



US Department
of Transportation
Federal Aviation
Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020
11/30/2007

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft	Nationality and Registration Mark	N87567	Serial No.	129
	Make	Republic	Model	RC3
2. Owner	Name (As shown on registration certificate) Ostronik, KC		Address (As shown on registration certificate)	
			Address P.O. Box 371101	
			City Key Largo State FL	
			Zip 33037 Country USA	

3. For FAA Use Only

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type	_____	_____
			Manufacturer		

6. Conformity Statement

A. Agency's Name and Address		B. Kind of Agency	
Name	Poules, Alexander	<input checked="" type="checkbox"/> U. S. Certified Mechanic	Manufacturer
Address	200 Woody Hill Road	<input type="checkbox"/> Foreign Certified Mechanic	C. Certificate No.
City	Hope Valley State RI	<input type="checkbox"/> Certified Repair Station	37365627
Zip	02832 Country USA	<input type="checkbox"/> Certified Maintenance Organization	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual <i>Mych P-2</i> 10-08-2014
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7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is ☒ Approved ☐ Rejected

BY	FAA Fit. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	Repair Station	<input checked="" type="checkbox"/> Inspection Authorization	Other (Specify)

Certificate or Designation No. 37365627	Signature/Date of Authorized Individual <i>Mych P-2</i> 10-08-2014
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NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N87567


Nationality and Registration Mark

10-08-2014

Date

One time major alteration to install Pre-Oiler system.
See attached FAA Form 8110-3 dated 13 September 2014
for details. END.

☒ Additional Sheets Are Attached

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION			DATE
STATEMENT OF COMPLIANCE WITH AIRWORTHINESS STANDARDS			13 September 2014
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
MAKE Sky Enterprises, Inc.	MODEL NO. RC-3	TYPE (Airplane, Radio, Helicopter, etc.) Airplane	NAME OF APPLICANT KC Ostronik
LIST OF DATA			
IDENTIFICATION	TITLE		
SEABEEALT-POL, Rev. IR, Dated 30 April 2014 ***END DATA***	Document Title - "Alteration to install Pre-oiler system on Republic RC-3 Serial Number 129". <div style="display: flex; justify-content: space-between;"> <div> Notes: What the DER is approving: "This approval is for engineering design data only. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as "Applicable Requirements." "This form does not constitute FAA approval of all the engineering data necessary for substantiation of compliance to necessary requirements for the entire alteration/repair." What the DER cannot approve: "The approval of Instructions for continued airworthiness is retained by the FAA. However, the ICA has been reviewed by the DER and it appears to satisfy the requirements. The ICA mimics those previously approved ICA for an identical installation on a different serial numbered RC-3 Aircraft. Rules excluded: None Rules cited by Applicant and Not DER findings: 23.1529 [Instructions for Continued Airworthiness, Amdt.23-26], 33.4 [Instructions for Continued Airworthiness, Amdt.33-9]. Compliance with additional regulations not listed here may be required. ***END*** </div> <div> ***END DATA*** </div> </div>		
PURPOSE OF DATA			
This is in support of a one-time Major Alteration to the RC-3 Seabee S/N 129 aircraft for the Engine preoiler system installation.			
APPLICABLE REQUIREMENTS (List specific sections)			
14 CFR §§ 23.23 [Load distribution limits, Amdt. 23-45], 23.25 [Weight limits, Amdt. 23-50], 23.601 [General, Amdt. 23-0], 23.603(b) [Materials and workmanship, Amdt. 23-23], 23.611 [Accessibility [provisions.], Amdt. 23-48], 23.1017(a) [Oil lines and fittings, Amdt. 23-24], 23.1301 [Function and installation, Amdt. 23-62], 23.1309(a) (2) [Equipment, systems, and installations, Amdt.23-61], 23.1331(a) (b) [Instruments using a power source, Amdt.23-61], 23.1351(a) (b) [General, Amdt.23-49], 23.1365 (a) (d) (e) [Electric cables and equipment, Amdt.23-49], 23.1367 [Switches, Amdt.23-0], 23.1541 [General, Amdt.23-21]			
CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered. <u>None</u> have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations.			
<input type="checkbox"/> Recommend approval of these data* <input checked="" type="checkbox"/> Approve these data**			
I(We) Therefore			
SIGNATURE (S) OF DESIGNATED ENGINEERING REPRESENTATIVE (S)		DESIGNATION NUMBERS (S)	CLASSIFICATION (S)
Tracy R. Ourhaan  Digitally signed by com.apple.idms.appleid.prd.48796944434b6b77 49446541526c355774594c4672413d3d DN: cn=com.apple.idms.appleid.prd.48796944434b6 b7749446541526c355774594c4672413d3d Date: 2014.09.13 14:43:05 -06'00'		DERT-833513-CE	POWERPLANT - B ENGINES - E

KC Ostronik Owner
SKY ENTERPRTESES, INC. (REPUBLIC)
MODEL: RC-3
SERIAL NUMBER: 129
FAA REGISTRATION: N87657

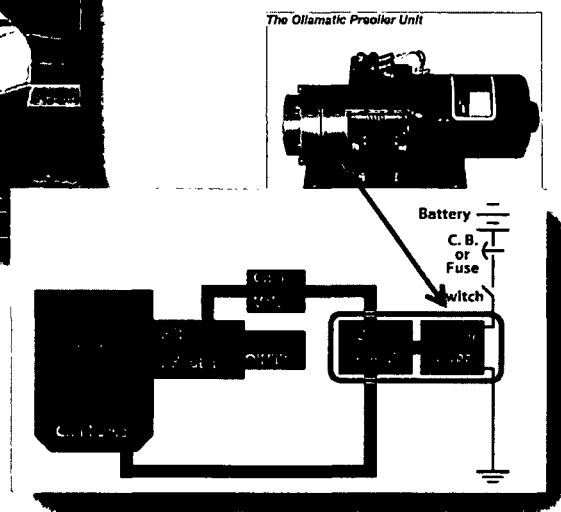
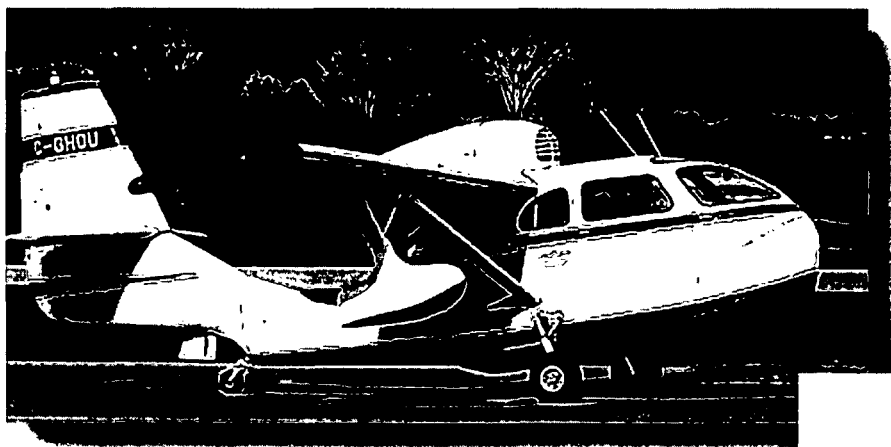


DERS Group Svc LLC

Alteration to install Pre-oiler system on Republic RC-3 Serial Number 129

DOCUMENT NO.: SEABEEALT-POL
REVISION: IR

April 30, 2014



KC Ostronik owner of the aircraft proposes an one-time alteration to Seabee RC-3 aircraft for installation of a Engine Pre-oiler system that lubricates the engine prior to start and eliminates dry starts.

The designs and data shown and described in this document contain certain features which have been developed by owner of the aircraft KC Ostronik and shall not be disclosed outside the immediate recipient, or be duplicated, used or disclosed in whole or in part for any purpose other than that for which it is submitted. All use, sales, and reproduction rights are the property of KC Ostronik and the disclosure herein does not imply transfer or relinquishment of these rights.

RC-3 S/N 129-Engine Pre-oiler
System Installation

RECORD OF REVISIONS / SIGNATURES

REVISION	DATE	PURPOSE	APPROVAL BY
Original	04/30/2014	Initial Release	JMG


Applicant Project Manager
Tracy Ourhaan
FAA Consultant DER, Chart B & E
DERS Group Svc LLC
144 Grays Creek Dr.
Savannah, Georgia 31410



Project Engineer
Jayant R. Ghawalkar
BSME, MS Aviation Safety Aircraft
Airworthiness
Phone: (818) 939-6785
jayghawalkar@DERS-Group.com

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1 INTRODUCTION

1.1 General:

This Compliance Summary Report document provides the description for a one-time alteration to a Republic RC-3 Seabee aircraft. This document includes alteration description, purpose, proposed certification basis, compliance finding, safety assessment and compliance demonstration.

1.2 Scope

The Republic RC-3 Seabee aircraft is an amphibious aircraft powered with a 6 cylinder horizontally opposed 215 hp 6A8-215-B9F engine. Applicant Mr. KC Ostronik, owner of the aircraft, proposes this one time alteration for the installation of an Engine pre-oiler system supplied by Oilamatic Inc. The installed pre-oiler unit lubricate an engine without starting and pre-oil the engine prior to starting only to reduce the engine wear from dry start. Hence pre-oiling an engine can reduce that excess wear attributed to insufficient lubrication during start or from ill affects of long periods without operation.

Mr. KC Ostronik has contracted DERS Group Svc LLC. (DERS Group) located at 144 Grays Creek Drive, Savannah, Georgia 31410, to act as its agent and manage this certification project and provide the FAA with all necessary documentation in support of this alteration.

This is a one time alteration is only applicable to the below specified aircraft serial number:

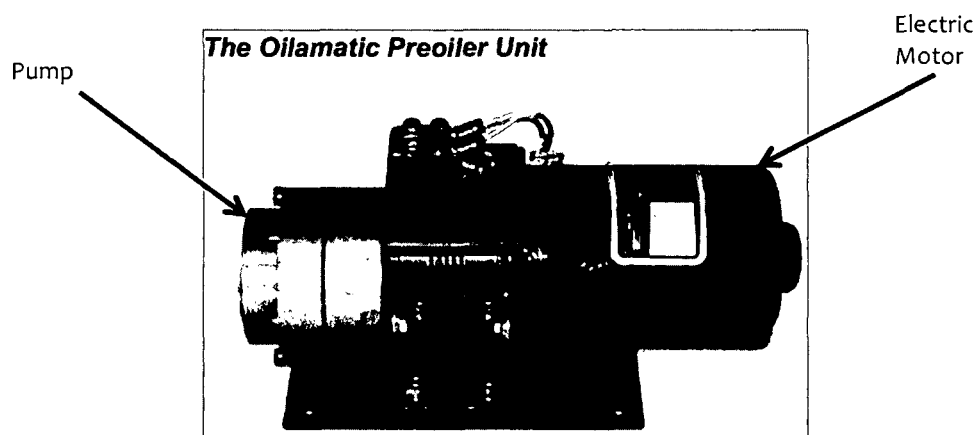
1.2.1 Table 1 – Applicability

AIRCRAFT MAKE	AIRCRAFT MODEL	AIRCRAFTS/N
Sky Enterprises, Inc.	RC -3 Seabee	129

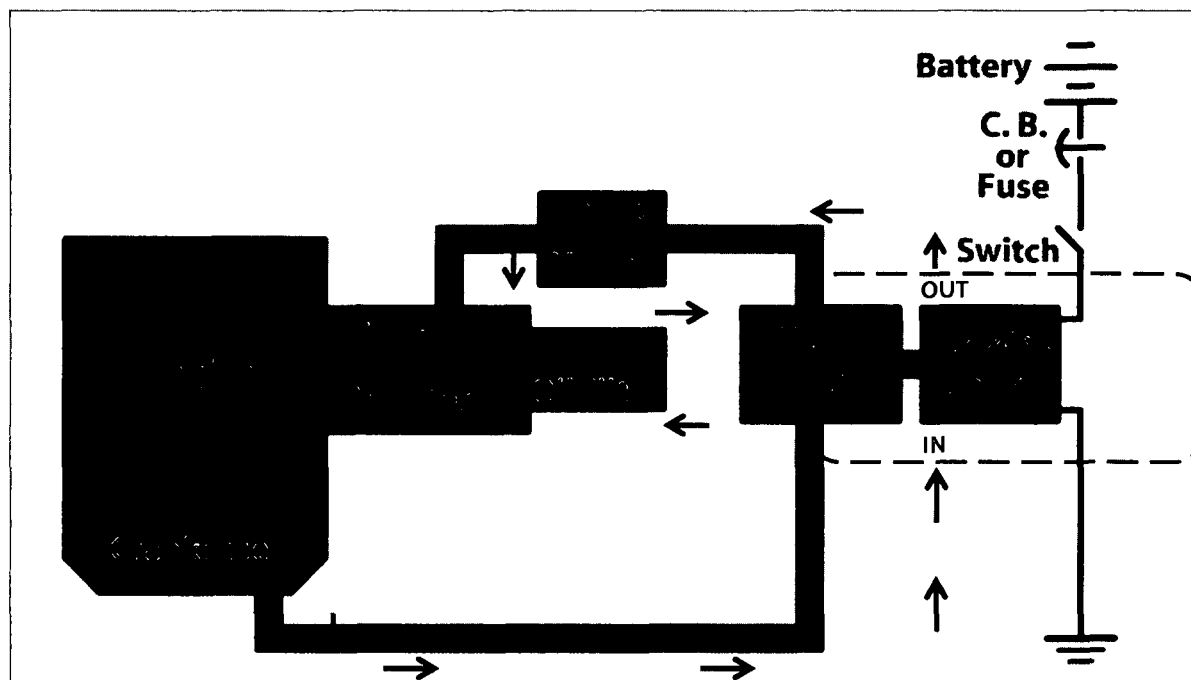
2 DESIGN REPORT:

2.1 Proposed Oil System

The Pre-oiler system supplied by Oilamatic Inc. mainly consists of a pre-oiler unit (12 volt electric motor driven pump), switch, and check valve, placards and mounting hardware. The pre-oiler unit is shown below.



This unit and check valve are plumbed into the engine oil system using special adapters so that oil is drawn from the crankcase and injected directly into the engine through the oil filter, as shown below.



RC-3 S/N 129-Engine Pre-oiler System Installation

A check valve in the high-pressure side isolates the pump from the engine once the engine is started and the pump is turned off. Oil from pump flow past check valve through the oil filter and purge the air.

A dash-mounted switch operates the pre-oiler (with Master switch on), which runs on the battery. The pre-oiler is protected with a 10-amp circuit breaker. The pilot can monitor pre-oiling on the engine oil pressure gage and turn the pump off as the starter is engaged.

Typical installations provide oil pressure stabilized near the "bottom of the green" before start.

No air is left in the system, and all parts are lubricated before their first motion. No matter how long the engine has been sitting, it is fully lubricated before start instead of after.

3 INSTALLATION INSTRUCTIONS

The Oilamatic Inc.'s Pre-oiler is FAA PMA approved and Oilamatic Inc. is granted with 33 STCs for installation of Pre-oiler unit and special adapters on different aircraft/engines models. Oilamatic Inc. has sold the pre-oiler model number 2110A to the applicant, Serial Number 1108036 for this alteration.

Oilamatic Inc. does not hold STC for the installation of pre-oiler on RC-3 aircrafts, but authorizes the applicant to reference Oilamatic's installation instructions for applicant's RC-3 Serial Number 129 aircraft.

A copy of Oilamatic signed letter dated August 03, 2011 along with the associated supplied technical data is provided in APPENDIX A. The technical data includes the installation instructions, maintenance instructions, operation instructions, part list and installation schematic.

4 REGULATORY

4.1 Original Certification Basis

The Original Aircraft Type Certification Basis are listed under:

- CAR 03 effective 13 November 1945, A-769 Rev. 15 - TCDS Sky Enterprises, Inc.

4.2 Determination of Significance

This alteration to the aircraft is considered to be 'Major Alteration', as it is not listed in the aircraft, engine, or propeller specifications. And it is decided to use the regulations at current amendment levels for compliance demonstration; hence a further classification of alteration as significant or Non-significant has not been performed.

4.3 Proposed Certification Basis

Part 23 regulations at current amendment levels as dated on 24 April 2014.

4.4 Compliance Checklist

Below are the rules governing the compliance applicable to this alteration.

1.1.1 Table – Compliance Checklist

14 CFR	AMDT.	DESCRIPTION
23.23	23-45	Load distribution limits
23.25	23-50	Weight limits
23.601	23-0	General
23.603 (b)	23-23	Materials and workmanship
23.611	23-48	Accessibility provisions
23.1017 (a)	23-14	Oil lines and fittings
23.1301	23-62	Function and installation
23.1309 (a)(2)	23-61	Equipment, systems, and installations
23.1331 (a)(b)	23-61	Instruments using a power source
23.1351 (a)(b)	23-49	General
23.1365 (a)(d)(e)	23-49	Electric cables and equipment
23.1367	23-0	Switches
23.1541	23-21	General

4.5 Compliance Demonstration

This section demonstrates the compliance with the each of applicable rule.

4.5.1 Sec. 23.23 FLIGHT: Load distribution limits.

(a) Ranges of weights and centers of gravity within which the airplane may be safely operated must be established. If a weight and center of gravity combination is allowable only within certain lateral load distribution limits that could be inadvertently exceeded, these limits must be established for the corresponding weight and center of gravity combinations.

(b) The load distribution limits may not exceed any of the following:

- (1) The selected limits;
- (2) The limits at which the structure is proven; or
- (3) The limits at which compliance with each applicable flight requirement of this subpart is shown.

Amdt. 23-45, Eff. 09/07/93

4.5.1.1 Evidence

The additional weight i.e Pre-oiler ~ 5.6 lbs (check valve and fitting hardware weights neglected) to the aircraft due to the Pre-oiler system installation can be considered as negligible. So the previously established ranges of weight and centers of gravity remains valid and unchanged. *Therefore, it is concluded that the Pre-oiler system installation on RC-3 S/N 129 is in compliance with § 23.23.*

4.5.2 Sec. 23.25 FLIGHT: Weight limits.

(a) Maximum weight. The maximum weight is the highest weight at which compliance with each applicable requirement of this part (other than those complied with at the design landing weight) is shown. The maximum weight must be established so that it is--

- (1) Not more than the least of--
 - (i) The highest weight selected by the applicant; or]
 - (ii) The design maximum weight, which is the highest weight at which compliance with each applicable structural loading condition of this part (other than those complied with at the design landing weight) is shown; or
 - [(iii) The highest weight at which compliance with each applicable flight requirement is shown, and]
- (2) Not less than the weight with--
 - (i) Each seat occupied, assuming a weight of 170 pounds for each occupant for normal and commuter category airplanes, and 190 pounds for utility and acrobatic category airplanes, except that seats other than pilot seats may be placarded for a lesser weight; and
 - (A) Oil at full tank capacity, and
 - (B) At least enough fuel for maximum continuous power operation of at least 30 minutes for day-VFR approved airplanes and at least 45 minutes for night-VFR and IFR approved airplanes; or
 - (ii) The required minimum crew, and fuel and oil to full tank capacity.

(b) Minimum weight. The minimum weight (the lowest weight at which compliance with each applicable requirement of this part is shown) must be established so that it is not more than the sum of--

- (1) The empty weight determined under Sec. 23.29;
- (2) The weight of the required minimum crew (assuming a weight of 170 pounds for each crewmember); and
- (3) The weight of--
 - (i) For turbojet powered airplanes, 5 percent of the total fuel capacity of that particular fuel tank arrangement under investigation; and
 - (ii) For other airplanes, the fuel necessary for one-half hour of operation at maximum continuous power.

Amdt. 23-50, Eff. 03/01/96

4.5.2.1 Evidence

The additional weight i.e Pre-oiler ~ 5.6 lbs (check valve and fitting hardware weights neglected) to the aircraft due to the Pre-oiler system installation can be considered as negligible. So the previously established maximum and minimum weights of aircrafts remains valid and unchanged. *Therefore, it is concluded that the Pre-oiler system installation on RC-3 S/N 129 is in compliance with § 23.25.*

4.5.3 Sec. 23.601 DESIGN AND CONSTRUCTION: General.

The suitability of each questionable design detail and part having an important bearing on safety in operations must be established by tests.

Amdt. Orig., Eff. 02/01/65

4.5.3.1 Evidence

The suitability of installation of Pre-oiler system can be justified that the installed pre-oiler model from the Oilamatic Inc., is a FAA PMA and Oilamatic Inc., is authorized with 33 STCs for installation of Pre-oiler and special adapters for different aircraft/engines models (except RC-3). And for this alteration, Oilamatic Inc. has authorized the applicant to refer to Oilamatic's installation instructions. Considering the purpose and functioning of the Pre-oiler system it is concluded that the system does not have important bearing on safety in operation. *Therefore, it is concluded that the Pre-oiler system installation on RC-3 S/N 129 is in compliance with § 23.601.*

4.5.4 Sec. 23.603 (b) DESIGN AND CONSTRUCTION: Materials and workmanship.

- [(a) The suitability and durability of materials used for parts, the failure of which could adversely affect safety, must--
- (1) Be established by experience or tests;]
 - (2) Meet approved specifications that ensure their having the strength and other properties assumed in the design data; [and
 - (3) Take into account the effects of environmental conditions, such as temperature and humidity, expected in service.]
- (b) Workmanship must be of a high standard.

Amdt. 23-23, Eff. 12/01/78

4.5.4.1 Evidence

The installation instructions and the maintenance manual supplement instructions ensure high standard workmanship and continued safe operation of the system. *Therefore, it is concluded that the Pre-oiler system installation on RC-3 S/N 129 is in compliance with § 23.603(b).*

4.5.5 Sec. 23.611 DESIGN AND CONSTRUCTION: Accessibility [provisions.]

[For each part that requires maintenance, inspection, or other servicing, appropriate means must be incorporated into the aircraft design to allow such servicing to be accomplished.]

Amdt. 23-48, Eff. 03/11/96

4.5.5.1 Evidence

The installation of pre-oiler unit in the baggage compartment ensures easy access for maintenance, inspection or servicing. *Therefore, it is concluded that the Pre-oiler system installation on RC-3 S/N 129 is in compliance with § 23.611.*

4.5.6 Sec. 23.1017 (a) POWERPLANT: Oil lines and fittings

(a) Oil lines. Oil lines must meet Sec. 23.993 and must accommodate a flow of oil at a rate and pressure adequate for proper engine functioning under any normal operating condition.

(b) Breather lines. Breather lines must be arranged so that--

- [(1) Condensed water vapor or oil that might freeze and obstruct the line cannot accumulate at any point;]
- (2) The breather discharge will not constitute a fire hazard if foaming occurs, or cause emitted oil to strike the pilot's windshield;
- (3) The breather does not discharge into the engine air induction system; and
- (4) For acrobatic category airplanes, there is no excessive loss of oil from the breather during acrobatic maneuvers, including short periods of inverted flight.
- [(5) The breather outlet is protected against blockage by ice or foreign matter.]

Amdt. 23-48, Eff. 03/11/96

4.5.6.1 Evidence

The installation instructions ensures installation of standard hose and different elbows/T fittings which ensure proper oil flow under working pressure and rate and ensures proper functioning of engine as before alteration. *Therefore, it is concluded that the Angle of Attack system installation on RC-3 S/N 129 is in compliance with § 23.1017(a).*

4.5.7 Sec. 23.1301 EQUIPMENT: Function and installation

Each item of installed equipment must--

- (a) Be of a kind and design appropriate to its intended function;
- (b) Be labeled as to its identification, function, or operating limitations, or any applicable combination of these factors; and
- (c) Be installed according to limitations specified for that equipment.

Amdt. 23-62, Eff. 01/31/12

4.5.7.1 Evidence

The installation instructions ensure appropriate labeling of different instruments of the system. Also, the installation of similar pre-oiler system on several other aircraft models demonstrated that the system does it intended function, without any safety concern. *Therefore, it is concluded that the Angle of Attack system installation on RC-3 S/N 129 is in compliance with § 23.1301.*

4.5.8 Sec. 23.1309(a)(2) EQUIPMENT: [Equipment, systems, and installations.]

The requirements of this section, except as identified in paragraphs (a) through (d), are applicable, in addition to specific design requirements of part 23, to any equipment or system as installed in the airplane. This section is a regulation of general requirements and does not supersede any requirements contained in another section of part 23.

(a) The airplane equipment and systems must be designed and installed so that:

- (1) Those required for type certification or by operating rules perform as intended under the airplane operating and environmental conditions, including the indirect effects of lightning strikes.
- (2) Any equipment and system does not adversely affect the safety of the airplane or its occupants, or the proper functioning of those covered by paragraph (a)(1) of this section.

Amdt. 23-62, Eff. 01/31/12

4.5.8.1 Evidence

The Pre-oiler system can be considered as non-critical system, which does not have adverse effect on the aircraft safety, Refer to Section 5. Non of the Pre-oiler system instrument interfere with any other instrument/system of the aircraft, hence does not affect proper functioning of any other system. *Therefore, it is concluded that the Pre-oiler system installation on RC-3 S/N 129 is in compliance with § 23.1309(a)(2).*

4.5.9 Sec. 23.1331 (a)(b) EQUIPMENT: Instruments using a power source

For each instrument that uses a power source, the following apply:

(a) Each instrument must have an integral visual power annunciator or separate power indicator to indicate when power is not adequate to sustain proper instrument performance. If a separate indicator is used, it must be located so that the pilot using the instruments can monitor the indicator with minimum head and eye movement. The power must be sensed at or near the point where it enters the instrument. For electric and vacuum/pressure instruments, the power is considered to be adequate when the voltage or the vacuum/pressure, respectively, is within approved limits.

(b) The installation and power supply systems must be designed so that--

- (1) The failure of one instrument will not interfere with the proper supply of energy to the remaining instrument; and
- (2) The failure of the energy supply from one source will not interfere with the proper supply of energy from any other source.

(c) For certification for Instrument Flight Rules (IFR) operations and for the heading, altitude, airspeed, and attitude, there must be at least:

- (1) Two independent sources of power (not driven by the same engine on multiengine airplanes), and a manual or an automatic means to select each power source; or
- (2) A separate display of parameters for heading, altitude, airspeed, and attitude that has a power source independent from the airplane's primary electrical power system.

Amdt. 23-62, Eff. 01/31/12

4.5.9.1 Evidence

The installed pre-oiler system operates before start of the engine and is cut off before the engine is started and is a non-critical system. And the failure of this system does not interfere will not with proper supply of energy to remaining instruments. Electrical load analyses demonstrate that the electrical load when the pre-oiler is in operation does not exceed 80% of total electricity output. *Therefore, it is concluded that the Pre-oiler system installation on RC-3 S/N 129 is in compliance with § 23.1331(a)(b).*

4.5.10 Sec. 23.1351(a)(b) EQUIPMENT: General

(a) Electrical system capacity. Each electrical system must be adequate for the intended use. In addition--

- (1) Electric power sources, their transmission cables, and their associated control and protective devices, must be able to furnish the required power at the proper voltage to each load circuit essential for safe operation; and
- (2) Compliance with paragraph (a)(1) of this section must be shown as follows--
 - (i) For normal, utility, and acrobatic category airplanes, by an electrical load analysis or by electrical measurements that account for the electrical loads applied to the electrical system in probable combinations and for probable durations; and
 - (ii) For commuter category airplanes, by an electrical load analysis that accounts for the electrical loads applied to the electrical system in probable combinations and for probable durations.

(b) Function. For each electrical system, the following apply:

- (1) Each system, when installed, must be--
 - (i) Free from hazards in itself, in its method of operation, and in its effects on other parts of the airplane;

- (ii) Protected from fuel, oil, water, other detrimental substances, and mechanical damage; and
- (iii) So designed that the risk of electrical shock to crew, passengers, and ground personnel is reduced to a minimum.

[(2) Electric power sources must function properly when connected in combination or independently.

(3) No failure or malfunction of any electric power source may impair the ability of any remaining source to supply load circuits essential for safe operation.

(4) In addition, for commuter category airplanes, the following apply:]

- (i) Each system must be designed so that essential load circuits can be supplied in the event of reasonably probable faults or open circuits including faults in heavy current carrying cables;
- (ii) A means must be accessible in flight to the flight crewmembers for the individual and collective disconnection of the electrical power sources from the system;
- (iii) The system must be designed so that voltage and frequency, if applicable, at the terminals of all essential load equipment can be maintained within the limits for which the equipment is designed during any probable operating conditions;
- (iv) If two independent sources of electrical power for particular equipment or systems are required, their electrical energy supply must be ensured by means such as duplicate electrical equipment, throwover switching, or multichannel or loop circuits separately routed; and
- (v) For the purpose of complying with paragraph (b)(5) of this section, the distribution system includes the distribution busses, their associated feeders, and each control and protective device.

(c) Generating system. There must be at least one generator/alternator if the electrical system supplies power to load circuits essential for safe operation. In addition--

(1) Each generator/alternator must be able to deliver its continuous rated power, or such power as is limited by its regulation system.

(2) Generator/alternator voltage control equipment must be able to dependably regulate the generator/alternator output within rated limits;

[(3) Automatic means must be provided to prevent damage to any generator/alternator and adverse effects on the airplane electrical system due to reverse current. A means must also be provided to disconnect each generator/alternator from the battery and other generators/alternators.]

(4) There must be a means to give immediate warning to the flight crew of a failure of any generator/alternator.

(5) Each generator/alternator must have an overvoltage control designed and installed to prevent damage to the electrical system, or to equipment supplied by the electrical system that could result if that generator/alternator were to develop an overvoltage condition.

(d) Instruments. A means must exist to indicate to appropriate flight crewmembers the electric power system quantities essential for safe operation.

(1) For normal, utility, and acrobatic category airplanes with direct current systems, an ammeter that can be switched into each generator feeder may be used and, if only one generator exists, the ammeter may be in the battery feeder.

(2) For commuter category airplanes, the essential electric power system quantities include the voltage and current supplied by each generator.

(e) Fire resistance. Electrical equipment must be so designed and installed that in the event of a fire in the engine compartment, during which the surface of the firewall adjacent to the fire is heated to 2,000° F for 5 minutes or to a lesser temperature substantiated by the applicant, the equipment essential to continued safe operation and located behind the firewall will function satisfactorily and will not create an additional fire hazard.

(f) External power. If provisions are made for connecting external power to the airplane, and that external power can be electrically connected to equipment other than that used for engine starting, means must be provided to ensure that no external power supply having a reverse polarity, or a reverse phase sequence, can supply power to the airplane's electrical system.

(g) It must be shown by analysis, tests, or both, that the airplane can be operated safely in VFR conditions, for a period of not less than five minutes, with the normal electrical power (electrical power sources excluding the battery and any other

standby electrical sources) inoperative, with critical type fuel (from the standpoint of flameout and restart capability), and with the airplane initially at the maximum certificated altitude. Parts of the electrical system may remain on if--

- (1) A single malfunction, including a wire bundle or junction box fire, cannot result in loss of the part turned off and the part turned on; and
- (2) The parts turned on are electrically and mechanically isolated from the parts turned off.

Amdt. 23-49, Eff. 03/11/96

4.5.10.1 Evidence

The Pre-oiler unit works on 12 volts and 7-22 amps maximum power load. The electric load of 7-22 amps is considered to be negligible on the existing aircraft electrical system considering fact that the pre-oiler unit is off prior to engine starting. Also an electric load analysis justify that this additional load does not exceed alternator maximum output. *Therefore, it is concluded that the Angle of Attack system installation on RC-3 S/N 129 is in compliance with § 23.1351(a)(b).*

4.5.11 Sec. 23.1365 (a)(d)(e) EQUIPMENT: Electric cables and equipment.

(a) Each electric connecting cable must be of adequate capacity.

[(b) Any equipment that is associated with any electrical cable installation and that would overheat in the event of circuit overload or fault must be flame resistant. That equipment and the electrical cables must not emit dangerous quantities of toxic fumes.]

(c) Main power cables (including generator cables) in the fuselage must be designed to allow a reasonable degree of deformation and stretching without failure and must--

- (1) Be separated from flammable fluid lines; or
- (2) Be shrouded by means of electrically insulated flexible conduit, or equivalent, which is in addition to the normal cable insulation.

[(d) Means of identification must be provided for electrical cables, terminals, and connectors.

(e) Electrical cables must be installed such that the risk of mechanical damage and/or damage caused by fluids vapors, or sources of heat, is minimized.

(f) Where a cable cannot be protected by a circuit protection device or other overload protection, it must not cause a fire hazard under fault conditions.]

Amdt. 23-49, Eff. 03/11/96

4.5.11.1 Evidence

The electrical wires/cables used for installation are industry standard MIL specification wires such as MW 22759 and are of adequate capacity and the instruments connections are properly identified and are shown in the drawing. Therefore, it is concluded that the Angle of Attack system installation on RC-3 S/N 129 is in compliance with § 23.1365 (a)(d)(e).

4.5.12 Sec. 23.1367 Equipment: Switches

Each switch must be--

- (a) Able to carry its rated current;
- (b) Constructed with enough distance or insulating material between current carrying parts and the housing so that vibration in flight will not cause shorting;
- (c) Accessible to appropriate flight crewmembers; and
- (d) Labeled as to operation and the circuit controlled.

Amdt. 23-0, Eff. 02/01/65

4.5.12.1 Evidence

The pre-oiler switch is properly labeled and is as per the rated current operation. Therefore, it is concluded that the Angle of Attack system installation on RC-3 S/N 129 is in compliance with § 23.1367.

4.5.13 Sec. 23.1541 Operating Limitations and Information: General

- (a) The airplane must contain--
 - (1) The markings and placards specified in Secs. 23.1545 through 23.1567; and
 - (2) Any additional information, instrument markings, and placards required for the safe operation if it has unusual design, operating, or handling characteristics.
- (b) Each marking and placard prescribed in paragraph (a) of this section--
 - (1) Must be displayed in a conspicuous place; and
 - (2) May not be easily erased, disfigured, or obscured.
- [(c) For airplanes which are to be certificated in more than one category--
 - (1) The applicant must select one category upon which the placards and markings are to be based; and
 - (2) The placards and marking information for all categories in which the airplane is to be certificated must be furnished in the Airplane Flight Manual.
- (d) [Deleted.]]

Amdt. 23-21, Eff. 03/01/78

4.5.13.1 Evidence

The installation of the system has been done in accordance with instructions provide by manufacturer, which clearly identifies the placards which are required such as placard for Pre-oiler switch, operation limits placards. *Therefore, it is concluded that the Angle of Attack system installation on RC-3 S/N 129 is in compliance with § 23.1541.*

4.6 Instructions for Continued Airworthiness (ICA)

An Airplane Maintenance Manual Supplement is supplied with this documen in support of this alteration.

4.7 Airplane Flight Manual Supplement (AFMS)

An Airplane Flight Manual Supplement is supplied with this document in support of this alteration.

5 SAFETY ASSESSMENT

5.1 Introduction

This section provides a qualitative safety assessment related to the installation of Pre-oiler system and investigates in reference to failure conditions, their classification, probability and their effects, and overall system safety level.

5.2 System Description

The system considered under this safety assessment is Oil system with the alteration described previously. The purpose of the alteration to the existing oil system is to lubricate an engine without starting. The pre-oiler unit and its associated components such as hoses, check valve, circuit breaker, switch etc are plumbed into the existing engine oil system. The Pre-oiler unit is electrically operated before start of the engine until oil pressure is stabilized and turned off prior to the starting the engine. And the pre-oiler unit is cut off from the existing oil system during normal operation of the engine hence this installation and operation of these components do not interfere the existing operation and functioning of the oil system. There have been also no changes to the existing aircraft system for the installation of this system.

5.3 Functional hazard assessment (FHA)

This section provides a systematic, comprehensive examination of the Pre-oiler system functions to identify potential minor, major, hazardous, and catastrophic failure conditions that may arise as a result of a malfunction or a failure to function.

The severity is a quantitative measure of the worst possible degree of personal injury, property damage, or system damage, which can result from a failure mode. The possible severity categories defined in FAA Advisory Circular AC 25.1309-1E are provided in Table 2.

5.3.1 Table 2 Severity Classification

SEVERITY CLASS	SEVERITY DESCRIPTION
Catastrophic	Failure condition, which prevents continued safe flight and landing, and for which no effective action is realistically possible.
Hazardous	Failure condition which causes a large reduction in safety margins or functional capacity, very high increase in workload or physical stress for the crew or discomfort to occupants.
Major	Failure condition, which causes a significant reduction in safety margins or functional capabilities and a significant increase in crew workload or in, conditions impairing crew efficiency or discomfort to occupants.
Minor	Failure condition which does not significantly reduce aircraft safety and/or involve crew actions that are well within their capabilities. Minor failure conditions may include for example, a slight reduction in safety margins or functional capabilities, a slight increase in crew workload, such as a routine flight plan change or some inconvenience to occupants.
No Safety Effect	Failure conditions that would have no effect on safety (that is, failure conditions that would not affect the operational capability of the airplane or increase crew workload).

Below are the failure conditions that have been identified related to the alteration.

5.4 Safety Assessment

5.4.1 Table 3 Failure Causes

FAILURE CONDITION	FAILURE CONDITION CAUSE	FAILURE CONDITION CLASSIFICATION	OCCURANCE
Loss of the Pre-oiler system	<ul style="list-style-type: none"> Loss of electricity Malfunction of any of the Pre-oiler system component 	No Safety Effect	Extremely Improbable

5.4.2 Table 4 Failure Effects

FAILURE CONDITION	EFFECT
Loss of the Pre-oiler system	Pre-oiling the engine will not be available anymore which will result in dry starts.

5.5 Conclusion – Criticality Determination

The installed pre-oiler unit can be considered as non-critical component as the failure of it does not have any safety effect i.e. failure would not affect the operational capability of the airplane or increase crew workload. This can be justified by the fact that, the pre-oiler system is only used before start of the engine just to only lubricate the engine to avoid dry start. A check valve in the high pressure side isolates the pump from the engine before the engine is started and the pump is turned off. This ensures that the functioning of the oil system after start of the engine remains same as it was before alteration. The failure of the system would result in dry start of the engine which is normal operation and would not impose any other limitations. Hence the operation and the failure of pre-oiler system does not interfere with any other existing aircraft system. Hence this alteration does not have any adverse effect on the previously established safety level. Therefore, it is concluded that the Angle of Attack system installation on RC-3 S/N 129 is in compliance with § 23.1309.

5.6 Airworthiness Directive Search Report

SEARCH PARAMETER

Component Name
Component Model
Supplier Name

Pre-oiler
2110A
Oilamatic

Search http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/MainFrame?OpenFrameSet

SEARCH RESULTS A search for all of above inputs returned zero (0) AD.

Search results are listed on the following pages (attached). Only important pages of each of the ADs are shown.

AD Query Completed May 03, 2014 by Jayant R Ghawalkar, Certification Engineer, DERS Group Svc LLC.

RC-3 S/N 129-Engine Pre-oiler System Installation

Airworthiness Directives

5/3/14, 5:58 PM

Search:

[Search Help](#)

- ▼ [Airworthiness Directives](#)
 - ☐ [Emergency ADs \(Last 30 days\)](#)
 - ☐ [New ADs \(Last 60 days\)](#)
 - ▼ ☐ [Current ADs](#)
 - ☐ [By Make](#)
 - ☐ [By Appliance](#)
 - ☐ [By Number](#)
 - ☐ [By Product](#)
 - ▼ ☐ [Historical ADs](#)
 - ☐ [By Supersession/Revision](#)
 - ☐ [AD Biweekly](#)
 - ☐ [AD Index](#)
 - [Related Links](#)
 - [Help](#)

Search Results

[* Top](#) [Previous](#) [Next](#)**No Documents Found**

Same
result for
all search
inputs

[Print View](#)

[FAA.gov Home](#) | [Privacy Policy](#) | [Web Policies & Notices](#) | [Contact Us](#) | [Help](#)

Readers & Viewers: [Adobe Reader](#) | [MS Word Viewer](#) | [MS PowerPoint Viewer](#) | [MS Excel Viewer](#) | [Information about Zip files](#)

5.6.1 AD Summary

The search dated on 03 May 2014 identified zero (0) AD as shown in the image. Therefore, no action is required.

5.7 Service Difficulties Summary Report

The Aircraft Make for the RC-3 aircraft is Sky Enterprises, Inc., as per the TCDS A-769 shown below.

SEARCH SITE: <http://av-info.faa.gov/SDRX/Query.aspx>

SDR Query Completed May 03, 2014 by Jayant R Ghawalkar, Certification Engineer, DERS Group Svc LLC.

FEDERAL AVIATION AGENCY	
<div><div>A-769</div><div>Revision 15 STOL (REPUBLIC) RC-3</div><div>November 20, 1992</div></div>	
AIRCRAFT SPECIFICATION NO. A-769	
Type Certificate Holder	<div>Sky Enterprises, Inc.</div> <div>Tacoma Narrows Airport 1302 26th Avenue NW Gig Harbor, Washington</div>
1 - Model <u>RC-3</u> 4 PCAmM (Normal Category), 2 PCAmM (Utility Category). Approved October 15, 1947 (See NOTES 4, 5 and 6 for flying boat versions).	
Engine	Franklin 6A8-215-B8F
Fuel	80 min. octane aviation gasoline
Engine limits	For all operations, 2500 rpm (215 hp)

For the above search site, 'Sky Enterprise, Inc.' is not listed on the FAA website, as the aircraft make, shown below.

RC-3 S/N 129-Engine Pre-oiler System Installation

Run Query Clear Query Criteria Return to the Main Menu

Query Criteria (Note: Recently submitted SDR's are not available for use)

Operator Control # (submission)

Operator Designator

Difficulty Date: From To (mm/dd/yyyy)

JASC (ATA) Code

Aircraft Make SKYLARK

Engine Make

Propeller Make

Part Name

Part Number

Problem Description

(Searching by C)

Regi (mm/dd/yyyy)

Aircraft Manufacturer Lookup

Search Text: sky

SKRSKY - SIKORSKY AIRCRAFT
SKYLEA - SKYLEADER JIHLAVAN/SIMVISION CZ
SKYLARK - SKYLARK AIRCRAFT CORP

Select Cancel

(Searching this field will affect query time!)

These fields allow the use of the % symbol to indicate a wildcard search. Below are some examples:
 Exact Match - "craft mod" will only match the exact text "craft mod"
 Single Wildcard Match - "craft mod%" would match "craft model" but not "aircraft model"
 Multiple Wildcard Match - "%craft mod%" or "air%mod%" would match any text containing that phrase such as "aircraft model"

'Sky Enterprise, Inc.' NOT identified

So, it was unable to identify any Service Difficulties Summary Report for RC-3.

RC-3 S/N 129-Engine Pre-oiler System Installation

APPENDIX A: OILAMATIC DATA

Oilamatic Inc

P.O. Box 5284 • Englewood, Colorado 80155 • (303) 770-0175

August 3, 2011

With reference to FAA Notice 8110.69, Oilamatic, Inc. has sold a Preoiler Model Number 2110A, Ser # 1108036 to KC Ostronik for installation on a Republic Sea Bee airplane.

Oilamatic, Inc. holds no STC for this installation, but authorizes you to reference Oilamatic's installation instructions provided as a basis, as necessary, for obtaining approval for this one time installation.

No other authorizations for use of this Preoiler kit or installation instructions are implied.

Sincerely,



George R. McCrillis, Pres.
Oilamatic, Inc.

APPENDIX A: Oilamatic data (CONTINUED)

PREOILER INSTALLATION, OPERATING INSTRUCTIONS

AND MAINTENANCE

NO STC OR EXPERIMENTAL WITH LYCOMING GO480 ENGINE and REMOVAL

Installation
Instructions

- A. **INSTALL PUMP/MOTOR ASSEMBLY**
 1. Install item 18 in pump inlet and item 16 in pump outlet.
 2. Position Pump/Motor Assembly on firewall, drill holes and bolt in position.
- B. **INSTALL PREOILER INLET/SUCTION HOSE**
 1. Drain engine oil. Install item 14 (90° Elbow) in sump drain.
 2. Fabricate and install a 1/2 inch (-8) hose assembly (Item 39).
- C. **TO INSTALL PREOILER OUTPUT/PRESSURE HOSE ASSEMBLY**
 1. Install item 19 (check valve) at pump output. **CAUTION:** Ensure that flow arrow on check valve points away from pump. Install item 17 (Nipple) in check valve.
 2. Install Item 20 (T-fitting) in input port to filter adapter. Install item 21 (Reducer) on one leg.
 3. Fabricate and install a 3/8 inch (-6) hose assembly (Item 37).
 4. Connect oil pump output hose to other leg of T-fitting.
- D. **INSTALL ELECTRIC POWER AND CONTROL SWITCH.**
 1. Install item 27 (switch) in panel with placard.
 2. Connect a 22 gage wire from center post on switch to a 5 amp circuit breaker. Connect a 22 gage wire from each side post, through fire wall to control post on each contactor (item 24).
 3. Connect a 14 gage wire from a 20 amp circuit breaker or 15 amp fuse and route to "BAT" terminal on each contactor
 3. Connect a 14 gage ground wire from Negative wire on pump directly to the airframe.
 4. Install item 44 (Operations Limitations Placard) adjacent to switch.
- E. **PREPARE AIRCRAFT FOR OPERATION AND OPERATE PREOILER.**
 1. **REFILL ENGINE WITH OIL.**
 2. **COMPLETE WARRANTY CARD AND RETURN TO OILAMATIC, INC.**

APPENDIX A: Oilamatic data (CONTINUED)

Page 2

Operation
Instructions

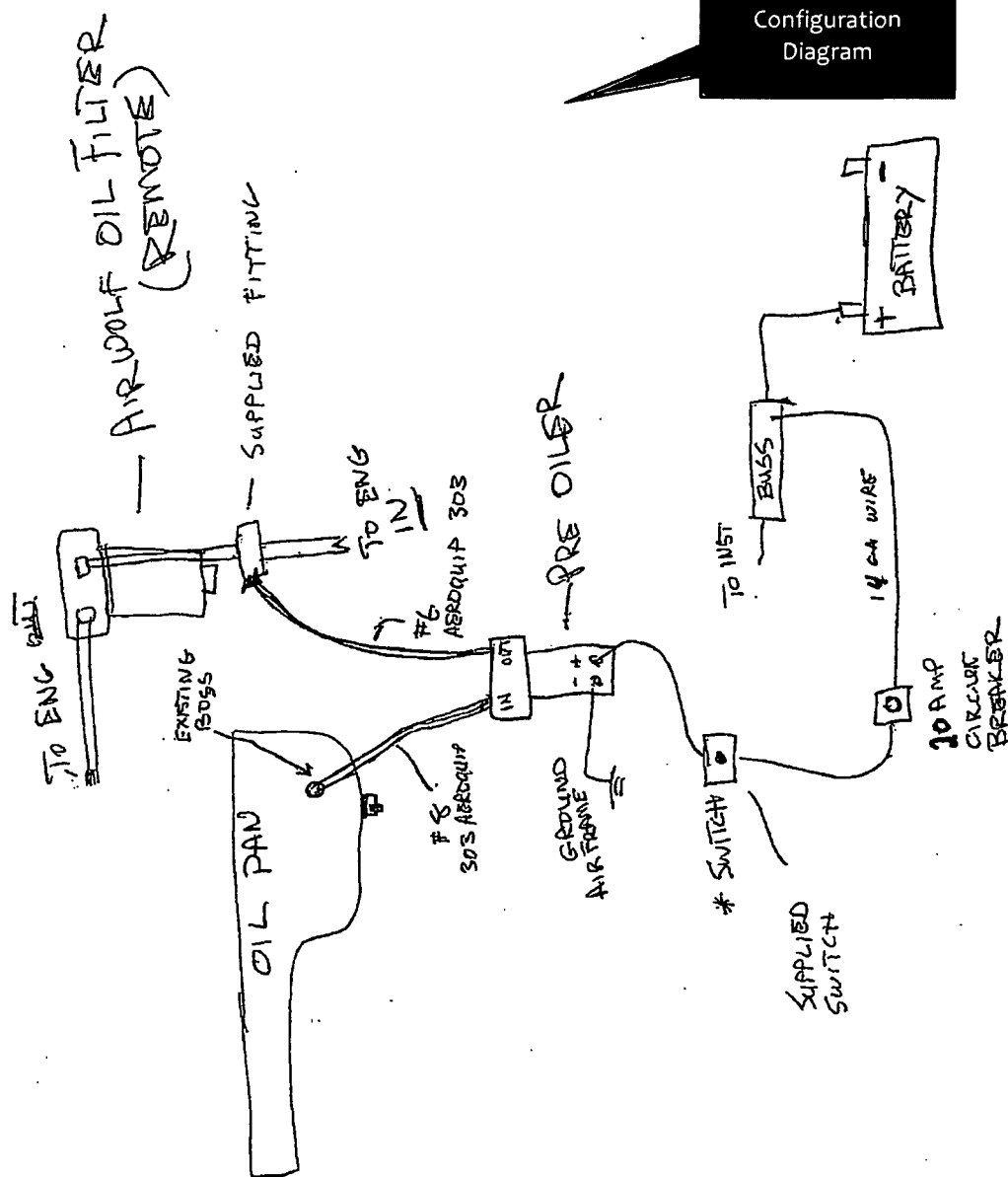
F. PREOILER OPERATION

1. Turn aircraft master switch "On" and turn Preoiler switch "On".
2. Check engine oil pressure gage for rise in pressure indicating Preoiler has primed and engine is being preoiled.
3. If Preoiler fails to prime within 30 seconds, turn Preoiler "Off", open bleed valve on pump ¼ turn, turn Preoiler "On" until it primes and oil flows from bleed valve (use hose and container to catch oil), turn Preoiler "Off", tighten bleed valve and operate Preoiler until engine oil pressure rises.
4. Preoil engine until oil pressure stabilizes.
5. Check installation for oil leaks.
6. Turn Preoiler "Off" prior to starting engine.

G. PREOILER MAINTENANCE

1. **CAUTION: AVOID SPRAYING HIGH PRESSURE WATER OR CLEANING SOLVENTS DIRECTLY ONTO ELECTRIC MOTOR.**
2. At each inspection, check hoses, fittings and pump for leaks and for signs of distress.

APPENDIX A: Oilmatic data (CONTINUED)



DOES NOT EXCEED 80% OF TOTAL ELECTRICAL OUTPUT
* DO NOT USE WHEN ENGINE IS RUNNING (PLACARD)

RC-3 S/N 129-Engine Pre-oiler System Installation

APPENDIX A: Oilamatic data (CONTINUED)

PARTS LIST FOR Sea Bee with GO 480 ENGINE 12 Volt System with Remote Filter

Kit Serial No. 1108036Sold to: K.C. OSTRONIK

Part List

Date sold: 8-9-2011

ITEM NO.	PART NO.	EACH	DESCRIPTION
1	720403-13	1 <input checked="" type="checkbox"/>	Oil Pump/Motor Assembly - 12 volt
2	720408-11	1 <input checked="" type="checkbox"/>	Mounting plate - 3.5 x 5.5
3	720408-22 ⁴	4 <input checked="" type="checkbox"/>	Spacer - 3/4 x 3.5 3/4 x 1/8
4	720408-24	2 <input checked="" type="checkbox"/>	Stiffener
7	AN 3-4A	1 <input checked="" type="checkbox"/>	Bolt - ground lug
8	AN 3-5A	4 <input checked="" type="checkbox"/>	Bolt
9	AN 960-10	10 <input checked="" type="checkbox"/>	Washer
10	AN 363-1032	10 <input checked="" type="checkbox"/>	Lock nut
13	SAE140237-4-4	1 <input checked="" type="checkbox"/>	90° Elbow-pipe to pipe
14	SAE 070302-6-8	1 <input checked="" type="checkbox"/>	45° Elbow-pipe to flare
15	SAE 070202-6-6S	1 <input checked="" type="checkbox"/>	90° Elbow-pipe to flare
16	406A-1	1 <input checked="" type="checkbox"/>	Check Valve
17	SAE 070102-4-6S	1 <input checked="" type="checkbox"/>	Nipple-pipe to flare
18	SAE 070202-8-8	1 <input checked="" type="checkbox"/>	90° Elbow-pipe to flare
19	820403-1	1 <input checked="" type="checkbox"/>	T-Fitting - (On filter adapter)
22	TBD	x XXX	Hose - Suction
23	TBD	x XXX	Hose-Output
31	W23-X1A1G-20	1 <input checked="" type="checkbox"/>	Circuit Breaker
32	MW 22759/16-14	5ft <input checked="" type="checkbox"/>	Wire-14 gage-random length
34	8811K17	1 <input checked="" type="checkbox"/>	Switch - MS 35058-30
35	820415-3	1 <input checked="" type="checkbox"/>	Switch Placard
36	110001	1 <input checked="" type="checkbox"/>	Operation Limits Placard
41	1N4004	1 <input checked="" type="checkbox"/>	Diode
42	2-41	1 <input checked="" type="checkbox"/>	Terminal Block
43	8-32x1/2 Cap screws	4 <input checked="" type="checkbox"/>	(on terminal block)
44	RB14-6	6 <input checked="" type="checkbox"/>	Ring Terminal (4 on pump)
45	RB 14-8	3 <input checked="" type="checkbox"/>	Ring Terminal (Main power & CB)
46	RB14-10	1 <input checked="" type="checkbox"/>	Ring Terminal - ground lug
47	2RB 14	2 <input checked="" type="checkbox"/>	Butt Splice
48	RA18-6	2 <input checked="" type="checkbox"/>	Ring Terminal (on diode)

TBD = "To Be Determined by installer"

Packet Materials:

1. ☒ Warranty 2. ☒ Parts list 3. ☒ Permission Statement
 4. ☒ Installation, Operation and Maintenance Instructions

ALL PARTS SUPPLIED BY OILAMATIC ARE FAA/PMA APPROVED ONLY
 WHEN INSTALLED UNDER AN FAA SUPPLEMENTAL TYPE CERTIFICATE (STC)

DERS Group Svc LLC

AIRPLANE FLIGHT MANUAL SUPPLEMENT

DOCUMENT: SEABEEALT-IGN

REVISION: IR

April 30, 2014

AIRPLANE FLIGHT MANUAL SUPPLEMENT

This Aircraft Flight Manual Supplement (AFMS) must be attached to the FAA approved Aircraft Flight Manual when this aircraft is modified by the Engine pre-oiler unit Installation. The information provided in this manual, supplement or supersedes the information of the basic Airplane Flight Manual to the operator, only in areas listed.

For all other information not listed in this document consult the basic FAA approved Airplane Flight Manual.



144 Grays Creek Drive
Savannah, Georgia 31410
Phone: 818-620-8444
Fax: 912-898-0015
E-Mail: Tourhaan@DERS-Group.com
Web: www.DERS-Group.com



SECTION 1

General

Electric engine pre-oiler was installed to this aircraft to decrease the engine wear by pre-oiling the engine prior to start.

SECTION 2

Limitations

Engine pre-oiler only to be operated prior to starting of the engine. Placard located above switch states.

NOTE: DO NOT OPERATE PREOILER WHILE ENGINE IS RUNNING.

SECTION 3

Emergency Procedures

No change.

SECTION 4

Normal Procedure

1. Turn aircraft master switch ON and turn preoiler switch ON.
2. Check engine oil pressure gage for rise in pressure indicating preoiler has primed and engine is being preoiled.
3. Preoil engine until oil pressure stabilizes.
4. Turn preoiler OFF prior to starting engine.

SECTION 5

Performance

No Change

DERS Group Svc LLC

Aircraft Maintenance Manual Supplement

DOCUMENT: SEABEEALT-POL

REVISION: IR

April 30, 2014

AIRPLANE MAINTENANCE MANUAL SUPPLEMENT

This Airplane Maintenance Manual Supplement (AFMS) must be attached to the FAA approved Aircraft Maintenance Manual when this aircraft is modified with the Pre-Oiler System Installation. The information provided in this manual, supplement or supersedes the information of the basic Airplane Maintenance Manual provided to the operator, only in areas listed.

For all other information not listed in this document consult the basic FAA approved Airplane Maintenance Manual.



144 Grays Creek Drive
Savannah, Georgia 31410
Phone: 818-620-8444
Fax: 912-898-0015
E-Mail: Tourhaan@DERS-Group.com
Web: www.DERS-Group.com



SECTION 1

INSPECTION – Accomplish the following at each inspection.

1. Engine Pre-oiler
 - a. Pre-oiler unit location – Baggage compartment.
 - b. Pre-oiler unit Attachments – Check all hardware for security and/or damage. Replace as necessary.
 - c. Oil Line Connections – Check hoses, fittings and pump for sign of distress.
2. Electric Components
 - a. Wiring – Check for chafing, burns and security.
 - b. Switch and Circuit Breaker – Check for overheating, arcing and security of installation.
 - c. Security of attachment and separation from structure and other aircraft components.
3. Oil Lines And Connections
 - a. Check for evidence of leakage at all connections.
 - b. Check for cracking or chafing of all flexible oil lines, replace necessary.
 - c. Security of attachment and separation from structure and other aircraft components

SECTION 2

MAINTENANCE –

1. Pre-oiler unit – Upon malfunction or failure, replace the unit, No internal repair permissible.
2. Electrical Components – Upon malfunction or failure of switch, circuit breaker or evidence of damage to wiring, replace individual component. No internal repair permissible.
3. Oil Line and Connections – Replace all fuel lines that are cracked, stiff, show evidence of chafing, or any other visible damage.
4. Hardware and Attachments Bracket – Replace any individual part that shows evidence of wear, breakage or failure.
5. CAUTION: AVOID SPRAYING HIGH PRESSURE WATER OR CLEANING SOLVENT DIRECTLY ONTO ELECTRIC MOTOR.