SERVICE MANUAL & ICA
FOR
LYCOMING IO-580-B1A
ENGINE INSTALLATION IN
CESSNA MODEL 182

THIS PAGE INTENTIONALLY LEFT BLANK

LOG OF REVISIONS

REVISION	PAGES AFFECTED	DESCRIPTION	DATE	FAA ACCEPTANCE
IR	ALL	INITIAL RELEASE	4/14/14	
A	14, 15, 20	UPDATED FOR LANDPLANE	3/20/15	
B	21	Added shear torque chart, and Tef-Gel. Removed warranty claim form.	5/26/2015	

View the most current revision of this ICA at www.wipaire.com

THIS PAGE INTENTIONALLY LEFT BLANK

LIST OF EFFECTIVE PAGES

PAGES	REVISION	PAGES	REVISION	PAGES	REVISION
1	IR	24	IR		
2	IR				
3	B				
4	IR				
5	B				
6	IR				
7	IR				
8	IR				
9	IR				
10	IR				
11	IR				
12	A				
13	A				
14	IR				
15	IR				
16	IR				
17	IR				
18	A				
19	IR				
20	IR				
21	B				
22	IR				
23	IR				

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION AND GENERAL INFORMATION 11

1.0 INTRODUCTION 11
1.1 GENERAL INFORMATION ON IO-580 ENGINE INSTALLATION 12
1.2 REFERENCES 13
1.3 SPECIFICATIONS 13

CHAPTER 2 AIRWORTHINESS LIMITATIONS 15

CHAPTER 3 SERVICING AND MAINTENANCE 17

3.0 SERVICING AND MAINTENANCE 18
3.1 COWL FLAP RIGGING 18
3.2 FUEL PRESSURE SETTING 18

CHAPTER 4 RECOMMENDED PROCESSES, PRODUCTS AND INSPECTION CHECKLIST 19

4.0 SERVICING INSTRUCTIONS 20
4.1 MAINTENANCE CHECKLIST 22

THIS PAGE INTENTIONALLY LEFT BLANK

NEW CUSTOMER INFORMATION

Customer Name	
Billing Address	
Shipping Address	
Phone Number	**Fax Number**
Purchasing Contact	**Phone Number**
E-Mail	**Fax Number**
Accounts Payable Contact	**Phone Number**
E-Mail	**Fax Number**
Type(s) of Aircraft Owned or Maintained	
Model(s) of Floats and Skis Owned or Maintained	
FedEx and/or UPS account number (if applicable)	

Please return to Wipaire Customer Service:

Fax 651-306-0666 Phone 651-306-0459 CustomerService@wipaire.com

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 1
INTRODUCTION AND GENERAL INFORMATION

1.0 INTRODUCTION

This manual is provided for the owners of a Lycoming IO-580-B1A engine installed on Cessna 182 aircraft. It has two main priorities:

To inform owners of the level and amount of servicing required to properly maintain their airplane, and to provide technical data and servicing as specified to maintenance professionals charged with servicing airplanes modified by this STC.

The service products referred to throughout this manual are described by their trade names and may be purchased from Wipaire Parts.

Department:

We, at Wipaire, welcome your purchase and look forward to years of satisfying exchanges with you. Our customer service department, WipCaire, is available for your questions 24 hours a day, 7 days a week, where ever you are in the world.

Parts Sales and Technical Support Dept:

Wipaire, Inc.
1700 Henry Avenue – Fleming Field
South St. Paul, MN 55075
Telephone: (651) 306-0459
Fax: (651)-306-0666
Website: www.wipaire.com
Email: CustomerService@wipaire.com

When a part of this installation is significantly changed or an additional inspection is recommended or required, often a service letter and/or kit is issued. If a warranty is issued, most commonly it is for an 18 month time period, so it is crucial to check for service letters specific to your float model at each periodic inspection to be eligible.

Service Manuals and the installation documents included are also revised periodically and also to be kept updated. Service letters, Service Kits and Service Manuals are available on our web site at no charge, www.wipaire.com.

NOTE:

IT IS CRITICAL TO CHECK FOR MANUAL UPDATES EACH TIME AN INSPECTION IS EXECUTED.

1.1 GENERAL INFORMATION ON IO-580 ENGINE INSTALLATION

The Lycoming IO-580-B1A is a 315 horsepower engine that replaces the original 230 horsepower IO-540-AB1A5 engine in Cessna models 182S and 182T. This engine installation is very similar to the original IO-540 engine installation and utilizes many of the same parts, however some of the differences are noted below:

1. Side baffles and select other baffles are new. Baffles are made out of 2024-T3 aluminum and painted with high temperature paint.
2. A second oil cooler, identical to the original, is added on the pilot side and is plumbed in parallel with the right side oil cooler.
3. Heating air intake is relocated from the aft left baffle to the lower cowl.
4. Air intake box is modified to accommodate the IO-580 engine.
5. Cowl flap travel is extended and side plates are added to the cowl flaps.
6. New throttle control and mixture control brackets, made out of 4130 steel and painted with high temperature paint.
7. Some hose lengths modified.
8. Cockpit engine instruments changed to reflect proper limits for IO-580 engine.

Remaining items are either new on the IO-580 engine or reused from the previous engine installation. These include throttle, mixture, and propeller controls, propeller governor, alternator, and some baffling. The engine cowl is unchanged, as is the fuel system except for some hose length changes in the engine compartment.

A modified engine mount is required for the IO-580 engine installation for floatplanes only, and is covered under a separate STC SA02967CH. Landplanes may use the existing Cessna engine mount.

The engine installation on Cessna 182 aircraft is covered in Wipaire installation instructions document 1005680. Additional details specific to the engine can be found in “IO-580-B1A Operation and Installation Manual”, Lycoming part number 60297-28. Operational information is detailed in the Airplane Flight Manual Supplement. See the list of applicable supplements in 1005680.

1.2 REFERENCES

A list of important references is given below. In addition to this document, these will aid in the maintenance and continued airworthiness of this engine installation.

Lycoming document LMO-580-B, IO-580-B1A Maintenance and Overhaul Manual

Lycoming Specification 2655, Detail Specification for Engine Model IO-580-B1A

Lycoming document 60297-28, IO-580-B1A Operation and Installation Manual

Wipaire document 1005680, Installation Instructions for IO-580-B1A Installation in Cessna 182S and 182T Aircraft

Cessna Service Manual for 182S and 182T Aircraft

The aircraft and engine service manuals should be the primary references in the servicing and continued airworthiness of this installation. Any necessary subject matter relating to this installation that is not covered in those manuals will be covered in this manual.

1.3 SPECIFICATIONS

Engine limitations are shown below.

Tachometer

Red line: 2700 RPM

Green arc: 2000 – 2700 RPM

Manifold Pressure

Green arc: 15 – 30 in.Hg

Fuel Flow

Green arc: 5 – 20 GPH

Cylinder Head Temperature

Redline: 465 °F

Green arc: 200 – 465 °F

Oil Temperature

Redline: 235 °F

Green arc: 100 – 235 °F

Oil Pressure

Redline: 115 psi

Green arc: 50 – 90 psi

Redline: 20 psi

THIS PAGE INTENTIONALLY LEFT BLANK

CHAPTER 2
AIRWORTHINESS LIMITATIONS

AIRWORTHINESS LIMITATIONS

This Airworthiness Limitations section is FAA approved and specifies maintenance required under paragraphs 43.16 and 91.403(c) of the Federal Aviation Regulations unless an alternative program has been FAA approved.

The aircraft Airworthiness Limitations are unchanged as a result of installation of the Lycoming IO-580-B1A engine addressed by this STC.

FAA APPROVED_____

DATE 4/14/14

CHAPTER 3
SERVICING AND MAINTENANCE

3.0 SERVICING AND MAINTENANCE

The IO-580 engine installation on the Cessna 182S/T is very similar to the original IO-540 engine installation. Therefore, many of the existing maintenance items, servicing procedures, inspection intervals, etc. that are contained in the Cessna service manual should be followed. This section describes any items that deviate or are not included in either the Cessna service manual or the Lycoming IO-580 service manual.

3.1 COWL FLAP RIGGING

Cowl flap travel is extended for this engine installation to give the engine greater cooling capability. Side plates are also added to the cowl flaps to control airflow. Extensions consist of standoffs added to the cowl flap push rods.

Cowl flaps should be rigged to obtain the following open and closed angles. Angles are measured with respect to the fixed part of the cowl just inboard of the cowl flap. Cowl flap angle is measured by placing an inclinometer on the inboard bottom side of cowl flap.

Open: 42° ± 1°

Closed: 8.5° ± 1°

3.2 FUEL PRESSURE SETTING

Connect a pressure gauge capable of reading up to 50 psi to the pressure port of the fuel servo. Alternatively the pressure gauge can be tee'd into the output from the engine fuel pump. This measures unmetered fuel pressure. Run engine and ensure unmetered fuel pressure reads at least 12 psi at idle. Increase power to at least 75% power and ensure pressure reads 32 psi ± 2 psi. If pressure is not within range, adjust using set screw on fuel pump. Turning the set screw in will increase pressure with 1/4 turn = 1 psi.

CHAPTER 4
RECOMMENDED PROCESSES, PRODUCTS AND INSPECTION CHECKLIST

4.0 SERVICING INSTRUCTIONS

As coded in the Inspection Time Limits chart in this section, there are items to be checked each 25, 50, 100, and 200 hours. Also, there are notes on special items which may require servicing at more frequent intervals.

*When conducting an inspection at 25 hours, all items marked for 25 hours would be accomplished.

*at 50 hours, the 25 and 50-hour items would be accomplished.

*at 100 hours, the 25, 50, and 100-hour items would be accomplished.

*at 200 hours, the 25, 50, 100 and 200-hour items would be accomplished.

*A complete inspection (Annual Inspection) would include all 25, 50, 100, 200 hour items.

Below is a list of recommended lubricants and "protection". This lists products used by Wipaire during installation.
There may be equivalent products just as satisfactory for protection. However, it is recommended if trying different products, to inspect them frequently so as to determine their effectiveness.

Protection of nuts, bolts, hydraulic lines, metal surfaces, or electrical connections.
Dinitrol AV30
Dinol Group

CRC – SP400 Soft Seal
CRC Industries

General Lubricants
LPS 1, LPS 2 and LPS 3
LPS Industries

Metal Corrosion Protection

Boeshield T9 Rust Protection

Boeing Company

Corrosion X

ACF-50 Rust Protection

Tef-Gel
Ultra Safety Systems, Inc.

RTV Silicones

General Electric

SIKAFLEX 201 or 252

Sika Manufacturing

Teflon Spray

6P-730A

Comet Industries

Bolt Torque

Bolts in Critical Areas - For common, correct torque when installed, or when visual inspection indicates a need for a torque check.

****Tension Nut**

Nut-Bolt Size	Torque Limits (in-lbs) Min.	Max.
8-36	12	15
10-32	20	25
1/4-28	50	70
5/16-24	100	140
3/8-24	160	190
7/16-20	450	500
1/2-20	480	690
9/16-18	800	1,000
5/8-18	1,100	1,300
3/4-16	2,300	2,500
7/8-14	2,500	3,000
1-14	3,700	4,500
1 1/8-12	5,000	7,000
1 1/4-12	9,000	11,000

****Shear Nut**

Nut-Bolt Size	Torque Limits (in-lbs) Min.	Max.
8-36	7	9
10-32	12	15
1/4-28	30	40
5/16-24	60	85
3/8-24	95	110
7/16-20	270	300
1/2-20	290	410
9/16-18	480	600
5/8-18	600	780
3/4-16	1,300	1,500
7/8-14	1,500	1,800
1-14	2,200	3,300
1 1/8-12	3,000	4,200
1 1/4-12	5,400	6,600

** A Torque of 80% should be used when Tef-Gel is applied to the bolt

4.1 MAINTENANCE CHECKLIST

INSTRUCTIONS / PROCEDURES			HOURLY LIMITS					MECHANIC	INSP
	General	Details	25	50	100	200	Annual		
General	Check installed placards against the AFM/POH Supplement Section 2, and installation drawings.				X		X		
Baffles	Engine Baffling	Inspect baffling for cracks and security.			X		X		
Hoses	Inspect fuel lines and oil hoses.	Ensure there are no leaks and no chaffing. Ensure all fittings are tight and hoses are secured.			X		X		
Airbox	Examine airbox assembly for security	Ensure fasteners are secure			X		X		
	Inspect and clean induction elbow	Inspect urethane induction elbow for any signs of wear or deterioration. Wipe off any oil or grease.			X		X		
Cowl Flaps	Verify cowl flap rigging .	Check cowl flap rigging matches specifications given in this manual. Ensure cowl flaps operate properly.					X		
Service Documents	Check Cessna and Lycoming Service Manuals for additional required maintenance items.		X				X		

END