400	2700	400	2700	86" to 72" (-0 to -14)	86.0 lb.	Aluminum Alloy
C8475-0 to C8475-14	400	2575	400	2575	86" to 72" (-0 to -14)	90.0 lb.	Aluminum Alloy
C8477-0 to C8477-14	400	2575	400	2575	86" to 72" (-0 to -14)	93.0 lb.	Aluminum Alloy
C9587-6 to C9587-22	350	2575	350	2575	91" to 75" (-6 to -22)	90.0 lb.	Aluminum Alloy
C9684-12 to C9684-18	330	2400	330	2400	84" to 78" (-12 to -18)	105.0 lb.	Aluminum Alloy
<u>Counterweighted Propellers HC-E3YR-2, HC-I3YR-2, PHC-I3YF-2</u>							
C7693-0 to C7693-10	400	2700	400	2700	78" to 68" (-0 to -10)	85.5 lb.	Aluminum Alloy

Weights shown are for HC-E3YR-1 and -2 models only. Subtract 2 lb. for ()HC-I3Y() models and add 5 lb. for HC-E3YR-7.

Certification Basis: 14 CFR Part 35 effective February 1, 1965 with amendments 35-1 and 35-2 thereto.
Type Certificate No. P33EA issued April 29, 1968 under Delegated Option Authorization procedures of
14 CFR Part 21 Subpart J.

Date of application for Type Certificate: March 22, 1968.

The following models were included under the original certification basis:

HC-E3YR-1, HC-E3YR-2

The following models were added, updated or revised in accordance with 14 CFR Part 35 with
amendments 35-1 and 35-4 effective May 2, 1977:

HC-E3YR-1

The following models were added, updated or revised in accordance with 14 CFR Part 35 with
amendments 35-1 through 35-5 effective October 14, 1980:

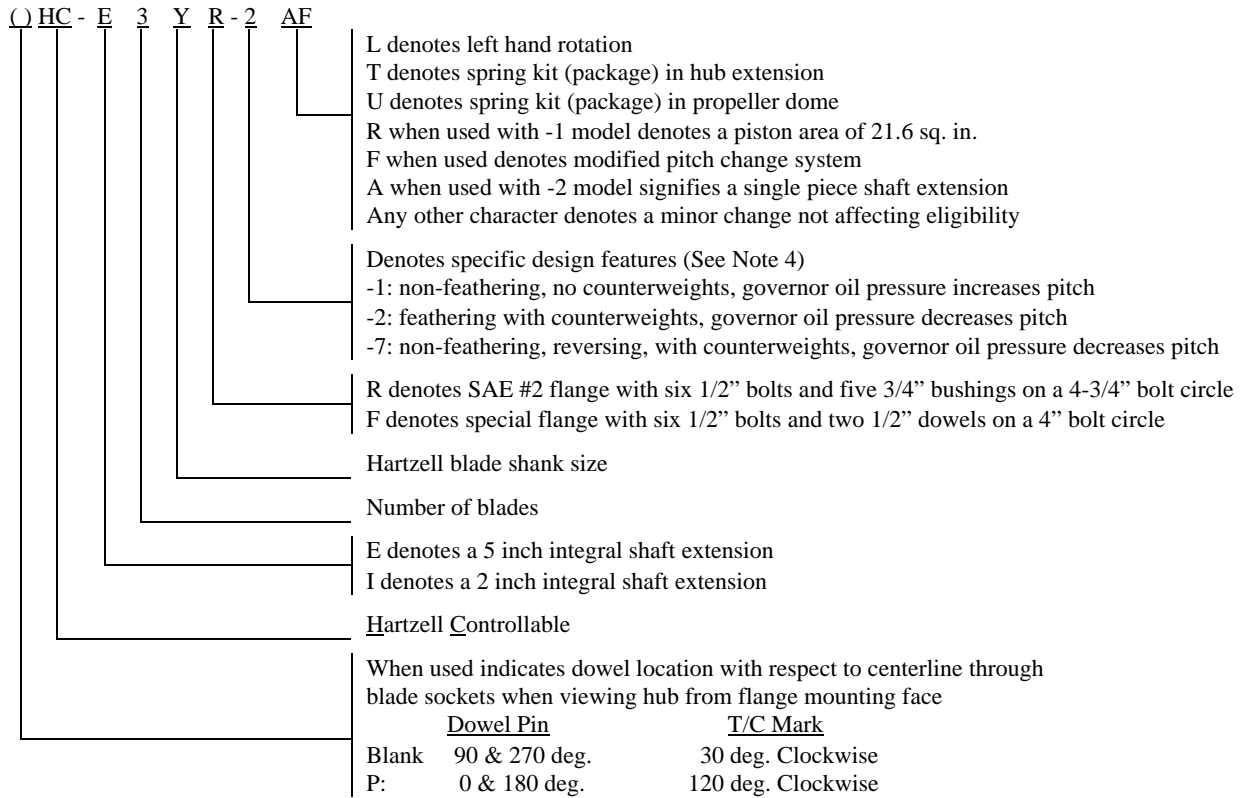
HC-E3YR-1, HC-E3YR-2, HC-E3YR-7, HC-I3YR-1, HC-I3YR-2

The following models were added, updated or revised in accordance with 14 CFR Part 35 with
amendments 35-1 through 35-6 effective August 1, 1990:

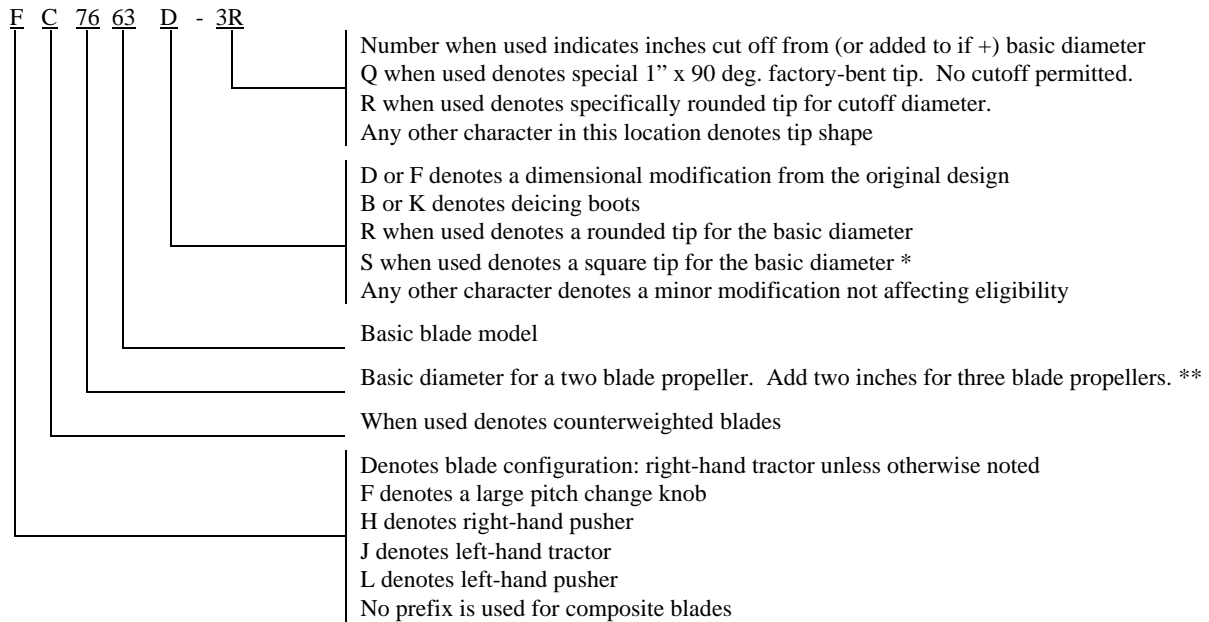
HC-E3YR-1, HC-I3YR-1, PHC-I3YF-1, PHC-I3YF-2, HC-E3YR-2, HC-I3YR-2

Production Basis: Production Certificate no. 10

Note 1: Hub Model Designation



Note 2: Blade Model Designation

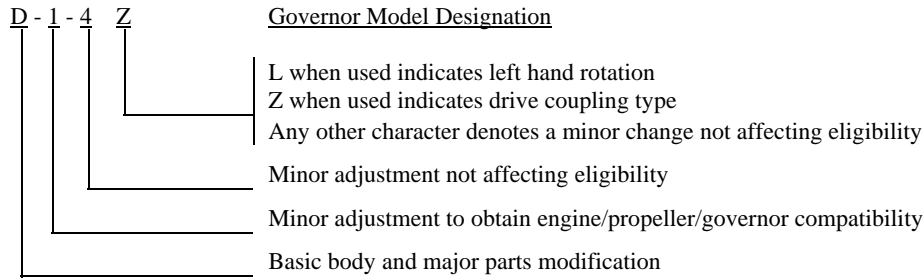


* Blades may incorporate either round or square tips, yet may not be marked with an "R" or "S" in their model designation. This character is used to distinguish between two or more tip shapes available at the same diameter. Certain blades use "S" to denote shot peening of the exterior surface. (See Note 6)

** Do not add the two inch diameter correction to the 9684 and C9684 blade designs.

Note 3: Pitch Control

(a) Approved with Hartzell governors per drawings C-4770 and C-4772. Wt.: 4.5 lb. (See Note 10)



- (b) The -1 propeller models use oil to increase pitch and do not have counterweighted blades. The -2 and -7 models have counterweighted blades and use oil to decrease pitch. (See Note 4)
- (c) Maximum governor output pressure: 350 psi for all propeller models
- (d) All governors must be approved as part of the aircraft installation regardless of manufacturer. (See Note 10)

Note 4: Feathering The -1 and -7 models do not feather. The -2 models incorporate feathering and unfeathering features.

Reversing The -7 models incorporate reversing.

Note 5: Left-Hand Models

The left-hand version of an approved propeller model is approved at the same rating and diameter as listed for the right-hand model. (See Notes 1 and 2)

Note 6: Interchangeability

- (a) Propellers
 - “F” type propellers with the modified pitch change system are interchangeable with corresponding propellers with the standard pitch change system. (See Notes 1 and 2)
- (b) Governors
 - Hartzell governors with a “Z” suffix in their model designation may be used interchangeably with corresponding governors without the “Z”. For example, the F-6-24Z is a replacement for the F-6-24 and the F-6-24 is a replacement for the F-6-24Z.
- (c) Blades
 - Shot-peened blades may replace non shot-peened blades either individually or as a set (See Note 2)
- (d) Ice Protection Systems
 - Refer to Hartzell Service Letter HC-SL-30-260 for ice protection system component interchangeability.

Note 7: Accessories (See Note 10)

- (a) Propeller anti-icing (weight of anti-icing system extra)
 - (1) Approved with fluid feed boots listed on Hartzell approved type design data when installed in accordance with Hartzell specification H-S-2 or Hartzell Manual no 133().
 - (2) Approved with fluid feed equipment listed in Hartzell approved type design data on propeller models for which equipment is available.
- (b) Propeller deicing (weight of deicing equipment extra)
 - (1) Approved with Goodyear Ice Guards (electrical propeller deicer) when installed in accordance with instructions outlined in Goodyear Report no. AP-147 dated October 23, 1961.
 - (2) Approved with Goodrich electrical deicing kit 5EXXXX-X, 7EXXXX-X, 77-XXX, 67-XXX, or 65-XXX when the specific kit number is listed on Hartzell type design data and installed in accordance with Goodrich Report no. ATA 30-60-07.
 - (3) Approved with ice protection equipment when listed on Hartzell type design data.
- (c) Propeller spinner (weight of spinner extra)
 - Approved with Hartzell and other manufacturers' spinners when listed on Hartzell type design data.
- (d) Pressure control valve (weight of pressure control valve extra)
 - Required for operation of -7 model propellers

Note 8: Shank Fairings Not applicable.

Note 9: Special Limits

Table of Propeller - Engine Combinations
Approved Vibrationwise for Use on Normal Category Single Engine Tractor Aircraft

The maximum and minimum propeller diameters that can be used from a vibration standpoint are shown below. No reduction below the minimum diameter listed is permissible, since this figure includes the diameter reduction allowable for repair purposes.

The engine models listed below are the configurations on the engine type certificate unless specifically stated otherwise. Modifications to the engine or airframe that alter the power of the engine models listed below during any phase of operation have the potential to increase propeller stresses and are not approved by this list. Such modifications include, but are not limited to, the addition of a turbocharger or turbonormalizer, increased boost pressure, increased compression ratio, increased RPM, altered ignition timing, electronic ignition, full authority digital engine controls (FADEC), or tuned induction or exhaust. Also, any change to the mass or stiffness of the crankshaft/counterweight assembly is not approved by this list.

<u>Hub Model</u>	<u>Blade Model</u>	<u>Engine Model</u>	<u>Max. Dia. (inches)</u>	<u>Min. Dia. (inches)</u>	<u>Placards</u>
HC-E3YR	F7673()R F7673()-()R	LYC TIO-540-S1AD	78	76	none
HC-E3YR	()8468	LYC TIO-540-A2B	80	78	none
HC-E3YR	8468	LYC IO-540-K1A5, -K1B5, -K1C5, -K1D5, -L1A5, -M1A5	84	76	none
HC-E3YR	F8475	LYC IO-720-A1A, -A1B, -A1BD	82	80	none
HC-E3YR	F8475	LYC IO-720-A1A, -A1B, -A1BD	80	76	none
HC-E3YR	F9587A-10	LYC TIO-540-J2B	87	86	Do not exceed 30 inches manifold pressure below 2400 RPM

Note 10: Propeller installation must be approved as part of the aircraft Type Certificate and demonstrate compliance with the applicable aircraft airworthiness requirements.

Propeller models listed herein consist of basic hub and blade models. Most propeller models include additional characters to denote minor changes and specific features as explained in Notes 1 and 2. Refer to the aircraft Type Certificate Data Sheet for the specific propeller model applicable to the installation.

Propellers with composite blades must be evaluated for bird impact resistance prior to approval on any type aircraft. Hartzell Propeller must perform tests and/or analyses based on aircraft configuration and operating conditions to determine the potential hazard as a result of a bird impact.

Note 11: Retirement Time

(a) Life Limits and Mandatory Inspections

(1) Airworthiness limitations, if any, are specified in Hartzell Manuals 113() or 117()

Note 12: Special Notes

(a) Refer to Hartzell Manual no. 202() for overspeed and overtorque limits.

(b) Refer to Hartzell Service Letter HC-SL-61-61() for overhaul periods.

END