

# MAINTENANCE MANUAL MODEL A5



Publication ICA000833, Issue C3

Airplane Registration Number: \_\_\_\_\_

Airplane Serial Number: \_\_\_\_\_

Date: 28 February 2019

ICON Aircraft / 2141 ICON Way, Vacaville, CA 95688



ICON Aircraft, Inc.  
2141 ICON Way  
Vacaville, CA 95688

<https://www.iconaircraft.com>

All rights reserved. No part of this manual may be reproduced or copied in any form or by any means without written permission of ICON Aircraft, Inc.

# Table of Contents

	CHAPTER
Revisions . . . . .	1
General . . . . .	2
Inspections . . . . .	3
Structures . . . . .	4
Doors and Windows . . . . .	5
Electrical System . . . . .	6
Environmental Control (Utility Systems) . . . . .	7
Equipment and Furnishings . . . . .	8
Flight Controls . . . . .	9
Fuel System . . . . .	10
Fuselage and Vertical Tail . . . . .	11
Horizontal Tail . . . . .	12
Instruments (and Avionics) . . . . .	13
Landing Gear . . . . .	14
Placards and Markings . . . . .	15
Propulsion . . . . .	16
Wing . . . . .	17
Wing Fold Mechanism . . . . .	18
ICON Parachute System (IPS) . . . . .	19
Structural Repair . . . . .	20
Painting and Coatings . . . . .	21
Feedback Forms . . . . .	22





# Chapter 1

## REVISIONS

Record of Maintenance Manual Revisions..... 1-2

    Issue C3..... 1-2

    Issue C2..... 1-5

    Issue C1..... 1-6

    Issue C..... 1-9

List of Effective Chapters.....1-12

Manual Revisions..... 1-14

## 1.1 Record of Maintenance Manual Revisions

In this section a record of the maintenance manual revisions is given. Further description of those revisions by issue and chapter can be found below.

Issue	Date	Chapter(s)	Added By
A	8 June 2015	All	ICON Aircraft
A1	25 January 2016	1, 2, 3, 4, 5, 7, 9, 10, 13	ICON Aircraft
A2	16 March 2016	1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 13	ICON Aircraft
A3	18 March 2016	1, 3	ICON Aircraft
A4	14 June 2016	1, 2, 13	ICON Aircraft
B	17 February 2017	All	ICON Aircraft
B1	13 March 2017	1, 2, 3, 4, 6, 7, 9, 10, 11, 14	ICON Aircraft
B2	31 March 2017	1, 3, 4, 5, 6, 7, 11, 12, 14	ICON Aircraft
B3	23 October 2017	1, 2, 3, 4, 5, 6, 7, 10, 11, 14	ICON Aircraft
C	20 April 2018	All	ICON Aircraft
C1	28 September 2018	1, 2, 3, 6, 9, 10, 11, 13, 14, 16, 17, 19	ICON Aircraft
C2	12 October 2018	1, 2, 4, 9	ICON Aircraft
C3	28 February 2019	1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17	ICON Aircraft

### RELATED INFORMATION:

"Manual Revisions" on page 1-14

### 1.1.1 Issue C3

#### Chapter 2

- Updated the Introduction
- Updated the Disposable Replacement Parts list
- Updated Tire Inflation Pressures

#### Chapter 3

- Updated Landing Gear Condition and 100-Hour Inspection

- Updated Empty Weight and CG Measurement

#### Chapter 4

- Updated Wheels and Brakes

#### Chapter 6

- Added Landing & Taxi Lights Maintenance Instructions
- Added Fuel Level Sensor Description
- Updated Inspect, Repair, and Secure Wiring Harness with Signs of Chafing
- Updated Install Fuel Pressure Sensor
- Moved Grease Coil Pack Connections to Chapter 16
- Added Landing and Taxi Lights section
- Updated Battery Description
- Updated Replace Coarse Fuel Filter
- Move Bilge Pump from Chapter 7
- Updated Charge Battery

#### Chapter 7

- Move Bilge Pump section to Chapter 7

#### Chapter 8

- Updated Center Console Bucket Removal
- Updated Throttle Handle and Bezel
- Updated GPS Mount and Radio Stack Bezel
- Added Instrument Panel Center Spine Removal and Installation

#### Chapter 9

- Updated Remove Flap Actuator
- Updated Inspect Flap Rigging
- Added Flaps Controls Diagram
- Updated Pitch Control Diagram
- Updated Rigging Roll Controls
- Updated Roll Controls Diagram
- Updated Install Flap Actuator
- Added Rigging Flap Controls section

- Added Yaw Controls Description
- Added Yaw Controls Diagram
- Updated Rigging Yaw Controls

#### Chapter 10

- Updated Pump Usable Fuel from Fuel Tank
- Added Fuel Pressure Diagnostic
- Added coarse Fuel Filter Description and Schematic
- Added Clean Coarse Fuel Filter (MY18+)
- Updated Clean Coarse Fuel Filter (MY17 Only)
- Renamed Fuel Bladder (MY17 Only) sections
- Updated Fuel Bladder and Fuel Tank sections
- Added Remove Fine Fuel Filter
- Added Install Fine Fuel Filter

#### Chapter 12

- Added Horizontal Tail Tip Lock Switches section

#### Chapter 13

- Added DAC Software Version section
- Updated the Instruments and Avionics Description
- Added Central Stack Instruments section
- Added ELT Transponder and Transmitter Replacement
- Added Pitot-Static-Angle of Attack (AOA) maintenance tasks

#### Chapter 14

- Updated Nose Landing Gear (NLG) Wheel Removal
- Updated Main Landing Gear (MLG) Removal
- Added Nose Wheel Tire Leak
- Updated Nose Landing Gear (NLG) Rigging sections
- Updated Main Landing Gear (MLG) Rigging sections
- Updated Landing Gear Actuator Limit Switch Adjustment Procedure

#### Chapter 15

- Updated Secure Loose Object placard

- Updated ELT Remote Switch placard

#### Chapter 16

- Moved Grease Coil Pack Connections from Chapter 6
- Updated Install Exhaust System
- Updated Install Fuse Box and Regulators
- Added Propeller Schematic
- Added Install Oil Tank
- Added Remove Oil Tank
- Added Oil Tank Description and Schematic
- Added Balance Propeller section
- Updated A5 Specific Oil Change Procedures
- Updated Install Engine Cowlings
- Updated Remove Engine Cowlings
- Updated Inspect Engine Mount
- Added ECU Troubleshooting

#### Chapter 17

- Updated Wing Lock Switch Mounting Plate Installation
- Updated Wing Lock Switch Mounting Plate Removal

### 1.1.2 Issue C2

#### Chapter 2

- Updated Disposable Replacement Part list
- Updated the nose gear tire size in Tire Inflation Pressures

#### Chapter 4

- Updated the nose gear tire size in Wheels and Brakes

#### Chapter 9

- Added Pitch Controls Section
- Updated Inspect Pitch Cable Tension
- Renamed Elevator Rigging to Inspect Pitch Rigging

### 1.1.3 Issue C1

#### Chapter 2

- Updated Special Tools list

#### Chapter 3

- Updated Condition and 100-Hour Inspection-Parachute list
- Updated Condition and 100-Hour Inspection-Forward Fuselage and Hull
- Updated Condition and 100-Hour Inspection-AFT Fuselage and Empennage
- Updated Condition and 100-Hour Inspection-Fuel Systems
- Updated Condition and 100-Hour Inspection-Engine and Propeller
- Updated Condition and 100-Hour Inspection-Avionics and Electronics

#### Chapter 6

- Updated chapter description
- Added Grease Coil Pack Connections task
- Added Inspect, Repair, and Secure Wiring Harness with Signs of Chafing
- Added Wing Tip Lights description
- Added Remove Wing Tip Lights
- Added Install Wing Tip Lights
- Added Dome Light Switch description
- Added Remove Dome Light Switch
- Added Install Dome Light Switch
- Added Battery description
- Added Charge Battery task
- Added Battery Diagnostic task
- Added Fuel Pressure Sensor description
- Added Remove Fuel Pressure Sensor
- Added Install Fuel Pressure Sensor

#### Chapter 9

- Added Flight Controls description
- Added Flight Controls diagram
- Added Inspect Rudder Pedal Adjustment Mechanism

- Added Inspect Control Cables (Acceptable Conditions)
- Updated Aileron Cable Tension to Inspect Roll Cable Tension
- Updated Aileron Controls to Roll Controls
- Updated Check Aileron Rigging to Inspect Roll Rigging
- Updated Aileron Rigging to Rigging Roll Controls
- Added Remove Roll Cables
- Added Install Roll Cables
- Added Roll Trim Tab description
- Added Roll Trim Tab diagram
- Added Remove Roll Trim Tab task
- Added Install Roll Trim Tab task
- Added Determine Roll Trim Tab Length task
- Added Pitch Controls description
- Added Pitch Controls diagram
- Added Pitch Trim Actuator description
- Added Pitch Trim Actuator diagram
- Added Pitch Trim Tab description
- Added Pitch Trim Tab schematic

#### Chapter 10

- Added Remove Fuel Tank
- Added Install Fuel Tank

#### Chapter 11

- Moved Rudder Rigging content to Chapter 9 and renamed Rudder to yaw
- Moved Elevator Rigging content to Chapter 9 and renamed Elevator to Pitch
- Flap Hinge Repair procedure moved to Chapter 17

#### Chapter 13

- Added Remove Instrument Cluster
- Added Install Instrument Cluster
- Renamed Flight Instrument Cluster Gauge Replacement to Replace Instrument Panel Gauge
- Added ELT description

- Added ELT diagram
- Added VHF Comm Antenna description
- Added VHF Comm Antenna diagram
- Added Annunciator Panel Description
- Added Annunciator Panel Diagnostic
- Updated Pitot-Static-AOA Leak task

#### Chapter 14

- Updated Check Landing Gear Retracted Position task
- Added Landing Gear Actuator Fuse Blown task
- Added Landing Gear Excessive Friction Check task
- Added Parking Brake Valve Replacement Procedure
- Updated step five of MLG Wheel and Axle Installation
- Updated step 2 of MLG Actuator Removal
- Updated Replace Nose Landing Gear Actuator task
- Updated name of Aft Nose Landing Gear to Aft Nose Landing Gear Door
- Added MLG Rigging and Rigging Check with Landing Gear Up
- Added Landing Gear description
- Added Landing Gear diagram
- Updated Check Landing Gear Extended Position

#### Chapter 16

- Updated Exhaust System
- Updated Engine description
- Updated Install Engine
- Updated Remove Engine
- Updated Engine Mount Inspection task
- Added Fuse Box description
- Added Remove Fuse Box and Regulators task
- Added Install Fuse Box and Regulators task
- Added Inspect Regulator Wires task



- Moved Remove Engine Cowlings from chapter three
- Added Install Engine Cowlings
- Renamed Throttle Control Proper Travel and Security to Install Throttle Control Proper Travel and Security

#### Chapter 17

- Moved Flap Actuator content to Chapter 9
- Moved Flap Gas Strut content to Chapter 9
- Flap Hinge Repair procedure moved from Chapter 11

#### Chapter 19

- Added IPS Description
- Added Parachute Package Removal
- Added Parachute Package Installation
- Added Harness Installation
- Added Extraction Rocket Removal
- Added Extraction Rocket Installation
- Added Arming Extraction Rocket task
- Added Activation System Installation task
- Updated Activation System Installation

### 1.1.4 Issue C

#### All Chapters

- Complete layout overhaul

#### Chapter 2

- Update to the logbook instructions
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

#### Chapter 3

- Updated Maintenance Schedules
- Updated Condition Inspections and 100-Hour Inspections
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

#### Chapter 4

- Updated task specific training in Use of VHB Tape for Installations and Repairs

#### Chapter 7

- References to torque stripe deleted from manual

#### Chapter 8

- Added Center Console Bucket procedure
- Added Throttle Handle and Bezel procedure

#### Chapter 9

- Added Measure Pitch Trim Tab Wear procedure
- Added Aileron Cable Tension Check
- Added Elevator Cable Tension Check
- Added Rudder Cable Tension Check

#### Chapter 11

- Updated Check Rudder Rigging
- Added Rudder Rigging procedure
- Added Elevator Rigging procedure
- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

#### Chapter 12

- Added Measure Horizontal Tail Tip Anti Rotation Pin Wear procedure

#### Chapter 14

- Wheel and Brake System Maintenance updated
- Update task specific training in Nose Landing Gear Actuator Replacement

#### Chapter 16

- Updated Engine Mount Installation and Removal
- Added Spinner Dome removal and installation
- Updated Engine Coolant Replacement

#### Chapter 17

- Replace wording of “wing lock cross pins” with “wing locking pins”
- Updated Flap Hinge Repair
- Updated task specific training in Aileron Cable Maintenance and Tensioning
- Change title of Aileron Cable Maintenance and Tensioning to Aileron Rigging

## Chapter 19

- Changed Complete Aircraft Parachute to ICON Parachute System (IPS)

## 1.2 List of Effective Chapters

The table below shows the current effective chapters and dates in this revision of the handbook (see previous section). The applicable maintenance manual revision is listed below the table for reference.

Chapter	Change	Date
1. REVISIONS	C3	28 February 2019
2. GENERAL	C3	28 February 2019
3. INSPECTIONS	C2	28 February 2019
4. STRUCTURES	C2	28 February 2019
5. DOORS AND WINDOWS	C0	20 April 2018
6. ELECTRICAL SYSTEM	C2	28 February 2019
7. ENVIRONMENTAL CONTROL (UTILITY SYSTEMS)	C1	28 February 2019
8. EQUIPMENT AND FURNISHINGS	C1	28 February 2019
9. FLIGHT CONTROLS	C3	28 February 2019
10. FUEL SYSTEM	C2	28 February 2019
11. FUSELAGE AND VERTICAL TAIL	C1	28 September 2018
12. HORIZONTAL TAIL	C1	28 February 2019
13. INSTRUMENTS (AND AVIONICS)	C2	28 February 2019
14. LANDING GEAR	C2	28 February 2019
15. PLACARDS AND MARKINGS	C1	28 February 2019
16. PROPULSION	C2	28 February 2019
17. WING	C2	28 February 2019
18. WING FOLD MECHANISM	C0	20 April 2018
19. ICON PARACHUTE SYSTEM (IPS)	C1	28 September 2018

Chapter	Change	Date
20. STRUCTURAL REPAIR	C0	20 April 2018
21. PAINTING AND COATINGS	C0	20 April 2018
22. FEEDBACK FORMS	C0	20 April 2018

Applicable to Maintenance Manual Revision: Issue C3

RELATED INFORMATION:

"Manual Revisions" on page 1-14

## 1.3 Manual Revisions

This MM utilizes chapter-level revision control. Each page of the manual contains a revision indication in the lower, inside corner. Revision indicators are consistent throughout an entire chapter, but may vary from chapter to chapter.

A major release of the manual is called an "Issue". The issue letter and its effective date are listed on the title page of the manual using a letter code; for example, "Issue A".

Updates and changes to the manual are called "Revisions" and are designated using an issue prefix followed by a number; for example, "Revision A2" is the second revision of "Issue A". These revisions are listed on the Record of Manual/Handbook Revisions page near the front of the handbook. Owners are responsible for keeping this page updated when handbook revisions are issued by ICON.

Updates and changes to chapters of the manual are called "Changes" and are designated using the issue prefix followed by a number; for example, "Change A0" is the original release of a chapter in Issue A and "Change B3" is the third revision of a chapter in Issue B of the entire manual. The "List of Effective Chapters" near the front of the manual documents the applicable chapter "Changes" associated with a given manual revision.

Revisions to this Maintenance Manual will be distributed to all owners of relevant aircraft registered with ICON. Distribution will be of the entire manual with any necessary instructions. Revisions should be examined immediately upon receipt.

It is the responsibility of the owner to maintain this MM in a current state when it is being used for operational purposes. Owners should contact ICON whenever the revision status of their MM is in question.

### RELATED INFORMATION:

"Record of Maintenance Manual Revisions" on page 1-2

"List of Effective Chapters" on page 1-12

# Chapter 2

## GENERAL

Introduction .....	2-3
Symbols .....	2-4
General Safety Information .....	2-5
Maintenance Terminology and Abbreviations .....	2-6
Organization and Structure of This Manual .....	2-9
Maintenance System for Light Sport Aircraft .....	2-11
Introduction .....	2-11
Line Maintenance, Repairs, and Alterations .....	2-11
Heavy Maintenance, Repairs, and Alterations .....	2-11
Overhaul .....	2-11
Maintenance Levels of Certification .....	2-11
Task-Specific Training .....	2-12
Minimum Levels of Certification .....	2-12
Level of Certification Hierarchy .....	2-12
Major Repairs and Alterations .....	2-13
Safety Directives and Continued Operational Safety .....	2-14
Instructions for Reporting Safety of Flight Concerns .....	2-14
Maintenance Schedules .....	2-16
Logbook Instructions .....	2-17
Sources to Purchase Parts .....	2-18
Disposable Replacement Parts .....	2-19
Special Tools .....	2-20
Weight and Balance Information .....	2-23
Equipment List .....	2-24
Tire Inflation Pressures .....	2-25
Engine Specifications .....	2-26
Approved Engine Oils and Capacity .....	2-27
Approved Fuel Grades and Specifications .....	2-28
Approved Engine Coolant Grades and Capacity .....	2-29
Fasteners .....	2-30
General .....	2-30
Flat Washers .....	2-30
Lock Washers .....	2-30

Locking Nuts .....	2-30
Castle Nuts .....	2-31
Clevis Pins .....	2-31
Cotter Pins .....	2-31
Threaded Taper Pins .....	2-31
Safety Wire .....	2-31
Turnbuckles .....	2-31
Threadlocker .....	2-31
Fabricated Cable Assemblies .....	2-32
Torque Procedure and Fastener Torque Values .....	2-32
Transportation by Trailer .....	2-34



## 2.1 Introduction

This maintenance manual provides the standard maintenance and inspection procedures for the ICON A5. Repairs, alterations, and maintenance tasks included within this manual are considered *minor*. Task instructions are valid for any A5 unless a specific Model Year (MY) is called out in the task title. Any repairs, alterations, or maintenance tasks not listed in this manual are considered *major*. Major repairs, alterations, or maintenance tasks require coordination and approval from ICON Aircraft *before any work commences*. The minimum levels of certification to perform any minor task are also listed in this manual.

**NOTE:** *The information in this manual is the best available at the time of publication. As modifications for product improvement may have occurred, your aircraft could have a different configuration than described. Contact ICON Aircraft if your hardware does not match the instructions in this manual.*

This manual was developed in compliance with the ASTM standard F2483, Maintenance and the Development of Maintenance Manuals for Light Sport Aircraft.

## 2.2 Symbols

This handbook uses the following symbols and definitions to emphasize important information.

**WARNING:** *Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.*

**CAUTION:** *Indicates a potentially hazardous situation or instruction which, if not avoided or followed, may result in minor or moderate injury or severely damage the aircraft.*

**NOTE:** *Indicates supplementary information that may be needed to fully complete or understand an instruction.*

## 2.3 General Safety Information

The personal safety and health of operators are of primary importance to ICON Aircraft. Maintenance personnel should comply with regulatory standards and best practices for occupational safety.

It is important to take adequate precautions regarding the use of any hazardous chemicals specified in your work area. Material Safety Data Sheets (MSDS) for chemicals specified in this manual are available online.

Maintenance personnel are responsible for keeping themselves informed of workplace hazards, participating in training, following all applicable safety policies and procedures, and promptly reporting hazards and accidents to their supervisor.

Maintenance personnel should pay particular attention to the ergonomic set up of work stations, desks, computers and other daily use equipment. If you spend long periods of time using a computer, other office equipment, or perform any type of repetitive motion during the course of your work, be sure to change your position at least once every half hour to avoid eye strain, back and neck strain, and repetitive injuries such as carpal tunnel.

Remember to always use proper lifting techniques which may include: using leg muscles rather than back muscles, team lifts and inspect items to be moved for protruding nails, slivers, sharp edges, etc., before handling.

## 2.4 Maintenance Terminology and Abbreviations

### Condition Inspection

A detailed inspection accomplished once in the preceding 12 calendar months on a LSA in accordance with instructions provided in the maintenance manual supplied with the aircraft. The purpose of the inspection is to look for any wear, corrosion, or damage that would cause an aircraft to not be in a condition for safe operation.

### A&P

Airframe and powerplant mechanic as defined by 14 CFR Part 65 in the U.S. or equivalent certification in other countries.

### Heavy Maintenance

Any maintenance, inspection, repair, or alteration a manufacturer has specified in the maintenance manual that requires specialized training, equipment, or facilities.

### Line Maintenance

Any repair, maintenance, scheduled checks, servicing, inspections, or alterations not considered heavy maintenance that is approved by the manufacturer and is specified in the manufacturer's maintenance manual.

### LSA Repairman Maintenance (LSA-RM)

U.S. FAA-certificated repairman (light sport aircraft) with a maintenance rating as defined by 14 CFR Part 65 (or equivalent rating issued by another civil aviation authority), who is authorized to perform line maintenance on aircraft certificated as special LSA aircraft. Authorized to perform the condition and 100-hour inspections on an LSA.

### Maintenance Manual (MM)

A manual provided by an LSA manufacturer or supplier that specifies all maintenance, repairs, and alterations authorized by the manufacturer.

### Major Repair, Alteration, or Maintenance (MRA)

Any repair, alteration, or maintenance for which instructions to complete the task are excluded from the maintenance manual supplied to the consumer.

*NOTE: Any major repairs, require prior coordination and approval from ICON Aircraft before commencing work.*

### Minor Repair, Alteration, or Maintenance

Any repair, alteration, or maintenance for which instructions to complete the task are included in the maintenance manual supplied to the consumer.

### Overhaul

Maintenance, inspection, repair, or alterations that are only to be accomplished by the original manufacturer or a facility approved by the original manufacturer of the product.

### Overhaul Facility

Facility specifically authorized by the aircraft or component manufacturer to overhaul the product originally produced by that manufacturer.

**Repair Facility**

Facility specifically authorized by the aircraft or component manufacturer to repair the product originally produced by that manufacturer.

**Voltage Standing Wave Ratio (VSWR)**

The measure of how efficiently radio-frequency power is transmitted from a power source, through a transmission line, into a load.

**100-Hour Inspection**

Same as a *condition inspection*, except the interval of inspection is 100 hours of operation instead of once in the preceding 12 calendar months. This inspection is utilized when the LSA is flown 100 hours before the preceding 12 calendar months have passed from the last Condition or 100-Hour Inspection.

**A&P**

Airframe and Powerplant

**BRS**

Ballistic Recovery Systems

**CG**

Center of Gravity

**IPS**

ICON Parachute System

**COS**

Continued Operational Safety

**ECU**

Engine Control Unit

**EGT**

Exhaust Gas Temperature

**ELT**

Emergency Locator Transmitter

**INOP**

Inoperable

**EMS**

Engine Management System

**LH**

Left Hand

**LSA**

Light Sport Aircraft

**LSA-RM**

Light Sport Aircraft – Repairman Maintenance

**MLG**

Main Landing Gear

**MM**

Maintenance Manual

**MRA**

Major Repair and/or Alteration

**NLG**

Nose Landing Gear

**PIM**

Parachute Installation Manual

**RF**

Radio Frequency

**RH**

Right Hand

**TED**

Trailing Edge Down

**TEL**

Trailing Edge Left

**TER**

Trailing Edge Right

**TEU**

Trailing Edge Up

**VSWR**

Voltage Standing Wave Ratio

## 2.5 Organization and Structure of This Manual

Understanding the organization and structure of this MM is key to properly using it.

This General chapter describes helpful information and provides information about the *maintenance system* or framework within which the A5 operates.

The Inspections chapter gives a list of the inspection tasks developed for the A5. In many cases these inspection tasks are useful in completing condition and 100-hour inspections or to verify the proper completion of a maintenance task.

The following chapters provide inspection, maintenance, repair, or alteration tasks developed for the A5: Structures, Doors and Windows, Electrical System, Environmental Control (Utility Systems), Equipment and Furnishings, Flight Controls, Fuel System, Fuselage and Vertical Tail, Horizontal Tail, Instruments (and Avionics), Landing Gear, Placards and Markings, Propulsion, Wing, Wing Fold Mechanism, ICON Parachute System, Structural Repair, and Paintings and Coatings.

The Feedback Forms chapter provides additional reference information.

Each task provided in this MM is structured using the following general format.

### **Type of Maintenance**

The specific type of maintenance (Line, Heavy, or Overhaul).

### **Level of Certification**

This provides the qualifications of an individual who may complete the task (Owner/Pilot, LSA-RM, or A&P).

### **Task-Specific Training Required**

Yes/No

### **Special Tools Needed**

A list of any tools needed that are not included in a common mechanic's toolbox. If there are none, then it will say 'None'.

### **Parts Needed**

Parts that will be needed to perform the task. If there are none, then it will say 'None'.

### **Task Instructions**

A list of steps or instructions to perform the task.

### **Aircraft System and Number**

ICON Aircraft system name and number.

### **Consumables**

A list of any consumables items needed to perform the task. If there are none, then it will say 'None'.

### **Verification Method**

The means of inspecting or verifying that the task was accomplished properly.

Following this task format, tasks may include a Related Information section which provides one or more references to other helpful tasks or reference material.

## RELATED INFORMATION:

- "Line Maintenance, Repairs, and Alterations" on page 2-11
- "Heavy Maintenance, Repairs, and Alterations" on page 2-11
- "Overhaul" on page 2-11
- "Maintenance Levels of Certification" on page 2-11



## 2.6 Maintenance System for Light Sport Aircraft

### 2.6.1 Introduction

Maintenance, inspection, repair, and alteration tasks described in this manual are considered *line maintenance*, and the authorizations to perform each individual task can be found in each individual task. There are no *heavy maintenance* tasks defined in this MM for the A5.

### 2.6.2 Line Maintenance, Repairs, and Alterations

Line maintenance, repairs, and alterations may be performed by the holder of an LSA repairman certificate with either an inspection or maintenance rating or by an A & P mechanic. Some simpler tasks are authorized for completion by an Owner/Pilot. In these cases, the person performing the work must hold at least a Sport Pilot certificate.

#### RELATED INFORMATION:

"Organization and Structure of This Manual" on page 2-9

### 2.6.3 Heavy Maintenance, Repairs, and Alterations

There are no heavy maintenance, repairs, or alterations defined in this maintenance manual at this time. These tasks require specialized training, equipment, or facilities.

#### RELATED INFORMATION:

"Organization and Structure of This Manual" on page 2-9

### 2.6.4 Overhaul

Only ICON Aircraft or an entity approved by ICON Aircraft is authorized to perform overhauls. Overhaul tasks are not defined in this maintenance manual.

#### RELATED INFORMATION:

"Organization and Structure of This Manual" on page 2-9

"Condition and 100-Hour Inspection – Paperwork" on page 3-26

"Overhaul Maintenance" on page 3-8

### 2.6.5 Maintenance Levels of Certification

The following section defines the minimum levels of maintenance personnel certification for the A5. Also defined is the hierarchy of those certification levels and task-specific training.

## RELATED INFORMATION:

"Organization and Structure of This Manual" on page 2-9

### 2.6.5.1 Task-Specific Training

Task-specific training is specified for those tasks where specialized knowledge of the A5 is required in order to accomplish the task properly. All maintenance must be performed by factory-authorized personnel who have completed ICON training.

At this time, there are no maintenance, repair, or alteration tasks for the A5 which require task-specific training.

### 2.6.5.2 Minimum Levels of Certification

A minimum level of certification is specified for each task in the manual. The levels are Owner/Pilot, LSA Repairman Maintenance (LSA-RM), or A&P mechanic. In addition to these levels of certification, any task may also require task-specific training.

Owner/Pilot – Items that can be expected to be completed by a responsible owner who holds at least a Sport Pilot certificate but who has not received any specific authorized training.

LSA Repairman Maintenance (LSA-RM) – Items that can be expected to be completed on a SLSA by a responsible individual, who holds an FAA repairman certificate (light sport aircraft) with a maintenance rating.

A&P – Items that can be expected to be completed by a responsible individual who holds a mechanic certificate with airframe and/or powerplant rating.

Task-Specific – Items that can be expected to be completed by a responsible individual who holds the required level of certification (Owner/Pilot, LSA-RM, A&P) and *in addition* has received task-specific training to perform the task.

### 2.6.5.3 Level of Certification Hierarchy

Each task requires definition of a level of certification. There is, however, no inherent hierarchy between these levels. The following listing defines a hierarchy **for the purposes of this A5 maintenance manual** that gives the limitations of each level.

- Owner/Pilot can perform only the tasks explicitly listed with the Owner/Pilot.
- LSA-RM can perform tasks that list any of Owner/Pilot or LSA-RM.
- A&P can perform tasks that list any of Owner/Pilot, LSA-RM, or A&P.
- For any of the above, if a task indicates 'Yes' for the task-specific requirement, then the training specified is required *in addition* to the level of certification (e.g. LSA-RM + task-specific).

**Table 2-1:** Summary table of level of certification hierarchy. In any instance, task-specific training is in addition to level of certification.

Task Says	Owner/Pilot Can Do The Task	LSA-RM Can Do The Task	A&P Can Do The Task
Owner/Pilot	X	X	X
LSA-RM		X	X
A&P			X

### 2.6.6 Major Repairs and Alterations

By definition, major maintenance, repairs, and alterations are not addressed in this MM. Any task not defined within this MM is considered a major repair or alteration (MRA) and requires prior approval from ICON Aircraft.

If ICON Aircraft agrees to provide an MRA, then ICON will evaluate the change against the requirements of the applicable ASTM standards for compliance and issue a completed MRA Form that includes detailed instructions for completion and an affidavit that the alteration will still result in an aircraft that meets the requirements of the ASTM standards. MRAs will require logbook entries and may also require updates to the Pilot's Operating Handbook.

## 2.7 Safety Directives and Continued Operational Safety

ICON Aircraft's continued operational safety program, ICA003321 ICON Continued Operational Safety (COS) program, is in place to monitor the safety of the A5 fleet, assess any known or potential safety of flight issues, and determine the method necessary of alerting owners/operators of these issues and the corrective action if necessary. The notice of corrective action can be done by three methods: by means of a safety directive, service bulletin, or a notification.

A safety directive/alert requires immediate action from the owner/operator. Safety directives/alerts are similar to Airworthiness Directives, however they are not approved by the FAA. They are required by the owner/operator to stay within compliance of the ASTM design specification. Service Bulletins recommend future action and a notification provides important information. Notifications do not necessarily recommend future action but are primarily for the release of continued airworthiness information.

When corrective actions to the aircraft are required the following information will be included, either directly or by reference, within the notice.

- A list of the tools needed to accomplish the task
- A list of parts needed to perform the task
- The type of maintenance
- The level of certification required to perform the task
- Detailed instructions and diagrams needed to perform the task
- Method to test/inspect to verify

ICON will attempt to contact affected owners using the contact information on file. This information can be obtained by contacting ICON Customer Service and support via the following channels:

ICON Aircraft, Inc.

Attention: Customer Service and Support

2141 ICON Way

Vacaville, California 95688

01 855-FLY-ICON (359-4266)

Email: support@iconaircraft.com

Please be sure to keep your contact information up-to-date. The Appendices contain a Change of Address/Ownership form for this purpose.

### RELATED INFORMATION:

"Instructions for Reporting Safety of Flight Concerns" on page 2-14

"Feedback Forms" on page 22-2

### 2.7.1 Instructions for Reporting Safety of Flight Concerns

Aircraft owners are responsible for reporting Continued Operational Safety concerns to ICON Aircraft. To notify ICON Aircraft of operational or other safety concerns, fill out a copy of the 'Continued Operational Safety Reporting Form' found at the back of this manual and mail or email to ICON Aircraft. You can also contact ICON using the phone numbers or email address shown at the bottom of the form.

## RELATED INFORMATION:

"Safety Directives and Continued Operational Safety" on page 2-14

## 2.8 Maintenance Schedules

The A5 has various components and systems that require periodic inspections, maintenance, or overhaul. The maintenance schedules listed in the Related Information below summarize the required work by calendar time and operational hours.

### RELATED INFORMATION:

- "Introduction" on page 3-3

- "Interval Maintenance – Operational Hours" on page 3-4

- "Interval Maintenance – Calendar Intervals" on page 3-5

- "Overhaul Maintenance" on page 3-8

## 2.9 Logbook Instructions

Per 14 CFR Part 43, a maintenance record entry must include the following information.

- 1) A description of the work performed.
- 2) The date of completion of the work performed.
- 3) The name and certificate number (if applicable) of the person performing the work and returning the aircraft to service.

Complete a review for applicable Notifications (Notifications, Service Bulletins, Safety Directives/Alerts) before completing maintenance tasks.

Per FAA Exemption 10829 for the ICON A5, the logbook entry for any maintenance performed on the aircraft must reference the exemption. The exemption states the following:

*“Any person who performs maintenance or preventive maintenance on the ICON model A5 aircraft under the provisions of this exemption must include a reference to this exemption in the maintenance record entry required to be made under the provisions of 14 CFR § 43.9 or 43.11, as applicable.”*

See logbook entry example below.

**Table 2-2:** Example logbook entry referencing FAA Exemption 10829.

Name, Certificate Number and Type	Date	Inspection and Description	Signature
Brian Anderson, LSA-RM Cert #123456	2015-05-12	IPS removed, serviced, and reinstalled per BRS PIM (ref. FAA Exemption 10829)	

## 2.10 Sources to Purchase Parts

Parts can be acquired from ICON Aircraft.

ICON Aircraft, Inc.

2141 ICON Way

Vacaville, CA 95688

+001 707-564-4000

RELATED INFORMATION:

<https://www.iconaircraft.com>

[ownersupport@iconaircraft.com](mailto:ownersupport@iconaircraft.com)

"Disposable Replacement Parts" on page 2-19



## 2.11 Disposable Replacement Parts

The following lists the disposable replacement parts and source of supply for the ICON A5. All items may be purchased through ICON Aircraft.

Item	Part Number	Source
Main Gear Tires	DTAB3D3	Desser Tires
Nose Gear Tire	ICA013789	Desser
Brake Pads	ZEA01	Beringer
Coarse Fuel Filter	FX 375-M	Andair
Fine Fuel Filter	874060	Rotax/Kodiak
Air Filter	RU-0800	K&N Filters
Spark Plugs	Per Rotax Maintenance Manual	Rotax/Kodiak
Oil Filter	825-012	Rotax/Kodiak
Main ELT Battery E	E-04.0	ACK Technologies Inc.
ELT Remote Control Panel Indicator Battery	Eveready PX28L 6 volt Lithium battery	Various
ELT Audio Annunciator	Duracell CR-2,3	Various

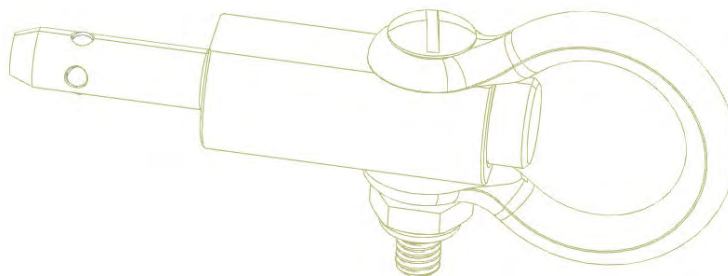
### RELATED INFORMATION:

"Sources to Purchase Parts" on page 2-18

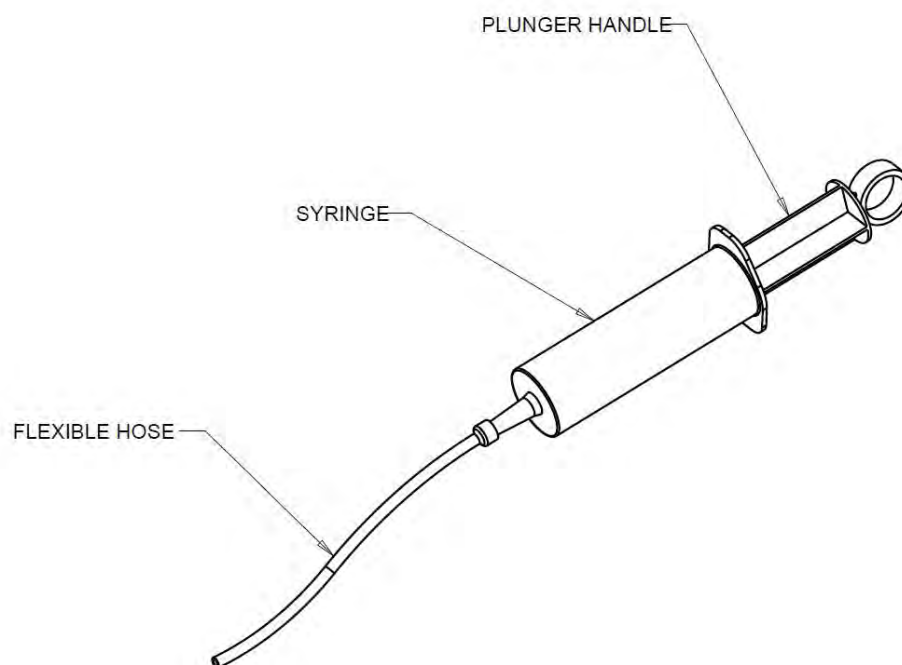
## 2.12 Special Tools

The following lists the special tools needed for inspection and maintenance of the A5. All items may be purchased through ICON Aircraft.

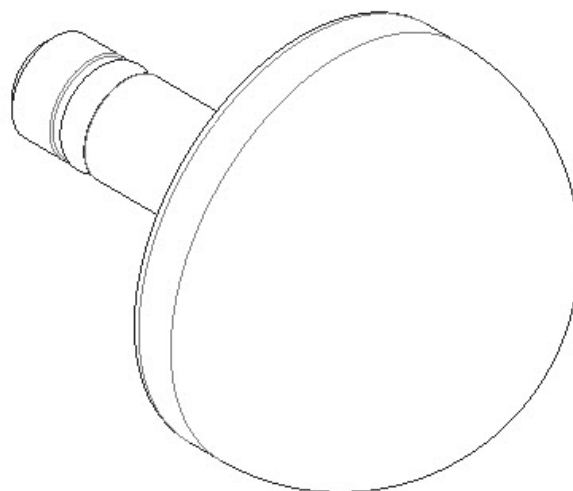
Tool	ICON Part Number
Tie-Down Adapter	QRP9C0405
Fuel Sumping Tool	ICA009753
Wing Jack Point Adapter	ICA009750
Nose Landing Gear Rigging Tool	ITL-1714
Eyeball Vent Tool	ITL-1563
Engine Hoist End Effector	ITL-902
Gas Spring Compression Tool	ITL-971
Rudder Deflection Template	ICA013055
Trim Actuator	ICA006821



**FIGURE 2-1**  
TIE-DOWN ADAPTER – QRP9C0405



**FIGURE 2-2**  
FUEL SUMPING TOOL – ICA009753.



**FIGURE 2-3**  
WING JACK POINT ADAPTER – ICA009750.

The following list of special tools may be needed to complete the inspection and maintenance of the A5.

- Borescope
- Tensionmeter
- Water Rudder Travel Protractor

- Rudder Travel Protractor
- Digital Protractor
- Densimeter
- Glycol Tester
- Caliper
- Micrometer
- Calibrated Torque Wrench
- Digital Level with 0.1° resolution
- 3M<sup>®</sup> Adhesion Promoter 111
- 14.125±.125 VDC Charge with current capability of at least 4.8 amperes
- DIA .250 Rig Pin
- DIA .1875 Rig Pin
- Plastic Syringe
- Flexible PVC Tubing
- ITW Tacky Tape
- Inclinator

## 2.13 Weight and Balance Information

The A5 weight and balance can be established using two different methods. The first (and more accurate) method uses three jack points – one on each wing and one under the tail skid. The second method uses the aircraft on its landing gear – two main wheels and the nose wheel. In both methods, the aircraft is leveled by use of a built-in bubble level located under the passenger floorboard panel.

For details on determining the empty weight and balance by either of these methods, see Related Information below. For a current status of empty weight and balance, see the Pilot's Operating Handbook.

**NOTE:** *Any maintenance work that affects weight and balance must be completed by conducting an empty weight and balance measurement and then updating the Weight and Balance Record in the Pilot's Operating Handbook.*

### RELATED INFORMATION:

"Weight and Balance – General" on page 3-27

"Empty Weight and CG Measurement While on Gear" on page 3-30

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

## 2.14 Equipment List

At this time, the ICON A5 has no equipment, options, or maintenance procedures allowed that affect weight and balance. Any modifications to the aircraft equipment require the prior approval of ICON Aircraft. Should such work be necessary, ICON will supply any needed weight and balance information and instructions through the Major Repair and Alteration (MRA) process, which is part of the A5 maintenance program.

## 2.15 Tire Inflation Pressures

Each of the tires on the aircraft shall be inflated to 45 psi.

Each landing gear assembly is equipped with one wheel and tire.

The main landing gear tires are size 5.00-5, 6-ply aircraft tires with a maximum load rating of 1,285 lb<sub>f</sub>.

The nose gear tire is size 10-3.50x4, 4-ply aircraft tire with a maximum load rating of 460 lb<sub>f</sub>.

### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Landing Gear" on page 3-14

## 2.16 Engine Specifications

The ICON A5 uses a Rotax 912 iS Sport (912iS 2) engine. The engine is a four-cylinder, horizontally opposed, normally aspirated engine configured for a fixed-pitch propeller. Following are some of the specifications and features of the engine.

### FEATURES

4-stroke, horizontally opposed, spark ignition engine, single central camshaft, overhead valves
Liquid cooled cylinder heads
Ram air cooled cylinders
Dry sump forced lubrication
Fully redundant electronic engine management system
Propeller drive via integrated gearbox with mechanical shock absorber and overload clutch
Oil tank
Electric starter (12 V, 0.8 kW)
Fuel pump assembly

### SPECIFICATIONS

Performance specifications given at sea level, standard conditions.

Parameter	Value
Bore	3.31 in
Stroke	2.40 in
Displacement	82.5 in <sup>3</sup>
Compression Ratio	10.8:1
Propeller Shaft Rotation	Counter clockwise looking at propeller shaft side of engine
Takeoff Power	100 hp at 5,800 RPM (maximum 5 minutes)
Maximum Continuous Power	93 hp at 5,500 RPM
Idle Speed	Minimum 1,400 RPM



## 2.17 Approved Engine Oils and Capacity

### Approved Oil Specifications

Viscosity – SAE 10W-40 multi-grade

API classification SG or higher

Registered brand heavy-duty four-stroke motorcycle oil with gear additives

**CAUTION:** Do not use oils containing friction modifier additives as this could result in clutch slippage.

**CAUTION:** Do not use conventional a.d. (ashless dispersant) aircraft oils.

**CAUTION:** Do not use oils intended primarily for diesel engines.

**CAUTION:** Do not use any oil additives.

**WARNING:** Oil changes are necessary more frequently when using AVGAS vs MOGAS (See Related Information).

### Recommended Oil

Shell brand AeroShell Sport Plus 4

### Oil Capacity

0.94 US gallons (approximate)

**NOTE:** The difference between the max and the min marks is approximately 0.5 quarts (0.47 l).

### RELATED INFORMATION:

"Engine Oil Check and Replenish" on page 16-77

"Engine Coolant Replacement" on page 16-57

## 2.18 Approved Fuel Grades and Specifications

### Total Fuel Capacity

20.2 US gallon

### Total Usable Fuel

20 US gallon

### Approved Types of Fuel

Unleaded automotive fuel with up to 10% maximum ethanol content meeting ASTM D4814 with minimum RON 95 (minimum Anti-Knock Index 91).

Anti-Knock Index is  $(RON+MON)/2$ . RON is Research Octane Number and MON is Motor Octane Number.

### Mixing Fuel Type

The A5 fuel system is designed to allow mixing of automotive fuel and AVGAS.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Operational Inspection" on page 3-25

## 2.19 Approved Engine Coolant Grades and Capacity

### Approved Coolant

Conventional coolant based on ethylene glycol with 50% water content.

Coolants with a 50:50 mix of antifreeze and distilled water.

**NOTE:** *The antifreeze should be a low silicate and nitrite-free formula.*

**NOTE:** *The following list is based on the experiences and local recommendation by the authorized distributors. Coolant brands, with same designation, may vary from one to the other region. Please contact the local distributor for a recommendation.*

Brand	Description
BASF™	Glysantin Protect Plus/G48
CASTROL™	Antifreeze All-Climate
CASTROL™	Antifreeze Anti-Boil
OMV™	OMV Coolant Plus
PETROL™	Antifreeze Concentrate/Antifreeze G 11
PRESTONE™	DEX-COOL extended life
PRESTONE™	50/50 pre-diluted DEX-COOL extended life
SHELL™	DEX-COOL
SHELL™	Antifreeze Concentrate
TEXACO™	Havoline Extended Life Antifreeze
VELVANA™	FRIDEX G49
YACCO™	LR-35

### Coolant Capacity

0.93 US gallons (approximate)

#### RELATED INFORMATION:

"Cooling System Inspection" on page 16-54

"Engine Test Run" on page 16-7

## 2.20 Fasteners

### 2.20.1 General

The A5 primarily uses stainless steel fasteners throughout the airframe for corrosion resistance. Countersunk Phillips fasteners are used in structural locations. Other hardware is AN aircraft hardware, but of the stainless variety. To the extent possible, all bolts and screws shall be mounted with the heads higher than the rest of the bolt/screw. This helps ensure that even in the event of a nut coming off, gravity will still help hold the bolt/screw in place. All bolts and screws shall have at least one thread protruding from the associated nut or nutplate. A calibrated torque wrench shall be used on any fastener where the torque target is critical.

### 2.20.2 Flat Washers

The maximum total washer combination is four washers. The maximum number of washers under the head or nut is two. If the minimum thread protrusion through the nut cannot be achieved due to variations in material thickness, a thin washer may be used. Thin washers may also be used in place of standard washers when castellated nuts cannot be aligned for safetying. A washer shall also be used if rotation of the bolt head would cause wear or damage to the underlying structure. If these washers are not sufficient to ensure appropriate thread engagement or avoid thread bottoming, a different grip length bolt or screw shall be used.

### 2.20.3 Lock Washers

When using bolts or screws into blind tapped holes (no nuts), Nord-Lock washers shall be used unless specified otherwise. Nord-Lock washers shall be installed per the Nord-Lock Washer Information Document. Bolts and screws using Nord-Lock washers shall be torqued per this document.

Other lock washers (split, internal star, external star) are not recommended and shall only be used on primary or secondary structures where failure will not result in damage or danger to aircraft or personnel.

### 2.20.4 Locking Nuts

Locking nuts shall be used in all primary and secondary structure bolted or screwed non-blind hole connections.

Bolts and screws shall be torqued per FAA Advisory Circular (AC) 43-13.1B, Chapter 7, Table 7-1 and section 7-40 for either shear or tension applications. Torque shall be applied to the nut, with the bolt head held motionless if at all possible. Torque required to run the nut down to a seated condition shall be added to the required torque for the application and the TOTAL torque shall be the final requirement.

Any Stainless Steel bolts and screws shall use MS21043 or MS21046 Stainless Steel Silver Plated locking nuts to avoid galling threads.

Lock nuts shall not be reused.

### **2.20.5 Castle Nuts**

Castle nuts shall be installed per AC43-13.1B, Chapter 7, Table 7-1 and section 7-40, paragraph (f).

### **2.20.6 Clevis Pins**

Clevis Pins shall be installed per AC43-13.1B, Chapter 7, section 7-102. A flat washer shall be used under the cotter pin.

### **2.20.7 Cotter Pins**

Cotter pins shall be used with Clevis pins and/or Castle nuts as required. Cotter pins shall be installed per AC43-13.1B, Chapter 7, sections 7-103 and 7-127.

### **2.20.8 Threaded Taper Pins**

Taper pins shall be used in joints which carry shear loads and where no play is allowable. Taper pins shall be installed per AC43-13.1B, Chapter 7, sections 7-101, using AN975 washers and castle nuts with cotter pins or locking pins.

Taper pin holes shall be reamed using the appropriate taper pin reamers to a depth necessary to ensure washer and nut compression on the taper pin.

Any taper pins not meeting inspection criteria shall be removed and replaced.

### **2.20.9 Safety Wire**

Safety wire shall be used on bolts, nuts or fittings as required. Safety wire shall be installed per AC43-13.1B, Chapter 7, sections 7-122 through 7-126.

### **2.20.10 Turnbuckles**

Turnbuckles shall be installed and inspected per AC43-13.1B, Chapter 7, sections 9 and 10.

Any turnbuckles not meeting inspection criteria shall be removed and replaced.

### **2.20.11 Threadlocker**

Threadlocker (e.g. LOCTITE<sup>®</sup>, Permatex, etc.) shall only be used if Nord-Lock washers are not specified. Threadlocker shall be installed per the manufacturer's instructions for the particular threadlocker specified. Surface to have threadlocker applied shall be clean and free of grease, oil or contaminants. Surfaces shall be cleaned with isopropyl alcohol prior to threadlocker application.

Threadlocker shall only be used within its applicable shelf life, if any, as defined by the manufacturer.

## 2.20.12 Fabricated Cable Assemblies

Swage-type terminals, including Nicopress® products, shall be installed per AC43-13.1B, Chapter 7, section 7-148.

**NOTE:** *Specifications within specific inspection or maintenance tasks in this manual take precedence over the general specifications given here.*

## 2.20.13 Torque Procedure and Fastener Torque Values

Nuts and bolts shall be tightened to the Final Torque values given in the tables below. Nuts and bolts shall be tightened to the Final Torque values given in the table below, unless otherwise specified. In general, shear torques are used throughout the aircraft so as to limit clamping loads that could damage composite materials. Torque shall be applied to the nut, with the bolt head held motionless if possible. The torque required to run the nut down to a seated condition (run-on or friction drag torque) shall be added to the base torque for the application and the Final Torque shall be the final requirement.

Final Torque = Base Torque Specification + Run-On Torque

**NOTE:** *Jam nuts (e.g. AN316 checknuts) should be torqued between the Min and Max values in Table 2-3 (no run-on allowance).*

**Table 2-3:** Torque values for bolt and lock nut. All values given are in-lb<sub>f</sub>.

Thread	MIN Torque Given by AC43.13- 1B for Shear Type	MAX Torque Given by AC43.13- 1B for Shear Type	New Fasteners, No Lubrication		Reused Locknuts, Lubrication Required		
			Run-On Torque	Final Torque	Run-On Torque	Final Torque	30% of New Fastener Run-On Torque
#8-36	7	9	4.3	12.3	4.1	12.1	1.3
#10-32	12	15	7.3	20.8	4.4	17.9	2.2
1/4-28	30	40	8.9	43.9	8.4	43.4	2.7
5/16-24	60	85	10.2	82.7	10.8	83.3	3.0
3/8-24	95	110	15.2	117.7	18.2	120.7	4.6
7/16-20	270	300	N/A	N/A	37.0	322.0	11.1
1/2-20	290	410	N/A	N/A	48.5	398.5	14.6
9/16-18	480	600	N/A	N/A	60.0	600.0	18.0
5/8-18	600	780	N/A	N/A	105.0	795.0	31.5

**Table 2-4:** Torque values for bolt and locking nutplate. All values given are in-lb<sub>f</sub>.

Thread	MIN Torque Given by AC43.13-1B for Shear Type	MAX Torque Given by AC43.13-1B for Shear Type	Nutplates, Lubrication Required	
			Run-On Torque	Final Torque
#8-36	7	9	5.4	13.4
#10-32	12	15	13.0	26.5
1/4-28	30	40	18.7	53.7
5/16-24	60	85	17.0	89.5

**NOTE:** *Specifications within specific inspection or maintenance tasks in this manual take precedence over the general specifications given here.*

## 2.21 Transportation by Trailer

While the A5 with its folding wings and removable tail tips is designed for trailering, it is not designed to be towed on any trailer. The suspension on ICON's A5 trailers has been designed, prototyped, tested, revised, and retested to ensure that the shock and vibration from the trailer stay below the design limits for all components of the airplane. Trailering the airplane on a trailer other than the one ICON designed for the A5 will have unknown and possibly severe consequences for the airworthiness of the A5 and is therefore prohibited.



# Chapter 3

## INSPECTIONS

Introduction .....	3-3
Maintenance Schedules .....	3-4
Interval Maintenance – Operational Hours .....	3-4
Interval Maintenance – Calendar Intervals .....	3-5
Overhaul Maintenance .....	3-8
Condition Inspections and 100-Hour Inspections .....	3-9
Condition and 100-Hour Inspection – Aircraft Identification and General .....	3-10
Condition and 100-Hour Inspection – Wings .....	3-11
Condition and 100-Hour Inspection – Fuel Systems .....	3-13
Condition and 100-Hour Inspection – Landing Gear .....	3-14
Condition and 100-Hour Inspection – Forward Fuselage and Hull .....	3-16
Condition and 100-Hour Inspection – Parachute .....	3-18
Condition and 100-Hour Inspection – Aft Fuselage and Empennage .....	3-19
Condition and 100-Hour Inspection – Engine and Propeller .....	3-21
Condition and 100-Hour Inspection – Avionics and Electrical .....	3-23
Condition and 100-Hour Inspection – Operational Inspection .....	3-25
Condition and 100-Hour Inspection – Paperwork .....	3-26
Weight and Balance – General .....	3-27
Aircraft Dimensional Data .....	3-27
Aircraft Reference Locations .....	3-27
Operating Weights and Loading .....	3-27
CG Limits and Station Information .....	3-28
Center of Gravity Limits .....	3-29
Empty Weight and CG Measurement .....	3-30
Empty Weight and CG Measurement While on Gear .....	3-30
Empty Weight and CG Measurement While on Jackpoint Scales .....	3-32
General Inspection Tasks .....	3-34
Removal and Installation of Inspection Panels and Fairings .....	3-34
Cockpit Panels Removal and Installation .....	3-36
Headliner Removal .....	3-37
Headliner Installation .....	3-38
Seat Belt Inertia Reel Removal .....	3-39
Seat Belt Inertia Reel Installation .....	3-40

Baggage Floor Removal .....	3-41
Baggage Floor Installation .....	3-42
Baggage Sidewall Panel Removal .....	3-43
Baggage Sidewall Panel Installation .....	3-45
Cockpit Floor Board Removal .....	3-46
Cockpit Floor Board Installation .....	3-47
Cockpit Sidewall Panel Removal .....	3-48
Cockpit Sidewall Panel Installation .....	3-49
Seat Back Removal .....	3-50
Seat Back Installation .....	3-51
Seat Pan Removal .....	3-52
Seat Pan Installation .....	3-53
Manual Tap Test .....	3-55
Structures .....	3-57
Basic Structural and Firewall Inspection .....	3-57
System Specific Inspections .....	3-59

## 3.1 Introduction

This chapter gives a list of all of the inspection tasks developed for the A5. In many cases, these inspection tasks are useful in condition inspections or to verify the proper completion of a maintenance task.

### RELATED INFORMATION:

"Maintenance Schedules" on page 2-16

"Condition Inspections and 100-Hour Inspections" on page 3-9

## 3.2 Maintenance Schedules

The A5 has various components and systems that require periodic inspections, maintenance, or overhaul. The maintenance schedules listed in the Related Information below summarize the required work by calendar time and operational hours.

### RELATED INFORMATION:

"Introduction" on page 3-3

"Interval Maintenance – Operational Hours" on page 3-4

"Interval Maintenance – Calendar Intervals" on page 3-5

"Overhaul Maintenance" on page 3-8

### 3.2.1 Interval Maintenance – Operational Hours

The inspections in the table below must be completed at the hour intervals listed. Maintenance is completed at every 50, 100, etc. hours of flight, unless noted.

Inspection Item	Maintenance	Interval (Flight Hours)						Initials
		Initial 25	50	100	200	500	1000	
Engine	Condition and 100-Hour Inspection (See "Condition Inspections and 100-Hour Inspections" on page 3-9.)			X <sup>1</sup> Or every 12 mo.				
Engine	Engine Line Maintenance (see Rotax Manual)	X	X			X	X	
Engine	Spark Plugs Remove and Replace (See "General Engine Line Maintenance" on page 16-26.)				X			
<b>NOTE:</b> If using leaded fuel (e.g. AVGAS) more than 30% of the time, See "Condition Inspections and 100-Hour Inspections" on page 3-9.								

Inspection Item	Maintenance	Interval (Flight Hours)						Initials
		Initial 25	50	100	200	500	1000	
Engine	Oil Change if using leaded fuel (i.e. AvGas more than 30% of the time). (See "Engine Oil Check and Replenish" on page 16-77.)		X					
	<b>NOTE:</b> If using primarily MoGas, See "Condition Inspections and 100-Hour Inspections" on page 3-9.							
Engine	Check/Clean Oil Tank (See "General Engine Line Maintenance" on page 16-26.)				X			
	<b>NOTE:</b> If using leaded fuel (e.g. AVGAS) more than 30% of the time, See "Condition Inspections and 100-Hour Inspections" on page 3-9.							

1. The same inspection (See "Condition Inspections and 100-Hour Inspections" on page 3-9.) is required every 100 flight hours or every 12 calendar months, dependent on which comes first. On completion of the condition inspection or 100-hr inspection both the operation hours and calendar time are reset.

Maintenance Comments:

|  
|  
|  
|  
|

#### RELATED INFORMATION:

"Maintenance Schedules" on page 2-16

"Condition Inspections and 100-Hour Inspections" on page 3-9

"General Engine Line Maintenance" on page 16-26

### 3.2.2 Interval Maintenance – Calendar Intervals

The inspections in the table below must be completed at calendar intervals. Maintenance timing restarts for each item at the last completion. For example, the 2-year maintenance is to be completed every two years.

Interval (Calendar Years)								
Inspection Item	Maintenance	1	2	5	6	7.5	15	Initials
Per Condition Inspections	Condition Inspection and 100-hr Inspection (See “Condition Inspections and 100-Hour Inspections” on page 3-9.)	X <sup>1</sup> or every 100-hrs						
Avionics	Transponder Inspection/Test per FAR 91.413 (See “Transponder” on page 13-8.)		X					
Weight & Balance Statement	Perform a weight and balance procedure on the aircraft and record the results in the aircraft's on-board POH (See “Empty Weight and CG Measurement” on page 3-30.)		X					
	<b>NOTE:</b> A new weight and balance is required every two years. This measure is needed in order to monitor possible water intrusion, absorption, and the collection of sand or other foreign matter in the aircraft. Compare any weight and balance with the previous one and assess the reason for any differences.							
Engine	Replace hoses (See Rotax Manual)			X				
Brakes	Replace brake discs (See “Wheel and Brake System Maintenance” on page 14-18.)				X			

Interval (Calendar Years)								
Inspection Item	Maintenance	1	2	5	6	7.5	15	Initials
Brakes	Replace caliper pistons and piston seals (See “Wheel and Brake System Maintenance” on page 14-18.)				X			
Brakes	Replace o-ring seals, bearings, and screws of the wheels (See “Wheel and Brake System Maintenance” on page 14-18.)				X			
IPS	Soft pack, inspection and repacked. Refer to the BRS Instructions For Continued Airworthiness (ICA).					X		
IPS	Replace BRS Rocket Motor by date of expiry. Refer to the BRS Owner’s Manual.						X	

1. The same inspection (See “Condition Inspections and 100-Hour Inspections” on page 3-9.) is required every 100 flight hours or every 12 calendar months, dependent on which comes first. On completion of the condition inspection or 100-hr inspection both the operation hours and calendar time are reset.

#### Maintenance Comments:

|  
|  
|  
|  
|

## RELATED INFORMATION:

- "Maintenance Schedules" on page 2-16
- "Condition Inspections and 100-Hour Inspections" on page 3-9
- "General Engine Line Maintenance" on page 16-26
- "Wheel and Brake System Maintenance" on page 14-18
- "Transponder" on page 13-8
- "Empty Weight and CG Measurement While on Gear" on page 3-30
- "Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

### 3.2.3 Overhaul Maintenance

The overhaul maintenance in the table below must be completed at the specified hours or calendar intervals. The ICON A5 airframe has a mandatory inspection and overhaul by a factory-authorized individual every 10 years or 2,000 hours, whichever is shorter. There is no limit to the number of overhauls that may be performed and ongoing airworthiness will be governed by the recurring overhauls and inspections.

Area	Task	2000 Hours	Initials
Engine	Complete Overhaul (See Rotax Manual)	X Or 15 years, whichever is shorter	
Airframe	Inspection and Overhaul	X Or 10 years, whichever is shorter	

## Maintenance Comments:

|  
|  
|  
|  
|

## RELATED INFORMATION:

- "Maintenance Schedules" on page 2-16
- "Condition Inspections and 100-Hour Inspections" on page 3-9
- "Overhaul" on page 2-11



### 3.3 Condition Inspections and 100-Hour Inspections

This task includes the checklists that must be completed to accomplish a Condition Inspection or to accomplish a 100-Hour Inspection. The inspection is complete when all rows of the checklist contain inspector's initials in either the Satisfactory ("S") or Unsatisfactory ("U") column and the bottom of the checklist is signed. A row filled out with a satisfactory result indicates that the inspection did not uncover any unairworthy condition – though a statement in the comments section may indicate recommended improvements or maintenance that may be deferred. A row filled out with an unsatisfactory result indicates an unairworthy condition.

After completion of the inspection, the result is entered into the Aircraft Logbook – either as passing airworthy or as unairworthy. An airworthy aircraft may be returned to service. All unairworthy inspection issues must be corrected prior to returning the aircraft to service.

All data related to unairworthy inspection issues is entered into the ICON Service Request form. Contact ICON owner support if a copy of the form is needed.

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Fuel Sumping Tool – ICA009753

Jack Adapters (2) – ICA009750

Engine Compression Tester

Battery Load Tester

Digital level (inclinometer) with 0.1° resolution

**Parts Required**

None

**RELATED INFORMATION:**

"Introduction" on page 3-3

"Interval Maintenance – Operational Hours" on page 3-4

"Interval Maintenance – Calendar Intervals" on page 3-5

"Overhaul Maintenance" on page 3-8

### 3.3.1 Condition and 100-Hour Inspection – Aircraft Identification and General

#### AIRCRAFT IDENTIFICATION

Type & S/N	A5 S/N:	Engine Model & S/N	
N Number		Engine Total Time	
Airframe Total Time		Propeller Model & S/N	
Owner		Propeller Total Time	
Date			

#### Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory

	S	U	Comments
Notifications (Notifications, Service Bulletins, Safety Directives/Alerts)			
Airworthiness displayed, registration aboard			
Aircraft identification plate installed			
'LIGHT SPORT' placard installed			
POH/Weight and Balance current and aboard			

### 3.3.2 Condition and 100-Hour Inspection – Wings

<b>Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory</b>			
	<b>S</b>	<b>U</b>	<b>Comments</b>
Remove Inspection panels (4) (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)			
General inspection of the exterior/interior wing			
Aileron horn condition			
Aileron hinges proper attachment, no binding			
Aileron push rods, rod ends, bellcranks good condition, hardware secure			
Roll controls properly rigged (See "Inspect Roll Rigging" on page 9-17.)			
Flap hinges good condition, no binding, properly fastened, check for play side-to-side and up/down			
Flap push rods, rod ends, bellcranks good condition, hardware secure (See "Inspect Flap Rigging" on page 9-65.)			
Flaps properly rigged (See "Inspect Flap Rigging" on page 9-65.)			
Flap bellcrank stops secure			
Wing skins delaminate/voids (Visually check. If anomalies found, perform tap test. See "Manual Tap Test" on page 3-55.)			
Inspect all bonded joints, for cracks and delaminations (See "Wing Bonded Joints, Cracks, or Delaminations" on page 17-6.)			
Wing fold mechanism secure Check wavy springs and U-joint attach rivets			
Check for excess play in wing pins (See "Inspect Wing Pins" on page 18-7.)			
Pitot tubes and lines good condition and connections secure			

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
AOA ports clear (left wing)			
Inspect wiring harness routing through wing and fold tube, security to spar			
Check wing electrical connector condition			
Check wingtip lights function and seal (See "Installation of Wing Tip Lights" on page 6-55.)			
Check that hardware is secure			
Reinstall inspection panels (4) (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)			

## RELATED INFORMATION:

- "Inspect Roll Rigging" on page 9-17
- "Inspect Flap Rigging" on page 9-65
- "Installation of Wing Tip Lights" on page 6-55
- "Inspect Wing Pins" on page 18-7
- "Manual Tap Test" on page 3-55

### 3.3.3 Condition and 100-Hour Inspection – Fuel Systems

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Fuel lines check for chafing/signs of age/security/condition			
Fuel tank leak check (inspect near low fuel level sensor, access plate)			
Fuel tank secure (inspect rubber strap isolators and support isolators)			
Sump fuel tank for water or debris			
Fuel cap and neck secure			
Fuel pump leak check/security			
Check fuel valve for smooth operation and security			
Clean coarse fuel filter (Replace if damaged)			
Replace fine fuel filter			
Perform leak check			
Fuel tank vent system clear (See "Clear Fuel Tank Vent Line" on page 10-35.) (See "Clear Filler Neck" on page 10-10.)			

#### RELATED INFORMATION:

"Clear Fuel Tank Vent Line" on page 10-35

"Clear Filler Neck" on page 10-10

### 3.3.4 Condition and 100-Hour Inspection – Landing Gear

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Check for rigging of all components, extended and retracted (See “Check Landing Gear Extended Position” on page 14-5.)(See “Check Landing Gear Retracted Position” on page 14-6.)			
Test/check indicator lights			
Perform retraction/extension, note and investigate anything unusual (See “Retraction and Extension Time” on page 14-12.)			
Inspect struts/trunnions/pushrods/bellcranks/actuator for attachment (See “Main Landing Gear Inspection” on page 14-8.)			
Inspect spring gear legs for cracks			
Check all bushings/bearings for wear/free play			
Check composite structure near mounts for cracks/disbonds			
Inspect tires for cracks, wear, and serviceability			
Check wheel bearings for smooth operation			
Check tire pressure (See “Tire Inflation Pressures” on page 2-25.)			
Brake pads within limits (replacement recommended)			
Check brake disks for wear (min thickness 2.8mm)			
Check radial play between disc and internal rim per Berringer Maintenance Manual			
Check brake fluid level (use only fluid that meets MIL-PRF-83282)			
Check brake hydraulic lines for leaks and security			
Test toe brake pedals for sponginess			
Check rigging of pedals (See “General Brake Line Termination Procedure” on page 14-29.)			

<b>Correct all unsatisfactory items prior to flight</b> <b>S=Satisfactory, U=Unsatisfactory</b>			
	<b>S</b>	<b>U</b>	<b>Comments</b>
Check for corrosion			

## RELATED INFORMATION:

- "Landing Gear Indicator Lights" on page 14-10
- "Main Landing Gear Inspection" on page 14-8
- "Nose Gear Inspection" on page 14-56
- "Tire Inflation Pressures" on page 2-25
- "Wheel and Brake System Maintenance" on page 14-18
- "Check Landing Gear Retracted Position" on page 14-6
- "Check Landing Gear Extended Position" on page 14-5

### 3.3.5 Condition and 100-Hour Inspection – Forward Fuselage and Hull

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Inspect bulkheads and skins for cracks			
Inspect for delaminated skin/voids (Visually check. If anomalies found, perform tap test See "Manual Tap Test" on page 3-55.)			
Inspect the security of all internal systems			
Inspect windows/canopy for cracks and fit			
Inspect canopy latching mechanism, hinges, and lock			
Check that windshield and windows are bonded to frames with no delaminations			
Inspect rudder pedals and master cylinders for security/leaks			
Check rudder pedal adjust mechanism for correct function. (See "Inspect Rudder Pedal Rigging" on page 9-83.)			
Inspect wing-to-fuselage root rib for cracks and delaminations			
Inspect systems and structure behind main bulkhead access panel (fuse box, ECU, relay panel, landing gear, water rudder actuator, and cables)			
Inspect roll cable tension. (See "Inspect Roll Cable Tension" on page 9-13.)			
Check control sticks for freedom of movement			
Check flap control operation and flap actuator/bellcrank/cables			
Check control cables, bellcranks and pulleys for corrosion, attachment, and operation (See "Inspect Control Cables" on page 9-8.)			
Ensure the cockpit instruments are properly marked			
Inspect DAC/MSC/instruments/lines for security and condition			



<b>Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory</b>			
	<b>S</b>	<b>U</b>	<b>Comments</b>
Inspect cockpit fresh air vents			
Inspect seats, seat belts/shoulder harnesses for security and condition			
Check taxi/landing lights function and condition/fogging/condensation			

## RELATED INFORMATION:

"Manual Tap Test" on page 3-55

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Inspect Roll Cable Tension" on page 9-13

"Inspect Control Cables" on page 9-8

### 3.3.6 Condition and 100-Hour Inspection – Parachute

*Treat the BRS Recovery System like a loaded gun. The rocket assembly is not armed until the handle is pulled. However, take all appropriate precautions to see that other persons cannot tamper with the BRS system while it is being inspected or serviced.*

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Ensure the detent pin with the "REMOVE BEFORE FLIGHT" flag is installed into the activation handle			
Inspect egress area for cracks/disbonds			
Check external placards for security			
Ensure the detent pin with the "REMOVE BEFORE FLIGHT" flag is installed into the activation handle.			
Check rocket for security			
Check carbon fiber Rocket Mount for security			
Inspect activation cable line from the activation handle to the rocket for cracking, kinking, or chaffing.			
Inspect activation line for color, brightness, and texture variations			
Check activation handle mounting plate for security			
Inspect activation handle for damage			
Ensure electrical connector on the back of the rocket mount bracket is properly connected and check for corrosion and chafing damage			
Ensure placards text is legible			

#### RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

"ICON Parachute System (IPS)" on page 19-1

### 3.3.7 Condition and 100-Hour Inspection – Aft Fuselage and Empennage

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Remove two inspection panels and inspect seals			
Check horizontal tail for security and condition			
Check horizontal tail tips for security and condition			
Check horizontal tail attach points for security, evidence of motion, damage			
Inspect outboard elevator and rudder attach points and verify hardware is secure			
Inspect hinges/rod ends for attachment and free play			
Inspect empennage skin for damage/delaminations Verify no lateral play on elevator			
Inspect yaw cable tension (See “Inspect Yaw Cable Tension” on page 9-80.)			
Inspect pitch cable tension (See “Inspect Pitch Cable Tension” on page 9-42.)			
Inspect pitch trim system, mounting bracket, and linkage for security, proper rigging, and wear (See “Measure Pitch Trim Tab Wear” on page 9-63.)(See “Inspect Pitch Trim Tab Rigging” on page 9-61.)			
Inspect all control cables, hinges, pulleys, pushrods, bellcranks			
Check for corrosion			
Inspect all control stops for condition and security and proper rigging			
Static ports clear			
Inspect yaw rigging (See “Inspect Yaw Rigging” on page 9-85.)			
Inspect pitch rigging (See “Inspect Pitch Rigging” on page 9-44.)			
Reinstall tail access panels			

## RELATED INFORMATION:

"Inspect Pitch Rigging" on page 9-44

"Inspect Yaw Rigging" on page 9-85

"Inspect Pitch Cable Tension" on page 9-42

"Inspect Yaw Cable Tension" on page 9-80

### 3.3.8 Condition and 100-Hour Inspection – Engine and Propeller

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Inspect engine per Rotax 912iS Maintenance Manual's maintenance schedule			
Inspect engine mount for wear, cracking, missing paint, general condition. See "Inspect Engine Mount" on page 16-30.			
Check engine mount attachments (10 places) are secure. See "Inspect Engine Mount" on page 16-30.			
Check for oil leaks from line fittings and oil tank drain valve			
Check firewall for condition and coverage (gaps between airframe and firewall)			
Check oil tank/mounting brackets for security			
Inspect oil cooler and radiator for leaks and condition			
Inspect throttle control for proper travel and security (See "Inspect Throttle Control for Proper Travel and Security" on page 16-32.)			
Check exhaust system for attachment, cracks, general condition			
Clean engine air filter			
Check cowling for cracks and condition and security of fasteners. See "Install Engine Cowlings" on page 16-16.			
Inspect propeller/hub/extension/fan per Sensenich 3B0R5 Installation Instructions, rev-a8 and verify that hardware is secure			
Remove spinner dome (See "Remove Spinner Dome" on page 16-105.)			
Torque propeller bolts per Sensenich 3B0R5 Installation Instructions, rev-a8			
Reinstall spinner dome (See "Install Spinner Dome" on page 16-106.)			
Check security and condition of engine grounding wires			

## RELATED INFORMATION:

- "Propeller Inspection" on page 16-94
- "Air Filter Cleanliness Inspection" on page 16-43
- "Clean Engine Air Filter" on page 16-46
- "Air Filter Security Inspection" on page 16-44
- "Propeller Installation Onto Engine" on page 16-103
- "Inspect Throttle Control for Proper Travel and Security" on page 16-32
- "Remove Spinner Dome" on page 16-105
- "Install Spinner Dome" on page 16-106

### 3.3.9 Condition and 100-Hour Inspection – Avionics and Electrical

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Battery, load test, free of corrosion, secure			
Perform ELT inspection/functional check per FAR 91.207. See "ELT Inspection and Function Check" on page 13-44.			
Inspect antenna mount and wiring for security			
Check wires to battery ground			
Inspect radio/leads/wires for attachment and security			
Inspect wiring instrument panel for attachment and security			
Check bilge pump for function, clear of debris. See "Check Bilge Pump Function" on page 6-42. See "Bilge Pump Debris Removal" on page 7-6.			
Check wiring harness for chafing/security/condition. See "Inspect, Repair, and Secure Wiring Harness with Signs of Chafing" on page 6-34.			
Check for wire/connector strains			
Calibrate AOA pressure transducer. See "Calibrate AOA Pressure Transducer" on page 13-25.			
Verify regulator B fan is operating with master power turned on			
Inspect regulator B wires for browning near connector. See "Inspect Regulator Wires" on page 16-84.			
Inspect regulator A wire for browning near connector. See "Inspect Regulator Wires" on page 16-84.			
Inspect Rotax fuse box for blown fuses and correct sized fuses are installed			
Inspect overhead panel for blown fuses and correct sized fuses are installed. See "Replace Overhead Console Fuses" on page 13-18.			

## RELATED INFORMATION:

- "Bilge Pump Debris Removal" on page 7-6
- "Check Bilge Pump Function" on page 6-42
- "Calibrate AOA Pressure Transducer" on page 13-25
- "Verify Altimeter Calibration" on page 13-83



### 3.3.10 Condition and 100-Hour Inspection – Operational Inspection

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Perform toolbox inventory check (no tools left in aircraft)			
Visual inspection of the engine/propeller			
All inspection panels and fairings secure			
Personnel with fire bottles standing by			
Brake system check			
Proper fuel in tank			
Engine start procedures			
Perform engine runup per POH			
Static full-power rpm check (See "Engine Test Run" on page 16-7.)			
Electrical system check			
Check annunciator panel function			
Cool down period/engine shut down (See "Engine Test Run" on page 16-7.)			
Perform oil, hydraulic, and fuel leak check			
Check overhead console fuses			

#### RELATED INFORMATION:

- "Annunciator Panel Function" on page 13-38
- "Oil Cooler and Radiator Condition Inspection" on page 16-55
- "Approved Fuel Grades and Specifications" on page 2-28
- "Inspect Engine Mount" on page 16-30
- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Basic Electrical System Inspection" on page 6-31

### 3.3.11 Condition and 100-Hour Inspection – Paperwork

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory			
	S	U	Comments
Airworthiness certificate displayed correctly			
Aircraft Registration in aircraft			
POH in aircraft			
Weight and balance statement in aircraft			
(Verification Method) Review checklists, record findings, and sign off inspection and maintenance in aircraft logbooks			

Aircraft A5 S/N \_\_\_\_\_ (serial number) has completed a Condition Inspection as detailed in the checklist above.

Aircraft Total Time: \_\_\_\_\_

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

RELATED INFORMATION:  
"Overhaul" on page 2-11

## 3.4 Weight and Balance – General

This section gives general information about aircraft dimensional data, operating weights, loading information, and CG limits.

### RELATED INFORMATION:

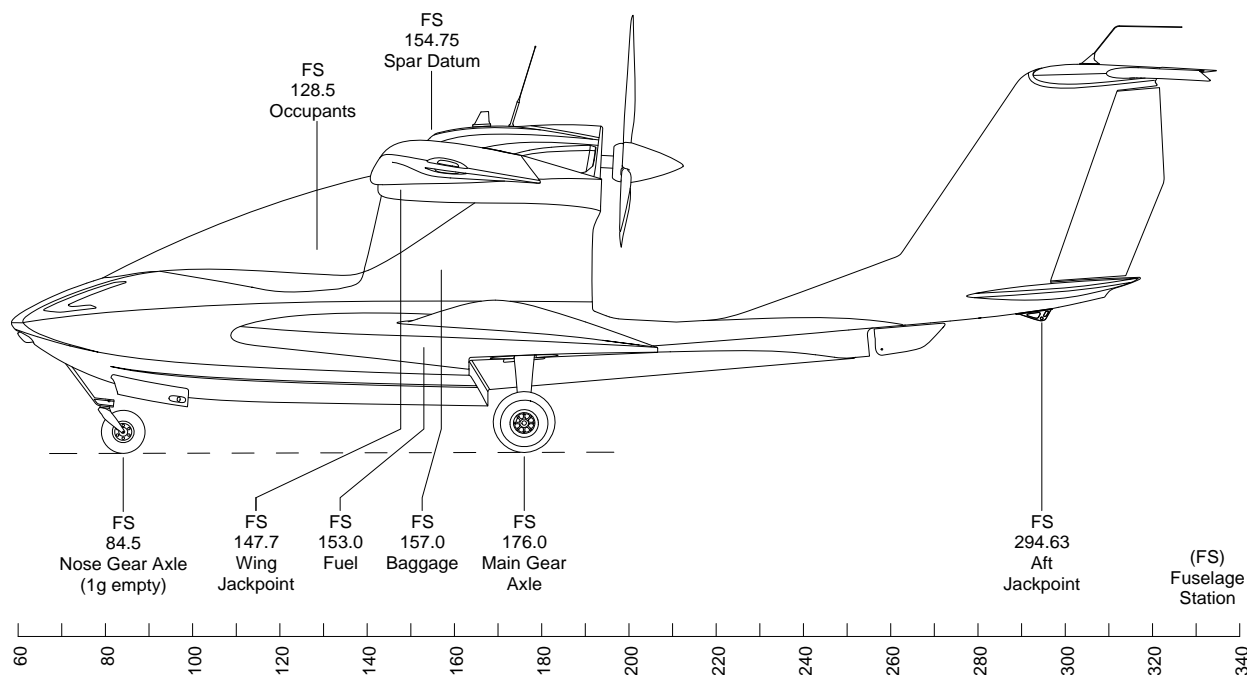
"Weight and Balance Information" on page 2-23

"Empty Weight and CG Measurement While on Gear" on page 3-30

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

### 3.4.1 Aircraft Dimensional Data

#### 3.4.1.1 Aircraft Reference Locations



**FIGURE 3-1**  
AIRCRAFT REFERENCE LOCATIONS.

### 3.4.2 Operating Weights and Loading

#### Maximum Occupant Weight

250 lb<sub>f</sub>

**NOTE:** The seats, interior, Seawings™ platforms steps areas, and safety restraints were designed to this maximum occupant weight.

**Maximum Baggage/Cargo Weight**60 lb<sub>f</sub>

**WARNING:** Loading a concentrated weight fully aft in the baggage area may cause an unsafe CG condition.

**Cargo Restraints**Are rated to hold 1,000 lb<sub>f</sub>**Minimum Number of Anchor Loops**

At least three (3) out of six (6) provided anchor loops must be used in order to safely restrain the full baggage/cargo load.

**Minimum Load Rating of Cargo Restraints (Pilot Supplied)**1,000 lb<sub>f</sub>**Full Usable Fuel Weight**120 lb<sub>f</sub> (20 US gal at 6 lb<sub>f</sub> per US gal)**Removable Side Window Weight and Fuselage Station**7.18 lb<sub>f</sub> (total both windows)

FS 127.6

**Removable Wind Deflector Weight and Fuselage Station**0.3 lb<sub>f</sub> (total both deflectors)

FS 113.4

**3.4.3 CG Limits and Station Information****Maximum Takeoff Weight (MTOW)**1,510 lb<sub>f</sub>**Reference Datum**

FS 154.75 (located on forward face of wing spar carry-through)

**Forward CG Limit**

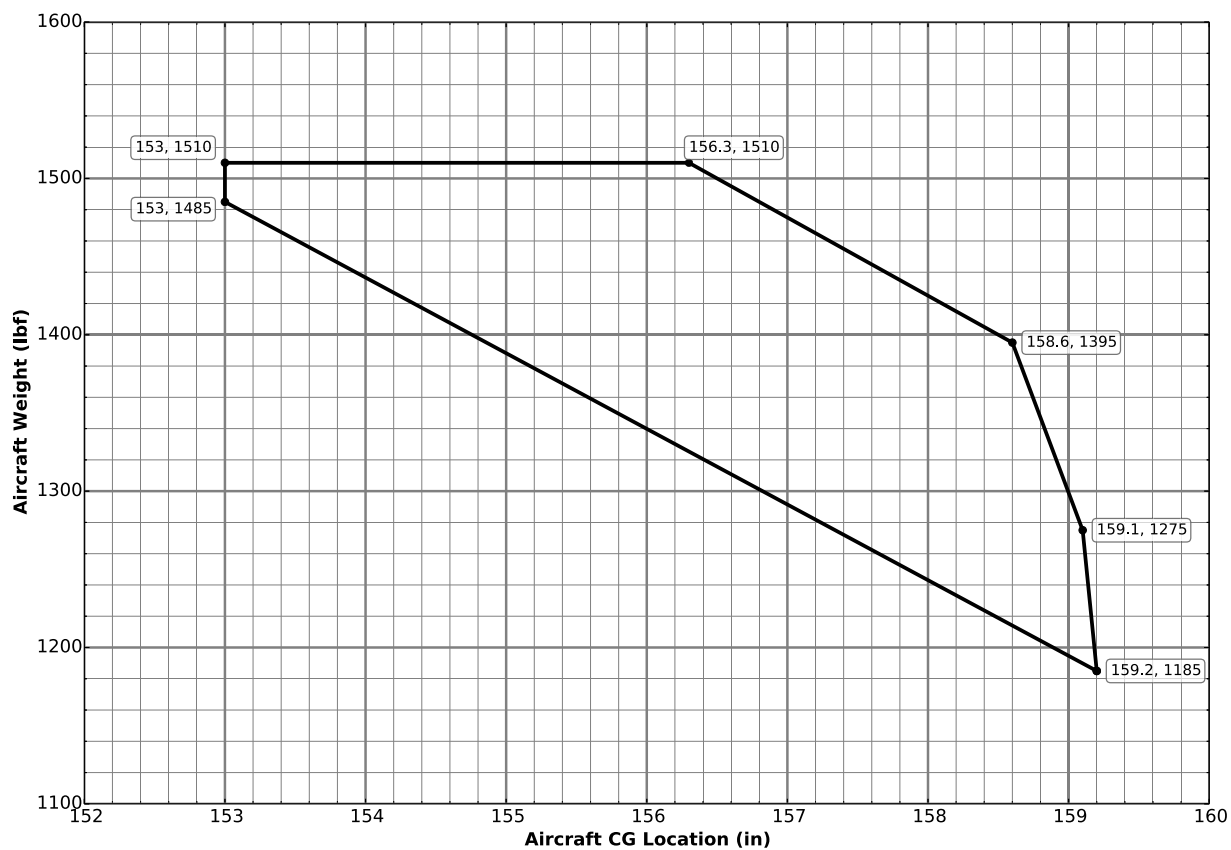
FS 153.0

**Aft CG Limit**

FS 159.2

**NOTE:** See the Weight and CG Envelope Limits figure for further details on the acceptable operating envelope.

### 3.4.4 Center of Gravity Limits



**FIGURE 3-2**  
WEIGHT AND CG ENVELOPE LIMITS

## 3.5 Empty Weight and CG Measurement

Use the following procedures to determine the weight and balance condition of the A5.

The airplane empty weight includes engine oil and coolant, unusable fuel, hydraulic brake fluid, and installed equipment for the aircraft.

The airplane must be weighed and leveled in a level area. The weighing area should also be calm or indoors to prevent wind from affecting the readings.

Check the calibration of the scales used to ensure accurate results.

Check the oil dipstick to verify at least 3.17 quarts (three liters) of oil. Service as necessary.

The difference between the max and the min marks is approximately 0.5 quarts (0.47 l).

Usable fuel must be pumped out of the fuel tank.

Retract flaps to the 0° position.

Center all controls to the neutral, static position.

Install removable side windows.

Close and latch the canopy.

Ensure all inspection covers and panels are installed.

### 3.5.1 Empty Weight and CG Measurement While on Gear

Determine the weight and balance condition of the A5 on its landing gear.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

##### Aircraft System and Number

NA

##### Consumable

None

**TASK INSTRUCTIONS:**

1. Install three platform scales under the two main gear and nose gear.
2. Shim or block up the aircraft so that the bubble level beneath the right side floorboard indicates a level condition. (See “Cockpit Floor Board Removal” on page 3-46.)
3. Record the weight readings on the scales under the nose gear, main gear RH, and main gear LH.
4. Complete the Empty Weight and CG Calculation Form and perform the calculations to obtain the total empty weight and CG position.

**VERIFICATION METHOD:**

Fill out blank cells in table below.

Scale Position	Weight, Wt (lb <sub>f</sub> )	Arm, FS (in)	Moment, M=Wt x Arm (lb <sub>f</sub> -in)
Nose Gear		84.5	
Right Main Gear		176.0	
Left Main Gear		176.0	
Total			

Total Weight (lb <sub>f</sub> )	CG Position – FS (in)

Calculate the FS location of the CG by dividing the total moment by the total weight.

Total Wt (from above)= \_\_\_\_ lbs

Aircraft CG Location, FS (Total M/Total Wt)= \_\_\_\_ in

Verify that the above readings and calculations make sense by comparing them with the Pilot's Operating Handbook records. Enter the new weight and balance information as a new baseline in the POH.

## RELATED INFORMATION:

- "Weight and Balance Information" on page 2-23
- "Weight and Balance – General" on page 3-27
- "Interval Maintenance – Calendar Intervals" on page 3-5
- "Pump Usable Fuel From Fuel Tank" on page 10-8
- "Cockpit Floor Board Removal" on page 3-46

### 3.5.2 Empty Weight and CG Measurement While on Jackpoint Scales

Determine the weight and balance condition of the A5 by using the built-in jack points.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

## TASK INSTRUCTIONS:

1. Install jack point adapters into the jack point receptacles on the underside of each wing.
2. Install load cells onto or scales beneath the aircraft jacks.

Verify that the scales are properly tared for an accurate reading.

The three jack points are: 1) one under left wing, 2) one under right wing, and 3) one under the tail skid.

3. Jack the aircraft clear of the ground, so that the bubble level on the right floor support indicates a level condition.

**NOTE:** Remove the floorboard by pulling up. (See "Cockpit Floor Board Removal" on page 3-46.) It will pop loose.



4. Complete the following worksheet.
5. Perform the calculations to obtain the required weight and balance information.

#### VERIFICATION METHOD:

Fill out blank cells in table below.

Load Cell Position	Weight, Wt (lb <sub>f</sub> )	Arm, FS (in)	Moment, M=Wt x Arm (in-lb)
Wing Left Jack Point		147.7	
Wing Right Jack Point		147.7	
Tail Jack Point		294.63	
Total			

Calculate the FS location of the CG by dividing the total moment by the total weight.

Total Wt (from above)= \_\_\_\_ lbs

FS Position of CG (Total M/Total Wt)= \_\_\_\_ in

Verify readings and calculations and compare them with the Pilot's Operating Handbook records. Enter the new weight and balance information as a new baseline in the POH.

#### RELATED INFORMATION:

- "Weight and Balance Information" on page 2-23
- "Weight and Balance – General" on page 3-27
- "Interval Maintenance – Calendar Intervals" on page 3-5
- "Main Landing Gear Inspection" on page 14-8
- "Nose Gear Inspection" on page 14-56
- "Check Landing Gear Extended Position" on page 14-5
- "Check Landing Gear Retracted Position" on page 14-6
- "Landing Gear Indicator Lights" on page 14-10
- "Main Landing Gear (MLG) Wheel and Axle Removal" on page 14-45
- "Main Landing Gear (MLG) Wheel and Axle Installation" on page 14-48
- "Pump Usable Fuel From Fuel Tank" on page 10-8
- "Cockpit Floor Board Removal" on page 3-46
- "Landing Gear Excessive Friction Check" on page 14-16

## 3.6 General Inspection Tasks

### 3.6.1 Removal and Installation of Inspection Panels and Fairings

Removing and installing the aircraft inspection panels.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

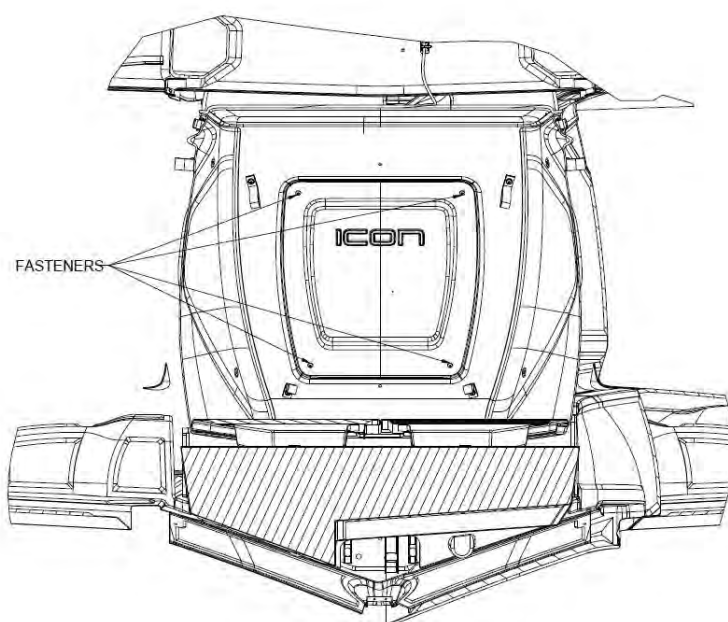
None

The A5 has the following access panels:

- Aft Bulkhead Baggage Panel in the baggage compartment.
- Water Rudder Access Panel on the empennage.
- Air Rudder Access Panel at the back of the empennage.
- 2X Horizontal Tail Tip Access Panel. There is one on each side, which is only visible with the tip removed.
- 2X Wing Fold Access Panel located on the underside of each wing near the wing fold mechanism.
- 2X Aileron Access Panel located on the underside of each wing near the aileron bellcrank mechanism.

**TASK INSTRUCTIONS:**

1. If removing the panel, loosen each of the fasteners and remove the panel. If installing the panel, place the panel in position and hand tighten each fastener (reference FAA AC 43-13).
  - Aft Bulkhead Baggage Panel – 4X Torx head 10-32 fasteners using a T20 Torx driver.
  - Water Rudder Access Panel – 8X Torx head 8-32 fasteners using a T15 Torx driver.
  - Air Rudder Access Panel – 7X Torx head 8-32 fasteners using a T15 Torx driver.
  - Horizontal Tail Tip Access Panel – 2X Torx head 6-32 fasteners (under each tip) using a T10 Torx driver.
  - Wing Fold Access Panel – 9X Torx head 8-32 fasteners (on each wing) using a T15 Torx driver.
  - Aileron Access Panel – 4X Torx head 8-32 fasteners (on each wing) using a T15 Torx driver.



**FIGURE 3-3**  
AFT BULKHEAD BAGGAGE PANEL.

**VERIFICATION METHOD:**

Visually inspect that the panel is removed or check that all the fasteners are hand tightened, as desired.

## RELATED INFORMATION:

- "Condition and 100-Hour Inspection – Forward Fuselage and Hull" on page 3-16
- "Condition and 100-Hour Inspection – Operational Inspection" on page 3-25
- "Install Flap Gas Strut" on page 9-77
- "Basic Structural and Firewall Inspection" on page 3-57
- "Main Landing Gear Inspection" on page 14-8
- "Check Landing Gear Extended Position" on page 14-5
- "Check Landing Gear Retracted Position" on page 14-6
- "Basic Electrical System Inspection" on page 6-31
- "Remove Flap Actuator" on page 9-71
- "Install Flap Actuator" on page 9-74
- "Horizontal Tail Removal" on page 12-11
- "Horizontal Tail Installation" on page 12-13
- "Removal of Water Rudder Cable" on page 11-15
- "Installation of Water Rudder Cable" on page 11-17
- "Remove Flap Gas Strut" on page 9-76
- "Air Rudder Installation" on page 12-15
- "Air Rudder Removal" on page 12-9
- "Inspect Rudder Pedal Adjustment Mechanism" on page 9-5
- "Adjust Rudder Pedal Rigging" on page 9-101
- "Re-Rigging Rudder Pedals" on page 9-103
- "Adjust Yaw Rigging" on page 9-100
- "Rigging Roll Controls" on page 9-20
- "Inspect Roll Cable Tension" on page 9-13
- "Rigging Yaw Controls" on page 9-87
- "Rigging Pitch Controls" on page 9-46
- "Condition and 100-Hour Inspection – Parachute" on page 3-18
- "Basic Parachute Inspection" on page 19-5
- "Inspect Yaw Cable Tension" on page 9-80
- "Parachute Package Inspection" on page 19-7
- "Parachute Package Removal" on page 19-8
- "Parachute Installation" on page 19-10
- "Harness Inspection Instructions" on page 19-14
- "Extraction Rocket Inspection" on page 19-23
- "Extraction Rocket Removal" on page 19-24
- "Extraction Rocket Assembly and Installation" on page 19-25
- "Arming Extraction Rocket" on page 19-29
- "Activation System Inspection" on page 19-33
- "Activation System Installation" on page 19-34
- "Harness Installation" on page 19-15
- "Main Landing Gear (MLG) Actuator Removal" on page 14-50
- "Inspect, Repair, and Secure Wiring Harness with Signs of Chafing" on page 6-34
- "Remove Fuse Box and Regulators" on page 16-86
- "Install Fuse Box and Regulators" on page 16-89
- "Inspect Regulator Wires" on page 16-84
- "Rigging Flap Controls" on page 9-67
- "Remove Horizontal Tail Tip Lock Switches" on page 12-6
- "Install Horizontal Tail Tip Lock Switches" on page 12-16
- "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 14-19

### 3.6.2 Cockpit Panels Removal and Installation

Use the following tasks to remove and install the panels located within the cockpit.

RELATED INFORMATION:

- "Rigging Roll Controls" on page 9-20
- "Inspect Roll Cable Tension" on page 9-13
- "Rigging Yaw Controls" on page 9-87
- "Rigging Pitch Controls" on page 9-46
- "Condition and 100-Hour Inspection – Parachute" on page 3-18
- "Basic Parachute Inspection" on page 19-5
- "Parachute Package Inspection" on page 19-7
- "Parachute Package Removal" on page 19-8
- "Parachute Installation" on page 19-10
- "Harness Inspection Instructions" on page 19-14
- "Extraction Rocket Inspection" on page 19-23
- "Extraction Rocket Removal" on page 19-24
- "Extraction Rocket Assembly and Installation" on page 19-25
- "Arming Extraction Rocket" on page 19-29
- "Activation System Inspection" on page 19-33
- "Activation System Installation" on page 19-34
- "Harness Installation" on page 19-15
- "Inspect, Repair, and Secure Wiring Harness with Signs of Chafing" on page 6-34

### 3.6.2.1 Headliner Removal

Use this procedure to remove the headliner.

TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove the four light control knobs from the overhead console by pulling each down and off their D-shafts.
2. Remove the overhead console bezel by pulling down on its forward edge, disengaging two spring clips. Disengage the two indexing tabs at the aft edge of the bezel, then remove the bezel.
3. Pull the right and left sides of the headliner inward, and the entire headliner forward and down to separate the hook and loop fastening and gain enough room to access the back of the headset hangers.
4. Disconnect the two headset hanger light connectors.
5. Remove the headliner.

**VERIFICATION METHOD:**

This procedure is complete when the headliner has been fully removed from the overhead console bracket.

**RELATED INFORMATION:**

"Baggage Sidewall Panel Removal" on page 3-43  
 "Baggage Sidewall Panel Installation" on page 3-45  
 "Fine Fuel Filter" on page 10-30  
 "Rigging Roll Controls" on page 9-20  
 "Inspect Roll Cable Tension" on page 9-13  
 "Rigging Yaw Controls" on page 9-87  
 "Rigging Pitch Controls" on page 9-46  
 "Remove Roll Cables" on page 9-28  
 "Remove Fuel Tank (MY18+)" on page 10-15  
 "Remove Fuel Pressure Sensor" on page 6-67  
 "Remove Fine Fuel Filter" on page 10-30

**3.6.2.2 Headliner Installation**

Use this procedure to install the headliner.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Position the headliner in rough position and connect the two headset hanger light connectors.
  2. Align and push the headliner up and into place.
  3. Install the overhead console bezel by engaging the tabs at the aft edge, then swinging the forward edge up until the spring fasteners snap into place.
  4. Push the four light control knobs onto their D-shafts.
- 

**VERIFICATION METHOD:**

Task is complete when headliner is installed.

**RELATED INFORMATION:**

"Fine Fuel Filter" on page 10-30  
"Rigging Roll Controls" on page 9-20  
"Inspect Roll Cable Tension" on page 9-13  
"Rigging Yaw Controls" on page 9-87  
"Rigging Pitch Controls" on page 9-46  
"Install Fuel Tank (MY18+)" on page 10-19  
"Install Fuel Pressure Sensor" on page 6-69  
"Install Fine Fuel Filter" on page 10-33

### 3.6.2.3 Seat Belt Inertia Reel Removal

Use this procedure to remove the seat belt inertia reel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

#### **Parts Required**

None

#### **Aircraft System and Number**

NA

#### **Consumables**

None

---

#### **TASK INSTRUCTIONS:**

1. Remove the seat belt reel cover by pulling on each corner to release retaining clips.
  2. Use a 3/8 wrench to remove the 5/16-24 locknut and washer securing the seatbelt reel to the fuselage (for easier access to nut, pull seatbelt all the way out).
  3. Remove the inertia reel.
- 

#### **VERIFICATION METHOD:**

The procedure is complete when the seat belt inertia reel has been completely removed.

#### **RELATED INFORMATION:**

"Baggage Sidewall Panel Removal" on page 3-43  
 "Rigging Roll Controls" on page 9-20  
 "Inspect Roll Cable Tension" on page 9-13  
 "Rigging Yaw Controls" on page 9-87  
 "Rigging Pitch Controls" on page 9-46

### **3.6.2.4 Seat Belt Inertia Reel Installation**

Uses this task to install the seat belt inertia reel.

#### **TASK INFORMATION:**

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**



None

**Aircraft System and Number**

NA

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Install the inertia reel onto the 5/16 stud at the lower edge of the rear window.
  2. Install the 5/16 washer and locknut, align the reel using the seat belt cover as a guide and torque the nut to 85 in-lb.
  3. Inspect the seat belt reel cover clips. If any are damaged, replace with new and use .020 safety wire to secure them.
  4. Snap the seat belt reel cover into place over the reel.
- 

**VERIFICATION METHOD:**

Procedure is complete when seat belt inertia reel is installed.

**RELATED INFORMATION:**

"Baggage Sidewall Panel Installation" on page 3-45  
"Rigging Roll Controls" on page 9-20  
"Inspect Roll Cable Tension" on page 9-13  
"Rigging Yaw Controls" on page 9-87  
"Rigging Pitch Controls" on page 9-46

### 3.6.2.5 Baggage Floor Removal

Use the following procedure to remove the baggage floor.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

Line

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

### **Aircraft System and Number**

NA

### **Consumables**

None

---

#### **TASK INSTRUCTIONS:**

1. Use a T20 Torx driver to remove the six 10-32 screws, one at each corner of the two floors.
  2. Remove the right floor, then the left floor, being careful not to lose the six associated spacers if they have come loose.
- 

#### **VERIFICATION METHOD:**

Task is complete when both right and left floors are removed.

#### **RELATED INFORMATION:**

"Baggage Sidewall Panel Removal" on page 3-43  
 "Fuel Level Sensor Replacement" on page 6-72  
 "Seat Back Removal" on page 3-50  
 "Main Landing Gear (MLG) Removal" on page 14-37  
 "Main Landing Gear (MLG) Installation" on page 14-38  
 "Rigging Roll Controls" on page 9-20  
 "Inspect Roll Cable Tension" on page 9-13  
 "Rigging Yaw Controls" on page 9-87  
 "Rigging Pitch Controls" on page 9-46  
 "Seat Belt Replacement" on page 8-3  
 "Remove Roll Cables" on page 9-28  
 "Remove Fuel Tank (MY18+)" on page 10-15

### **3.6.2.6 Baggage Floor Installation**

Use the following procedure to install the baggage floor.

#### **TASK INFORMATION:**

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

### Parts Required

None

### Aircraft System and Number

NA

### Consumables

None

### TASK INSTRUCTIONS:

1. Install the left baggage floor with its two spacers at the outboard screw locations.
2. Install the right baggage floor with its four spacers at its four corners.
3. Install the six 10-32 screws and tighten with a T20 Torx driver to 26 in-lb<sub>f</sub>.

### VERIFICATION METHOD:

The procedure is complete when the baggage floor is installed.

### RELATED INFORMATION:

"Baggage Sidewall Panel Installation" on page 3-45  
 "Fuel Level Sensor Replacement" on page 6-72  
 "Seat Back Installation" on page 3-51  
 "Main Landing Gear (MLG) Removal" on page 14-37  
 "Main Landing Gear (MLG) Installation" on page 14-38  
 "Rigging Roll Controls" on page 9-20  
 "Inspect Roll Cable Tension" on page 9-13  
 "Rigging Yaw Controls" on page 9-87  
 "Rigging Pitch Controls" on page 9-46  
 "Seat Belt Replacement" on page 8-3  
 "Install Fuel Tank (MY18+)" on page 10-19

## 3.6.2.7 Baggage Sidewall Panel Removal

Use the following task to remove the baggage sidewall panel.

### TASK INFORMATION:

#### Type of Maintenance

Line

#### Level of Certification

LSA-RM

#### Task Specific Training Required

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the headliner. (See "Headliner Removal" on page 3-37.)
  2. Remove the baggage floors. (See "Baggage Floor Removal" on page 3-41.)
  3. Use a T20 Torx driver and 3/8 wrench to remove the seat back closeout associated with the sidewall panel to be removed.
  4. Remove the seat belt reel associated with the sidewall panel to be removed. (See "Seat Belt Inertia Reel Removal" on page 3-39.)
  5. Use a small cross head screwdriver or similar tool to press the center of the plastic push-type fasteners in about 1/8 inch (don't press too far or the center button will fall out the back side). Doing so will release the expansion feature of the fastener. There are three of these fasteners in each sidewall panel.
  6. Lift the upper edge of the sidewall panel up and off the carbon retaining clips and remove from the aircraft.
- 

**VERIFICATION METHOD:**

The task is complete when the baggage sidewall panel has been completely removed.

## RELATED INFORMATION:

- "Baggage Floor Removal" on page 3-41
- "Seat Belt Inertia Reel Removal" on page 3-39
- "Headliner Removal" on page 3-37
- "Remove Fuel Bladder (MY17 Only)" on page 10-11
- "Rigging Roll Controls" on page 9-20
- "Inspect Roll Cable Tension" on page 9-13
- "Rigging Yaw Controls" on page 9-87
- "Rigging Pitch Controls" on page 9-46
- "Inspect Yaw Cable Tension" on page 9-80
- "Remove Roll Cables" on page 9-28
- "Remove Fuel Tank (MY18+)" on page 10-15

### 3.6.2.8 Baggage Sidewall Panel Installation

Use the following procedure to install the baggage sidewall panel.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

## TASK INSTRUCTIONS:

1. Locate the sidewall panel into rough position, then lift its upper edge up so as to engage the two carbon tabs.
2. Align the three holes with the underlining structure and install the three push-clip fasteners. Pushing their center buttons in flush once in place, will expand their locking feature.
3. Install the seat belt reels. (See "Seat Belt Inertia Reel Installation" on page 3-40.)

4. Install the baggage floors. (See "Baggage Floor Installation" on page 3-42.)
5. Install the headliner. (See "Headliner Installation" on page 3-38.)

#### VERIFICATION METHOD:

The task is completed when the baggage sidewall panel has been installed.

#### RELATED INFORMATION:

"Baggage Floor Installation" on page 3-42  
 "Seat Belt Inertia Reel Installation" on page 3-40  
 "Headliner Removal" on page 3-37  
 "Install Fuel Bladder (MY17 Only)" on page 10-12  
 "Rigging Roll Controls" on page 9-20  
 "Inspect Roll Cable Tension" on page 9-13  
 "Rigging Yaw Controls" on page 9-87  
 "Rigging Pitch Controls" on page 9-46  
 "Inspect Yaw Cable Tension" on page 9-80  
 "Install Fuel Tank (MY18+)" on page 10-19

### 3.6.2.9 Cockpit Floor Board Removal

The following procedure is used to remove the cockpit floor board.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

NA

##### **Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Lift up on the aft edge of each aft floor board, separating the ball and socket fasteners, then lift up on the forward edge in a similar way. Remove the aft floor board using care so as not to scratch anything.
  2. Remove each forward floor board by positioning the rudder pedals at mid-travel, then sliding the forward floor board aft and out.
- 

**VERIFICATION METHOD:**

The task is complete when the cockpit floor board has been removed.

**RELATED INFORMATION:**

"Seat Pan Removal" on page 3-52  
"Rigging Roll Controls" on page 9-20  
"Inspect Roll Cable Tension" on page 9-13  
"Rigging Yaw Controls" on page 9-87  
"Rigging Pitch Controls" on page 9-46  
"Empty Weight and CG Measurement While on Gear" on page 3-30  
"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32  
"Remove Roll Cables" on page 9-28

### 3.6.2.10 Cockpit Floor Board Installation

Use the following procedure to install the cockpit floor board.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Guide the forward "tongue" of the forward floor board through the gap under the heel strike fitting.
2. Slide the tabs in the floor's forward edge into the receiving slots in the forward floor support.
3. Place the aft floor board into position, align the four ball socket fasteners and press down until the balls engage the sockets.

**VERIFICATION METHOD:**

Task is complete when the cockpit floor board is installed.

**RELATED INFORMATION:**

"Seat Pan Installation" on page 3-53  
 "Rigging Roll Controls" on page 9-20  
 "Inspect Roll Cable Tension" on page 9-13  
 "Rigging Yaw Controls" on page 9-87  
 "Rigging Pitch Controls" on page 9-46

**3.6.2.11 Cockpit Sidewall Panel Removal**

Use the following procedure to install the cockpit sidewall panel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None



---

**TASK INSTRUCTIONS:**

1. Remove the armrest pad. It is secured with hook and loop material.
  2. Use a T15 Torx driver to remove the two 8-32 screws that were under the pad.
  3. Use a T15 Torx driver to remove the one 8-32 screw in the side panel pocket.
  4. Pulling in an inward and forward direction, pull panel out, taking care that the flange on the panel does not scratch the forward part of the seat bottom.
- 

**VERIFICATION METHOD:**

The task is complete when the steps have been completed and the cockpit sidewall panel has been removed.

**RELATED INFORMATION:**

"Seat Back Removal" on page 3-50

### 3.6.2.12 Cockpit Sidewall Panel Installation

The following procedure should be used to install the cockpit sidewall panel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

Tef-Gel®

---

**TASK INSTRUCTIONS:**

1. Inspect the area behind the panel to ensure nothing is out of place.
2. Locate the panel in position being careful not to scratch anything.

3. Install the three 8-32 attach screws with Tef-Gel<sup>®</sup> and torque each to 13 in-lb<sub>f</sub> with a T15 Torx driver.
  4. Install the armrest.
- 

**VERIFICATION METHOD:**

The task is complete when the cockpit sidewall panel has been installed.

**RELATED INFORMATION:**

"Seat Back Installation" on page 3-51

### 3.6.2.13 Seat Back Removal

Use the following procedure to remove the seat back.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove cockpit sidewall panel adjacent to the seat back to be removed. (See "Cockpit Sidewall Panel Removal" on page 3-48.)
2. Remove baggage floor adjacent to the seat back to be removed. (See "Baggage Floor Removal" on page 3-41.)
3. Use a T20 Torx driver and 3/8 wrench to remove the seat back closeout behind the seat to be removed.

4. Use a 3/8 wrench to remove the lower 10-32 bolts from seat back, one 10-32 bolt in the side of the center console and two 10-32 bolts from the outboard side of seat back.
5. Lift out seat back carefully so as not to scratch paint or damage the seat belt.

**VERIFICATION METHOD:**

The task is completed with the seat back has been removed.

**RELATED INFORMATION:**

"Fuel Level Sensor Replacement" on page 6-72  
"Cockpit Sidewall Panel Removal" on page 3-48  
"Baggage Floor Removal" on page 3-41  
"Remove Fuel Bladder (MY17 Only)" on page 10-11  
"Seat Pan Removal" on page 3-52  
"Main Landing Gear (MLG) Removal" on page 14-37  
"Main Landing Gear (MLG) Installation" on page 14-38  
"Rigging Roll Controls" on page 9-20  
"Inspect Roll Cable Tension" on page 9-13  
"Rigging Yaw Controls" on page 9-87  
"Rigging Pitch Controls" on page 9-46  
"Seat Belt Replacement" on page 8-3  
"Remove Roll Cables" on page 9-28  
"Remove Fuel Tank (MY18+)" on page 10-15

### 3.6.2.14 Seat Back Installation

The following procedure is used to install the seat back.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Place seat back into position.
2. Place seat belt into channel.
3. Install the five seat back mounting bolts finger tight, then torque all to 26 in-lbs with a 3/8 wrench.
4. Use a T20 Torx driver and 3/8 wrench to install the seat back closeout.
5. Install the baggage floors. (See "Baggage Floor Installation" on page 3-42.)
6. Install the cockpit sidewall panels. (See "Cockpit Sidewall Panel Installation" on page 3-49.)

**VERIFICATION METHOD:**

The task was completed when the seat back is installed.

**RELATED INFORMATION:**

"Fuel Level Sensor Replacement" on page 6-72  
 "Baggage Floor Installation" on page 3-42  
 "Cockpit Sidewall Panel Installation" on page 3-49  
 "Install Fuel Bladder (MY17 Only)" on page 10-12  
 "Main Landing Gear (MLG) Removal" on page 14-37  
 "Main Landing Gear (MLG) Installation" on page 14-38  
 "Rigging Roll Controls" on page 9-20  
 "Inspect Roll Cable Tension" on page 9-13  
 "Rigging Yaw Controls" on page 9-87  
 "Rigging Pitch Controls" on page 9-46  
 "Seat Belt Replacement" on page 8-3  
 "Install Fuel Tank (MY18+)" on page 10-19

**3.6.2.15 Seat Pan Removal**

The following procedure is used to remove the seat pan.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove seat back. (See "Seat Back Removal" on page 3-50.)
  2. Cut the cable tie at the top of the control stick boot, then unzip boot's zipper.
  3. Remove the aft cockpit floor board on the appropriate side. (See "Cockpit Floor Board Removal" on page 3-46.)
  4. Reaching underneath the seat pan, use a 1/2 wrench to remove the four attachment bolts and washers. The forward two bolts are AN5C5A and the aft two bolts are AN5C6A.
  5. Turn the seat pan over and remove the rudder pedal release cable by loosening the jam nut nearest the cable end and running it off the threaded end of the housing. The cable can then be freed from the seat pan by passing the cable through the slot in the cable clip, then disengaging the cable's free end from the release handle.
  6. Remove the seat pan from the aircraft.
- 

**VERIFICATION METHOD:**

The task is complete when the seat pan has been removed.

**RELATED INFORMATION:**

"Seat Back Removal" on page 3-50  
"Cockpit Floor Board Removal" on page 3-46  
"Rigging Roll Controls" on page 9-20  
"Inspect Roll Cable Tension" on page 9-13  
"Rigging Yaw Controls" on page 9-87  
"Rigging Pitch Controls" on page 9-46  
"Seat Belt Replacement" on page 8-3  
"Remove Roll Cables" on page 9-28

**3.6.2.16 Seat Pan Installation**

Use the following task to install the seat pan.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

Tef-Gel®

---

**TASK INSTRUCTIONS:**

1. Insert the rudder pedal release cable's ball end into the slot in the release handle.
  2. Pass the cable through the notch in the cable clip so that the jam nuts straddle the clip and can clamp against it.
  3. Adjust the jam nuts just to the point where there is no slack in the cable, then tighten them against the clip.
  4. Locate the seat pan in the position on the support structure and align the attachment holes.
  5. Install the mounting hardware with Tef-Gel®. The forward two bolts are AN5C5A and the aft two bolts are AN5C6A, each with an NAS1149C0563R washer under the head. Install all bolts finger tight at first, then use a 1/2 wrench to torque each to 90 in-lb<sub>f</sub>.
  6. Install the aft cockpit floor board on the appropriate side. (See "Cockpit Floor Board Installation" on page 3-47.)
  7. Zip up the control stick boot and install the cable tie around the top of the boot, snipping its free end flush with flush-cutters.
- 

**VERIFICATION METHOD:**

The task is complete when the seat pan is installed.

## RELATED INFORMATION:

- "Cockpit Floor Board Installation" on page 3-47
- "Rigging Roll Controls" on page 9-20
- "Inspect Roll Cable Tension" on page 9-13
- "Rigging Yaw Controls" on page 9-87
- "Rigging Pitch Controls" on page 9-46
- "Seat Belt Replacement" on page 8-3

### 3.6.3 Manual Tap Test

Tap testing is a manual process that uses a rod with a rounded tip or a lightweight hammer to tap the surface of the laminate. The inspector must listen to the tapping to monitor the results audibly, listening for distinct variations in the sound. A clear, sharp ringing sound is indicative of a well-bonded solid structure while a dull or thud-like sound indicates a discrepant area. The tapping rate needs to be rapid enough to produce enough sound such that any difference in sound tone is discernible to the ear.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

A small hammer

**Parts Required**

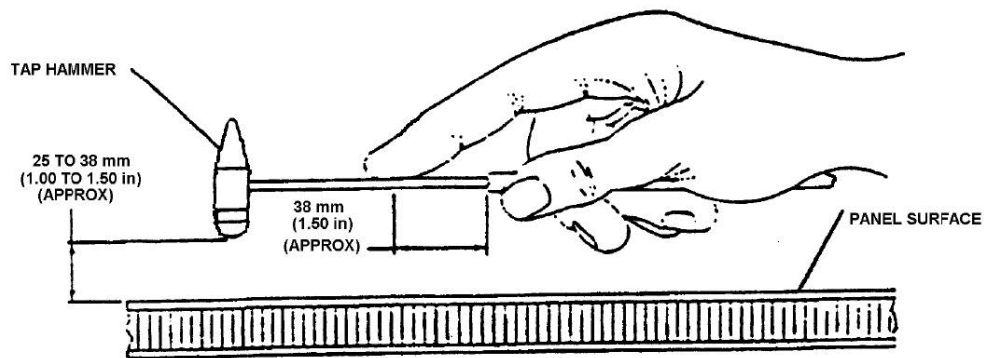
None

**Aircraft System and Number**

NA

**Consumables**

None



**FIGURE 3-4**  
MANUAL TAP TEST PROCEDURE.

#### TASK INSTRUCTIONS:

1. The inspection area should be relatively free from noise and distraction. A representative sample of the part/structure being inspected must be present and used as a reference.
2. Tapping on the part/structure must be done lightly to avoid damage during the inspection process. Recommended tapping stroke is approximately 1.0 inches to 1.5 inches.
3. Tap the reference sample lightly approximately 3-5 times per second in both the good and identified potential defect area to note the audible difference.
4. Systematically inspect the part/structure tapping approximately every 0.5-1.0 inch and returning to the reference sample periodically to note any audible difference.

#### VERIFICATION METHOD:

If a defect is found, tap outward from the center of the defect until a change in sound is detected. Mark the area of change and repeat until the entire defect area is identified. Contact ICON for repair instructions.

#### RELATED INFORMATION:

- "Condition and 100-Hour Inspection – Wings" on page 3-11
- "Condition and 100-Hour Inspection – Forward Fuselage and Hull" on page 3-16
- "Inspect Empennage Skin" on page 12-4
- "Wing Skins Delaminate/Voids" on page 17-4



## 3.7 Structures

### 3.7.1 Basic Structural and Firewall Inspection

Inspect the systems and structure behind the Aft Bulkhead Baggage Panel.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

NA

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove the Aft Bulkhead Baggage Panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
2. Structural Inspection:
  - a. Using a flashlight and viewing mirror as required, visually inspect all accessible bond lines for cracks or damage.
  - b. Inspect main bulkhead lines (fore and aft) between wing spar and fuselage skin for cracks and damage.
3. Firewall Inspection:
  - a. Using a flashlight and viewing mirror as required, visually inspect firewall for cracks along weld seams, oil stains and coolant/water stains.

#### VERIFICATION METHOD:

Verify there are no cracks or other anomalies.

## RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

## 3.8 System Specific Inspections

The inspections specific to a particular aircraft system are included in their respective system chapters and listed below for reference.

### Doors and Windows

See "Doors and Windows" on page 5-1.

### Electrical

See "Electrical System" on page 6-1.

### Environmental Control (Utility Systems)

See "Environmental Control (Utility Systems)" on page 7-1.

### Equipment and Furnishings

See "Equipment and Furnishings" on page 8-1.

### Flight Controls

See "Flight Controls" on page 9-1.

### Fuel

See "Fuel System" on page 10-1.

### Fuselage and Vertical Tail

See "Fuselage and Vertical Tail" on page 11-1.

### Horizontal Tail

See "Horizontal Tail" on page 12-1.

### Instruments and Avionics

See "Instruments (and Avionics)" on page 13-1.

### Landing Gear

See "Landing Gear" on page 14-1.

### Placards and Markings

See "Placards and Markings" on page 15-1.

### Propulsion

See "Propulsion" on page 16-1.

See "Engine" on page 16-4.

See "Propeller" on page 16-92.

### Wing

See "Wing" on page 17-1.

### Wing Fold Mechanism

See "Wing Fold Mechanism" on page 18-1.

### ICON Parachute System (IPS)

See "ICON Parachute System (IPS)" on page 19-1.



# Chapter 4

## STRUCTURES

Structures Description.....	4-2
Wing .....	4-2
Horizontal Tail .....	4-2
Seawings™ Platforms .....	4-2
Landing Gear System .....	4-2
Wheels and Brakes .....	4-3
Rinse After Salt Water Operations.....	4-4
Overall Exterior Rinse .....	4-5
Interior Rinse .....	4-6
Wing Fold Rinse .....	4-7
Horizontal Tail Tip Rinse.....	4-8
Salt-Away Rinse .....	4-9
Corrosion Inhibitor Application.....	4-10
Use of VHB Tape for Installations and Repairs .....	4-12

## 4.1 Structures Description

The A5 structures are largely carbon fiber composite construction. Because the aircraft operates on water and is approved for salt water operations, the vast majority of the fasteners and hardware are stainless steel. Parts made of aluminum or other materials are corrosion-protected by anodizing, painting, or other means.

### 4.1.1 Wing

The wing is a cantilevered design with flaps and ailerons.

The manual wing fold system allows the wings to be rotated and folded back along the fuselage, reducing the A5 width from approximately 35 feet to 8 feet for trailering and storage. The wing fold mechanism was designed to be simple, allowing one person to complete the task in just a few minutes with no tools required using the procedures described in the Pilot's Operating Handbook

**WARNING:** *The handles built into the wing tips are to be used for wing folding only. They must not be used for ground handling purposes or pushing/pulling the entire aircraft.*

### 4.1.2 Horizontal Tail

The horizontal tail tips are removable for trailering or shipping purposes. The tips have two switches – one to detect the tip is fully installed and the second to detect the latch is secured. The removable tip latches are located on the underside of the horizontal tail and are placarded to show operation.

### 4.1.3 Seawings™ Platforms

The Seawings™ platforms tips are easily replaceable by the owner in case they are damaged during docking or other operations. When removed, they decrease the aircraft width for easier ground transport or shipping.

### 4.1.4 Landing Gear System

The composite landing gear legs are lightweight and corrosion proof. The stainless steel wheel bearings are corrosion-resistant and extend time between required maintenance when used in salt water.

The self-centering, full 360° castoring nose wheel allows for ease of movement when moving the A5 on the ground and aligns the nose wheel to the correct position for gear retraction. Steering is accomplished while taxiing via differential braking actuated by toe pressure on the rudder pedals. Seaweed fins ahead of the nose landing gear door are included to minimize seaweed fowling or entanglement.

The electrically actuated, retractable landing gear system takes approximately seven seconds to retract. The left wing includes gear position mirrors used for visual confirmation of the gear position after verifying the indicator lights on the center console of the cockpit.

In the event of IPS deployment, the gear automatically extends to absorb additional energy at touchdown.

## 4.1.5 Wheels and Brakes

### Tires

Each landing gear assembly is equipped with one wheel and tire.

The main landing gear tires are size 5.00-5, 6-ply aircraft tires with a maximum load rating of 1,285 lb<sub>f</sub>.

The nose gear tire is size 10-3.50x4, 4-ply aircraft tire with a maximum load rating of 460 lb<sub>f</sub>.

### Wheel Brakes

Each main wheel is equipped with a hydraulically actuated disk brake controlled by a hydraulic cylinder mounted to the hinged top portion of each rudder pedal. These “toe brakes” can be used collectively to slow the aircraft when on the ground, or individually to steer the aircraft.

### Hydraulic Parking Brake

The braking system features a hydraulic parking brake accessible by a lever just above the floorboard on the left sidewall in front of the pilot’s seat.

To set, apply pressure to both brakes via the pedals and hold, then move the lever to the “ON” position. The pedal pressure can then be released and the parking brake will hold the set level of braking.

**CAUTION:** *The parking brake is intended only for short-term use (<10 minutes) while completing tasks such as folding/unfolding the wings. Never leave the aircraft unattended with just the parking brake set.*

To release the parking brake, move the lever to the “OFF” position.

## 4.2 Rinse After Salt Water Operations

The structure and many other parts of the A5 are constructed of corrosion proof composite materials. There are, however, many small fittings made up of nickel-plated steel, anodized aluminum, and stainless steel. These fittings are corrosion resistant but not corrosion proof. Salt water operations and continuous, or frequent, use and storage in hot, humid environments can lead to oxidation and damage of metal parts.

The Corrosion Prevention Schedule and procedures given below are the minimum preventative maintenance needed to minimize corrosion related problems. The levels represented progressively more aggressive operational environments and the associated minimum rinse procedures. More attention to rinsing operations will further improve the long-term results.

In general, the aircraft should be rinsed as soon as practical after every salt water operation. Landing in fresh water should not be considered a substitute for a thorough rinse as described in this section. Any visible salt should be rinsed off as soon as practical.

### Level 1

Aircraft used in fresh water only and stored mainly in dry, indoor environment.

### Level 2

Aircraft used mainly in fresh water with occasional salt water use and stored in a periodically humid environment.

### Level 3

Aircraft used mainly in salty or brackish water and stored near an ocean or in a hot, humid environment.

	Level 1	Level 2	Level 3
“Overall Exterior Rinse” on page 4-5	Normal aircraft wash cycle	End of each day of salt water ops	End of each day of salt water ops
“Interior Rinse” on page 4-6	Not Required	End of each month of salt water ops	End of each week of salt water ops
“Wing Fold Rinse” on page 4-7	Not Required	End of each month of salt water ops	End of each week of salt water ops
“Horizontal Tail Tip Rinse” on page 4-8	Not Required	End of each month of salt water ops	End of each week of salt water ops
“Salt-Away Rinse” on page 4-9	Not Required	Not Required	Optional for severe conditions
“Corrosion Inhibitor Application” on page 4-10	1-2 times per year	Each month	End of each week of salt water ops



## RELATED INFORMATION:

- "Overall Exterior Rinse" on page 4-5
- "Interior Rinse" on page 4-6
- "Wing Fold Rinse" on page 4-7
- "Horizontal Tail Tip Rinse" on page 4-8
- "Salt-Away Rinse" on page 4-9
- "Corrosion Inhibitor Application" on page 4-10

## 4.2.1 Overall Exterior Rinse

Rinse entire exterior of the aircraft with fresh water from a garden hose set to low pressure.

**CAUTION:** Do not use a high pressure sprayer. This could force water into bearings or pry apart joints.

**CAUTION:** Do not direct water into the pitot tube or static and AOA ports.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number****Consumables**

None

---

TASK INSTRUCTIONS:

1. Start at the top of aircraft and work down. Include areas above the normal waterline and spray line like the horizontal tail, which can be exposed to salt mist.
2. If salt water may have entered the engine inlet, direct water into the engine inlet and through the oil cooler and radiator. This water will drain out the cowling outlet and through the drain at the low point of the firewall.

3. Rinse all exposed metal parts (nose, main landing gear, control surface hinges, and water rudder) a second time.
4. (Optional) Dry the aircraft. A terry towel, micro cloth, or chamois can be used in addition to air drying.

#### VERIFICATION METHOD:

This task is done when all steps have been completed.

#### RELATED INFORMATION:

"Rinse After Salt Water Operations" on page 4-4

"Salt-Away Rinse" on page 4-9

### 4.2.2 Interior Rinse

This task describes how to perform a fresh water rinse on the interior of the aircraft, including the bilge pump, after salt water operations.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

Owner/Pilot

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

##### **Consumables**

None

#### TASK INSTRUCTIONS:

1. Remove floor boards and seat cushions. Remove nozzle attachments from garden hose. Adjust water flow to a low and gentle rate like that of water being poured from a glass.
2. Turn aircraft bilge pump on. Carefully direct flow of water over heater core, rudder pedal assemblies, rudder lateral torque tubes, and other areas with salt deposits.

3. Turn the bilge pump off once bilge empties. Blot excess water with a towel. Leave floor boards out until exposed surfaces are dry.
4. Remove the aft-most inspection panel (under the air rudder). Direct flow of water into this bay to rinse the rudder bellcrank for one minute.
5. Replace inspection panel. Run bilge pump until bilge is empty.
6. Remove the water rudder inspection panel. Direct flow of water into bay to rinse the water rudder bellcrank for one minute.
7. Replace inspection panel. Run bilge pump until bilge is empty.

**VERIFICATION METHOD:**

Task is done when all steps are complete and bilge is empty.

**RELATED INFORMATION:**

"Rinse After Salt Water Operations" on page 4-4

### 4.2.3 Wing Fold Rinse

This task describes how to perform a wing fold fresh water rinse after aircraft has been exposed to salt water.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number****Consumables**

None

**TASK INSTRUCTIONS:**

1. Unlatch and pull out wing as if to fold it, but do not rotate or walk it back to tail.

2. Set the wing tip on the ground. A suitable elevated support can also be used and this may help reduce the chance of getting water in the interior of the wing.
3. Remove nozzle attachments from garden hose and set water flow to a low gentle rate.
4. Carefully direct the flow of water over all metal parts, taking care not to get water into the interior of the wing or wing center section.
5. Use a towel to dry surfaces. Leave wings extended until all surfaces have dried.

#### VERIFICATION METHOD:

Task is done when steps are complete and all surfaces have dried.

#### RELATED INFORMATION:

"Rinse After Salt Water Operations" on page 4-4

"Wing Fold Procedure" on page 18-3

"Wing Extend Procedure" on page 18-4

### 4.2.4 Horizontal Tail Tip Rinse

This task describes how to perform a fresh water rinse of the horizontal tail tips after exposure to salt water.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

Owner/Pilot

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

##### **Consumables**

None

#### TASK INSTRUCTIONS:

1. Remove the horizontal tail tips.

2. Remove nozzle attachments from garden hose and set water flow to a low gentle rate.
  3. Direct flow of water over all metal parts on each side of the joint.
  4. Use a towel to dry surfaces.
- 

**VERIFICATION METHOD:**

Task is done when steps are complete and all surfaces are dry.

**RELATED INFORMATION:**

"Rinse After Salt Water Operations" on page 4-4

### 4.2.5 Salt-Away Rinse

Use this task to perform a Salt-Away rinse according to the corrosion prevention schedule (See Related Information).

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number****Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Use Salt-Away product per the manufacturer's instructions to rinse aircraft using overall exterior rinse procedure. (See "Overall Exterior Rinse" on page 4-5.)

**VERIFICATION METHOD:**

Task is done when overall exterior rinse procedure is completed.

## RELATED INFORMATION:

"Rinse After Salt Water Operations" on page 4-4

"Overall Exterior Rinse" on page 4-5

## 4.2.6 Corrosion Inhibitor Application

After aircraft has been rinsed, an application of a water-displacing, corrosion inhibiting oil such as Corrosion Zero, LPS 3<sup>®</sup>, or CRC Marine Heavy Duty<sup>™</sup> can be used.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

No

**Aircraft System and Number****Consumables**

None

## TASK INSTRUCTIONS:

1. Apply corrosion inhibiting oil liberally to the metal parts of the aircraft.
2. After application, wipe away any excess oil with a rag or paper towel.
3. Use the list below as an application guide.
  - a. Nose gear fork and steering pivot assembly
  - b. Nose gear aft door retraction linkages
  - c. Nose gear self-centering gas spring and cam
  - d. Nose gear retraction bellcrank and drag link
  - e. Nose gear leg pivot, forward door pivot, and spring
  - f. Main gear axle and brake caliper

**CAUTION:** *Do not apply oil to the brake disk or pads.*

- g. Water rudder hinge, sector, and retraction cable
  - h. Air rudder lower hinge and drive lugs
  - i. All HT tip joint metal parts
  - j. All wing fold metal parts
  - k. Canopy latch
- 

VERIFICATION METHOD:

The task is done when all steps are complete.

RELATED INFORMATION:

"Rinse After Salt Water Operations" on page 4-4

## 4.3 Use of VHB Tape for Installations and Repairs

VHB tape is used for installation and repair. Specifically it is used to repair vortex generators, stall strips, and flap fences.

### TASK INFORMATION:

#### Type of Maintenance

Line

#### Level of Certification

A&P

#### Task Specific Training Required

No

#### Special Tools Required

3M<sup>®</sup> Adhesion Promoter 111

#### Parts Required

None

#### Aircraft System and Number

#### Consumables

70006738424; 3M<sup>®</sup> VHB Tape 5915WF White, 1/2 in, 16 mil

70006738531; 3M<sup>®</sup> VHB Tape 5952WF White, 1/2 in, 45 mil

70006436714; 3M<sup>®</sup> VHB Tape 5915 Black, 1/2 in, 16 mil

### TASK INSTRUCTIONS:

1. Remove existing VHB from component and attaching surface. When removing a component attached with VHB tape, gradually soften and loosen the tape with isopropyl alcohol until the component can gently be worked free.  
**CAUTION:** *Do not forcibly remove the component as damage to the underlying structure could result.*
2. Clean both surfaces with mild soap and water solution and dry, then wipe surface with isopropyl alcohol and dry using a lint free cloth.
3. Apply 3M<sup>®</sup> Adhesion Promoter 111 to the cleaned mating surfaces. Allow to dry completely prior to the application of tape.
4. Locate the affected component per its associated installation drawing. Contact ICON Aircraft for the appropriate installation drawing as listed below the task steps.
5. Apply the specified VHB Tape to the affected component.



6. Join parts using approximately 15 psi of pressure. Temperature to be between 70° F (21° C) and 100° F (38° C).
7. Allow 72 hours for 100% bond strength cure (20 minutes=50%, 60 minutes=75%, 24 hours=90%).

---

### Installation Drawing References

#### ICA000500 VORTEX GENERATOR AND FENCE INSTL, FUSELAGE

- ICA009726 VORTEX GENERATOR, 2.3, INJ MLD, WHITE
- ICA009210 FENCE, FLAP ROOT, RH
- ICA009211 FENCE, FLAP ROOT, LH

#### ICA000501 STALL STRIP, INSTL

- ICA009265 STALL STRIP, TRIANGULAR XSECT, 18X.75

#### ICA000502 VORTEX GENERATOR INSTL, WING

- 05-04662 VORTEX GENERATOR, AIR WAVE

### VERIFICATION METHOD:

After the tape is fully cured, pull firmly on the component to ensure that it is bonded properly to the attaching surface.

### RELATED INFORMATION:

"Wing Trailing Edge Light Fence Replacement" on page 17-16



# Chapter 5

## DOORS AND WINDOWS

Doors and Windows Description.....5-2

## 5.1 Doors and Windows Description

Nose landing gear door (having a hinge or physical attachment/restraint) and panels (removable and/or not hinged) used for inspection and/or equipment access.

Windows include: the windshield canopy consisting of transparency, frame and removable side windows; and fixed aft windows.

Includes items such as: associated door/window structure, transparencies, hinges, latching mechanisms, handles, gas struts, seals, controls, and any integral handholds.

# Chapter 6

## ELECTRICAL SYSTEM

Description .....	6-3
Electrical System Wiring Diagrams .....	6-4
System Wiring Diagram, Bilge .....	6-5
System Wiring Diagram, Control Sticks, Pitch Trim .....	6-6
System Wiring Diagram, ELT .....	6-7
System Wiring Diagram, Engine Interface .....	6-8
System Wiring Diagram, Exterior Lights .....	6-12
System Wiring Diagram, Flaps .....	6-14
System Wiring Diagram, Fuel .....	6-15
System Wiring Diagram, GPS .....	6-16
System Wiring Diagram, Heater .....	6-17
System Wiring Diagram, Hour Meter .....	6-18
System Wiring Diagram, Instrument Lighting .....	6-19
System Wiring Diagram, Instrument Signals .....	6-20
System Wiring Diagram, Interior Lighting .....	6-21
System Wiring Diagram, Landing Gear .....	6-22
System Wiring Diagram, Mode C .....	6-25
System Wiring Diagram, Outlets .....	6-26
System Wiring Diagram, VHF .....	6-27
System Wiring Diagram, Water Rudder .....	6-29
System Wiring Diagram, Wing & Tip Switches .....	6-30
Troubleshooting .....	6-31
Basic Electrical System Inspection .....	6-31
Battery Diagnostic .....	6-32
Electrical System General Maintenance .....	6-33
Ignition Switch Replacement .....	6-33
Inspect, Repair, and Secure Wiring Harness with Signs of Chafing .....	6-34
Battery .....	6-36
Battery Description .....	6-36
Battery Diagram/Schematic .....	6-36
Maintenance Instructions .....	6-37
Battery Removal and Installation .....	6-37
Charge Battery .....	6-38

Bilge Pump.....	6-41
Bilge Pump Description.....	6-41
Bilge Pump Diagram/Schematic .....	6-41
Inspection Instructions .....	6-42
Check Bilge Pump Function .....	6-42
Bilge Pump Removal (MY17).....	6-43
Bilge Pump Installation (MY17).....	6-44
Bilge Pump Removal (MY18+) .....	6-47
Bilge Pump Installation (MY18+) .....	6-48
Wing Tip Lights.....	6-53
Wing Tip Lights Description.....	6-53
Wing Tip Lights Diagram/Schematic .....	6-53
Maintenance Instructions.....	6-53
Removal of Wing Tip Lights .....	6-53
Installation of Wing Tip Lights .....	6-55
Landing and Taxi Lights.....	6-57
Landing and Taxi Lights Description .....	6-57
Landing and Taxi Lights Diagram/Schematic .....	6-57
Maintenance Instructions.....	6-58
Remove Landing and Taxi Lights .....	6-58
Install Landing and Taxi Lights .....	6-60
Dome Light Switch .....	6-62
Dome Light Switch Description .....	6-62
Dome Light Switch Diagram/Schematic .....	6-62
Maintenance Instructions.....	6-64
Remove Dome Light Switch .....	6-64
Install Dome Light Switch .....	6-65
Fuel Pressure Sensor.....	6-67
Fuel Pressure Sensor Description.....	6-67
Fuel Pressure Sensor Diagram/Schematic.....	6-67
Maintenance Instructions.....	6-67
Remove Fuel Pressure Sensor .....	6-67
Install Fuel Pressure Sensor.....	6-69
Fuel Level Sensor .....	6-71
Fuel Level Sensor Description .....	6-71
Fuel Level Sensor Diagram/Schematic .....	6-71
Maintenance Instructions.....	6-72
Fuel Level Sensor Replacement .....	6-72

## 6.1 Description

The electrical system consists of electrical units and components which generate, control, and supply DC power for other systems or subsystems, including alternators, relays, and batteries through the secondary busses. Specifically, it powers the following systems: 12V and USB outlets, VHF radio, transponder, GPS, digital to analog converter (DAC), multiple systems controller (MSC), master contactor, heater solenoid, heater fan, regulator cooling fan, main and nose landing gear actuators, landing gear indicator, flap actuator, water rudder actuator, water rudder LED, bilge pump, bilge water sensor, bilge pump LED, instrument gauges, annunciator panel, pitch trim actuator, pitch trim indicator, taxi-landing lights, anti-collision lights (ACL) and position lights, strobe controller, interior lighting, fuel level sensor, fuel low sensor, fuel pressure sensor, and the hour meter.

The circuit protection system consists of 18 fuses, one for each system, and a 30A, non-automatic reset, circuit breaker. The fuse panel and circuit breaker are located in the overhead console. There are 4 fuse ratings: 5A, 7.5A, 15A and 20A. Also, there is a minimum of 3 spare fuses of each rating value located in the spare fuse panel in the overhead console. (See "Instruments (and Avionics)" on page 13-1.)

The aircraft is powered by a 12 VDC lead acid battery RG-25XC and the Rotax 912iS engine's internal alternator. The battery is manufactured by Concorde and has a rated capacity of 24Ah. The internal alternator of the Rotax 912iS engine has two isolated coils integrated (alternator A and alternator B). The engine voltage regulation is performed by two three-phase short rectifier regulators located on the Rotax-supplied fuse box. The output voltage for each regulator is  $14.2 \text{ V} \pm 0.3$  (from  $1000 \pm 250$  rpm). During the starting operation, the engine management system (EMS) is powered by the battery. With enough speed, alternator B takes over this function. After the EMS system check, alternator A takes over the supply of the EMS system (engine), if the switching threshold is exceeded. Alternator B is then used to power the aircraft systems and to charge the battery. Both the battery and alternator B are sharing the same electric bus.

## 6.2 Electrical System Wiring Diagrams

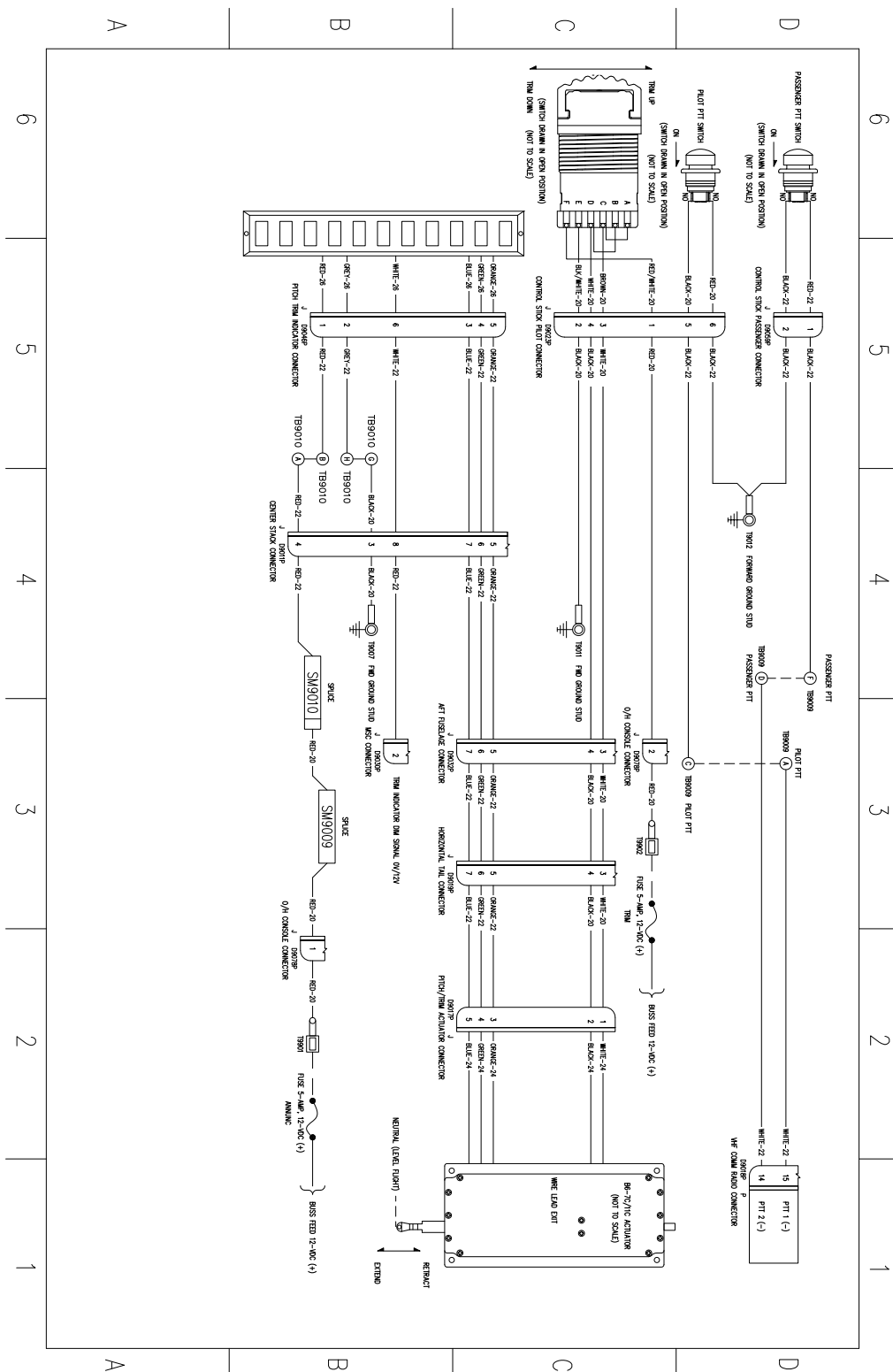
System wiring diagrams for all of the aircraft systems including control sticks, ELT, engine, lighting, flaps, fuel system, avionics and instruments, utility systems, and landing gear.



## CHAPTER 6



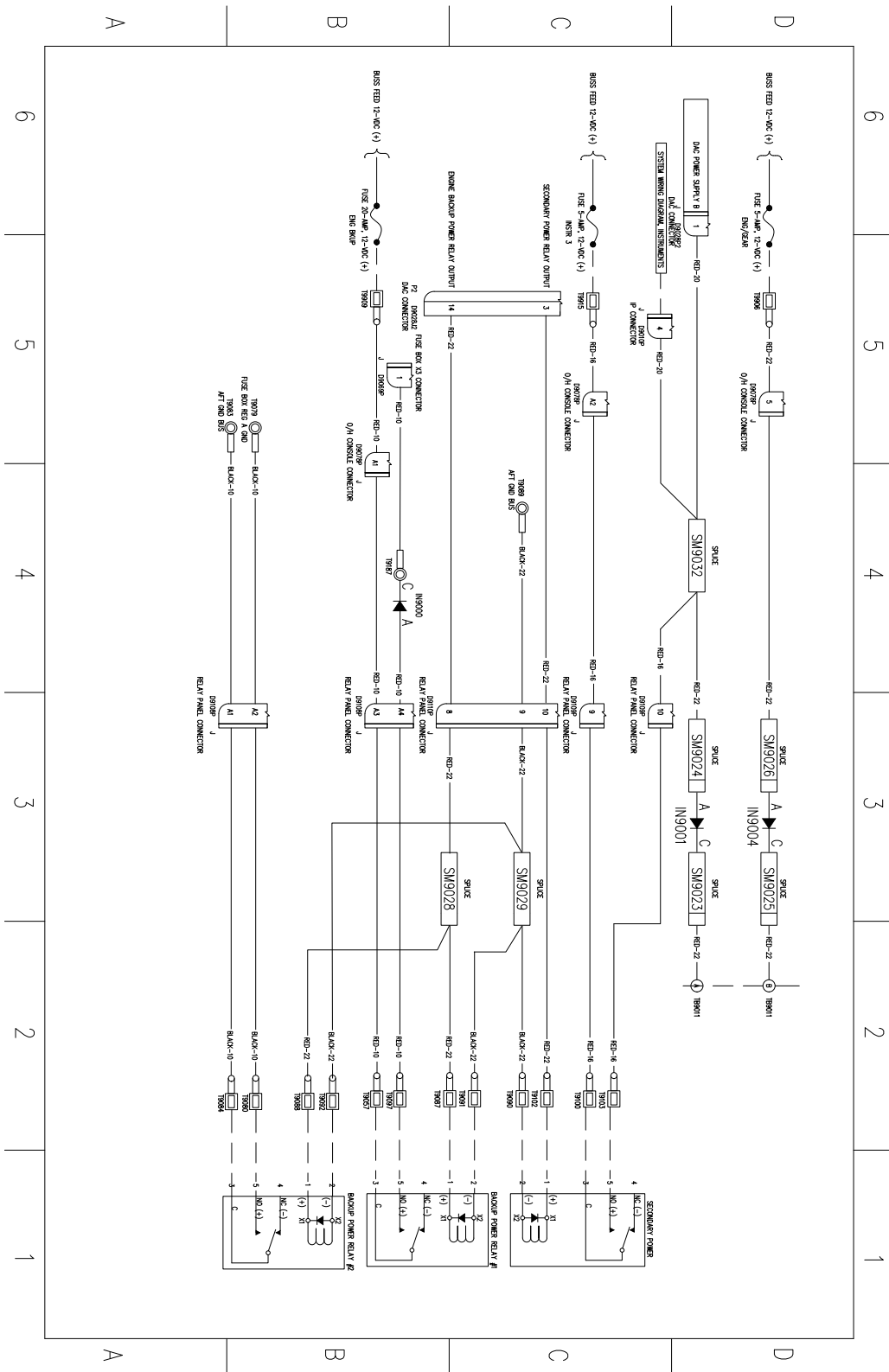
## 6.2.2 System Wiring Diagram, Control Sticks, Pitch Trim





## CHAPTER 6





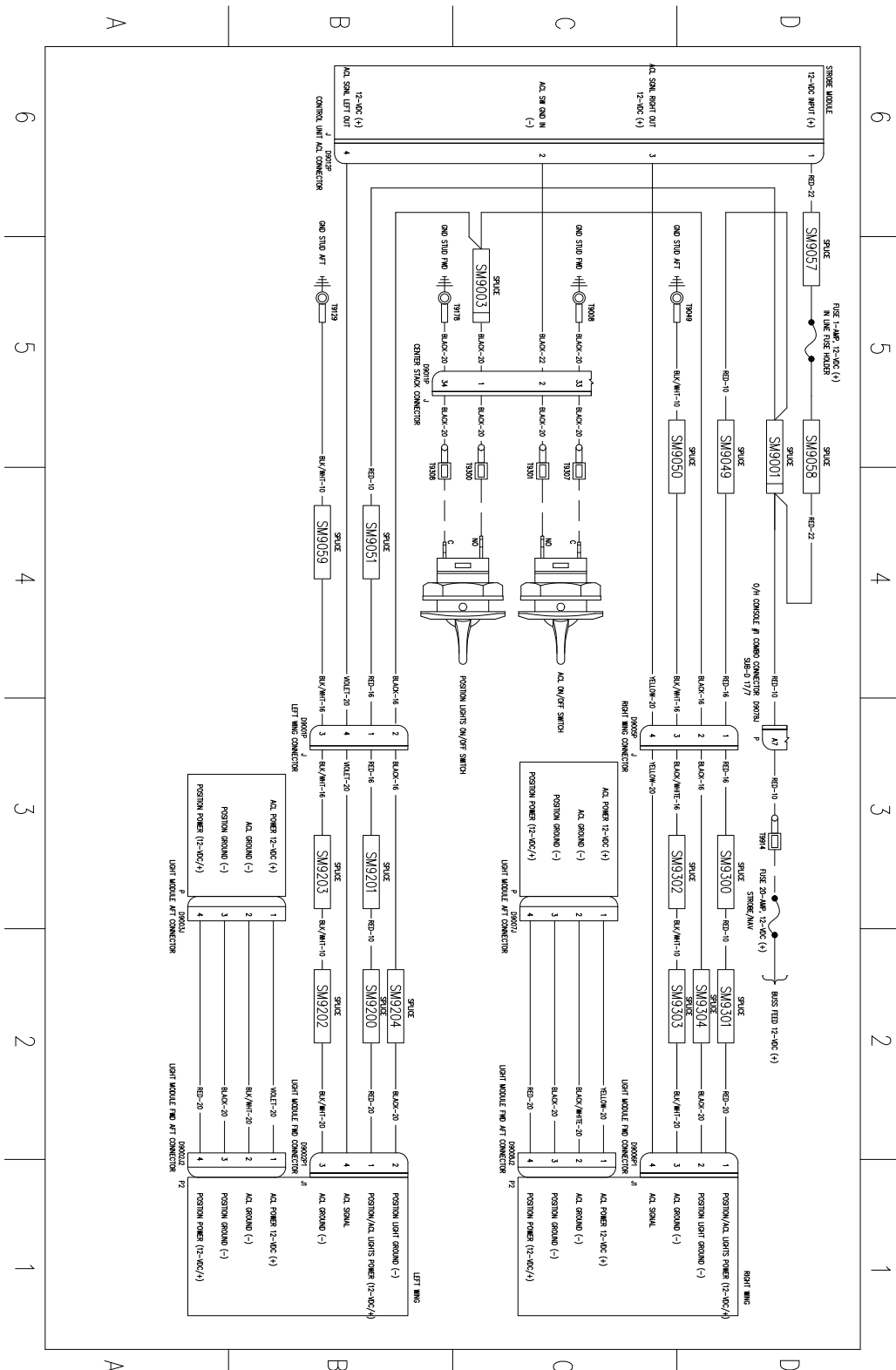




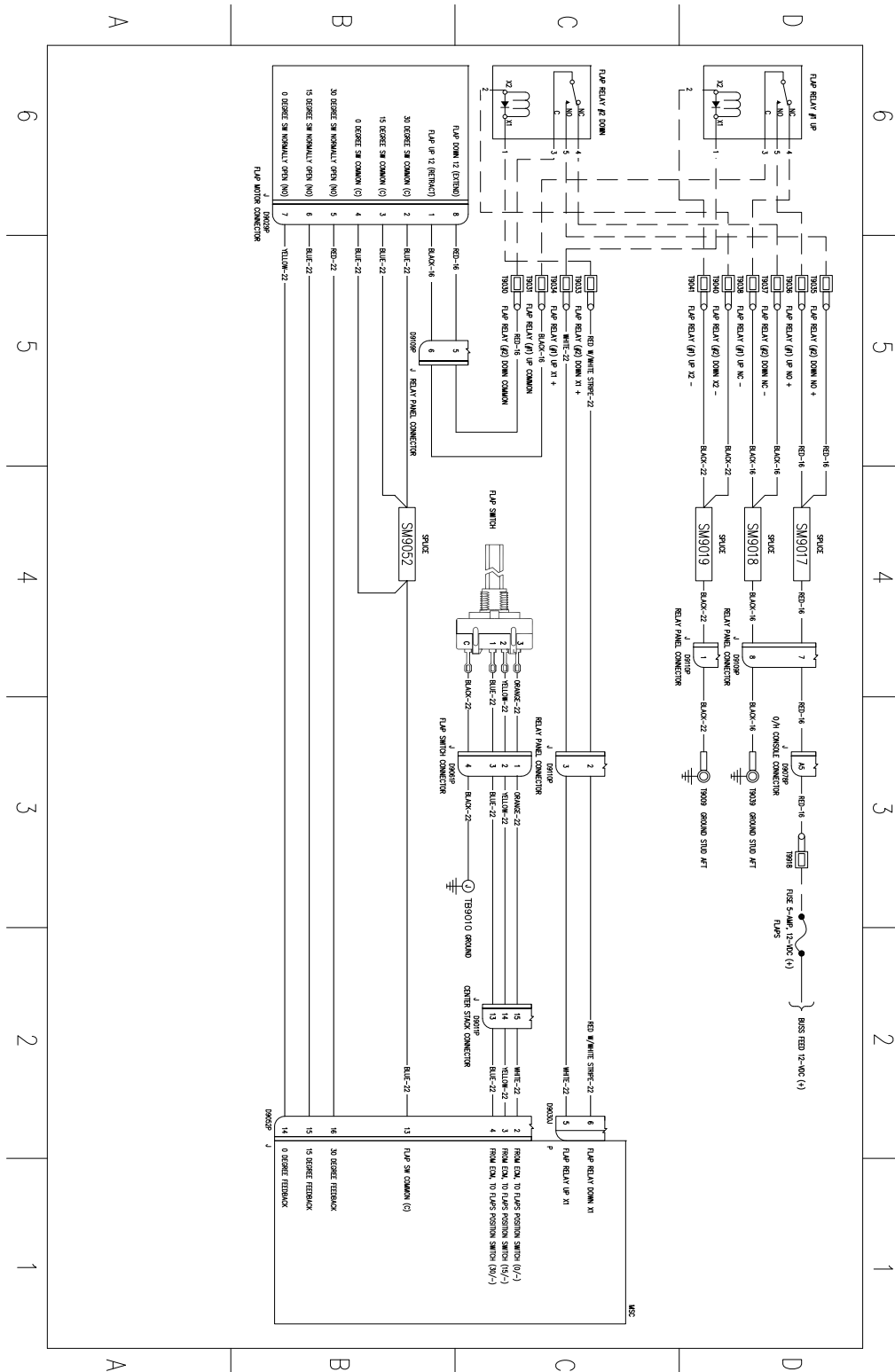
## CHAPTER 6







## 6.2.6 System Wiring Diagram, Flaps



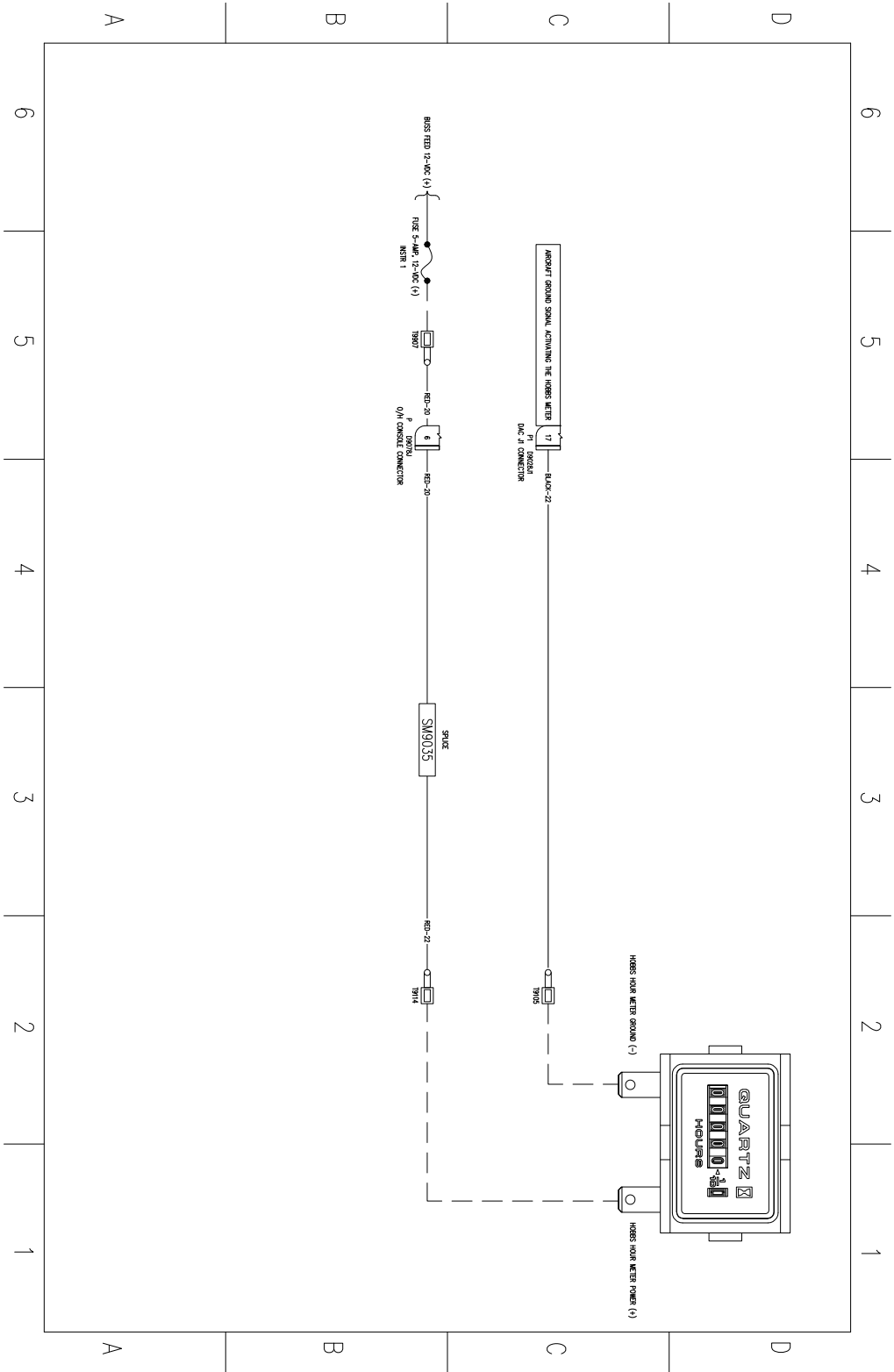


## CHAPTER 6

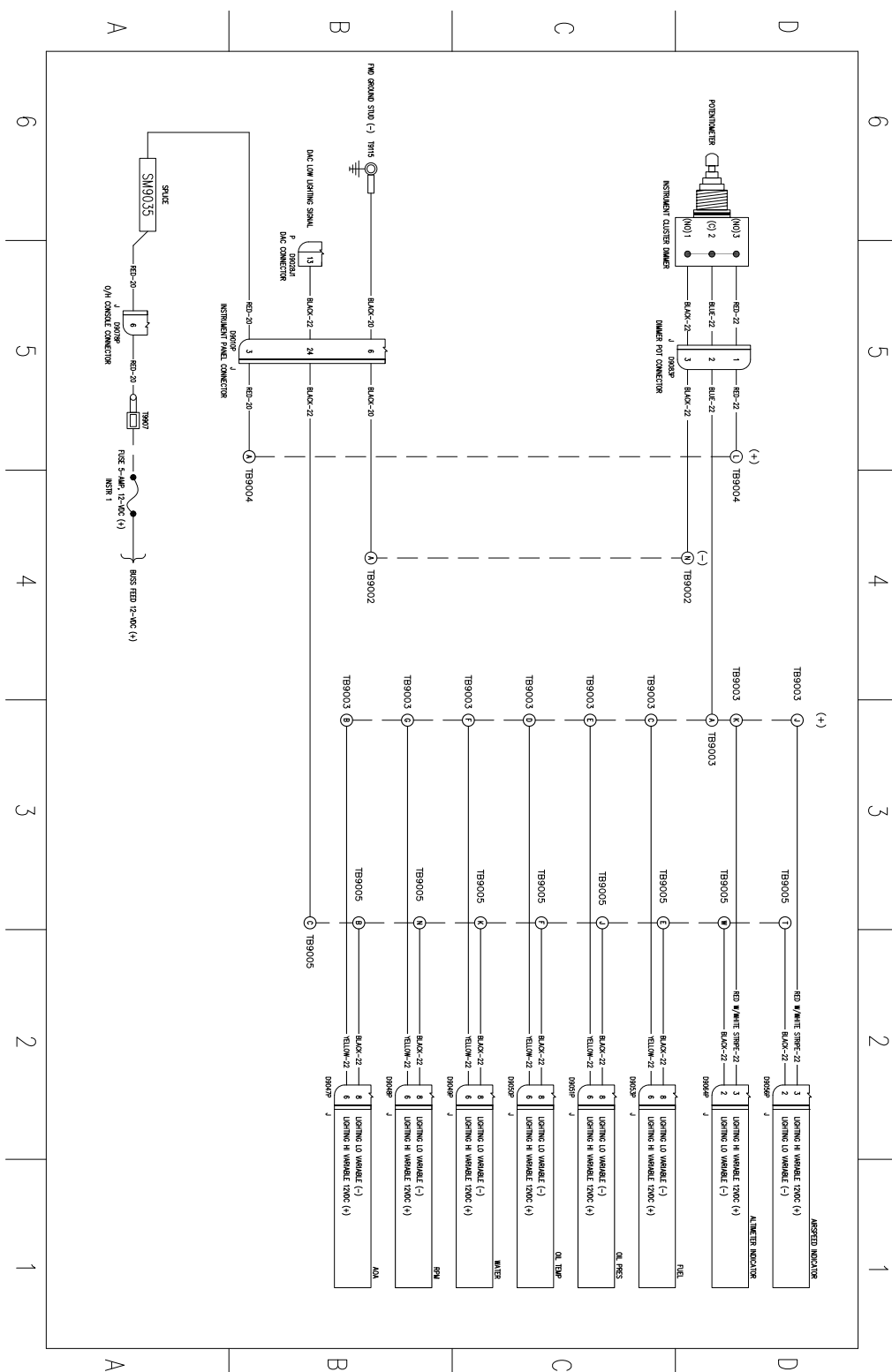




6.2.10 System Wiring Diagram, Hour Meter



## 6.2.11 System Wiring Diagram, Instrument Lighting

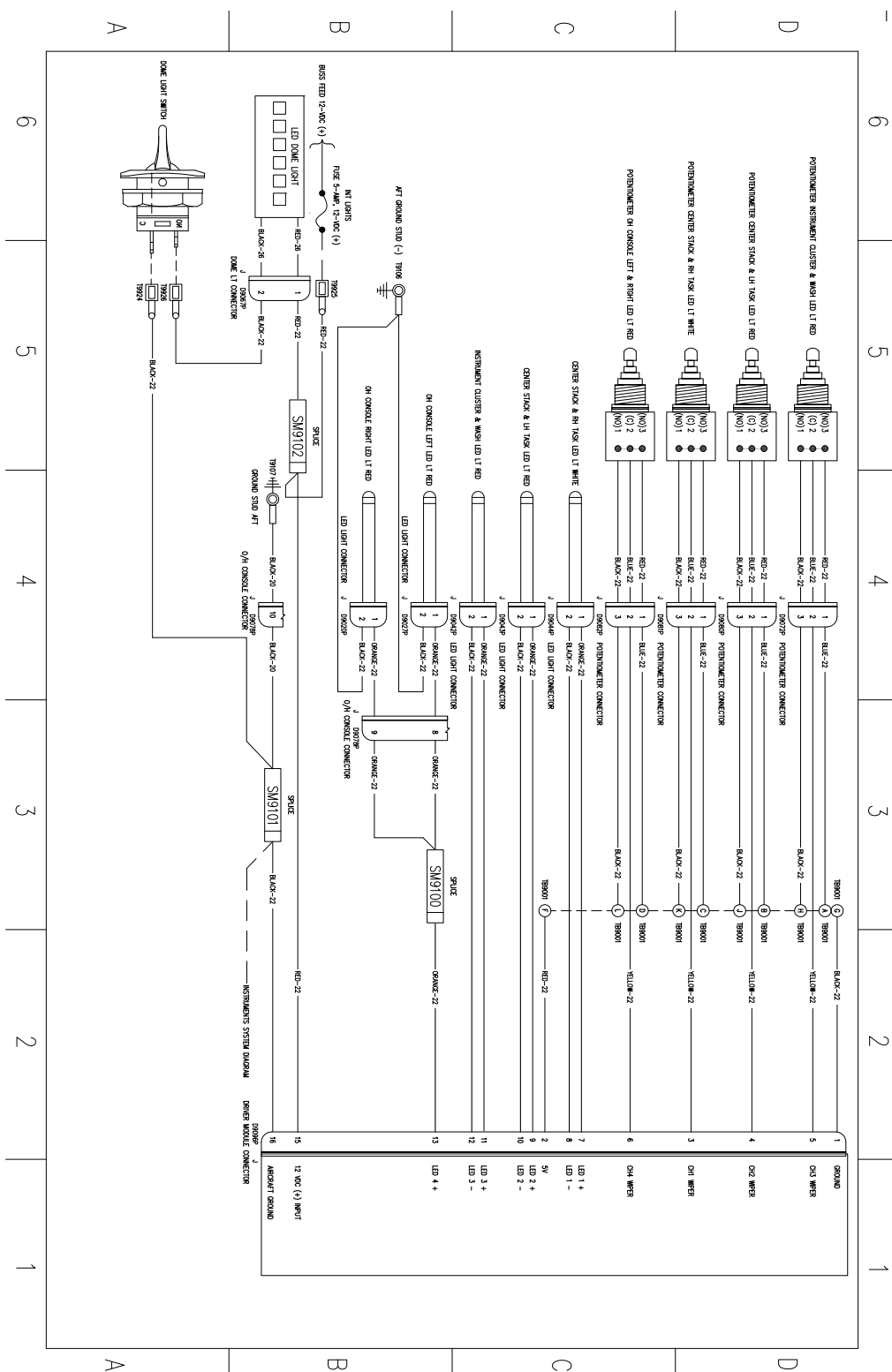


## CHAPTER 6

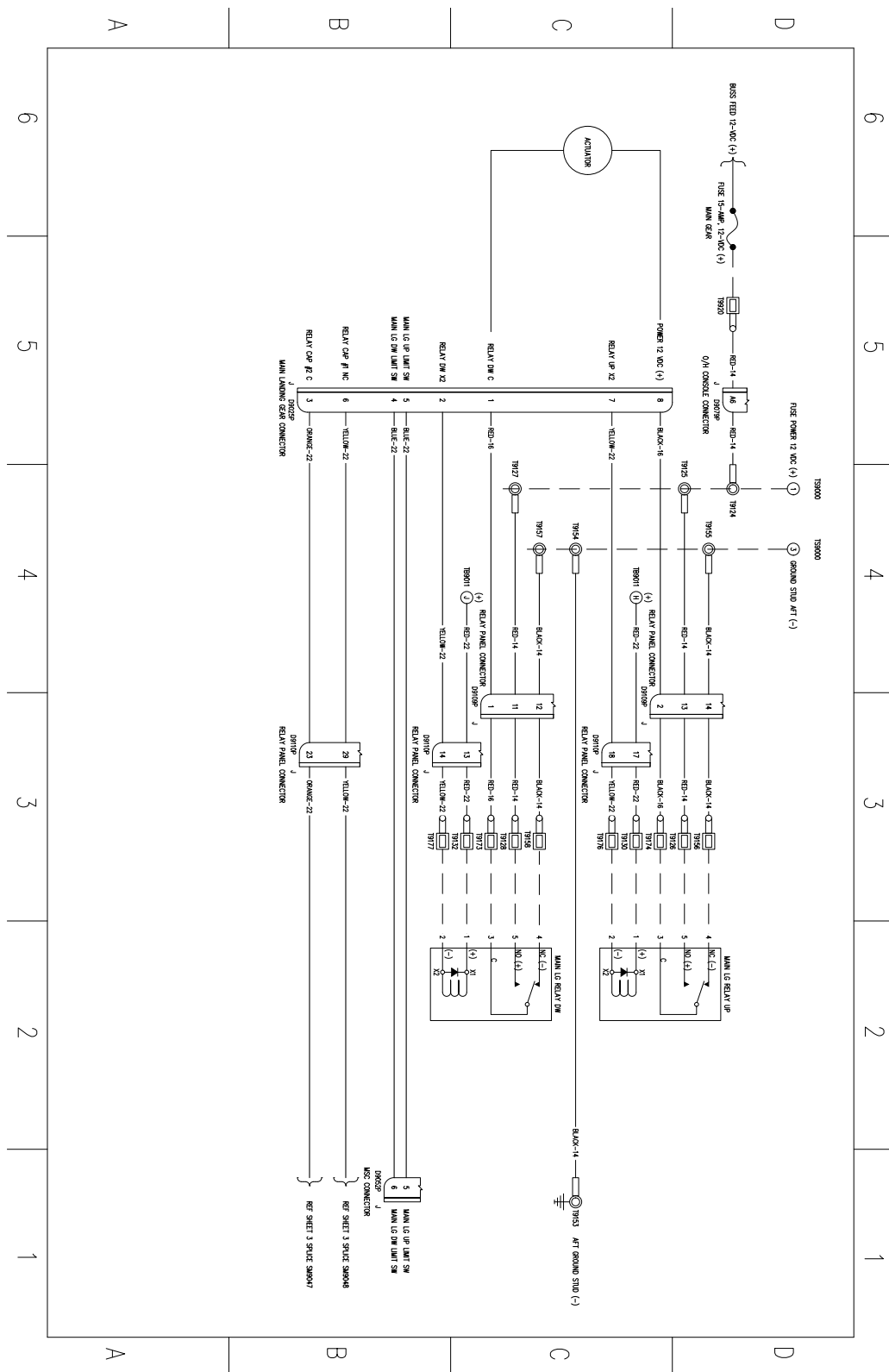


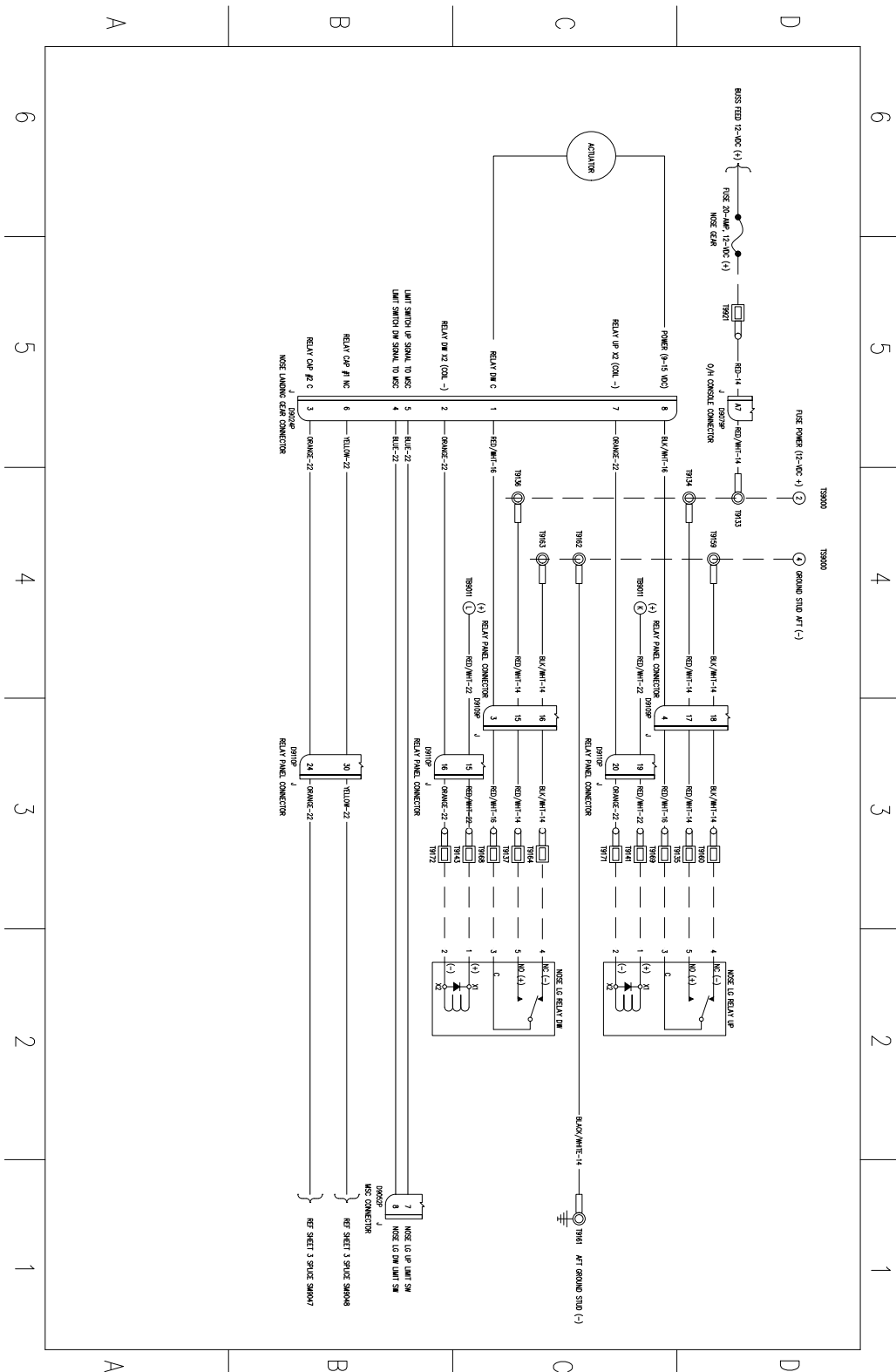


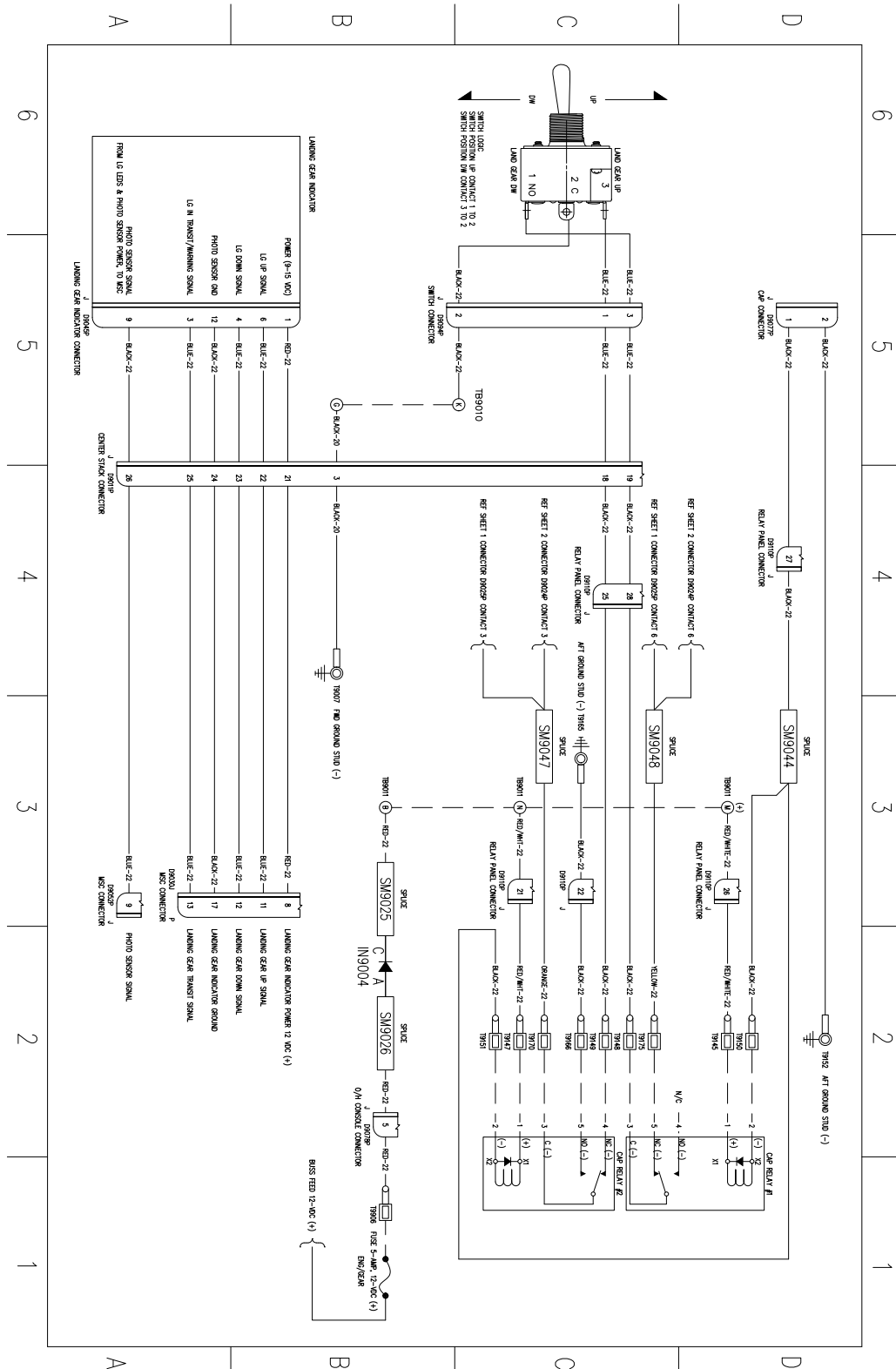
## 6.2.13 System Wiring Diagram, Interior Lighting



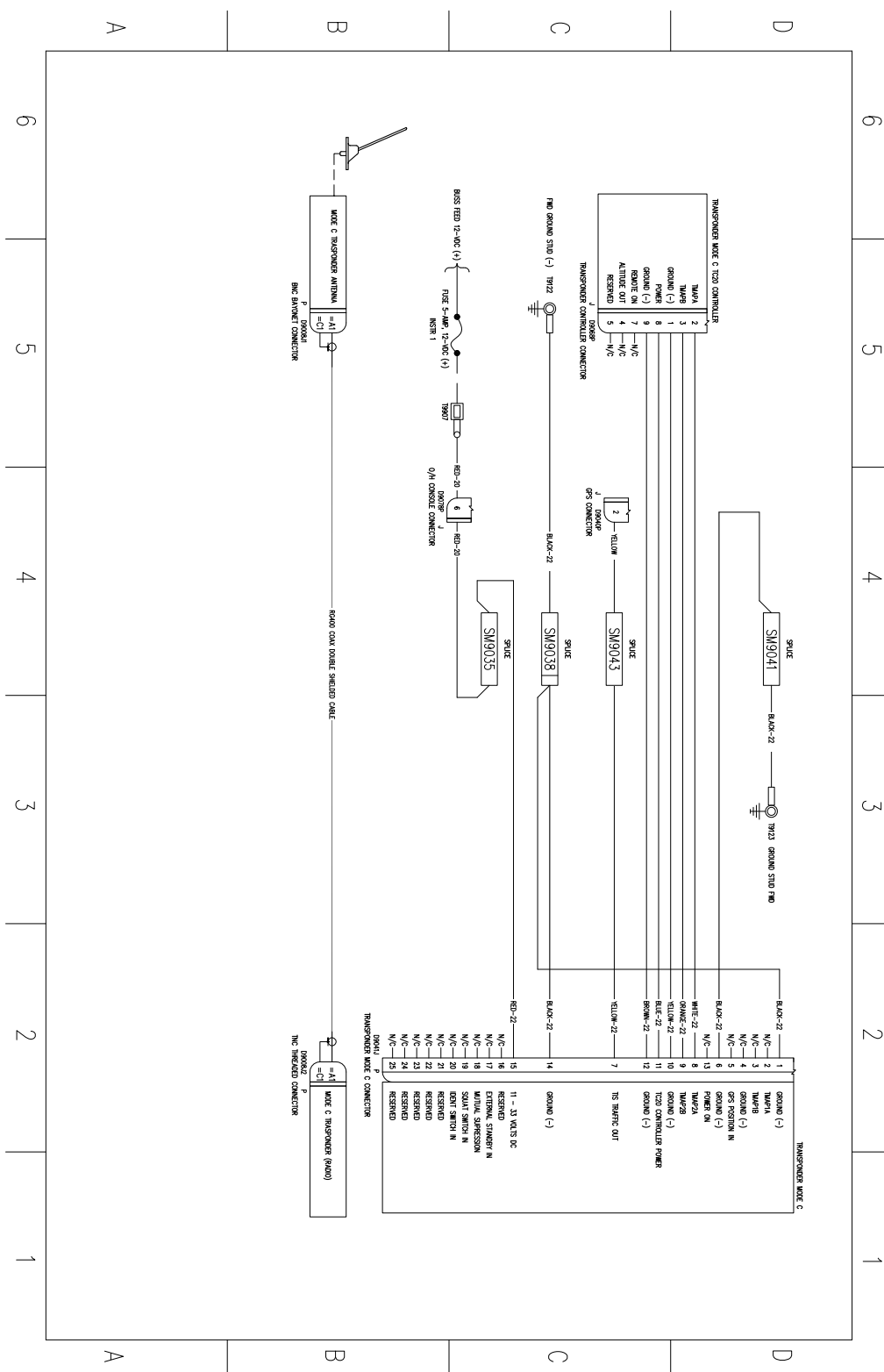
## 6.2.14 System Wiring Diagram, Landing Gear



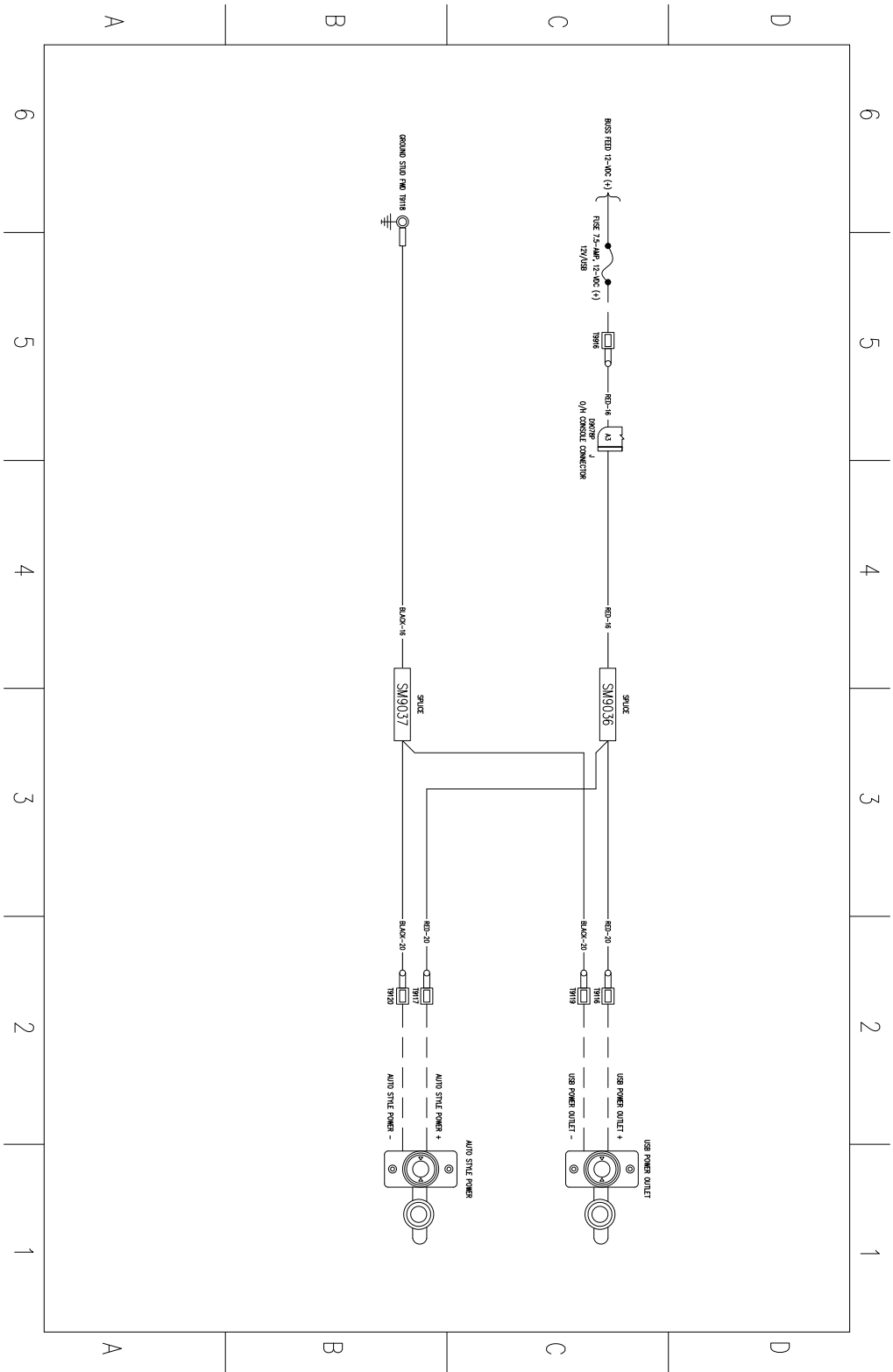




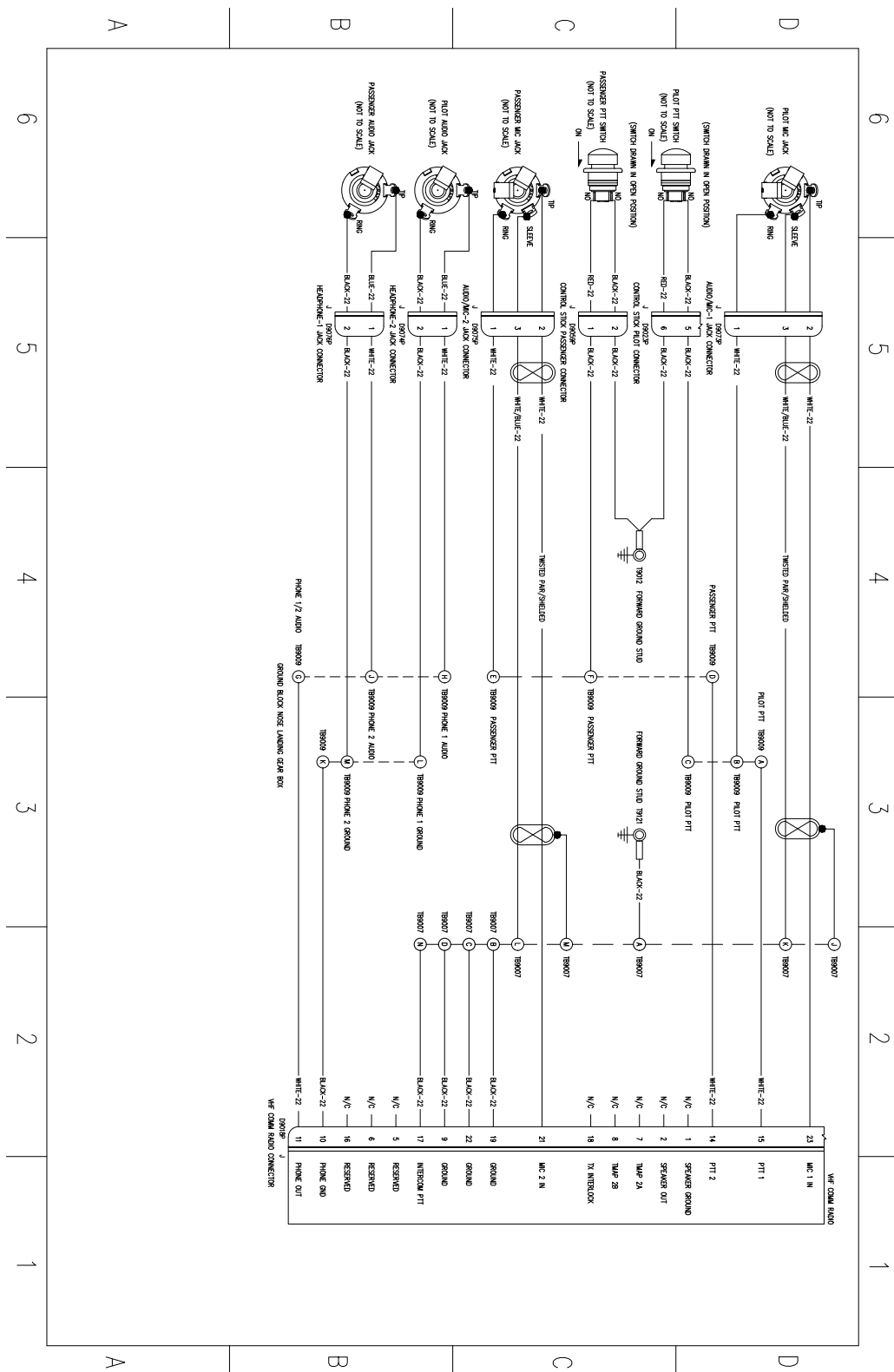
### 6.2.15 System Wiring Diagram, Mode C

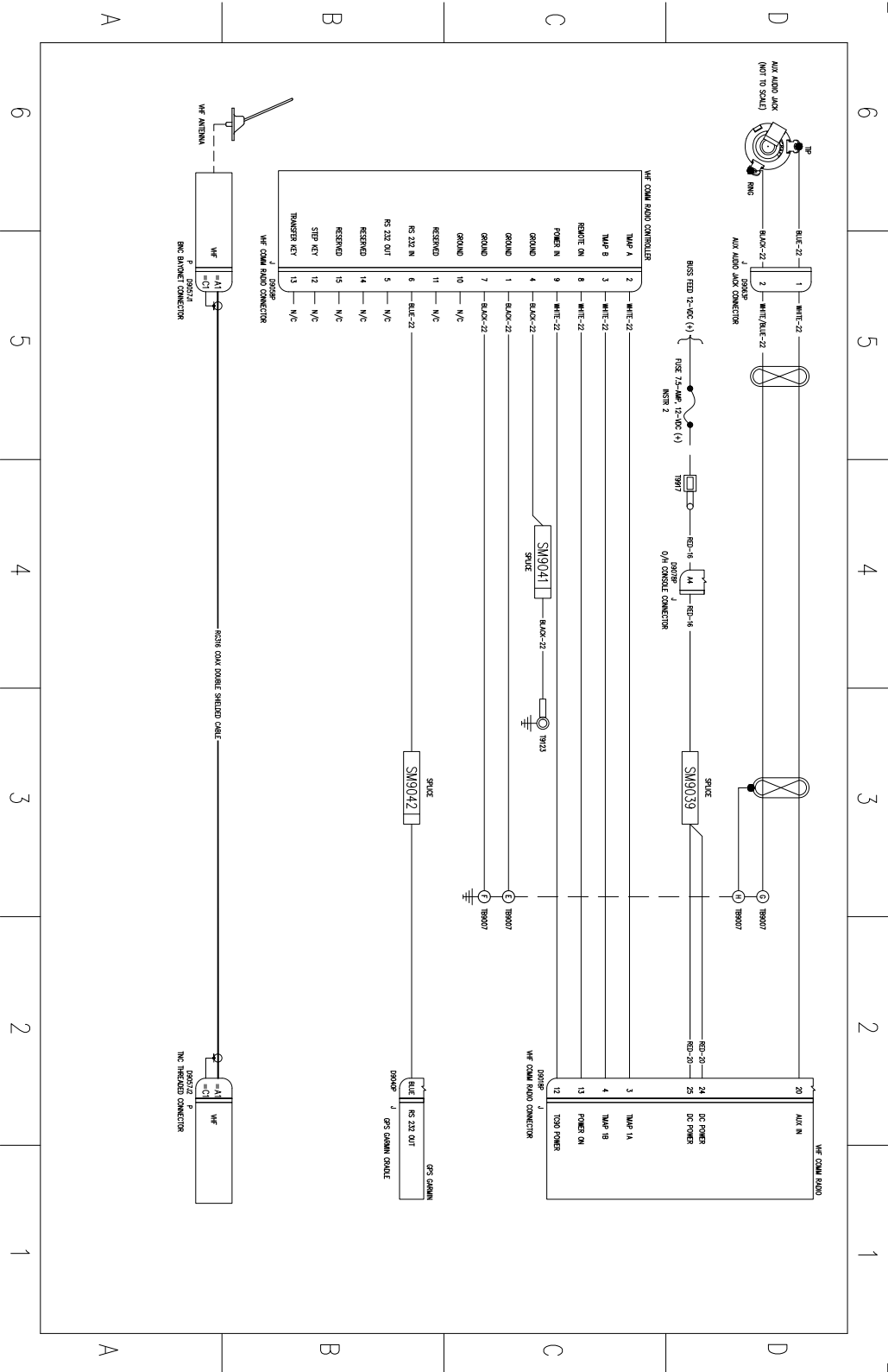


6.2.16 System Wiring Diagram, Outlets



## CHANGE C2



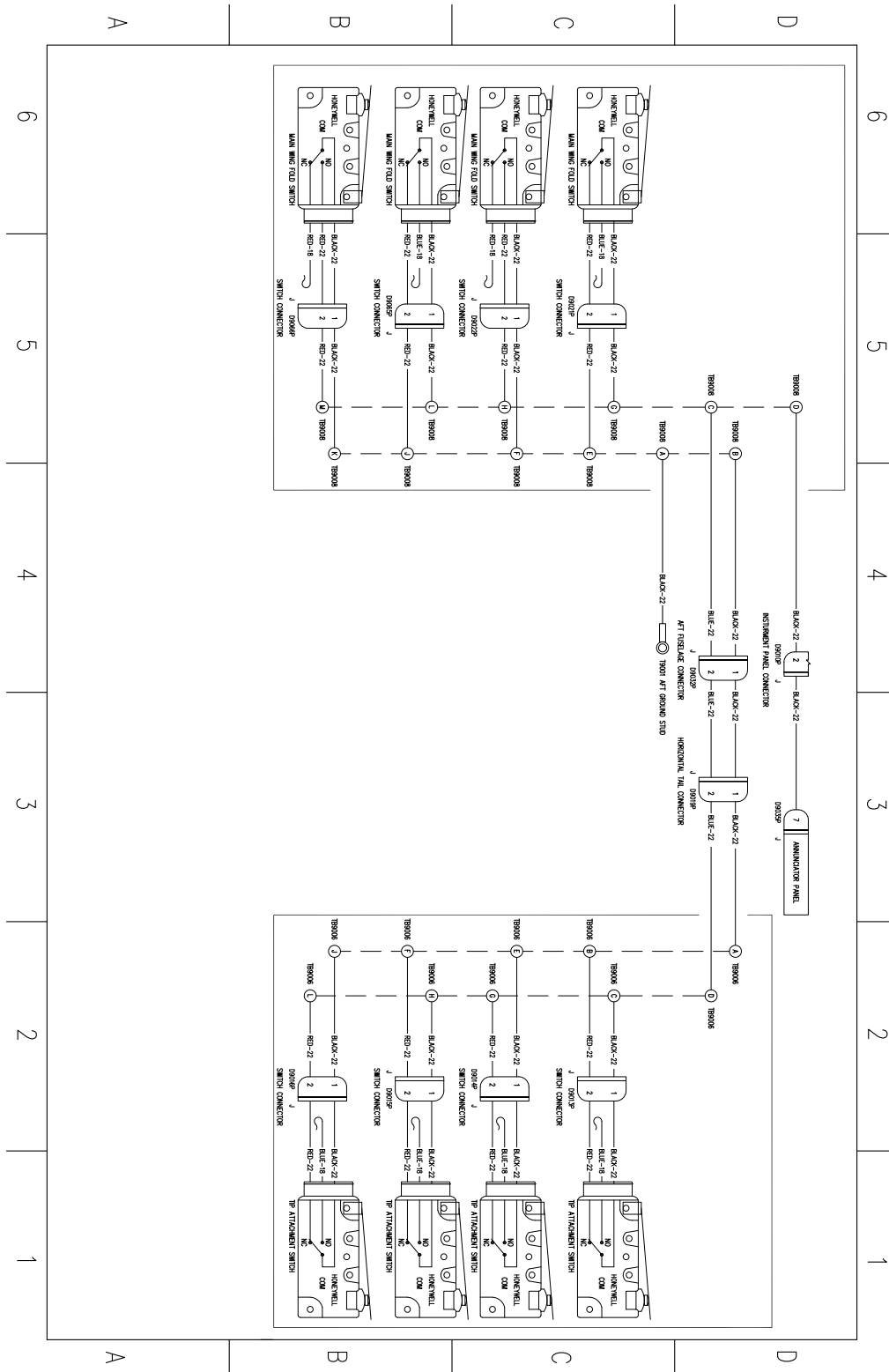




## CHAPTER 6



## 6.2.19 System Wiring Diagram, Wing & Tip Switches



## 6.3 Troubleshooting

### 6.3.1 Basic Electrical System Inspection

The following is used to inspect the electrical system located behind the Aft Bulkhead Baggage Panel.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove (4) Torx-head 10-32 fasteners to remove the Aft Bulkhead Baggage Panel at the rear of the baggage compartment.
  2. Check integrity of all connectors to and from relay unit.
  3. Check integrity of all connectors to and from ECU.
  4. Inspect condition of wire harnesses for chafing, fraying and damage.
- 

#### VERIFICATION METHOD:

Check acceptable condition and security of components behind the Aft Bulkhead Baggage Panel.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Operational Inspection" on page 3-25

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

### 6.3.2 Battery Diagnostic

Table 6-1 should be used to diagnose the aircraft 12 V battery once it has been established that it is the source of a problem. See "Annunciator Panel Diagnostic" on page 13-9.

**Table 6-1:** Battery Diagnostic Table

Symptom	Possible Cause	Remedy
Battery voltage below 12.5 VDC.	Battery discharged.	Perform capacity test (1). Boost-charge battery. See "Charge Battery" on page 6-38.
Battery voltage is 0 VDC	Battery charging fuse blown.	Replace 15A fuse located forward of the positive charging terminal, on the positive charging wire.
Battery capacity below 85% of rating (below 20.4 AH)	Battery beyond serviceable life.	Replace battery. See "Battery Removal and Installation" on page 6-37.
	Needs conditioning.	See Section 8: Conditioning Charge Procedure (1).
Battery does not hold charge.	Battery beyond serviceable	Replace battery. See "Battery Removal and Installation" on page 6-37.
Battery temperature is greater than 55°C/130°F during charging.	life.	Replace battery. See "Battery Removal and Installation" on page 6-37.
Battery voltage is 12.6 VDC or above but the battery is four years old and is not capacity tested.	N/A	Recommended to replace battery. See "Battery Removal and Installation" on page 6-37.
Source: (1) Concord document no.5-0171 Rev P.		

## 6.4 Electrical System General Maintenance

### 6.4.1 Ignition Switch Replacement

The following is used to replace the ignition switch.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

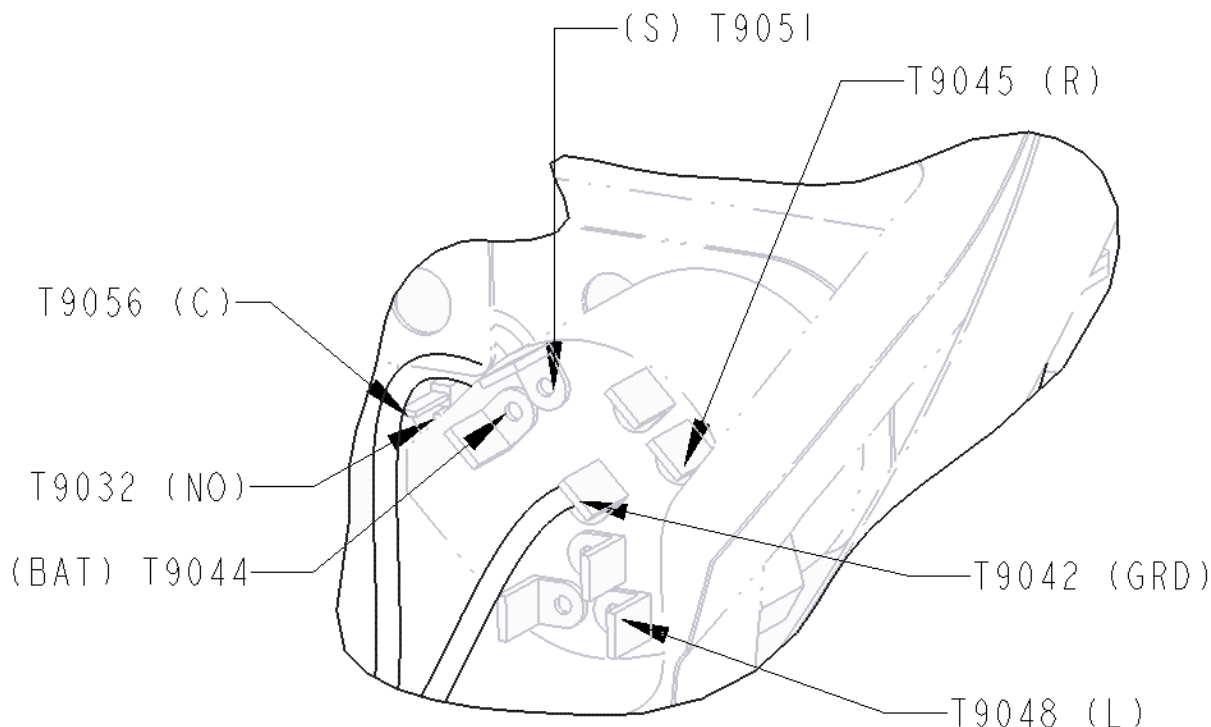
**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Locate the ignition switch. Unscrew the pilot-facing cap to release the ignition switch from the left hand crossbeam. Discard cap.
2. Reach behind the left hand crossbeam via the pilot footwell and disconnect the two push-on terminals connected to the master switch.
3. Pull the ignition switch out from behind the left hand crossbeam.
4. Disconnect all ring terminals going to the ignition switch. Discard ignition switch.
5. Connect all ring terminals to the new ignition switch using diagram below.
6. Connect the two push-on terminals to the master switch using the diagram below.



**FIGURE 6-1**  
BACK VIEW OF THE IGNITION SWITCH

7. Remove the cap from the new ignition switch and install the ignition switch to the left hand cross-beam.
8. Screw the new cap onto the ignition switch to secure it to the left hand crossbeam.

**VERIFICATION METHOD:**

The task is complete when the switch is secured to the left hand crossbeam and verified to function correctly by turning on the aircraft.

## 6.4.2 Inspect, Repair, and Secure Wiring Harness with Signs of Chafing

Use the following procedure to inspect the wiring harness for chafing, security, and condition.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

HT 1/2 N-100 (WRAP, SPIRAL, NYLON, 1/2" OD)

F4 TAPE BLACK (TAPE, SELF-FUSING, SILICONE, .02 IN THK, 1 IN WIDE)

TY24MX (CABLE TIE, NYLON 6-6, 30LB, 5.50, TY-RAP)

TT-I-735A or equivalent (ISOPROPYL ALCOHOL)

---

**TASK INSTRUCTIONS:**

1. Inspect wire harness or wires for clearance and wear contact against various locations in the aircraft. Look for nicks and chafing conditions. See "Removal and Installation of Inspection Panels and Fairings" on page 3-34. See "Cockpit Panels Removal and Installation" on page 3-36. See "Remove Engine Cowlings" on page 16-13.
  2. Inspect engine wire harness for clearance and wear contact against various locations of the wire harness on the engine. The engine wire harness must have minimum no touch clearance from any corner or sharp edge of the areas as per installed state.
  3. If chaffing or nick damage to insulation of wires is found and has not damaged the copper wires, clean individual damaged wire insulation with ISOPROPYL ALCOHOL and wrap it using F4 TAPE. Then re-wrap entire bundle using F4 TAPE. Leave a minimum no touch clearance.
  4. Using WRAP, SPIRAL, wrap any portions of the wire harness that may contact corners or sharp edges of the components as required.
  5. Ensure ignition leads do not touch inner cowling with a minimum clearance of .25" (inch). Cut engine CABLE-TIES and adjust/pull ignition wiring to the center of the engine and re-attach CABLE-TIES as needed.
- 

**VERIFICATION METHOD:**

The task is completed when the fuselage and engine wire harness have been inspected and repaired as needed.

**RELATED INFORMATION:**

"Cockpit Panels Removal and Installation" on page 3-36

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

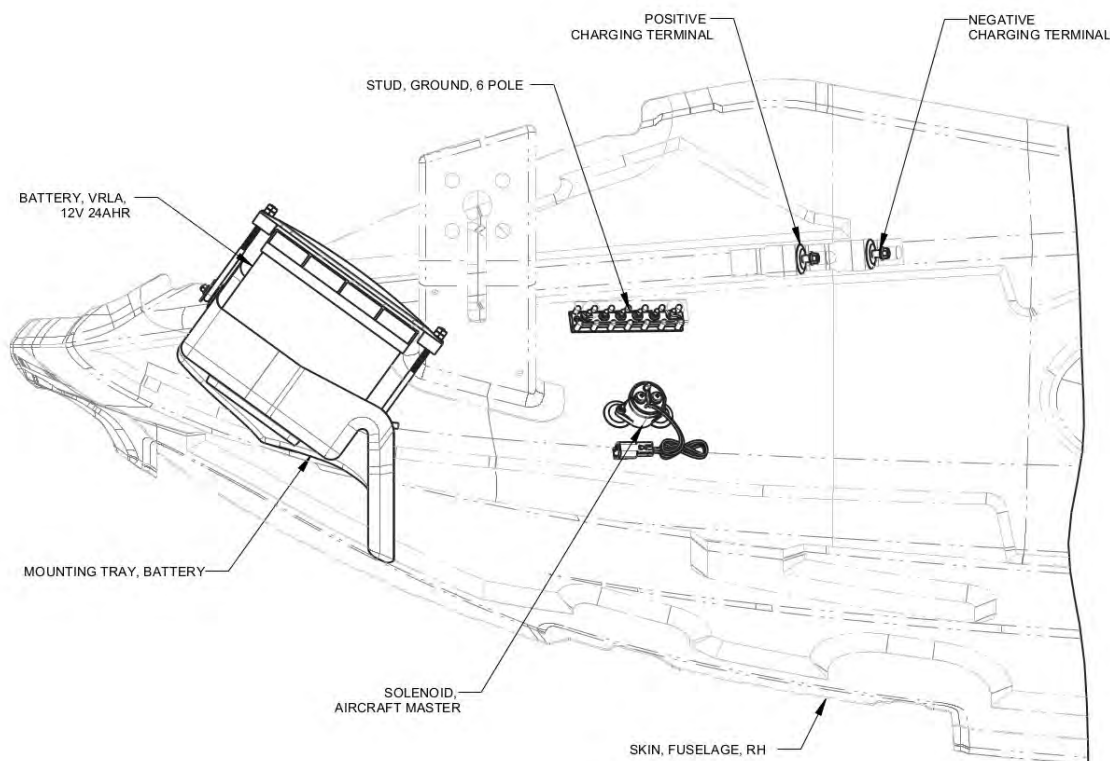
"Remove Engine Cowlings" on page 16-13

## 6.5 Battery

### 6.5.1 Battery Description

The A5 uses a Concorde, valve regulated lead acid (VRLA) 12V, 24AHR Absorbent Glass Mat (AGM) battery that is part of Concorde aircraft batteries. It produces 350 cold cranking amps (CCA) and weighs 23.5 lb. Make sure to use an AGM-compatible charging system for the battery. AGM batteries are sensitive to overcharging, the recommended charge rate should be kept around 2.25-2.30V/cell and shall not exceed 2.40V/cell.

### 6.5.2 Battery Diagram/Schematic



**FIGURE 6-2**  
BATTERY INSTALLATION



## 6.5.3 Maintenance Instructions

### 6.5.3.1 Battery Removal and Installation

The Concord RG-25XC, 12V, 25AH main aircraft battery is removed and installed by using the procedures given.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

CONCORD RG-25XC, 12V, 25 AH BATTERY

8997K53 POLYURETHANE STRIP

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove the Right Top Instrument Panel Cover. (See “Right Instrument Panel Top Panel Removal” on page 8-17.)
2. Disconnect the cabling from the negative battery terminals.
3. Disconnect the cabling from the positive battery terminals.
4. Remove the Battery Hold Down bracket nuts and bracket with a 7/16 wrench.
5. Remove the battery from the battery box.

#### Battery Installation

6. Install 8997K53 Polyurethane strip around the perimeter of the battery flush with the base. Cut to length needed to allow seam gap of less than 1.5”.
7. Install the battery into the battery box with terminals toward the right side of the aircraft.
8. Install the Battery Hold Down bracket with nut and washer as removed. Hand tighten the nuts ensuring the bracket sits evenly across the battery then torque each side to 44 in-lb<sub>f</sub> with a 7/16 wrench.

9. Reconnect the battery terminals in the following order:
  - a. Positive Terminal Connectors T9181, T9054.
  - b. Negative Terminals Connectors T9069, T9074, T9076, T9182.
10. Install the Right Top Instrument Panel Cover. (See "Right Instrument Panel Top Panel Installation" on page 8-18.)

#### VERIFICATION METHOD:

Turn the master switch on a verify that all electrical and avionics systems power up and function correctly.

#### RELATED INFORMATION:

"Right Instrument Panel Top Panel Removal" on page 8-17

"Right Instrument Panel Top Panel Installation" on page 8-18

"Nose Landing Gear (NLG) Leg Assembly Removal" on page 14-60

"Nose Landing Gear (NLG) Leg Assembly Installation" on page 14-62

### 6.5.3.2 Charge Battery

Use this procedure to boost-charge the aircraft battery.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

##### Special Tools Required

A 14.125±.125 VDC charge with current capability of at least 4.8 amperes for AGM batteries.

##### Parts Required

None

##### Aircraft System

03 – Electrical System

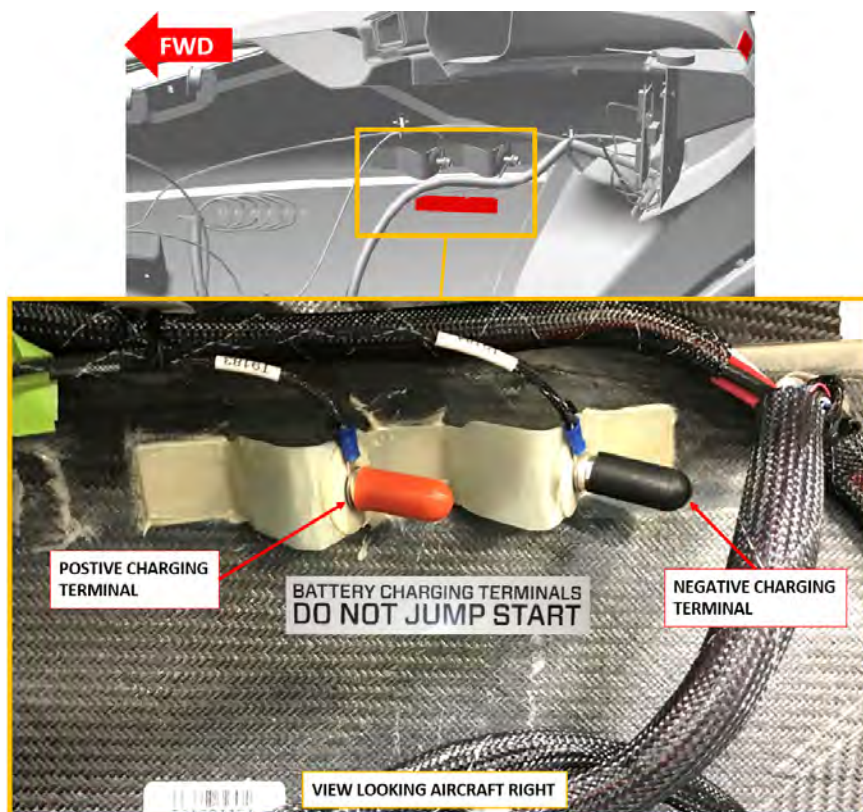
##### Consumables

None

**WARNING:** Do NOT jump start the aircraft.

#### TASK INSTRUCTIONS:

1. Verify that master switch OFF.
2. Remove red and black terminal caps from positive and negative charging terminals, respectively. (See Figure 6-3.)



**FIGURE 6-3**  
AIRCRAFT BATTERY CHARGING TERMINALS

3. Use a multimeter to check the battery voltage. If battery voltage is below 12.6 VDC, charge battery.
4. Remove the multimeter from the battery charging terminals.
5. Verify that your charging unit is OFF.

**WARNING:** Make sure to use an AGM compatible charging system for the battery. Because AGM batteries are sensitive to overcharging, the recommended charge rate should be kept around 2.25-2.30V/cell and shall not exceed 2.40V/cell.

6. Attach positive charging clamp from charging unit to the positive charging terminal.
7. Attach negative charging clamp from charging unit to the negative charging terminal.
8. Turn on the charging unit. Boost-charge battery up to a minimum of 12.6 VDC. Do not exceed 192 amperes charge current.

**WARNING:** Do NOT jump start the aircraft battery.

9. Continue charging for four more hours after the charge current drops to 1.2 amperes. See Table 6-2 for state of charge (SOC). Turn off charging unit once charging is complete.

**Table 6-2:** Battery Charging Status Reference

Open Circuit Voltage (VDC)	SOC(%)
12.9 or above	100
12.6	75
12.3	50
12.0	25
11.7 or below	0
Source: Concord RG Series Aircraft Battery Owner/Operator Manual (5-0324 Rev D)	

10. Remove negative charging clamps from the aircraft battery charging terminals.
11. Remove positive charging clamps from the aircraft battery charging terminals.
12. Use a multimeter to verify that the battery voltage is at or above 12.6 VDC.
13. Replace the red and black terminal caps. (See Figure 6-3.)

#### VERIFICATION METHOD:

Turn the master switch ON. Verify that the BATTERY indicator does not stay lit in the annunciator panel.

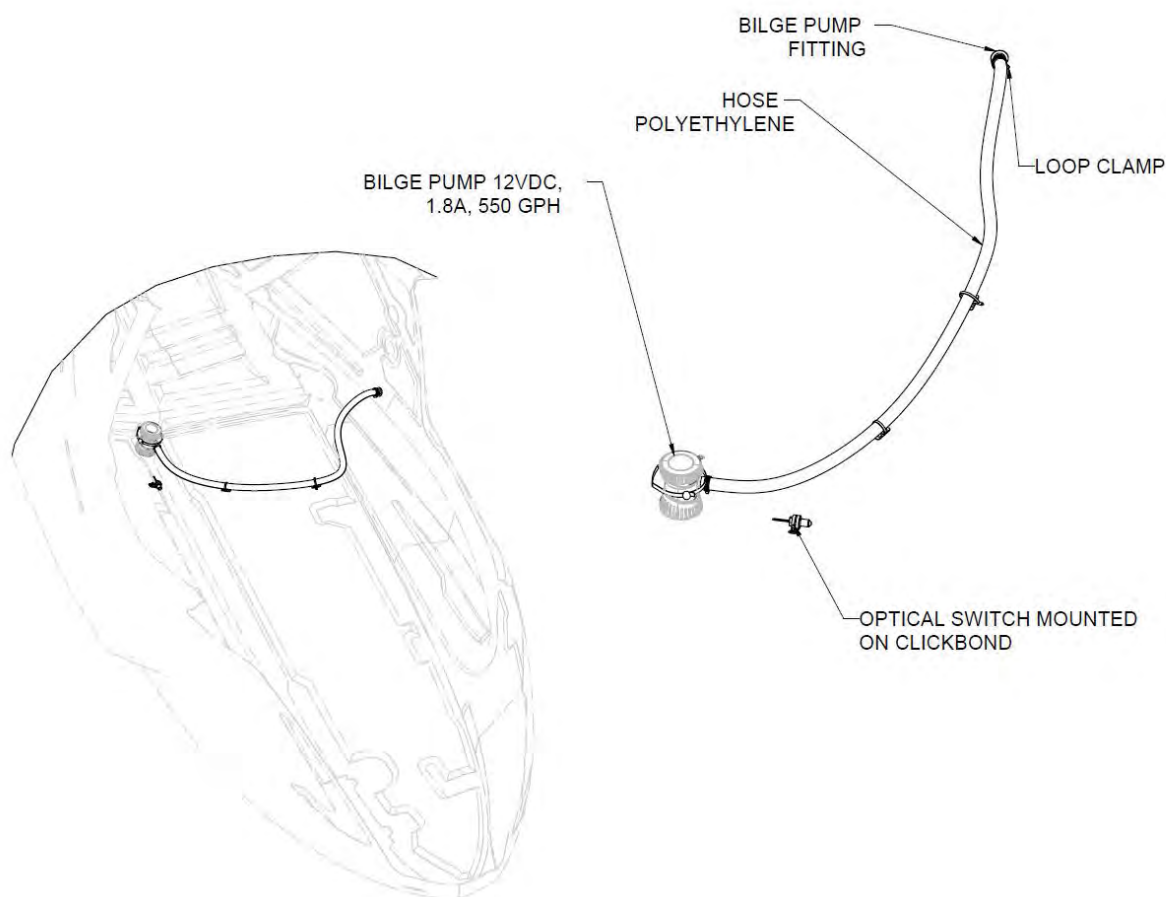
**NOTE:** *If the battery requires charging after normal aircraft operation, the battery may be faulty and must be replaced. See "Battery Diagnostic" on page 6-32.*

## 6.6 Bilge Pump

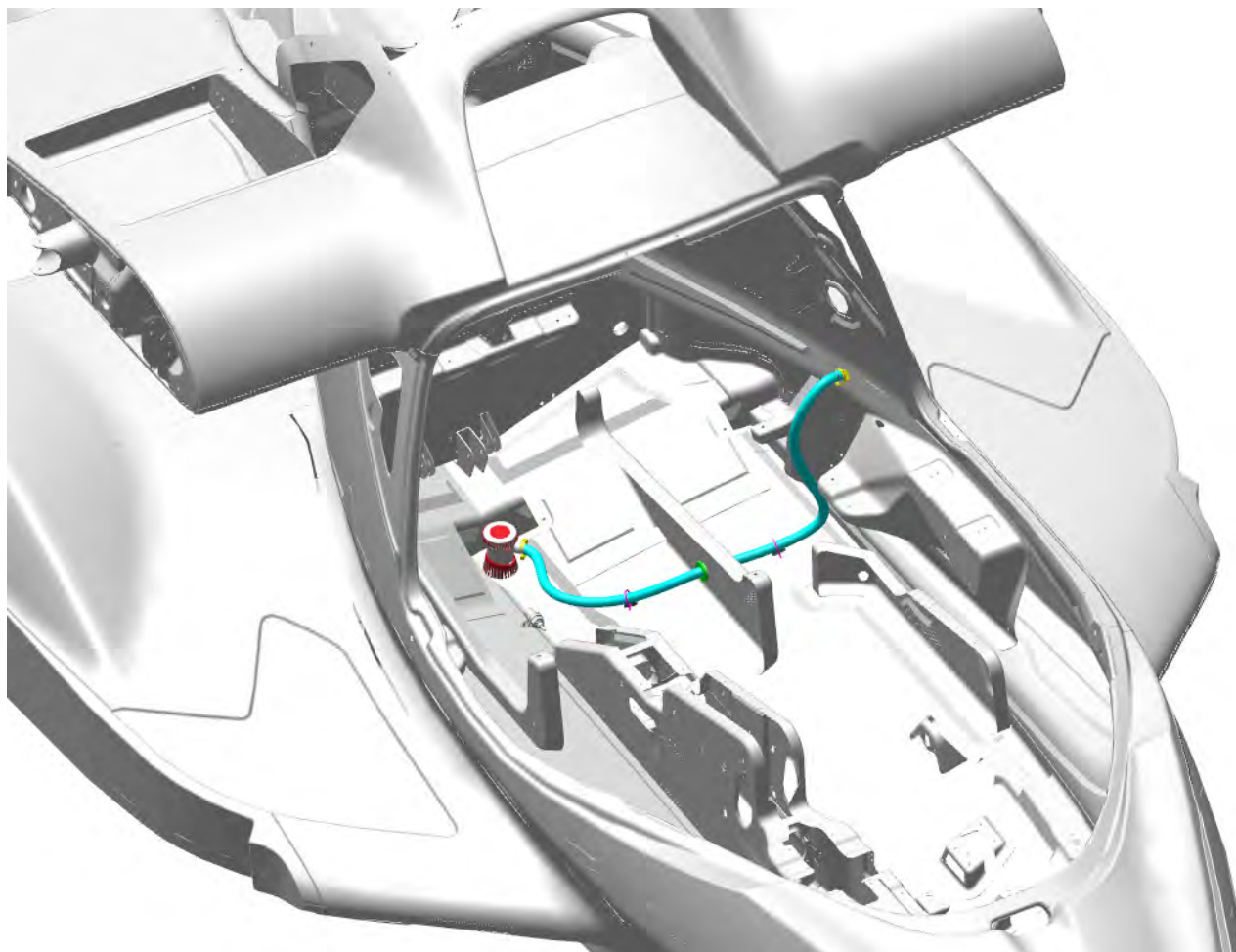
### 6.6.1 Bilge Pump Description

The A5 has a bilge pump located at the low point on the inside of the hull. It is located near the hull step beneath the fuel tank. It pumps any water from the hull overboard via a port located on the left side of the fuselage above the left Seawings™ platform. This allows the pilot to verify the function of the pump by looking out the window over his or her left shoulder.

### 6.6.2 Bilge Pump Diagram/Schematic



**FIGURE 6-4**  
BILGE PUMP INSTALLATION AND OUTLET ROUTING.



**FIGURE 6-5**  
BILGE PUMP INSTALLATION AND OUTLET ROUTING

## 6.6.3 Inspection Instructions

### 6.6.3.1 Check Bilge Pump Function

The following section includes the information necessary to check the function of the bilge pump on the A5.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the floorboard in front of the pilot seat. (See “Cockpit Floor Board Removal” on page 3-46.)
2. Turn on master switch.
3. Pour 1/2 gallon of water directly into the bottom of the hull.
4. Turn on bilge pump until no more water is pumping out.

*NOTE: A positive pitch attitude on the aircraft ensures optimum cleaning. This can be obtained by performing the procedure while parked on an incline (preferred), lifting the nose, or pushing down on the tail.*

5. Turn bilge pump off.
  6. Ensure the bilge indication has turned off.
  7. Turn off master switch.
  8. Reinstall floorboard. (See “Cockpit Floor Board Installation” on page 3-47.)
- 

**VERIFICATION METHOD:**

Verify that bilge pump successfully pumps the water from inside the hull.

**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Avionics and Electrical" on page 3-23

**6.6.3.2 Bilge Pump Removal (MY17)**

Use the following procedure to remove the bilge pump (MY17).

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the fuel tank. (See "Remove Fuel Bladder (MY17 Only)" on page 10-11.)
  2. Remove the fuel tank mounting structure if unable to perform the below steps with it installed.
  3. Reaching down behind the fuel tank mounting structure, disconnect the bilge pump hose from the pump by loosening the hose clamp and pulling the hose off the pump's barb.
  4. Cut the cable tie attaching the pump to the carbon saddle.
  5. Twist the pump to break it free from the adhesive and disconnect the pump body from the bottom strainer by depressing the lock button and turning counter clockwise.
  6. Remove the pump body and bottom strainer.
- 

**VERIFICATION METHOD:**

The task is completed when the bilge pump has been removed.

**RELATED INFORMATION:**

"Remove Fuel Bladder (MY17 Only)" on page 10-11

### 6.6.3.3 Bilge Pump Installation (MY17)

The following task should be used to install the bilge pump (MY17).

**TASK INFORMATION:**

**Type of Maintenance**



Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

TY528MX Cable Tie

**Aircraft System and Number**

03 – Electrical Systems

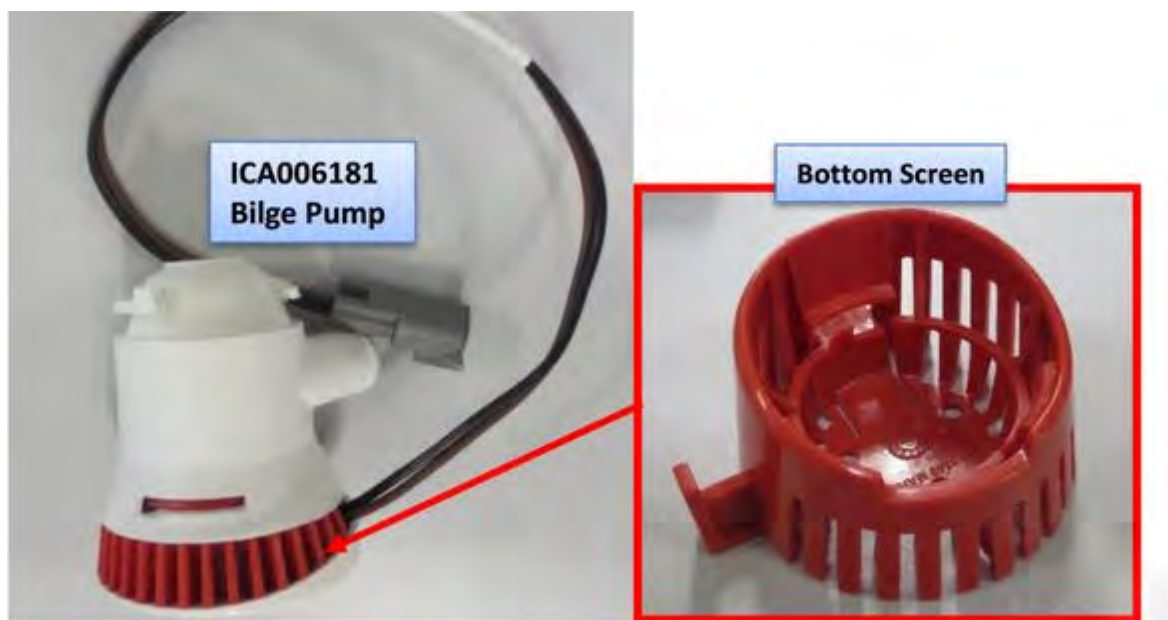
**Consumables**

Sil-Poxy<sup>®</sup> Silicone Adhesive

---

**TASK INSTRUCTIONS:**

1. Remove any adhesive residue from the bilge pump mounting flange.
2. Remove bottom strainer from bilge pump. (See Figure 6-6.)



**FIGURE 6-6**  
REMOVE BOTTOM SCREEN

3. Slide bottom strainer into place under the mounting flange.
4. Install the pump body onto the bottom strainer by aligning it and rotating clockwise until locked. (See Figure 6-7.)



**FIGURE 6-7**  
LOCK BOTTOM STRAINER

5. Secure the pump to the mounting flange with a TY528MX cable tie as shown. (See Figure 6-8.)



**FIGURE 6-8**  
SECURE THE PUMP TO MOUNTING FLANGE

6. Apply Sil-Poxy adhesive around the mounting flange, completely covering the cable tie as shown. (See Figure 6-9.)



**FIGURE 6-9**  
APPLY SIL-POXY

7. Attach the bilge pump hose to the pump barb fitting and secure with a 20-32/9-WS hose clamp.
8. Connect D9009J connector on bilge pump to D9009P connector on main wire harness.
9. Test that the bilge pump operates normally.
10. Install the fuel tank mounting structure if needed.
11. Install the fuel tank. (See "Install Fuel Bladder (MY17 Only)" on page 10-12.)

#### VERIFICATION METHOD:

The task is complete when both the bilge pump and the fuel bladder tank are installed.

#### RELATED INFORMATION:

"Install Fuel Bladder (MY17 Only)" on page 10-12

### 6.6.3.4 Bilge Pump Removal (MY18+)

The following procedure should be used to remove the bilge pump (MY18+).

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

### Special Tools Required

None

### Parts Required

None

### Aircraft System and Number

03 – Electrical System

### Consumables

None

### TASK INSTRUCTIONS:

1. Remove the fuel tank if unable to perform the below steps with tank installed. (See “Remove Fuel Tank (MY18+)” on page 10-15.)
2. Reaching down behind the fuel tank, disconnect the bilge pump hose from the pump by loosening the hose clamp and pulling the hose off the pump’s barb.
3. Detach the pump body from the bottom strainer by depressing the lock bottom and turning counter clockwise.
4. Remove the pump body, leaving the bottom strainer bonded to the bottom of the hull.

### VERIFICATION METHOD:

The procedure is complete when the bilge pump has been removed.

## 6.6.3.5 Bilge Pump Installation (MY18+)

Use the following procedure to install the bilge pump (MY18+).

### TASK INFORMATION:

#### Type of Maintenance

Line

#### Level of Certification

LSA-RM

#### Task Specific Training Required

No

#### Special Tools Required

None

#### Parts Required

PUMP, BILGE, 12VDC 1.8A, 550GPH

TY24MX CABLE-TIE, NYLON 6-6, 30LBS, 5.50, TY-RAP  
16-120-0340W HOSE, SHIELDS BILGEFLEX, .75, WHITE  
3806 CLAMP, WORM DRIVE, MINI, .312X0.781

**Aircraft System and Number**

03 – Electrical System

**Consumables**

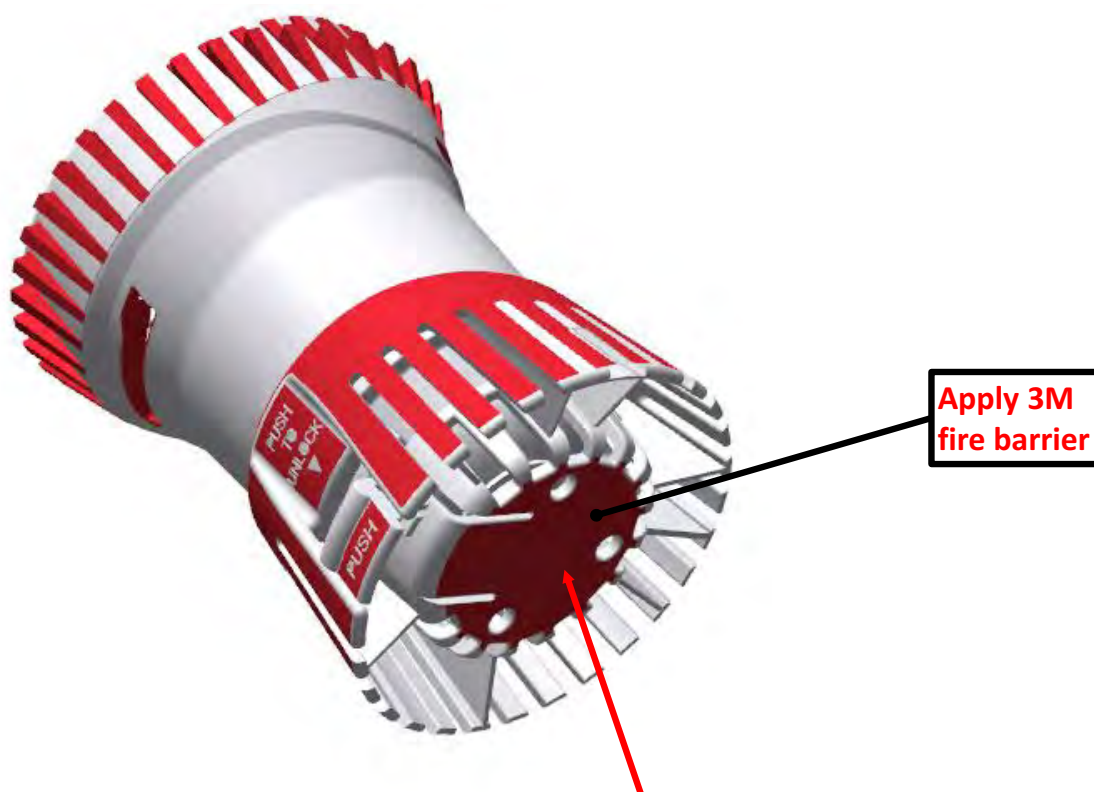
3M FIRE BARRIER SILICONE SEALANT 2000+B  
SILICONE ELASTOMER, ONE-COMPONENT

---

**TASK INSTRUCTIONS:**

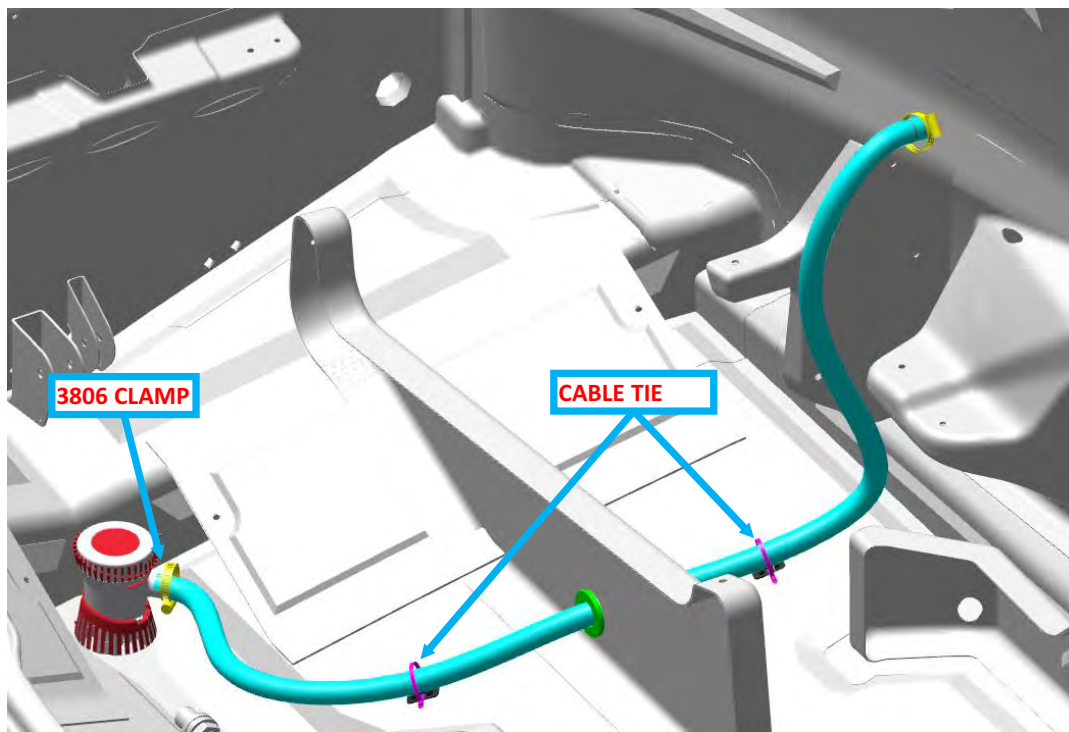
1. Clean the bilge area of any sand, stones, or other debris.
2. Remove the lower screen from the bilge pump and set it aside.

**NOTE:** *It will not be used unless the strainer in the aircraft is damaged. To bond in a new lower screen of the bilge pump, use 3M fire barrier (201). Wipe excess sealant extruded from pin holes flush with top side surface of bonding flange. Allow fire barrier to cure for 90 minutes before reinstalling the bilge pump.*

**FIGURE 6-10****APPLY 3M FIRE BARRIER**

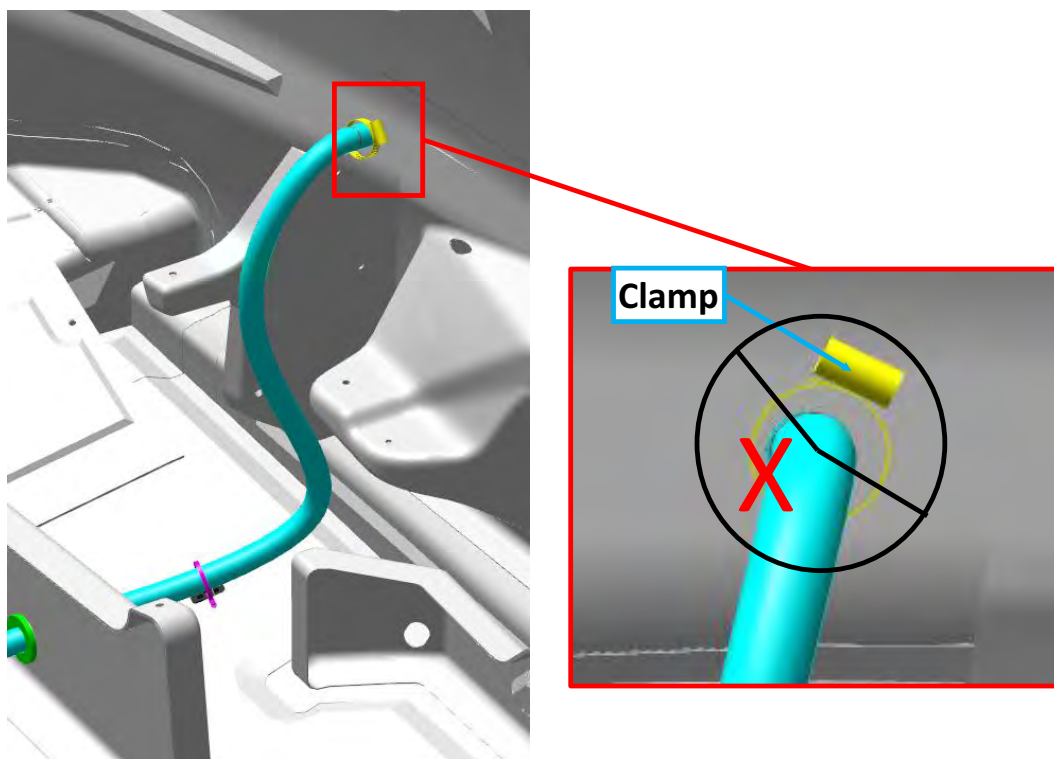
3. Install the pump body onto the bottom strainer already in the aircraft by aligning it and rotating it clockwise until locked.
4. Cut hose to  $42.0 \pm 1.0$ ", make cut in the center of the flat section. Attach the bilge pump hose to the pump barb fitting and secure with a 3806 CLAMP as shown below. Route the hose as indicated below. Slide one end of the hose onto the bulkhead fitting in the fuselage wall (until flush with the fuselage wall) and the other end onto the bilge pump (until flush with the bilge pump).





**FIGURE 6-11**  
SECURE BILGE PUMP HOSE

5. For the clamp on the bulkhead fitting in the pilot side fuselage skin, clock the clamp such that the screw housing is fully within the following approximate zone, make sure there is a minimum clearance of .125" from the fuselage roll control cable. Tighten clamps until a seal is achieved.



**FIGURE 6-12**  
CLAMP ORIENTATION

6. Connect D9009J connector on bilge pump to D9009P connector on main wire harness.
7. Test that the bilge pump operates normally.
8. Install the fuel tank. (See “Install Fuel Tank (MY18+)” on page 10-19.)

VERIFICATION METHOD:

The procedure is complete when the fuel tank is installed.

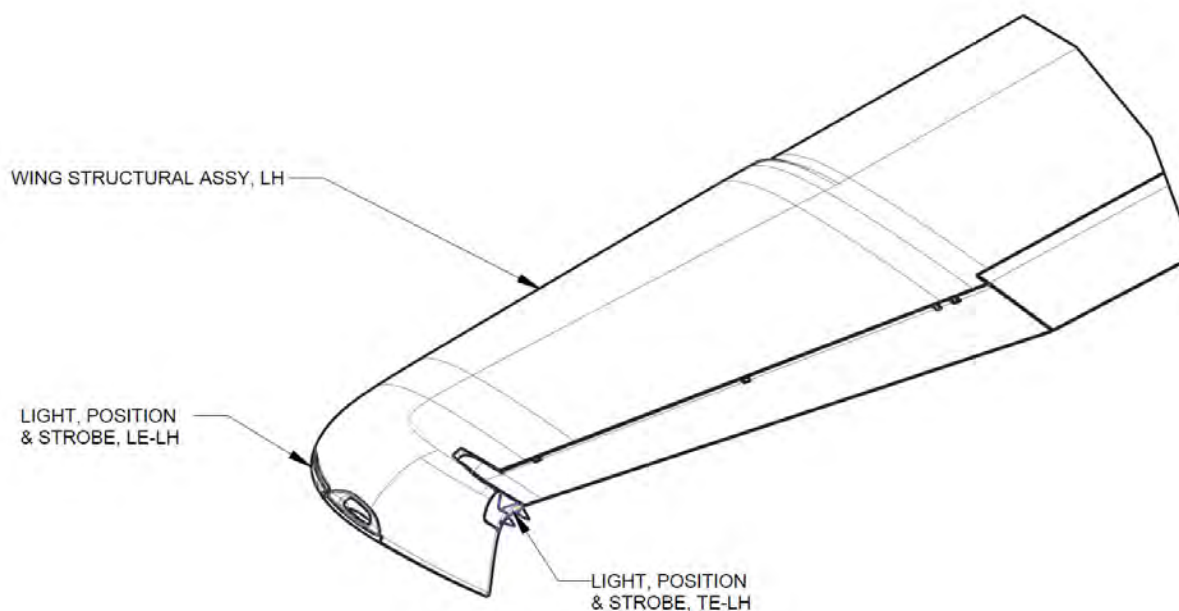


## 6.7 Wing Tip Lights

### 6.7.1 Wing Tip Lights Description

Each wing contains a set of leading edge and trailing edge position and strobe lights.

### 6.7.2 Wing Tip Lights Diagram/Schematic



### 6.7.3 Maintenance Instructions

#### 6.7.3.1 Removal of Wing Tip Lights

These instructions should be used to remove the wing tip lights.

##### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Using a T15 Torx screwdriver, remove the retention screw on each leading edge and tail edge light as needed.

*NOTE: If the retention screw is not being replaced, ensure the O-ring remains on it.*

2. Detach light from aircraft and disconnect the light's wire harness connectors.
  - a. Disconnect D90002J1 and D90002P2 on LIGHT, POSITION & STROBE, LE-LH from D90002P1 and D90002J2 on aircraft wire harness, respectively.

*NOTE:*

- b. Disconnect D90003P on LIGHT, POSITION & STROBE, TE-LH from D90003J on aircraft wire harness.
  - c. Disconnect D90006J1 and D90006P2 on LIGHT, POSITION & STROBE, LE-RH from D90006P1 and D90006J2 on aircraft wire harness, respectively.
  - d. Disconnect D90007P on LIGHT, POSITION & STROBE, TE-RH from D90007J on aircraft wire harness.



**FIGURE 6-13**  
LEADING EDGE LIGHT ASSEMBLY, LH



**FIGURE 6-14**  
TRAILING EDGE LIGHT ASSEMBLY, LH

VERIFICATION METHOD:

The task is complete when the light is fully removed from the aircraft. Use Installation of Wing Tip Lights to reinstall.

RELATED INFORMATION:

"Installation of Wing Tip Lights" on page 6-55

### 6.7.3.2 Installation of Wing Tip Lights

These instructions should be used to remove the wing tip lights.

TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

GTV-IC1400-0-AJ (LIGHT, POSITION & STROBE, LE-RH)  
 GTV-IC1600-0-AJ (LIGHT, POSITION & STROBE, TE-RH)  
 GTV-IC1400-1-AJ (LIGHT, POSITION & STROBE, LE-LH)  
 GTV-IC1600-1-AJ (LIGHT, POSITION & STROBE, TE-LH)  
 8-32x5-8TXFL82-316SS-BUN (SCREW, FL BUNA-N, 8-32x5-8T)

### Aircraft System and Number

03 – Electrical System

### Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®

### TASK INSTRUCTIONS:

1. Inspect the interior of the wing tip for water, debris, or anything else amiss and correct any issues.
2. Inspect the surfaces where the light's seal will contact the wing, ensuring that it is undamaged and clean.  
*NOTE: If installing a trailing edge (TE) light, remove the adhesive backing from the included seal (Figure 6-14) prior to installation.*
3. Connect the light's wire harness connectors.
  - a. For the LH Trailing Edge light, connect D9003P on light to D9003J on aircraft wire harness.
  - b. For the RH Trailing Edge light, connect D9007P on light to D9007J on aircraft wire harness.
  - c. For the LH Leading Edge light, connect D9002J1 and D9002P2 on light to D9002P1 and D9002J2 on aircraft wire harness respectively.
  - d. For the RH Leading Edge light, connect D9006J1 and D9006P2 on light to D9006P1 and D9006J2 on aircraft wire harness respectively.
4. Attach light to wing using SCREW, BUNA-N, 8-32x5-8T with a light coat of Tef-Gel®. Verify light is seated and torque screw to 13 in-lb<sub>f</sub> with a T15 Torx drive

*NOTE: If not in place, install the trailing edge light fences. (See "Wing Trailing Edge Light Fence Replacement" on page 17-16.)*

### VERIFICATION METHOD:

The task is complete when the light is secure.

### RELATED INFORMATION:

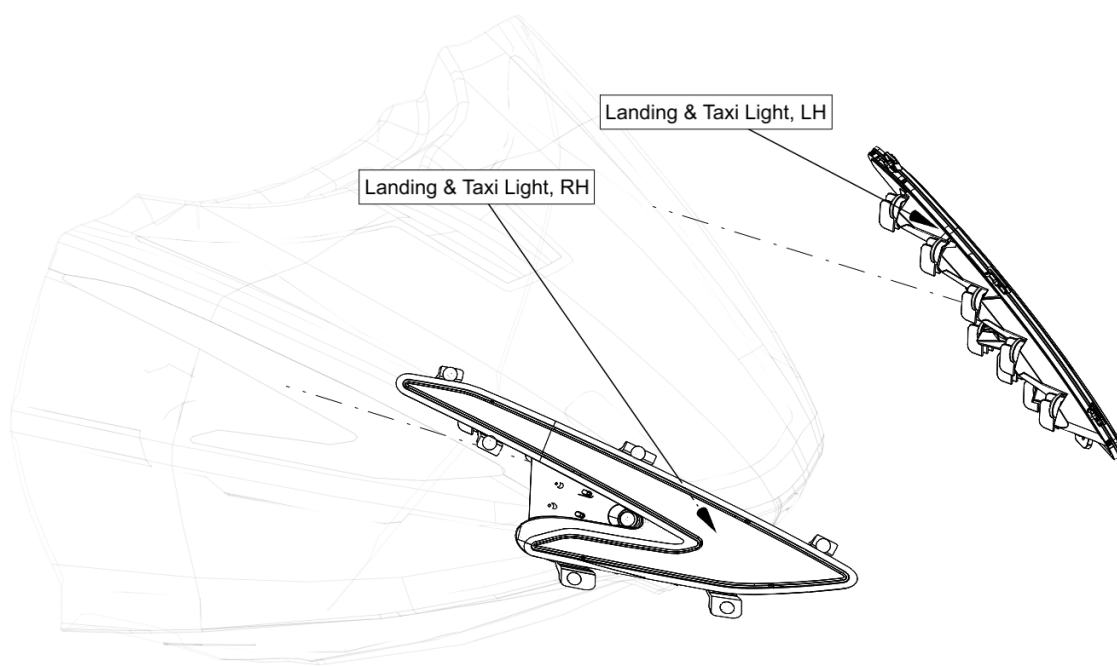
"Condition and 100-Hour Inspection – Wings" on page 3-11  
 "Removal of Wing Tip Lights" on page 6-53

## 6.8 Landing and Taxi Lights

### 6.8.1 Landing and Taxi Lights Description

Each aircraft has landing and taxi lights on the left-hand and right-hand side of the front of the aircraft. The switch for the landing and taxi lights is in the radio bezel.

### 6.8.2 Landing and Taxi Lights Diagram/Schematic



**FIGURE 6-15**  
LANDING AND TAXI LIGHTS DIAGRAM

## 6.8.3 Maintenance Instructions

### 6.8.3.1 Remove Landing and Taxi Lights

Use the following instructions to remove the landing and taxi lights.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

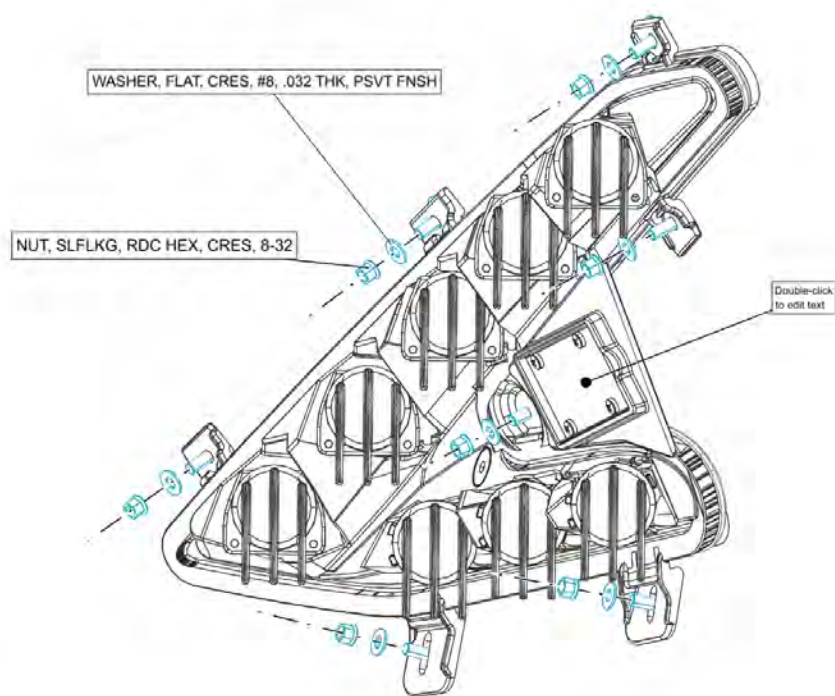
None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None



**FIGURE 6-16**  
LANDING AND TAXI LIGHTS INSTALLATION, RH (LH OPPOSITE)

**TASK INSTRUCTIONS:**

1. Remove top instrument panel. (See "Right Instrument Panel Top Panel Removal" on page 8-17.) (See "Left Instrument Panel Top Panel Removal" on page 8-19.)
2. Unplug D9033P connector on main wire harness from receptacle on LH light.
3. Unplug D9034P connector on main wire harness from receptacle on RH light.
4. Remove 7 8-32 nuts and washers attaching the landing and taxiing light to the front fuselage. Keep for re-installation.
5. Remove the LH and RH landing and taxi lights.

**VERIFICATION METHOD:**

The task is complete when both landing and taxi lights have been removed.

## RELATED INFORMATION:

"Right Instrument Panel Top Panel Removal" on page 8-17

"Left Instrument Panel Top Panel Removal" on page 8-19

"Install Landing and Taxi Lights" on page 6-60

### 6.8.3.2 Install Landing and Taxi Lights

Use the following instructions to install the landing and taxi lights.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

13 INCH POUND TORQUE WRENCH

**Parts Required**

LIGHT, TAXI AND LANDING, RH

LIGHT, TAXI AND LANDING, LH

NUT, SLFLKG, RDC HEX, CRES, 8-32

WASHER, FLAT, CRES, #8, .032 THK, PSVT FNSH

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

## TASK INSTRUCTIONS:

1. Install LH and RH light assembly onto existing studs as shown using retained washers and nuts. See Figure 6-16.
2. Torque nuts to 13 in-lbs. Check that hardware is secure.
3. Plug D9033P connector on main wire harness into receptacle on LH light.



4. Plug D9034P connector on main wire harness into receptacle on RH light.
  5. Turn on the landing and taxi lights switch in the radio bezel to verify lights are working correctly.
- 

**VERIFICATION METHOD:**

This task is done when the landing and taxi lights are installed and working.

**RELATED INFORMATION:**

"Right Instrument Panel Top Panel Installation" on page 8-18

"Left Instrument Panel Top Panel Installation" on page 8-21

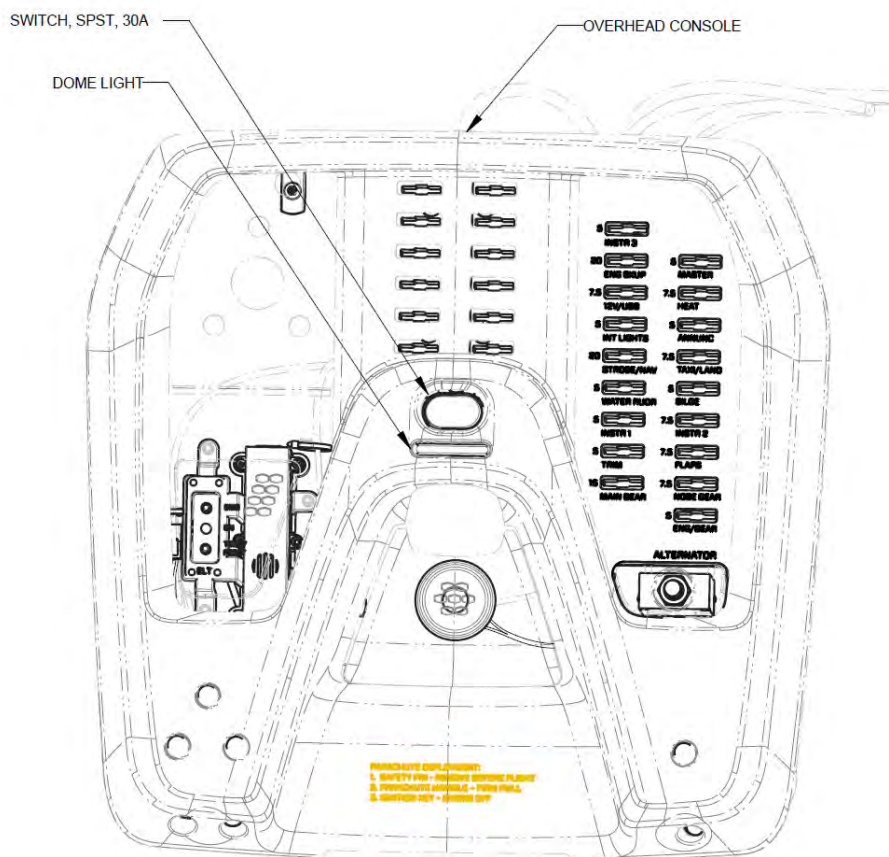
"Remove Landing and Taxi Lights" on page 6-58

## **6.9 Dome Light Switch**

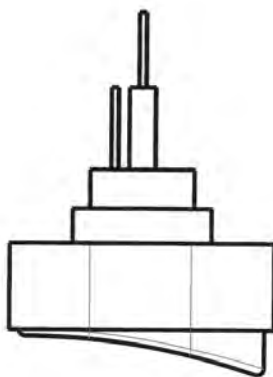
### **6.9.1 Dome Light Switch Description**

The dome light switch is a 30A SPST, single pole single throw, switch that controls the dome light in the overhead console.

### **6.9.2 Dome Light Switch Diagram/Schematic**



**FIGURE 6-17**  
OVERHEAD CONSOLE AND DOME LIGHT SWITCH



SWITCH, SPST, 30A

## 6.9.3 Maintenance Instructions

### 6.9.3.1 Remove Dome Light Switch

Use the following task to remove the dome light switch.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove the overhead console bezel. (See “Overhead Console Component Replacement” on page 13-15.)
  2. Carefully remove the connectors from short and long posts on SWITCH, SPST, 30A. (See Figure 6-17.)
  3. Remove the retaining nut and remove the dome light switch from the overhead console.
- 

#### VERIFICATION METHOD:

The task is completed when the switch has been removed.

## RELATED INFORMATION:

"Overhead Console Component Replacement" on page 13-15

### 6.9.3.2 Install Dome Light Switch

Use the following task to install the dome light switch.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

R13-133A-01 (SWITCH, SPST, 30A)

**Aircraft System and Number**

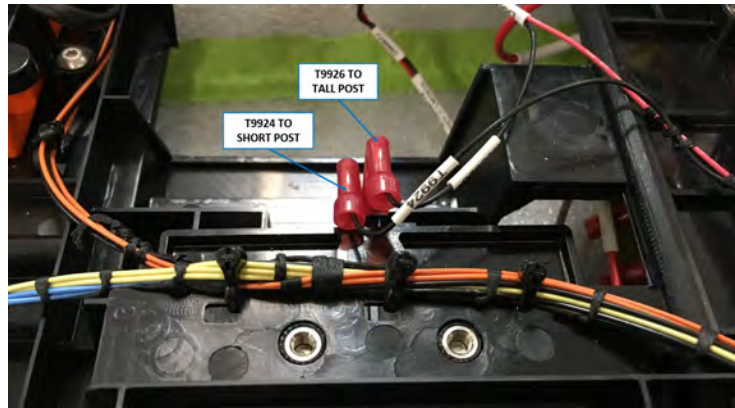
03 – Electrical System

**Consumables**

None

## TASK INSTRUCTIONS:

1. Install the new SWITCH, SPST, 30A into the overhead console frame and tighten with retaining nut. Torque to finger tight.
2. Connect wire labeled T9924 to the short post of the switch and T9926 to the tall post of the switch as shown in Figure 6-18.



**FIGURE 6-18**  
TOP VIEW DOWN OF OVERHEAD CONSOLE

3. Reinstall the console bezel. (See "Overhead Console Component Replacement" on page 13-15.)

**VERIFICATION METHOD:**

Turn the master switch on and verify that the dome light switch correctly controls the dome light.

**RELATED INFORMATION:**

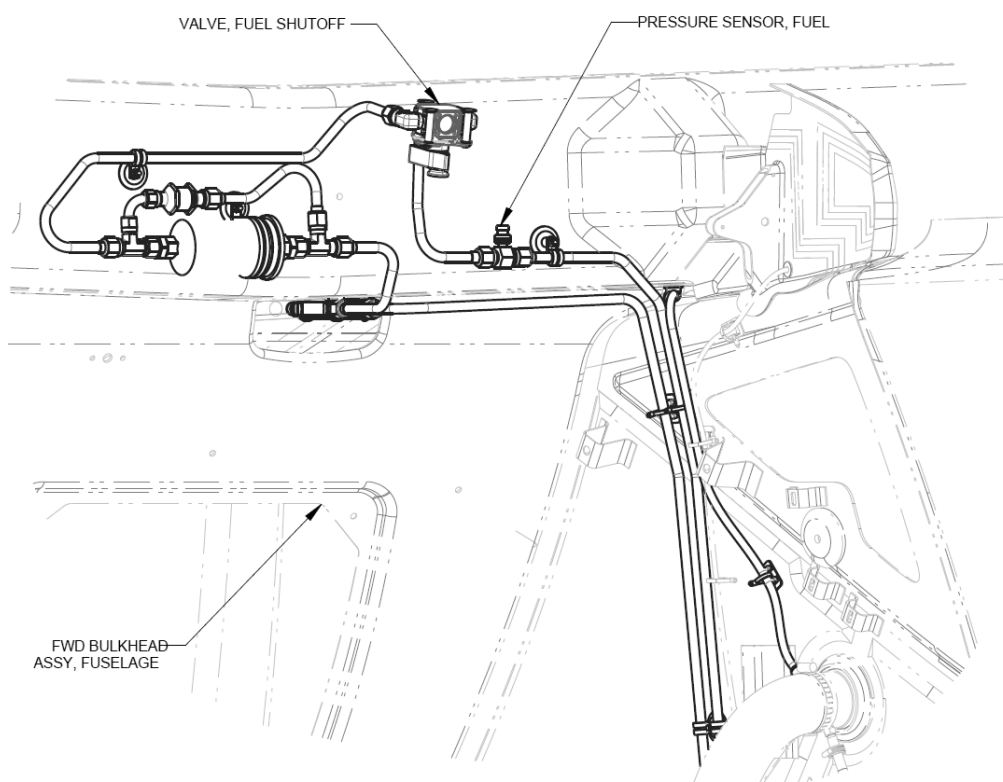
"Overhead Console Component Replacement" on page 13-15

## 6.10 Fuel Pressure Sensor

### 6.10.1 Fuel Pressure Sensor Description

The fuel pressure sensor utilizes the annunciator panel to alert the pilot if the fuel pressure is abnormal.

### 6.10.2 Fuel Pressure Sensor Diagram/Schematic



**FIGURE 6-19**  
FUEL PRESSURE SENSOR LOCATION

### 6.10.3 Maintenance Instructions

#### 6.10.3.1 Remove Fuel Pressure Sensor

These instructions should be used to remove the fuel pressure if it shows signs of a leak.

TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

03 – Electrical System

**Consumables**

None

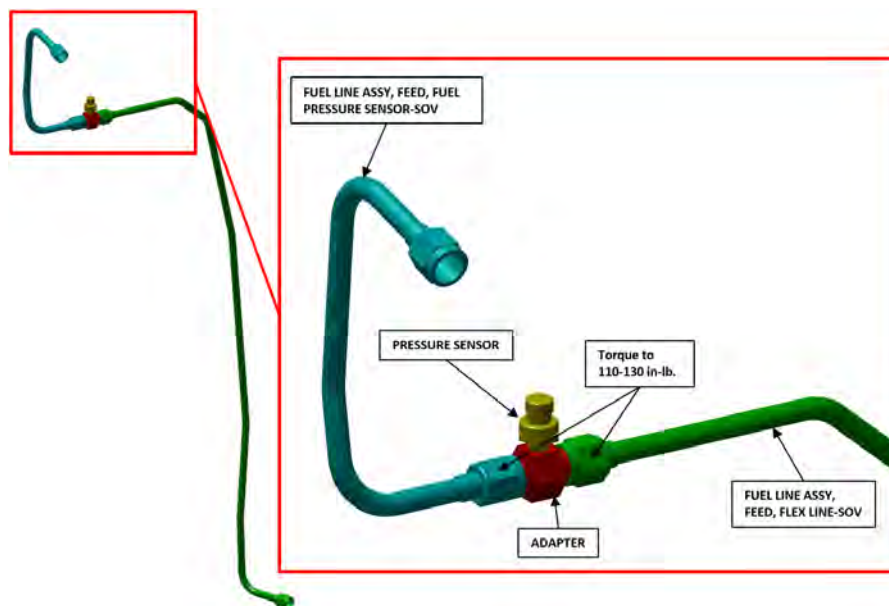
---

**TASK INSTRUCTIONS:**

1. Remove headliner. (See “Headliner Removal” on page 3-37.)
2. Turn fuel shutoff valve to the OFF position.
3. Disconnect D9036P on fuselage wire harness from PRESSURE SENSOR.
4. Remove PRESSURE SENSOR. Use backing wrench to hold the fuel pressure sensor adapter in place prior to loosening up the sensor. (See Figure 6-20.)

**CAUTION:** *Use a lot of rags to catch any liquid fuel from splattering around cockpit.*





**FIGURE 6-20**  
FUEL SUPPLY LINE, SUBASSEMBLY

**VERIFICATION METHOD:**

The task is completed when the fuel pressure sensor has been removed.

**RELATED INFORMATION:**

"Headliner Removal" on page 3-37

### 6.10.3.2 Install Fuel Pressure Sensor

Use the following instructions to install the fuel pressure sensor.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

M\_P75A-E4C (PRESSURE SENSOR, FUEL, 75PSI, .125NPT)

**Aircraft System and Number**

03 – Electrical System

**Consumables**

LOCTITE 243 (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE MED STR, BLUE)

TT-I-735A or equivalent (ISOPROPYL ALCOHOL)

TT-M0261 or equivalent (MEK: METHYL ETHYL KETONE)

O-A-51 or equivalent (ACETONE)

ICA01209 (INSPECTORS LACQUER, ANTI SABOTAGE, ORANGE)

---

**TASK INSTRUCTIONS:**

1. Clean threads of PRESSURE SENSOR with ISOPROPYL ALCOHOL, MEK, OR ACETONE.
  2. Apply THREADLOCKER to threads of the PRESSURE SENSOR. Install PRESSURE SENSOR 2 to 3 turns past finger tight into the fuel pressure sensor adapter. (See Figure 6-20.)
  3. Check that hardware is secure on the supply line B-nuts. Torque B-nuts to 110-130 in-lb.
  4. Connect D9036P on the fuselage wire harness to the PRESSURE SENSOR.
  5. Install headliner. (See "Headliner Installation" on page 3-38.)
  6. Turn fuel shutoff valve to the ON position.
- 

**VERIFICATION METHOD:**

Pressure check fuel lines with fuel valve in ON position and both pumps running. Ensure no leaks are visible.

**RELATED INFORMATION:**

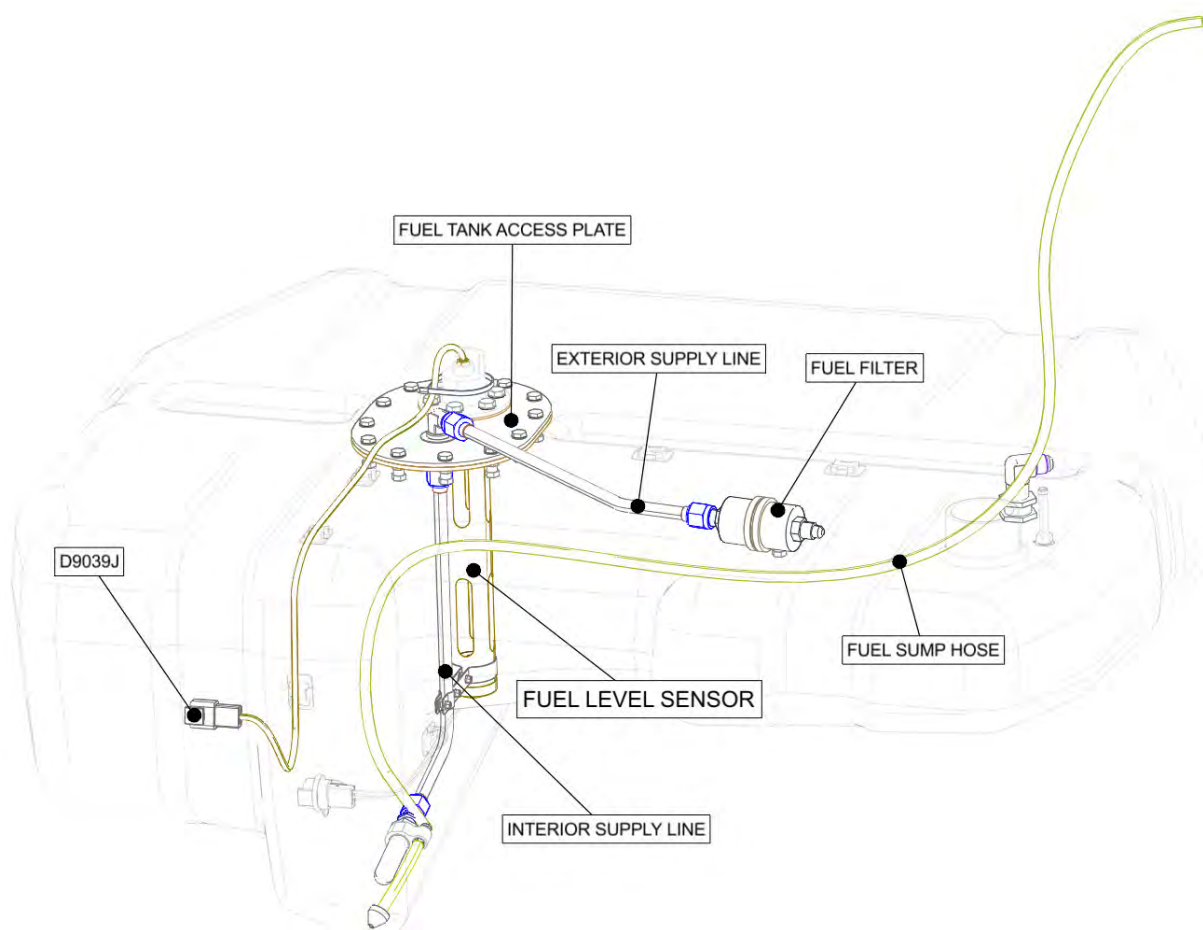
"Headliner Installation" on page 3-38

## 6.11 Fuel Level Sensor

### 6.11.1 Fuel Level Sensor Description

The fuel level sensor is mounted into the tank through the fuel tank access panel. It is connected to T9026 and T9028 ring terminals with washers and bolts and connected to D9039P on the main wire harness.

### 6.11.2 Fuel Level Sensor Diagram/Schematic



**FIGURE 6-21**  
FUEL LEVEL SENSOR INSTALLATION DIAGRAM

## 6.11.3 Maintenance Instructions

### 6.11.3.1 Fuel Level Sensor Replacement

Use the following task to replace the fuel level sensor.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

PROBE, FUEL LEVEL SENSOR

OPTICAL SENSOR

FUEL SENSOR GASKET

FUEL TANK ACCESS PLATE GASKET

**Aircraft System and Number**

03 – Electrical System

**Consumables**

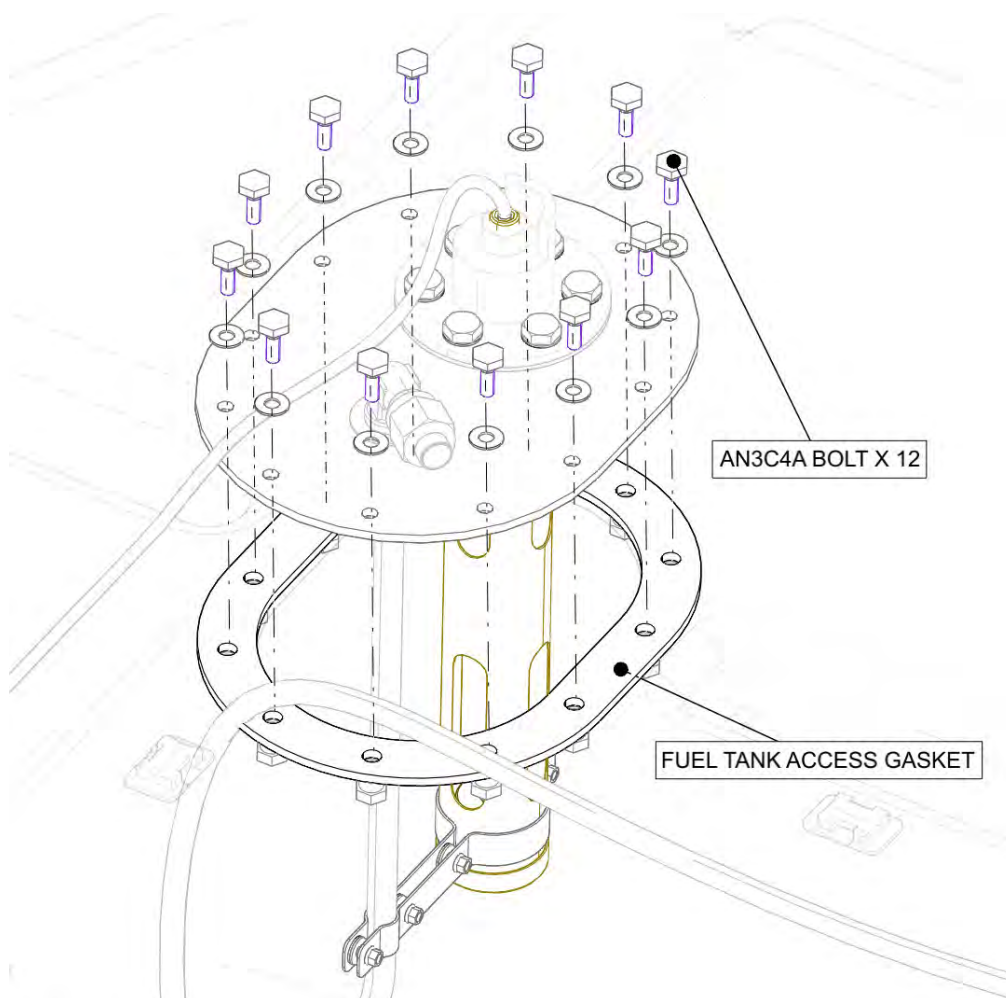
TY24MX (ZIP TIE)

LOCTITE 243 (THREADLOCKER)

GASKET SEALANT

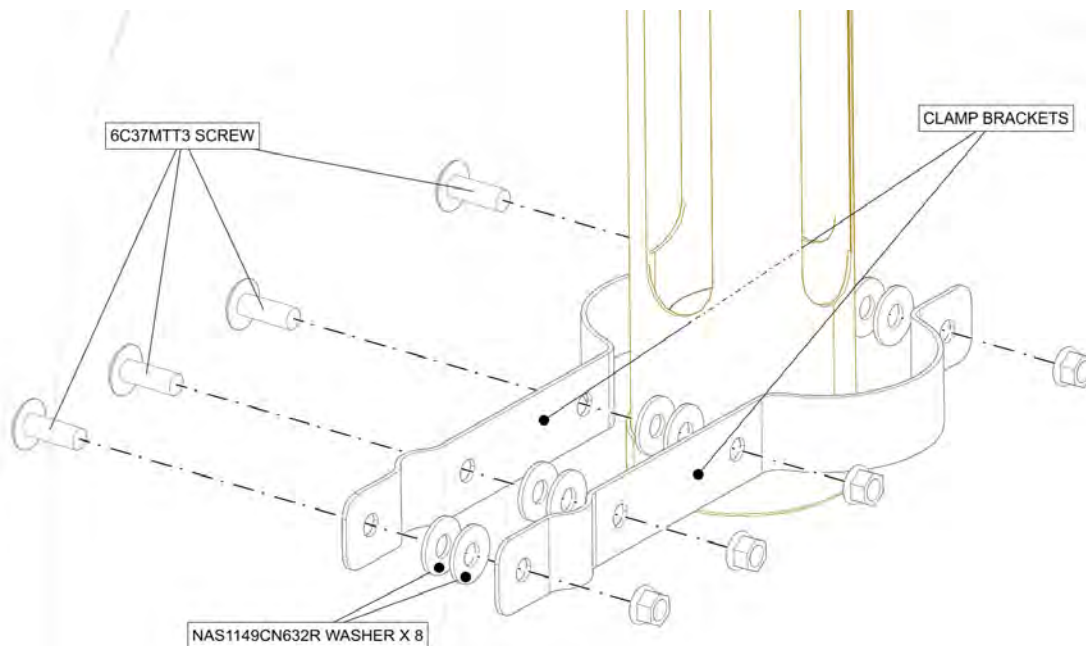
#### TASK INSTRUCTIONS:

1. Remove the right seat back closeout. (See “Seat Back Removal” on page 3-50.)
2. Remove the right baggage floor. (See “Baggage Floor Removal” on page 3-41.)
3. Disconnect fuel level sensor connector from d9039p aircraft wire harness. Cut the zip ties securing the wire harness.
4. Disconnect EXTERIOR SUPPLY LINE. See Figure 6-21.
5. Remove 12 AN3C4A BOLT and washers to remove FUEL TANK ACCESS PLATE from the FUEL TANK ACCESS GASKET.



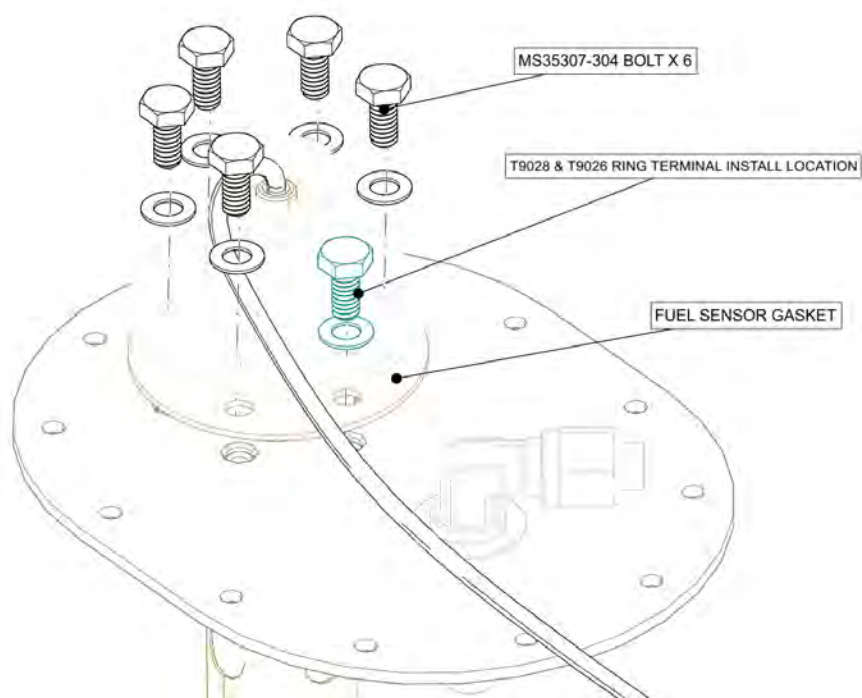
**FIGURE 6-22**  
REMOVE FUEL TANK ACCESS PLATE

6. Remove the 4 6C37MTT3 SCREW on CLAMP BRACKETS to release the fuel level sensor from Interior supply line.



**FIGURE 6-23**  
REMOVE CLAMP BRACKETS

7. Remove the bolts attaching the fuel level sensor to the FUEL TANK ACCESS PLATE. The sensor is attached to the FUEL TANK ACCESS PLATE using six MS35307 BOLT threaded into blind fasteners on the other side of the FUEL TANK ACCESS PLATE. Remove both ground wire RING TERMINAL attached to the bolts.

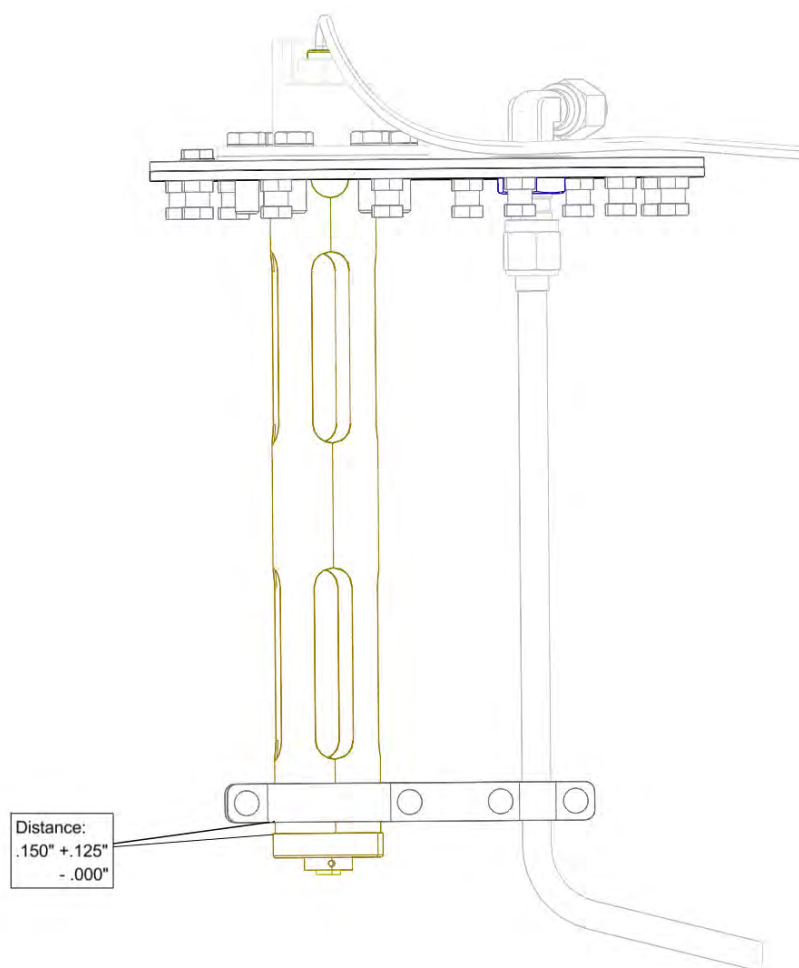


**FIGURE 6-24**  
REMOVE FUEL LEVEL SENSOR

8. Connect the FUEL SENSOR GASKET from the fuel level sensor and check its condition. Replace if necessary.
9. Install new fuel level sensor and its gasket onto the FUEL TANK ACCESS PLATE. Torque the five MS35307 BOLT in star shaped pattern to 40 in-lbs each. (See Figure 6-24.)

*NOTE: The last bolt for RING TERMINAL in the fuel level sensor will be installed at a later step.*

10. Position CLAMP BRACKETS as shown, reinstall CLAMP BRACKETS onto the fuel level sensor.

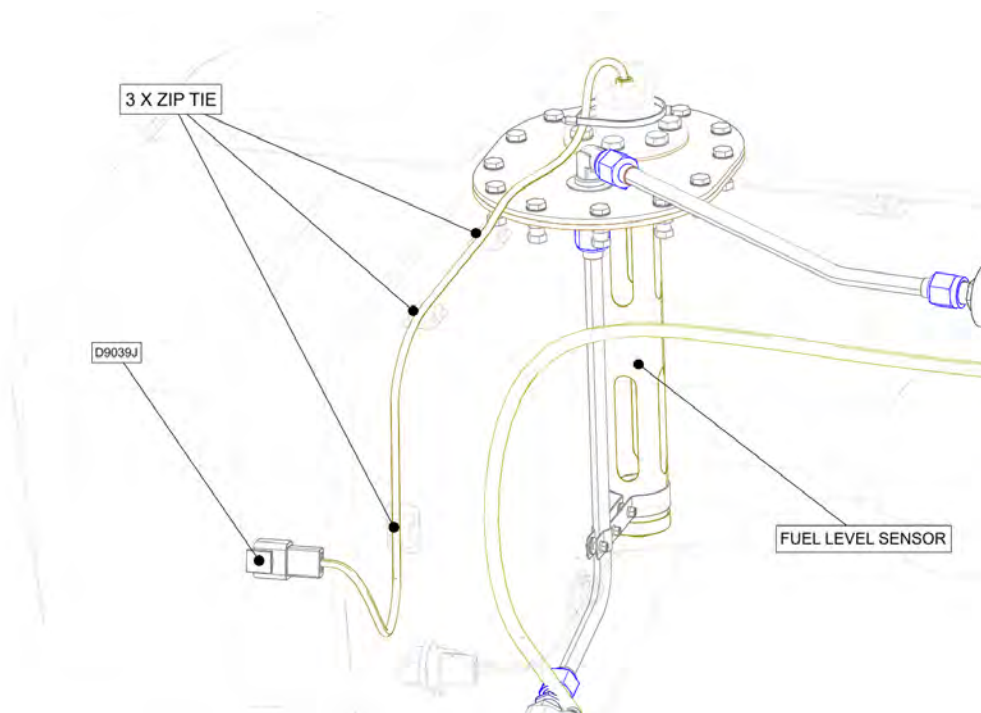


**FIGURE 6-25**  
INSTALL CLAMP BRACKETS

11. Whenever the FUEL LEVEL SENSOR is replaced, also replace the FUEL TANK ACCESS PLATE GASKET. Remove the original FUEL TANK ACCESS PLATE GASKET, clean the surface to make sure there's no sealant remaining on the fuel tank and the FUEL TANK ACCESS PANEL. Apply sealant on both sides of the gasket as one continuous bead approximately .030"-.060" thick. Sealant to be applied as straight lines between bolt holes and half crescents to the interior around the bolt holes. Allow sealant to sit for 5 minutes after being applied to gasket surfaces before placing gasket onto fuel tank.
12. Reinstall fuel level sensor and FUEL TANK ACCESS PLATE into the fuel tank with 12 AN3C4A BOLT and washers. See Figure 6-22.
13. Connect EXTERIOR SUPPLY LINE and torque both ends to 110-130 in-lbs. See Figure 6-21.
14. Attach T9028 and T9026 ring terminals and install AN3C4A BOLT and washer into fuel level sensor, apply LOCTITE 243. Torque to 40-45 in-lbs.
15. Connect the fuel level sensor connector to the aircraft harness. See Figure 6-21.
16. Verify continuity to ground between ring terminal and ground stud.

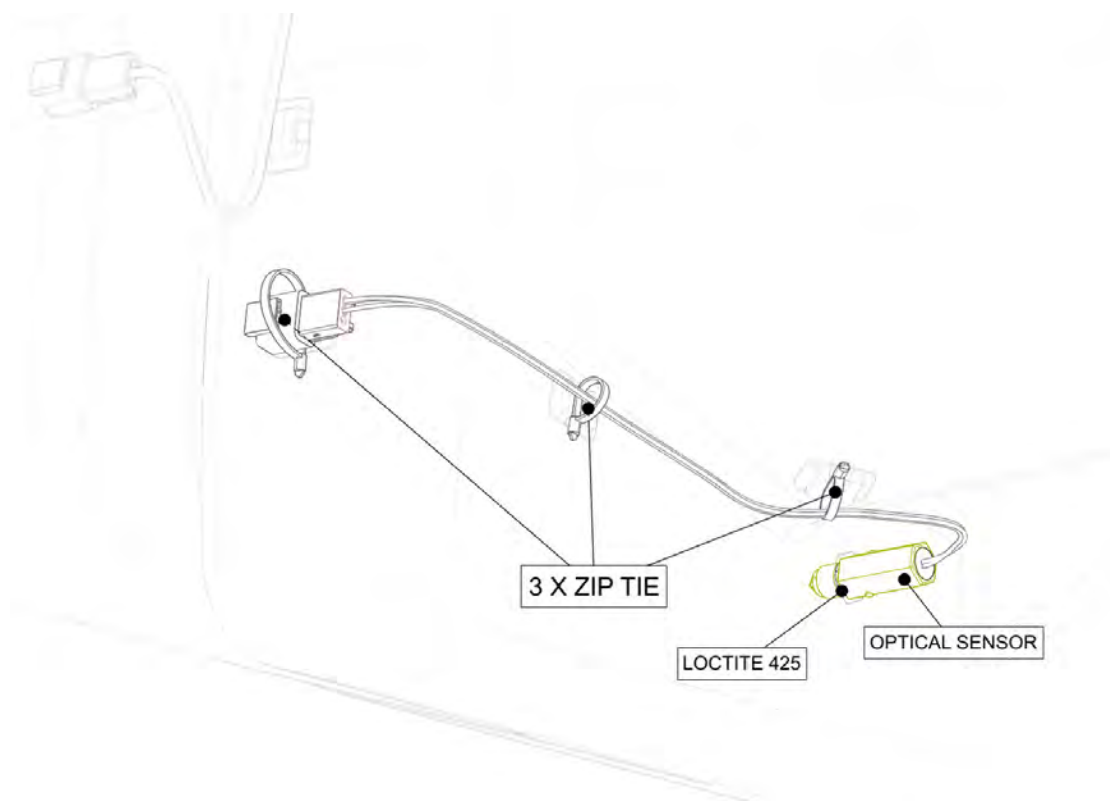


17. Perform a fuel calibration test to ensure the fuel level indicating system and low-level switch are operating correctly:
  - a. Sump fuel from the fuel tank, turn on aircraft to verify fuel low-level light come on.
  - b. Add three gallons of fuel into the fuel tank, verify the low-level light goes out.
  - c. Add two more gallons of fuel into the fuel tank and verify fuel level sensor reads about 5 gallons.
18. Secure fuel level sensor wire harness to zip tie mounts on fuel tank using three zip ties.



**FIGURE 6-26**  
SECURE FUEL LEVEL SENSOR WIRE HARNESS

19. Apply LOCTITE 425 to OPTICAL SENSOR and install OPTICAL SENSOR into bottom of fuel tank. Torque OPTICAL SENSOR to 12-15 in-lbs. Wrap connector with F4 tape. Secure wiring for OPTICAL SENSOR to fuel tank using zip ties and cable tie mounts.



**FIGURE 6-27**  
INSTALL OPTICAL SENSOR

20. Install the right seat back closeout. (See "Seat Back Installation" on page 3-51.)
21. Install the right baggage floor. (See "Baggage Floor Installation" on page 3-42.)

VERIFICATION METHOD:

Step 16 operates as the verification method for this task.

RELATED INFORMATION:

- "Baggage Floor Removal" on page 3-41
- "Seat Back Removal" on page 3-50
- "Baggage Floor Installation" on page 3-42
- "Seat Back Installation" on page 3-51

# Chapter 7

## ENVIRONMENTAL CONTROL (UTILITY SYSTEMS)

Environmental Control System Description.....	7-2
Cabin Heater.....	7-3
Cabin Heater Description.....	7-3
Inspection Instructions.....	7-3
Heater Fan and Core Removal.....	7-3
Heater Fan and Core Installation.....	7-4
Maintenance Instructions.....	7-6
Bilge Pump Debris Removal.....	7-6

## 7.1 Environmental Control System Description

Those units and components which furnish a means of heating, cooling and/or ventilate the internal volumes of the fuselage. Includes: cabin heating unit with liquid transfer lines to engine radiator, cabin fresh air eyeball vents, ducts, scoops and water/air separator.

## 7.2 Cabin Heater

### 7.2.1 Cabin Heater Description

The cabin heater utilizes engine coolant as a heat source. The fan and coil are located between the pilot and passenger rudder pedals. The control is located on the center console. When the control is off, the coolant valve is closed and the fan is off. When the control is turned clockwise, the coolant valve opens fully and the fan turns on. Further rotation of the control clockwise increases the fan speed providing additional heat to the cabin.

ICON Aircraft does not allow for any repairs to be made to the cabin heater without prior consent. Any cabin heater repairs needed must be coordinated and approved by ICON through the Major Repair and/or Alteration (MRA) process or handled directly by ICON.

### 7.2.2 Inspection Instructions

#### 7.2.2.1 Heater Fan and Core Removal

Use the following procedure to remove the heater fan and core.

##### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

##### Aircraft System and Number

04 – Environmental Control (Utility Systems)

##### Consumables

None

##### TASK INSTRUCTIONS:

1. Remove both instrument top panels. (See “Right Instrument Panel Top Panel Removal” on page 8-17. See “Left Instrument Panel Top Panel Removal” on page 8-19.)

2. Disconnect connector D9089J from D9089P at the heater fan.
3. If the heater core is to be removed, disconnect and drain it by disconnecting the input and output B-nut fittings, holding the hex on the core with a 3/4 wrench and turning the B-nut with an 11/16.
4. Using a 3mm ball-end hex key, remove the four screws and washers securing the heater fan and core to the composite bracket.
5. Slide the fan out to pilot's side from between bracket and heater core. If the heater core is still in place, support it with a stiff wire or cable tie so as not to put loads into the coolant lines, otherwise, it can now be removed.

#### VERIFICATION METHOD:

The task is complete when the heater core has been removed.

#### RELATED INFORMATION:

"Right Instrument Panel Top Panel Removal" on page 8-17

"Left Instrument Panel Top Panel Removal" on page 8-19

### 7.2.2.2 Heater Fan and Core Installation

Use the following procedure to install the heater fan and core.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

04 – Environmental Control (Utility Systems)

##### **Consumables**

None

#### TASK INSTRUCTIONS:

1. Locate heater core in position if it was removed. Tighten the 6 B-nuts finger tight.

2. Locate the fan between the heater bracket and heater core. The fan should be orientated so that the wire leads are at the lower-right corner and with the fan blowing aft. Use caution to not pinch any wires between the parts.
3. Using a 3mm ball-end hex key, install the four 92290A186 screws and four NAS1149CN832R washers securing the heater fan and core to the composite bracket, torquing each to 7 in-lb<sub>f</sub>.
4. Tighten the two heater core B-nuts to 75-125 in-lb<sub>f</sub>, holding the hex on the core with a 3/4 wrench and turning the B-nut with an 11/16.
5. Connect connector D9089J to D9089P at the heater fan.

#### VERIFICATION METHOD:

Test that the fan works properly. Run the engine for a few minutes, then check and adjust the coolant level and check for coolant leaks.

#### RELATED INFORMATION:

"Right Instrument Panel Top Panel Installation" on page 8-18

"Left Instrument Panel Top Panel Installation" on page 8-21

## 7.3 Maintenance Instructions

### 7.3.1 Bilge Pump Debris Removal

The following section includes information necessary to check the bilge pump for debris.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

04 – Environmental Control (Utility Systems)

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove the 4 Torx #20, 10-32 thread flat head screws of the right baggage floor panel.
  2. Remove the right baggage floor panel. (See “Baggage Floor Removal” on page 3-41.)
  3. With a flashlight, place the light beam in the middle-rear of the fuel bladder installation looking down to the bottom of the fuselage.
  4. Inspect the bilge pump. If there is any debris, gently remove from around the screen portion of the pump.
  5. Replace the right baggage floor panel. (See “Baggage Floor Installation” on page 3-42.)
  6. Tighten and secure the 4 Torx #20, 10-32 thread flat head screws.
- 

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Avionics and Electrical" on page 3-23



# Chapter 8

## EQUIPMENT AND FURNISHINGS

Equipment and Furnishings Description.....	8-2
Equipment and Furnishings General Maintenance .....	8-3
Seat Belt Replacement.....	8-3
Center Console Bucket Removal.....	8-5
Center Console Bucket Installation.....	8-8
Throttle Handle and Bezel Removal .....	8-10
Throttle Handle and Bezel Installation .....	8-13
GPS Mount and Radio Stack Bezel Removal.....	8-15
GPS Mount and Radio Stack Bezel Installation.....	8-16
Right Instrument Panel Top Panel Removal .....	8-17
Right Instrument Panel Top Panel Installation.....	8-18
Left Instrument Panel Top Panel Removal .....	8-19
Left Instrument Panel Top Panel Installation .....	8-21
Instrument Panel Center Spine Removal and Installation.....	8-22

## 8.1 Equipment and Furnishings Description

Those fixed and removable items of equipment and furnishings contained in the cockpit and baggage compartment. Typical parts are: seats, shoulder harnesses, seat belts, instrument panel and console components with instrument mounting provisions, interior cover panels and trim, miscellaneous storage compartments, and associated attachment brackets and hardware.

## 8.2 Equipment and Furnishings General Maintenance

### 8.2.1 Seat Belt Replacement

Use the following procedure to remove and install the seat belts.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

05 – Equipment and Furnishings

**Consumables**

None

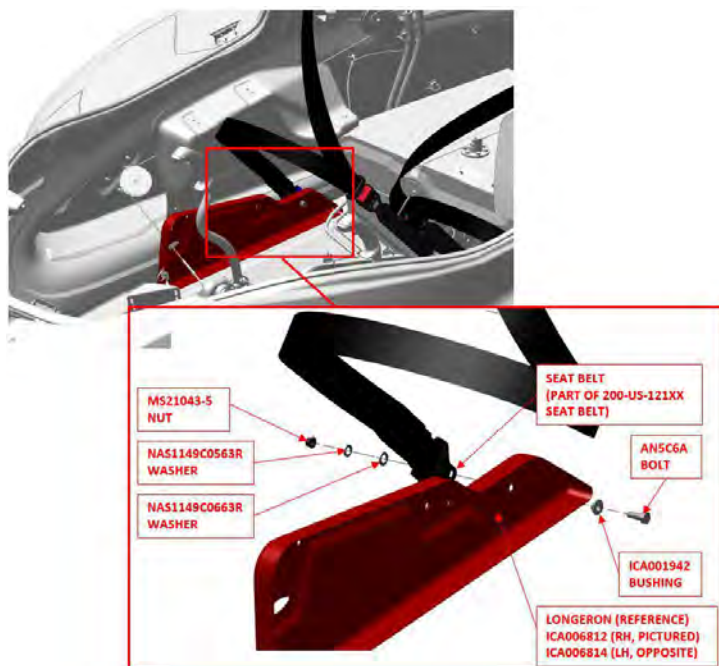
---

#### TASK INSTRUCTIONS:

1. Remove the baggage floors and seat back panel on the side of the seat belt to be removed. (See “Baggage Floor Removal” on page 3-41.) ( See “Seat Back Removal” on page 3-50.)

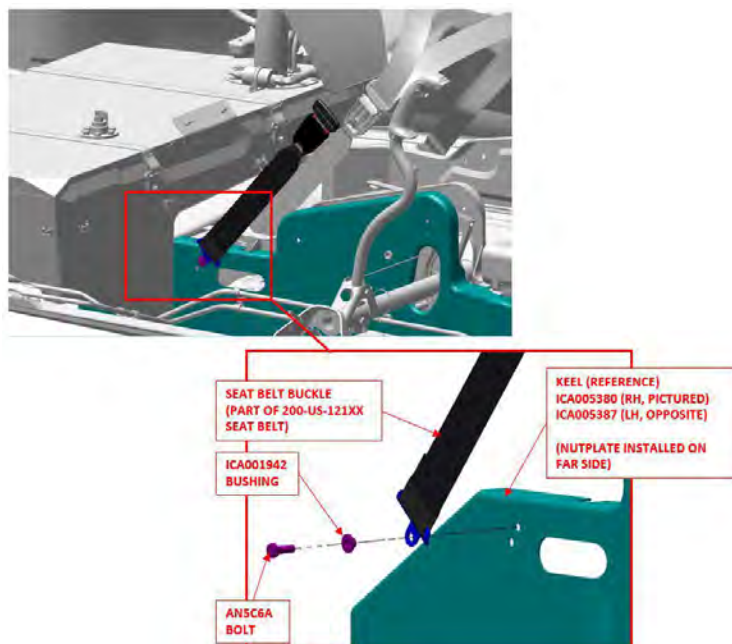
*NOTE: Though not necessary, removal of the seat back and seat pan makes the following steps easier. (See “Seat Pan Removal” on page 3-52.)*

2. Remove the seat belt inertia reel.(See “Seat Belt Inertia Reel Removal” on page 3-39.)
3. Use 1/2 and 3/8 wrenches to remove the bolt and nuts securing the outboard end of the belt assembly where it attaches to the outboard longeron. See Figure 8-1.



**FIGURE 8-1**  
CO-PILOT SIDE SHOWN

4. Use a 1/2 wrench to remove the bolt securing the inboard end of the seat belt where it attaches to the inboard keel structure; it is threaded into a nutplate. See Figure 8-2.



**FIGURE 8-2**  
CO-PILOT SIDE SHOWN

Installation

5. Install the seat belt buckle side of the belt assembly onto the inboard keel as shown in Figure 8-2. Torque the bolt to 90 in-lb<sub>f</sub>.
6. Install the free end of the seat belt assembly into the outboard longeron as shown in Figure 8-1. Torque the fastener to 85 in-lb<sub>f</sub>.
7. Install the seat belt inertia reel. (See "Seat Belt Inertia Reel Installation" on page 3-40.)
8. Verify proper function of the inertia reel.
9. Install the seat pan, seat back, seat back closeout, and baggage floors (See "Seat Pan Installation" on page 3-53.)(See "Seat Back Installation" on page 3-51.)(See "Baggage Floor Installation" on page 3-42.).

#### VERIFICATION METHOD:

Procedure is complete when steps are finished.

#### RELATED INFORMATION:

"Baggage Floor Removal" on page 3-41  
 "Seat Back Removal" on page 3-50  
 "Seat Pan Removal" on page 3-52  
 "Baggage Floor Installation" on page 3-42  
 "Seat Back Installation" on page 3-51  
 "Seat Pan Installation" on page 3-53

## 8.2.2 Center Console Bucket Removal

Use the following procedure to remove the center console bucket.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

05 – Equipment and Furnishing

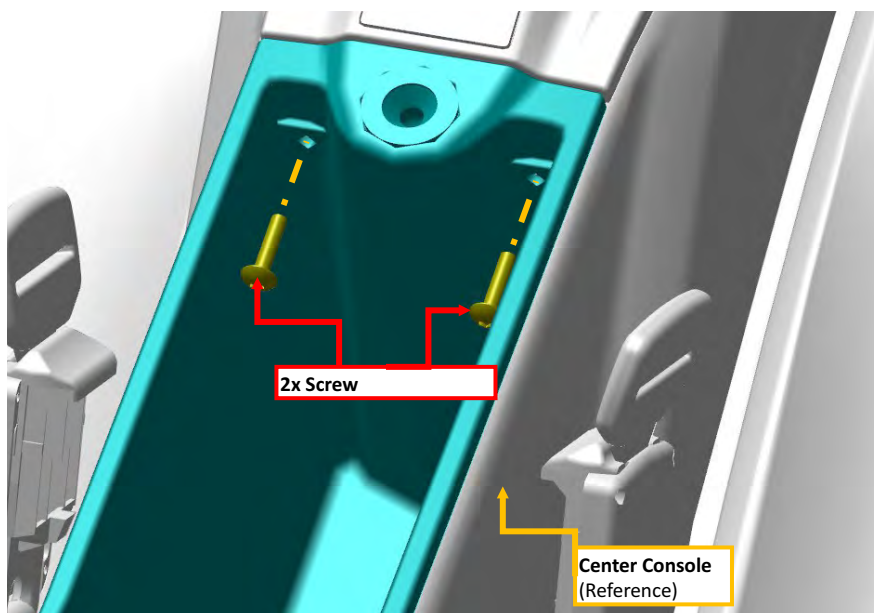
##### **Consumables**

None

---

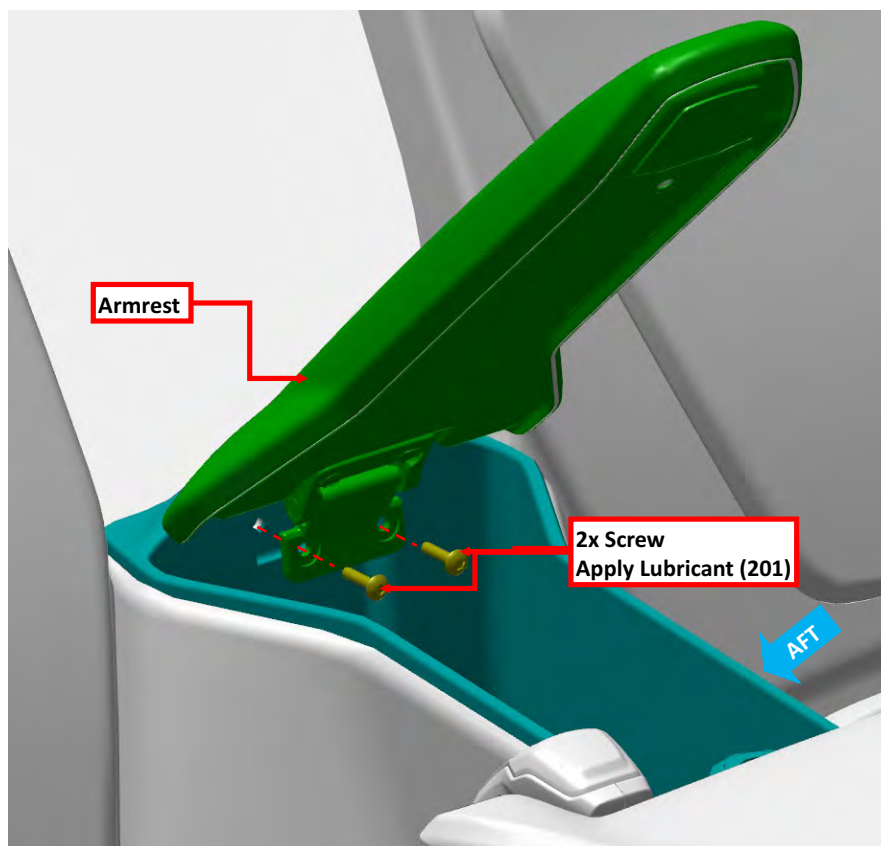
**TASK INSTRUCTIONS:**

1. Remove 2X Screws which secure the FWD edge of the center console bucket. Retain all fastening hardware. See Figure 8-3.



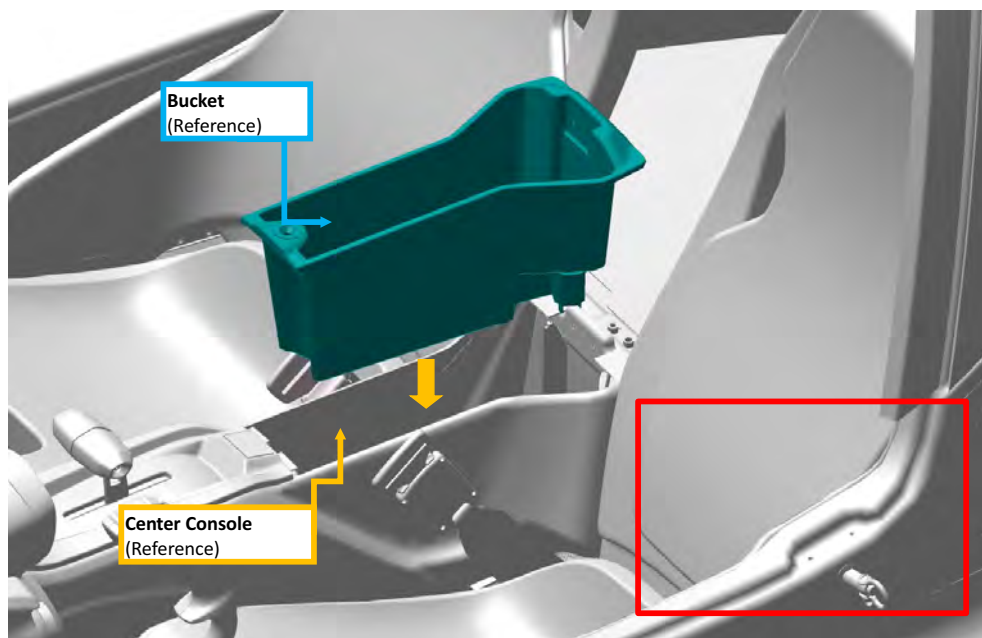
**FIGURE 8-3**  
FWD EDGE BUCKET SCREWS

2. Remove 2X Screws which secure the center armrest. Retain all fastening hardware. See Figure 8-4.



**FIGURE 8-4**  
CENTER ARMREST SCREWS

3. Lift the center console bucket, disconnect the electrical connections and remove. Label the wires for later installation. The connections are: cigarette lighter connectors – T9117(+) and T9119(-); USB power connectors – T9120(-) and T9116 (+); Aux audio in jack – D9063P. See Figure 8-5.



**FIGURE 8-5**  
CENTER CONSOLE BUCKET REMOVAL

#### VERIFICATION METHOD:

Procedure is complete when the center console is removed.

#### RELATED INFORMATION:

"Inspect Yaw Cable Tension" on page 9-80

"Rigging Yaw Controls" on page 9-87

"Rigging Pitch Controls" on page 9-46

"GPS Mount and Radio Stack Bezel Removal" on page 8-15

## 8.2.3 Center Console Bucket Installation

Use the following procedure to install the center console bucket.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No



**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

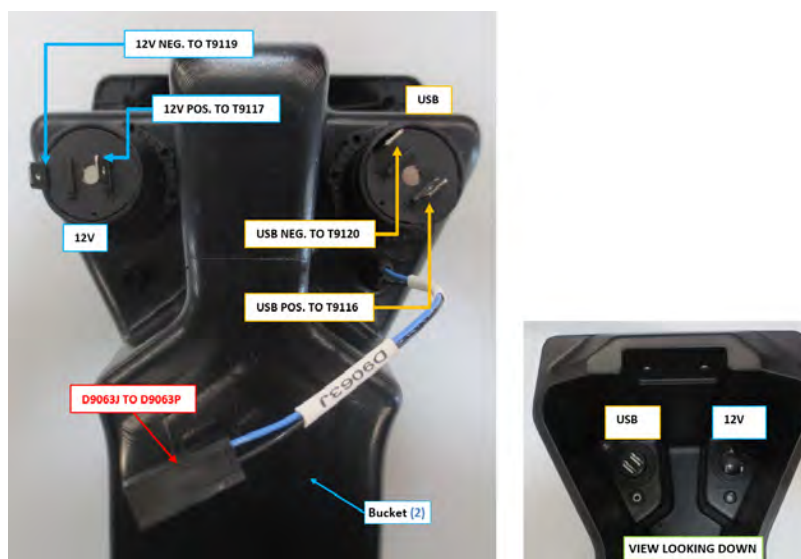
05 – Equipment and Furnishing

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Connect electrical connections as follows, refer to Figure 8-6:
  - a. Connector D9063J in bucket assembly connects to connector D9063P on fuselage wiring harness
  - b. Terminal T9117 on fuselage wiring harness connects to positive terminal on 12V
  - c. Terminal T9119 on fuselage wiring harness connects to negative terminal on 12V
  - d. Terminal T9116 on fuselage wiring harness connects to positive terminal on USB
  - e. Terminal T9120 on fuselage wiring harness connects to negative terminal on USB



**FIGURE 8-6**  
CENTER CONSOLE BUCKET ELECTRICAL CONNECTIONS

2. Install center console bucket. See Figure 8-5.

3. Install 2x screws which secure the center armrest. Apply ICA012078 lubricant and torque to 12 inlbs. See Figure 8-4.
4. Install 2x screws which secure the FWD edge of the center console bucket. Apply ICA012078 lubricant and torque to 12 inlbs. See Figure 8-3.

#### VERIFICATION METHOD:

Procedure is complete when the center console is installed in the aircraft.

#### RELATED INFORMATION:

"Inspect Yaw Cable Tension" on page 9-80

"Rigging Yaw Controls" on page 9-87

"Rigging Pitch Controls" on page 9-46

"GPS Mount and Radio Stack Bezel Installation" on page 8-16

## 8.2.4 Throttle Handle and Bezel Removal

Use the following procedure to remove the throttle handle and bezel.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools

No

##### Parts Required

None

##### Aircraft System and Number

05 – Equipment and Furnishing

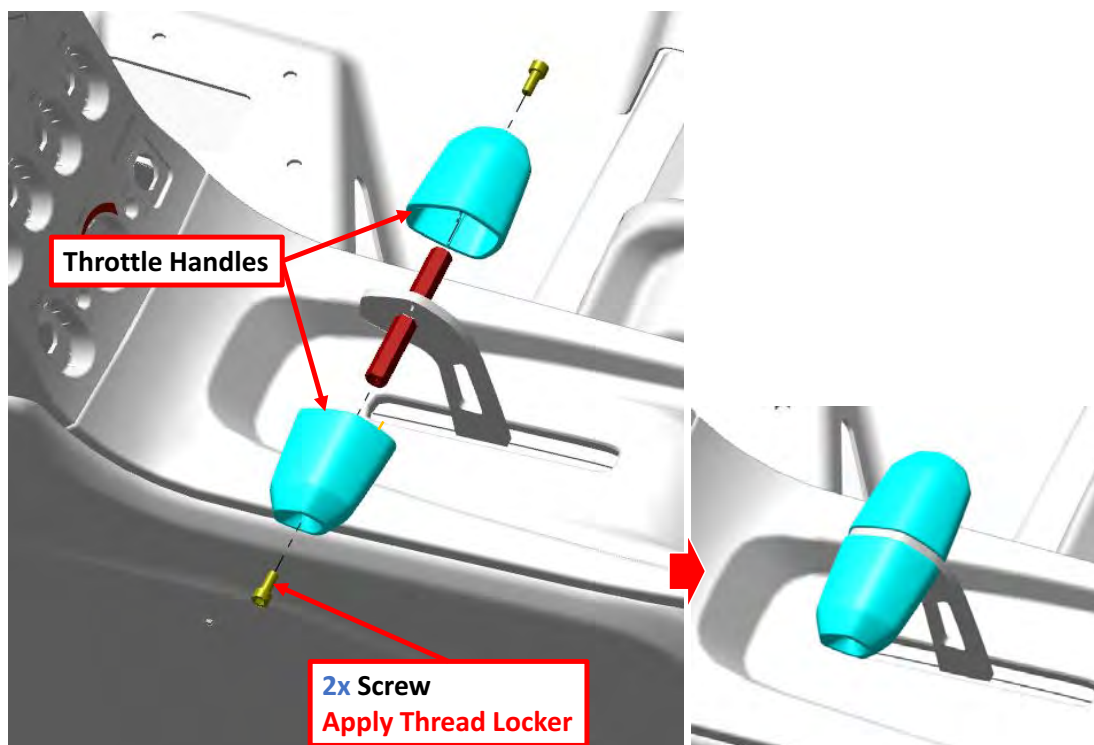
##### Consumables

LOCTITE® 243™

#### TASK INSTRUCTIONS:

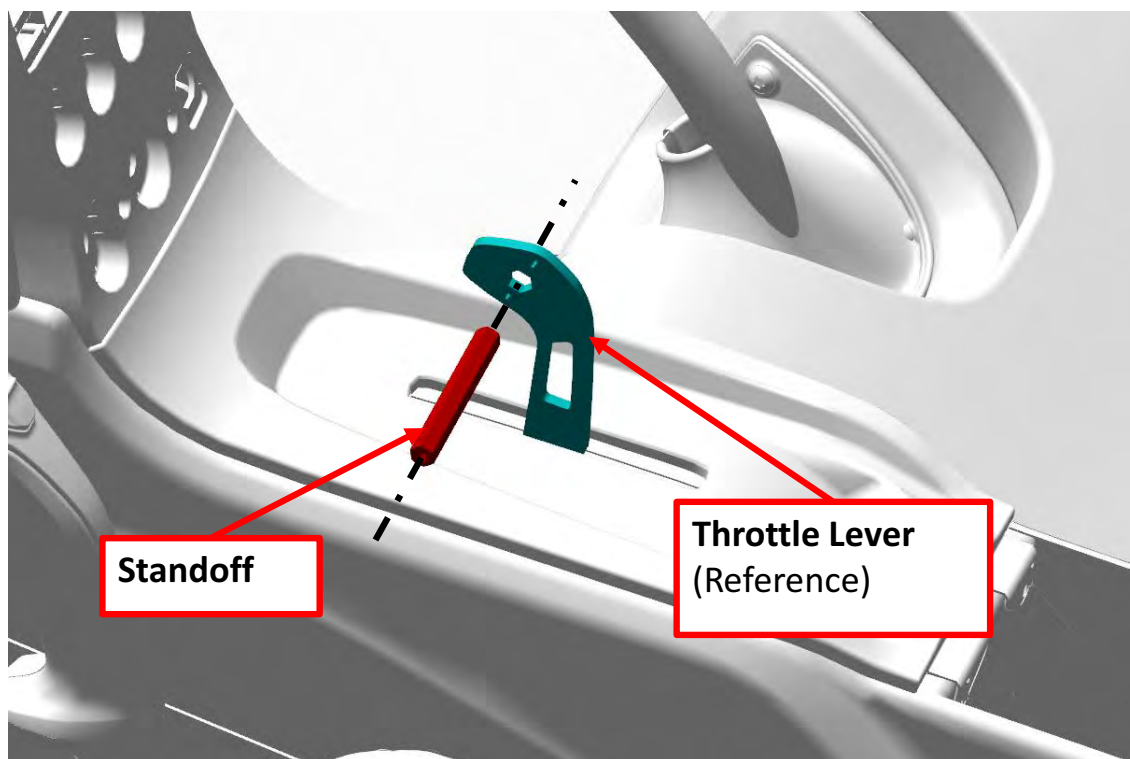
1. Remove center console bucket. (See "Center Console Bucket Removal" on page 8-5.)

2. Remove 2X Screws which secure the handle grips using a 9/64 hex wrench. Separate the two halves of the handle to remove it from the throttle lever. Retain all fastening hardware and handle components. See Figure 8-7.



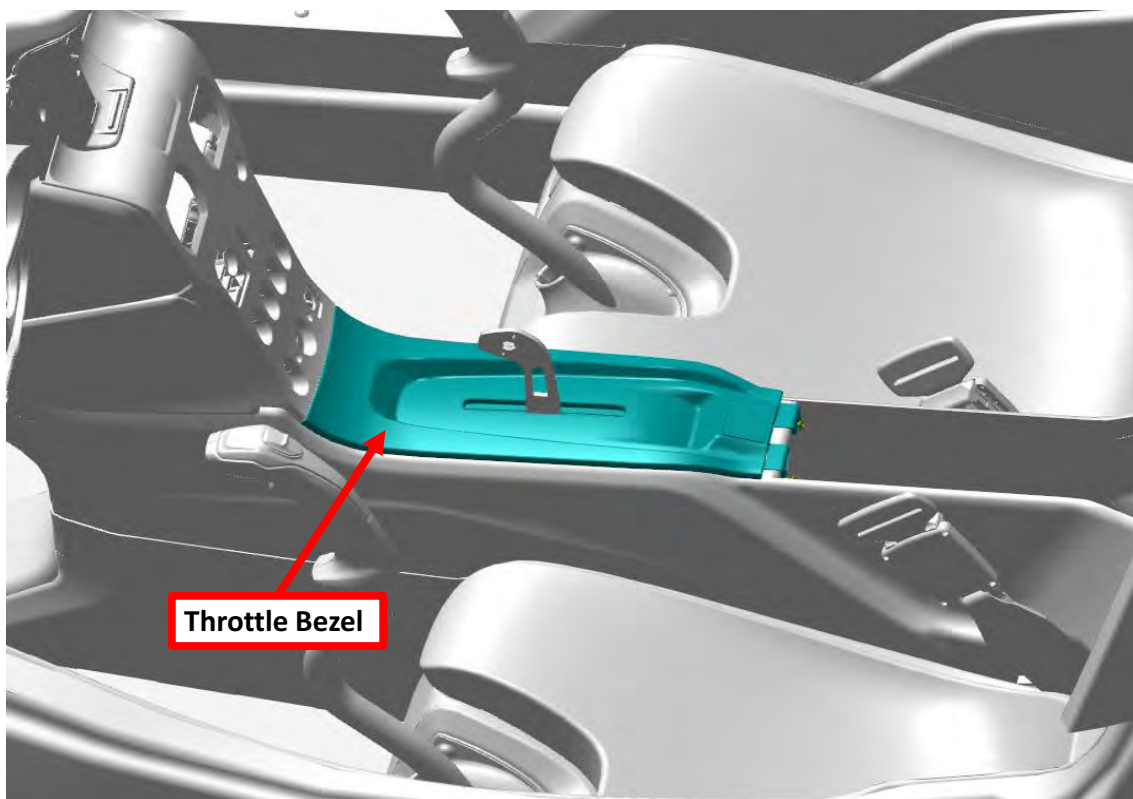
**FIGURE 8-7**  
THROTTLE HANDLE SCREWS

3. Remove the standoff that is inserted into the throttle lever. Retain hardware. See Figure 8-8.



**FIGURE 8-8**  
STANDOFF REMOVAL

4. Remove throttle bezel along with the hour meter (connectors T9114(+) and T99105(-)). Label each wire to ease reinstallation. The forward part of the bezel has two indexing tabs that slide out from the center stack and center console panel assembly.



**FIGURE 8-9**  
THROTTLE BEZEL REMOVAL

**VERIFICATION METHOD:**

Procedure is complete when the throttle handle and bezel is removed from the aircraft.

**RELATED INFORMATION:**

"Rigging Yaw Controls" on page 9-87

"Rigging Pitch Controls" on page 9-46

"GPS Mount and Radio Stack Bezel Removal" on page 8-15

## 8.2.5 Throttle Handle and Bezel Installation

Use the following procedure to remove the throttle handle and bezel.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

### Task Specific Training Required

No

### Special Tools

No

### Parts Required

None

### Aircraft System and Number

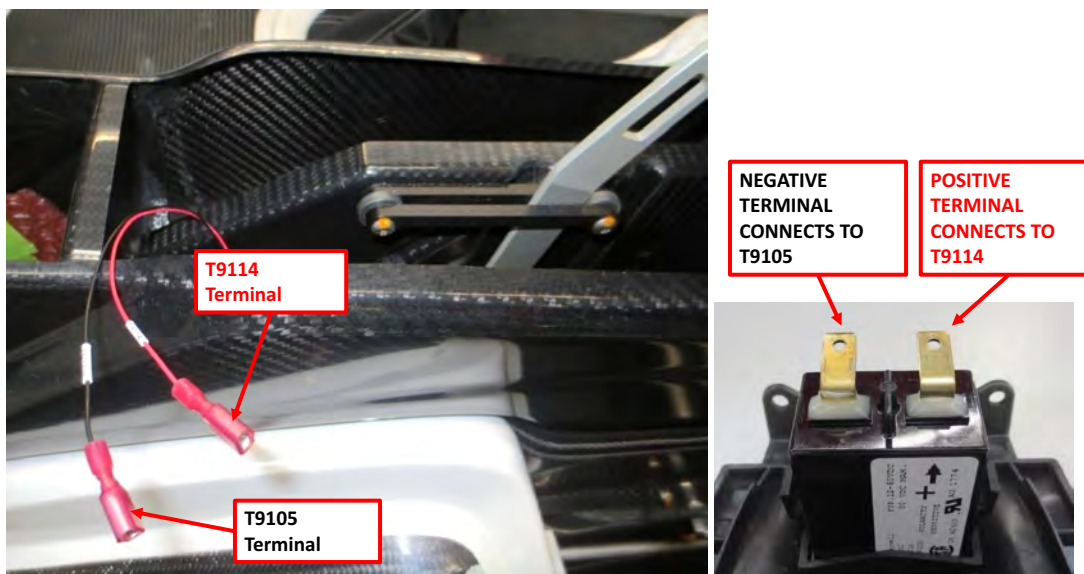
05 – Equipment and Furnishing

### Consumables

LOCTITE® 243™

#### TASK INSTRUCTIONS:

1. Connect electrical connections as follows, refer to Figure 8-10:
  - a. Connect T9114 terminal on fuselage wiring harness to the positive terminal (+) on hour meter.
  - b. Connect T9105 terminal on fuselage wiring harness to the negative terminal (-) on hour meter.



**FIGURE 8-10**  
THROTTLE BEZEL ELECTRICAL CONNECTIONS

2. Install throttle bezel. Slide bezel tabs under radio stack bezel and push bezel into place. See Figure 8-9.

3. Install the standoff by inserting it into the throttle lever. See step 2. See Figure 8-8.
4. Insert left and right throttle handles. Install 2X Screws which secure throttle handles. Apply LOCTITE® 243™ and torque to 7-9 in-lbs. See Figure 8-7.

**VERIFICATION METHOD:**

Procedure is complete when the throttle handle and bezel is installed.

**RELATED INFORMATION:**

"Rigging Yaw Controls" on page 9-87

"Rigging Pitch Controls" on page 9-46

"GPS Mount and Radio Stack Bezel Installation" on page 8-16

## 8.2.6 GPS Mount and Radio Stack Bezel Removal

Use the following procedure to remove the GPS mount and Radio stack bezel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

05 – Equipment and Furnishings

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove the Garmin Aera 796 GPS® if installed.
2. Unfasten the Garmin GPS mounting module using a T15 Torx driver to remove the two 8-32 screws. Remove the GPS mount.
3. If the center console bucket and throttle bezel are still in place. (See "Center Console Bucket Removal" on page 8-5.) (See "Throttle Handle and Bezel Removal" on page 8-10.)

4. Use a T15 Torx driver to remove the four 8-32 screws that attach the radio stack bezel.
5. Lift up on the bottom edge of the radio stack bezel, pulling it away from the center console and pivoting it about its upper edge. The tabs on the upper edge of the bezel of the GPS mount to rotate outward in a similar fashion, releasing the tabs at its top edge.
6. Remove the radio stack bezel and disconnect the electrical harness D9011J from the instrument panel cross beam. Disconnect transponder harness (D9068P) and the Radio harness (D9063P). Disconnect the static line to the transponder control head to completely release radio stack bezel.

#### VERIFICATION METHOD:

The procedure is complete when the GPS mount and radio stack bezel has been removed.

#### RELATED INFORMATION:

"Center Console Bucket Removal" on page 8-5

"Throttle Handle and Bezel Removal" on page 8-10

"GPS Mount and Radio Stack Bezel Installation" on page 8-16

## 8.2.7 GPS Mount and Radio Stack Bezel Installation

Use the following procedure to install the GPS mount and Radio stack bezel.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

05 – Equipment and Furnishings

##### **Consumables**

None



---

**TASK INSTRUCTIONS:**

1. Install the GPS mount and radio stack bezel at the same time. Do this by first interlocking the two parts together. Then, while holding the lower edge of the radio bezel away from the center console, engage the tabs at the upper edge of the GPS mount and push the assembly into place.
  2. Install the two 8-32 mounting screws in the GPS mount and the four 8-32 screws that mount the radio bezel, torquing all to 13 in-lb<sub>f</sub>.
- 

**VERIFICATION METHOD:**

The procedure is complete when the GPS mount and radio stack bezel has been installed.

**RELATED INFORMATION:**

"Center Console Bucket Installation" on page 8-8

"Throttle Handle and Bezel Installation" on page 8-13

"GPS Mount and Radio Stack Bezel Removal" on page 8-15

## 8.2.8 Right Instrument Panel Top Panel Removal

Use the following procedure to remove the right instrument panel top panel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

T15 Torx driver

#2 right-angle crosshead driver

Eyeball Vent Tool (ITL001563)

**Parts Required**

None

**Aircraft System and Number**

05 – Equipment and Furnishing

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove Center Console Bucket.(See "Center Console Bucket Removal" on page 8-5.)
  2. Remove the throttle handle and bezel.(See "Throttle Handle and Bezel Removal" on page 8-10.)
  3. Remove the two kneepads by carefully peeling them off. They are held on with hook and loop tape.
  4. Remove the GPS mount and Radio stack bezel. (See "GPS Mount and Radio Stack Bezel Removal" on page 8-15.)
  5. Remove the vent air hose at right side instrument panel by loosening the worm drive clamp.
  6. Remove the right eyeball air valve using ICON eyeball vent tool ITL001563.
  7. Remove the 6-32 screw behind the right eyeball air valve with a #2 right-angle crosshead driver. Remove the 8-32 screws at the forward-right side and at aft-left corner of the right instrument top panel with a T15 Torx driver. Remove the right instrument top panel.
- 

**VERIFICATION METHOD:**

The procedure is complete when the entire right instrument top panel has been removed.

**RELATED INFORMATION:**

"Battery Removal and Installation" on page 6-37  
 "Heater Fan and Core Removal" on page 7-3  
 "Multiple Systems Controller (MSC) Replacement" on page 13-27  
 "Canopy Removal" on page 11-3  
 "Canopy Installation" on page 11-4  
 "Nose Landing Gear (NLG) Leg Assembly Removal" on page 14-60  
 "Remove Landing and Taxi Lights" on page 6-58  
 "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 14-19

**8.2.9 Right Instrument Panel Top Panel Installation**

Use this procedure to install the right instrument panel top panel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

T15 Torx driver

#2 right-angle crosshead driver  
Eyeball Vent Tool (ITL001563)

### Aircraft System and Number

05 – Equipment and Furnishing

### Consumables

LOCTITE® 243™

---

#### TASK INSTRUCTIONS:

1. Install right instrument panel top first by locating it in position, then:
    - a. Install air vent hose and clamp.
    - b. Install 6-32 screw with washer under it head behind right eyeball air valve, torquing to 9 in-lb<sub>f</sub>.
    - c. Install 8-32 screws at right-forward side of and aft-left corner of panel, torquing each to 13 in-lb<sub>f</sub>.
  2. Install right eyeball air valve using eyeball vent tool (ITL001563), aligning tooling holes to 6 and 12 o'clock positions.
  3. Install Throttle Handle and Bezel. (See "Throttle Handle and Bezel Installation" on page 8-13.)
  4. Install the Center Console Bucket. (See "Center Console Bucket Installation" on page 8-8.)
  5. Install the GPS in its mount.
- 

#### VERIFICATION METHOD:

The procedure is complete when the right instrument panel top panel has been completely reinstalled.

#### RELATED INFORMATION:

"Battery Removal and Installation" on page 6-37  
"Heater Fan and Core Installation" on page 7-4  
"Multiple Systems Controller (MSC) Replacement" on page 13-27  
"Canopy Removal" on page 11-3  
"Canopy Installation" on page 11-4  
"Nose Landing Gear (NLG) Leg Assembly Installation" on page 14-62  
"Install Landing and Taxi Lights" on page 6-60  
"Landing Gear Actuator Limit Switch Adjustment Procedure" on page 14-19

## 8.2.10 Left Instrument Panel Top Panel Removal

Use the following procedure to remove the left instrument panel top panel.

#### TASK INFORMATION:

##### Type of Maintenance

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

T15 Torx driver

#2 right-angle crosshead driver

Eyeball Vent Tool (ITL001563)

**Aircraft System and Number**

05 – Equipment and Furnishing

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove Center Console Bucket.(See “Center Console Bucket Removal” on page 8-5.)
  2. Remove the throttle handle and bezel.(See “Throttle Handle and Bezel Removal” on page 8-10.)
  3. Remove the two kneepads by carefully peeling them off. They are held on with hook and loop tape.
  4. Remove GPS mount and Radio stack bezel. (See “GPS Mount and Radio Stack Bezel Removal” on page 8-15.)
  5. Remove the ICA008624 cluster hood.(See “Replace Instrument Panel Gauge” on page 13-26.)
  6. Remove the vent air hose at left side instrument panel top panel by loosening the worm drive clamp.
  7. Remove the left eyeball air valve using ICON tool ITL001563.
  8. Remove the 6-32 screw behind the left eyeball air valve with a #2 right-angle crosshead driver.
  9. Remove the 8-32 screws at the forward-left side and at aft-right corner of the left instrument panel top panel with a T15 Torx driver. Remove the left instrument panel top panel being careful not to damage the instrument cluster.
- 

**VERIFICATION METHOD:**

The procedure is complete when the entire left instrument panel top panel has been completely removed.

## RELATED INFORMATION:

- "Replace Instrument Panel Gauge" on page 13-26
- "Heater Fan and Core Removal" on page 7-3
- "Canopy Removal" on page 11-3
- "Canopy Installation" on page 11-4
- "Nose Landing Gear (NLG) Leg Assembly Removal" on page 14-60
- "Remove Landing and Taxi Lights" on page 6-58

## 8.2.11 Left Instrument Panel Top Panel Installation

Use the following procedure to install the left instrument panel top panel.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

05 – Equipment and Furnishing

**Consumables**

LOCTITE® 243™

## TASK INSTRUCTIONS:

1. Install left instrument panel top first by locating it in position carefully around the instrument cluster, then:
  - a. Install air vent hose and clamp.
  - b. Install 6-32 screw with washer under its head behind right eyeball air valve, torquing to 9 in-lb<sub>f</sub>.
  - c. Install 8-32 screws at left-forward side of and aft-right corner of panel, torquing each to 13 in-lb<sub>f</sub>.
2. Install right eyeball air valve using special tool ITL001563, aligning tooling holes to 6 and 12 o'clock positions.
3. Install Throttle Handle and Bezel. (See "Throttle Handle and Bezel Installation" on page 8-13.)

4. Install the Center Console Bucket. (See "Center Console Bucket Installation" on page 8-8.)
5. Install the GPS in its mount.

#### VERIFICATION METHOD:

The procedure is complete when the entire left instrument panel top panel has been fully reinstalled.

#### RELATED INFORMATION:

"Heater Fan and Core Installation" on page 7-4

"Canopy Removal" on page 11-3

"Canopy Installation" on page 11-4

"Nose Landing Gear (NLG) Leg Assembly Installation" on page 14-62

"Install Landing and Taxi Lights" on page 6-60

## 8.2.12 Instrument Panel Center Spine Removal and Installation

Use the following procedure to remove and install the instrument panel center spine.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

ME000557-B PAINTED, HANDHOLD, CENTER IP

8C50MTT3 SCREW, MACH TRH, 6LOBE, CRES, 8-32X.500

##### Aircraft System and Number

05 – Equipment and Furnishings

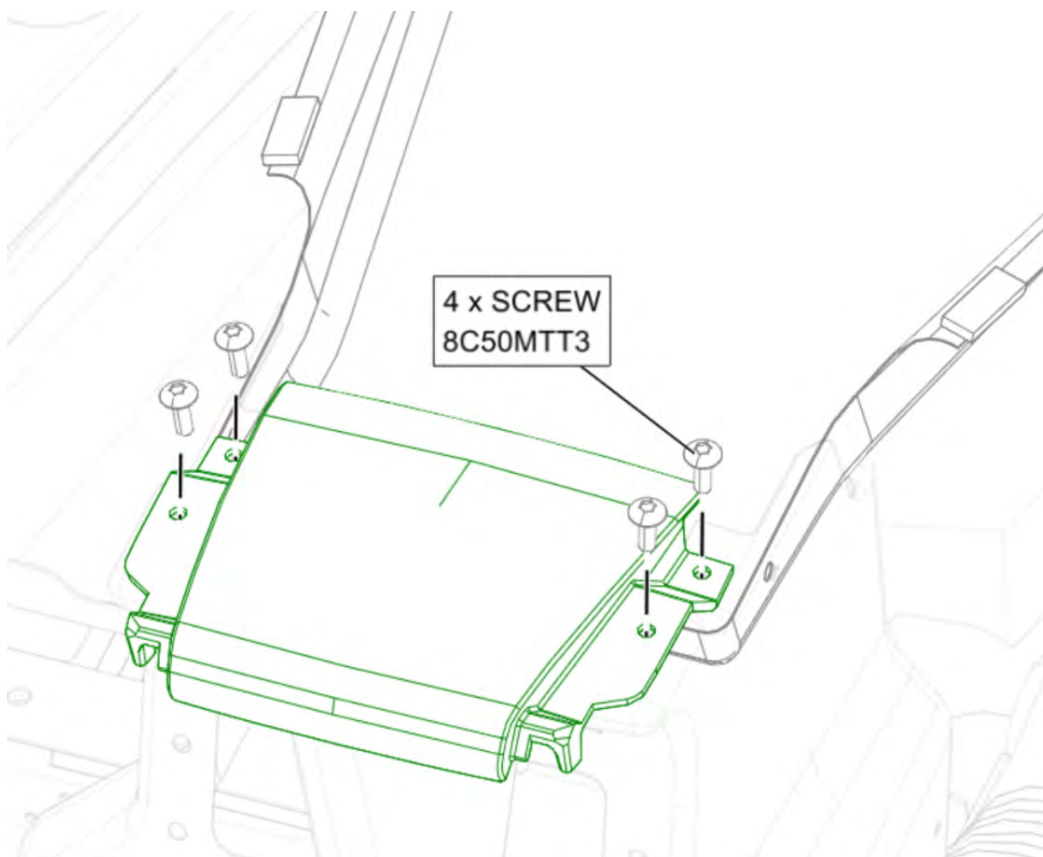
##### Consumables

None

#### TASK INSTRUCTIONS:

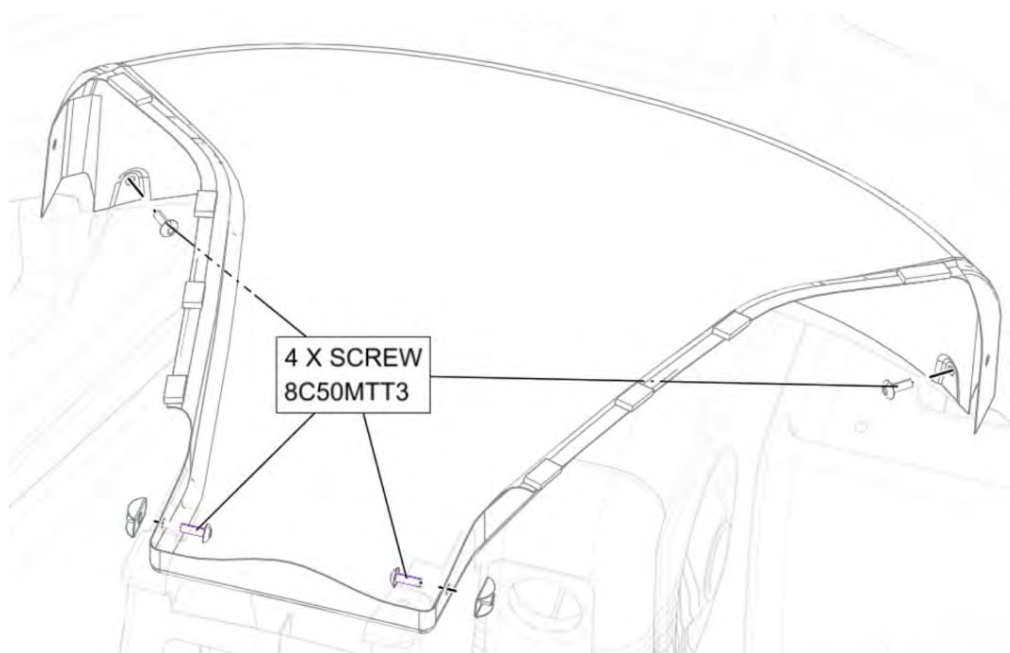
1. Remove left instrument panel top panel. (See "Left Instrument Panel Top Panel Removal" on page 8-19.)

2. Remove right instrument panel top panel. (See "Right Instrument Panel Top Panel Removal" on page 8-17.)
3. Remove 4x screws securing handhold from top of center console. Retain for reinstallation.



**FIGURE 8-11**  
REMOVE HANDHOLD SCREWS

4. Remove two screws securing instrument panel center spine to the front of the fuselage. Remove two screws securing center spine to the top of the center console. Retain for reinstallation.



**FIGURE 8-12**  
REMOVE CENTER SPINE SCREWS

5. Install center spine using four screws as shown in Figure 8-12, torque screws to 13 in-lbs.
6. Install Handhold using four screws as shown in Figure 8-11, torque screws to 13 in-lbs.
7. Install right instrument panel top panel. (See "Right Instrument Panel Top Panel Installation" on page 8-18.)
8. Install left instrument panel top panel. (See "Left Instrument Panel Top Panel Installation" on page 8-21.)

**VERIFICATION METHOD:**

Task is complete when the center spine has been installed.



# Chapter 9

## FLIGHT CONTROLS

Flight Control System Description .....	9-3
Diagram/Schematic .....	9-4
Flight Control System General Maintenance .....	9-5
Inspect Rudder Pedal Adjustment Mechanism .....	9-5
Inspect Control Cables .....	9-8
Roll Controls .....	9-11
Roll Controls Description .....	9-11
Roll Controls Diagram/Schematic .....	9-11
Inspection Instructions .....	9-13
Inspect Roll Cable Tension .....	9-13
Inspect Roll Rigging .....	9-17
Maintenance Instructions .....	9-20
Rigging Roll Controls .....	9-20
Remove Roll Cables .....	9-28
Install Roll Cables .....	9-32
Roll Trim Tab .....	9-35
Roll Trim Tab Description .....	9-35
Roll Trim Tab Diagram/Schematic .....	9-35
Inspection Instructions .....	9-36
Determine Roll Trim Tab Length .....	9-36
Maintenance Instructions .....	9-37
Remove Roll Trim Tab .....	9-37
Install Roll Trim Tab .....	9-38
Pitch Controls .....	9-40
Pitch Controls Description .....	9-40
Pitch Control Diagram/Schematic .....	9-40
Inspection Instructions .....	9-42
Inspect Pitch Cable Tension .....	9-42
Inspect Pitch Rigging .....	9-44
Maintenance Instructions .....	9-46
Rigging Pitch Controls .....	9-46
Pitch Trim Actuator .....	9-53
Pitch Trim Actuator Description .....	9-53

Pitch Trim Actuator Diagram/Schematic . . . . .	9-53
Maintenance Instructions . . . . .	9-53
Remove Pitch Trim Actuator . . . . .	9-53
Install Pitch Trim Actuator . . . . .	9-55
Pitch Trim Tab . . . . .	9-60
Pitch Trim Tab Description . . . . .	9-60
Pitch Trim Tab Diagram/Schematic . . . . .	9-60
Inspection Instructions . . . . .	9-61
Inspect Pitch Trim Tab Rigging . . . . .	9-61
Measure Pitch Trim Tab Wear . . . . .	9-63
Flap Controls . . . . .	9-65
Flap Controls Description . . . . .	9-65
Flap Controls Diagram/Schematic . . . . .	9-65
Inspection Instructions . . . . .	9-65
Inspect Flap Rigging . . . . .	9-65
Rigging Flap Controls . . . . .	9-67
Maintenance Instructions . . . . .	9-71
Remove Flap Actuator . . . . .	9-71
Install Flap Actuator . . . . .	9-74
Remove Flap Gas Strut . . . . .	9-76
Install Flap Gas Strut . . . . .	9-77
Yaw Controls . . . . .	9-79
Yaw Controls Description . . . . .	9-79
Yaw Controls Diagram/Schematic . . . . .	9-79
Inspection Instructions . . . . .	9-80
Inspect Yaw Cable Tension . . . . .	9-80
Inspect Rudder Pedal Rigging . . . . .	9-83
Inspect Yaw Rigging . . . . .	9-85
Maintenance Instructions . . . . .	9-87
Rigging Yaw Controls . . . . .	9-87
Adjust Yaw Rigging . . . . .	9-100
Adjust Rudder Pedal Rigging . . . . .	9-101
Re-Rigging Rudder Pedals . . . . .	9-103

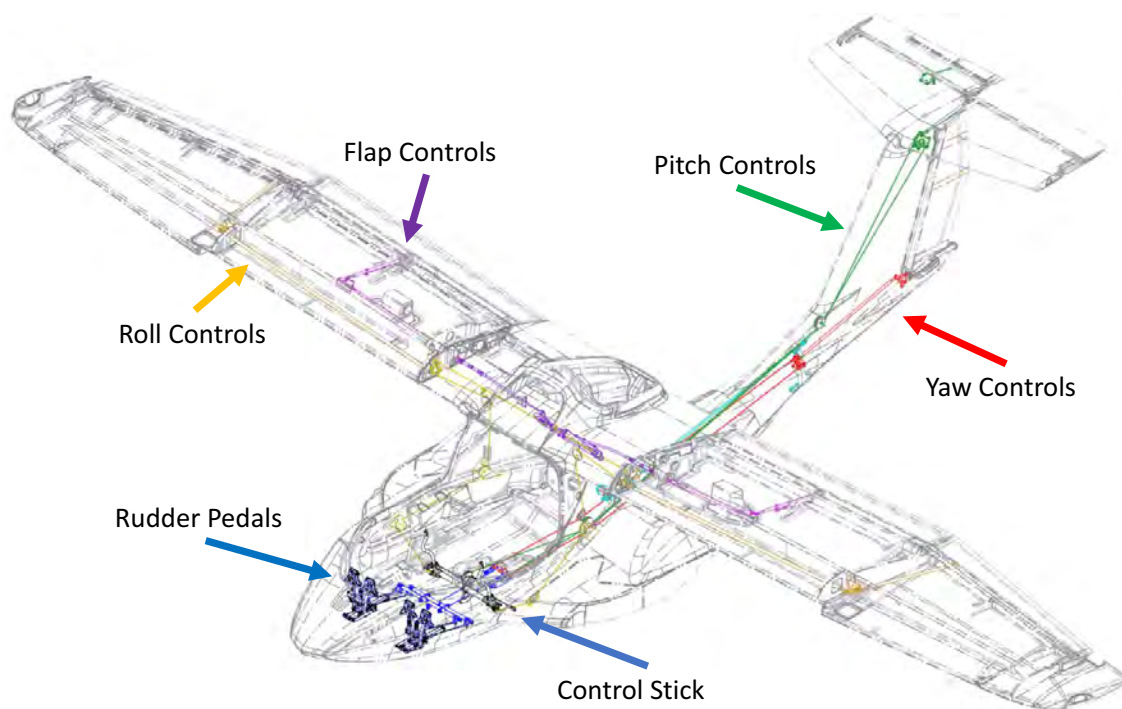
## 9.1 Flight Control System Description

Flight controls are made up of those components and units which serve to manually control the flight characteristics of the aircraft. This includes control cables and pushrods that move through a system of pulleys and bellcranks to move the appropriate control surfaces. Each pilot in the A5 has a control stick. Moving the control stick left-to-right rolls the aircraft in either direction by changing the position of the ailerons. The aft-to-forward movement of the control stick changes the pitch of the aircraft by adjusting the pitch of the elevator.

Applying foot pressure on the rudder pedals controls the yaw direction in flight and on the water by changing the direction of the rudders. The rudder pedals also offer yaw control on land by applying brake pressure on the Main Landing Gear wheels. An electric actuator operates the flaps through a system of push cables, pushrods, bellcranks, and gas struts.

Control surfaces are covered in their respective structure in other chapters of the maintenance manual. For example, the aileron control surfaces are covered in the wing chapter.

## 9.2 Diagram/Schematic



**FIGURE 9-1**  
FLIGHT CONTROL DIAGRAM

## 9.3 Flight Control System General Maintenance

### 9.3.1 Inspect Rudder Pedal Adjustment Mechanism

The following section contains information needed to inspect the rudder pedal adjust mechanism for correct function.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

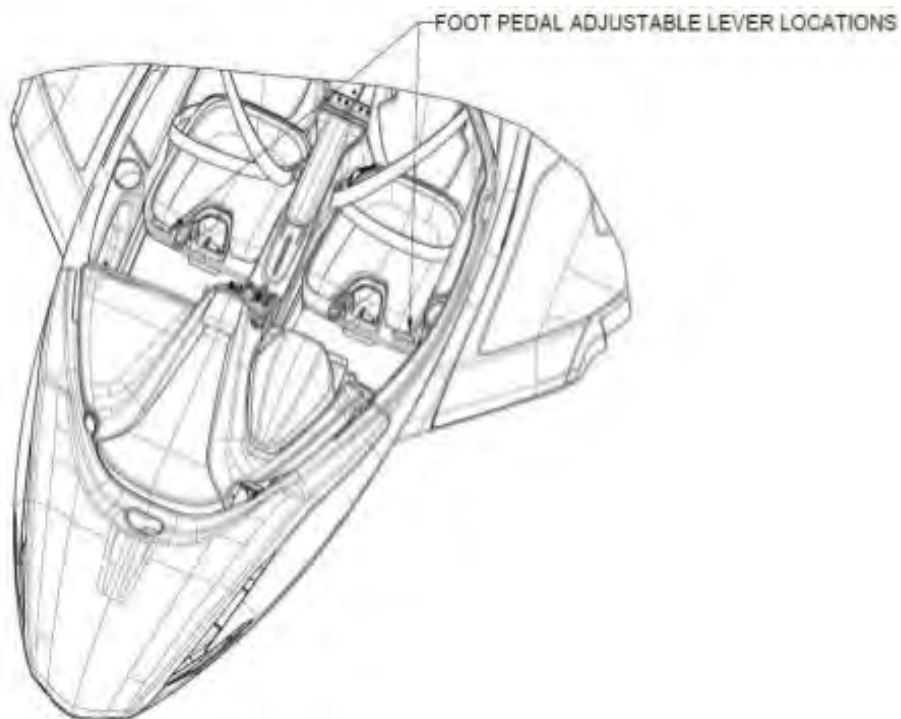
None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

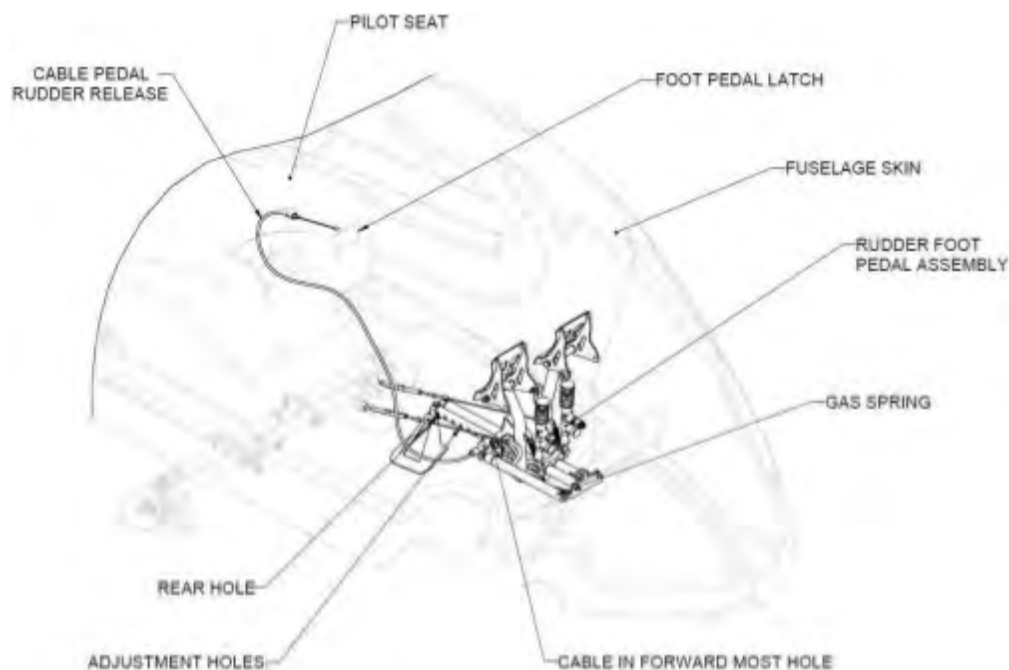


**FIGURE 9-2**  
RUDDER PEDAL LATCH LOCATIONS UNDER PILOT AND CO-PILOT SEATS.

---

**TASK INSTRUCTIONS:**

1. Remove the floorboard immediately in front of the pilot seat. (See “Cockpit Floor Board Removal” on page 3-46.)
2. Pull the lever under the seat as shown



**FIGURE 9-3**  
RUDDER PEDAL LATCH LOCATIONS UNDER PILOT AND CO-PILOT SEATS.

3. Ensure pedals completely move aft via a gas strut upon pulling the lever.
4. Release lever.
5. Push on pedals to obtain positive engagement.

Positive engagement is reached when pedals cannot be moved while applying load on heel strike.

6. Ensure the rudder cables going through the floor are free to operate and the pedals move freely.
7. Pull the lever again and unlock the locking mechanism.
8. Push with heel on heel strike in between the pedals on floor.
9. Confirm pedal assembly moves forward freely with ~30 lbs of force.
10. Release handle and load on heel strike and ensure positive engagement.
11. Ensure the rudder cables going through the floor are free to operate and the pedals move freely.
12. Replace the floorboard immediately in front of the pilot seat. (See "Cockpit Floor Board Installation" on page 3-47.)
13. Repeat this process for the co-pilot seat.

#### VERIFICATION METHOD:

Verify that results are within acceptable limits.

## RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Adjust Rudder Pedal Rigging" on page 9-101

"Re-Rigging Rudder Pedals" on page 9-103

## 9.3.2 Inspect Control Cables

Use these instructions to inspect flight control cables for corrosion, broken strands, and kinks.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

LPS-3 Rust/Corrosion Inhibitor

Visually Inspect Cables for corrosion, kinks, and broken strands.

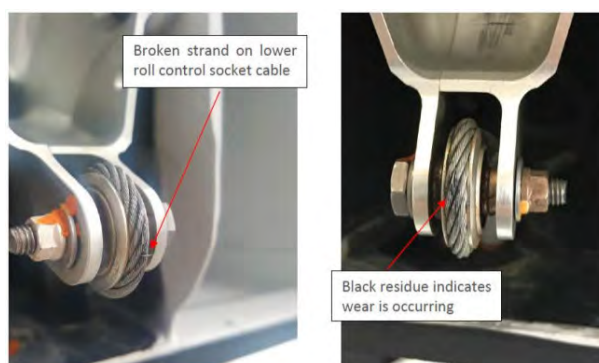
## TASK INSTRUCTIONS:

1. Inspect cables for broken strands. Any cable assembly that has at least one broken wire strand located in a critical fatigue area must be replaced. See Figure 9-4. The following are critical fatigue areas:
  - The working length of the cable where it runs over, under, or around a pulley, sleeve, or through a fair-lead.
  - Any section where the cable is flexed, rubbed, or worked in any manner.
  - Any point within one foot of a swaged-on fitting.
2. Inspect cables for corrosion. If the surface of the cable is corroded, do the following:
  - a. Relieve tension and carefully force the cable open by reverse twisting to visually inspect the interior. Use a magnifying glass if needed.
  - b. If no internal corrosion is present, clean the outer surface with a clean, coarse-weave rag or fiber brush. After cleaning, apply LPS-3 Rust Inhibitor to the affected area.

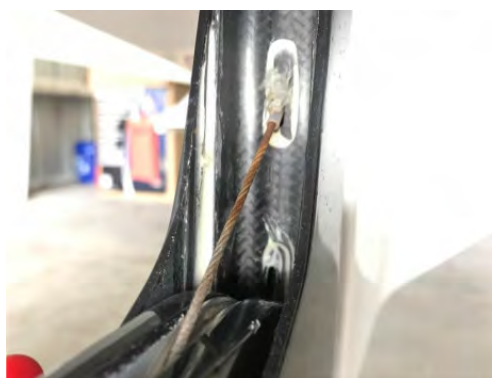


**NOTE:** Do NOT use metallic wool or solvents to clean the surface.

- c. If internal corrosion is present, replace the cable.
3. Inspect cable for kinks. Kinked cables have strands out of position, which lead to unequal tension and excessive wear at that part of the cable. Rather than straightening out kinked cables, replace regardless of wear or broken wires.
4. Inspect cables for general wear. Fold each wing and visually inspect both the inboard rod end of the inboard pushrod on the wing and the lower roll control cable terminal at the bottom of the roll socket at the wing fold joint.
  - a. If there is evidence of wear on the rod end or the roll control cable as shown in Figure 9-4 carefully inspect the end of the roll control cable for any broken strands.
  - b. If there is no evidence of wear or corrosion on the rod end or roll cable – no further action is needed.



**FIGURE 9-4**  
BROKEN STRAND AND BLACK RESIDUE INDICATING WEAR ON LOWER ROLL CONTROL CABLE.



**FIGURE 9-5**  
EXAMPLE OF CABLE SURFACE CORROSION.

#### VERIFICATION METHOD:

Ensure cables inspected fall within the acceptable conditions listed above. Otherwise follow the procedure listed for each type of unacceptable condition.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Forward Fuselage and Hull" on page 3-16

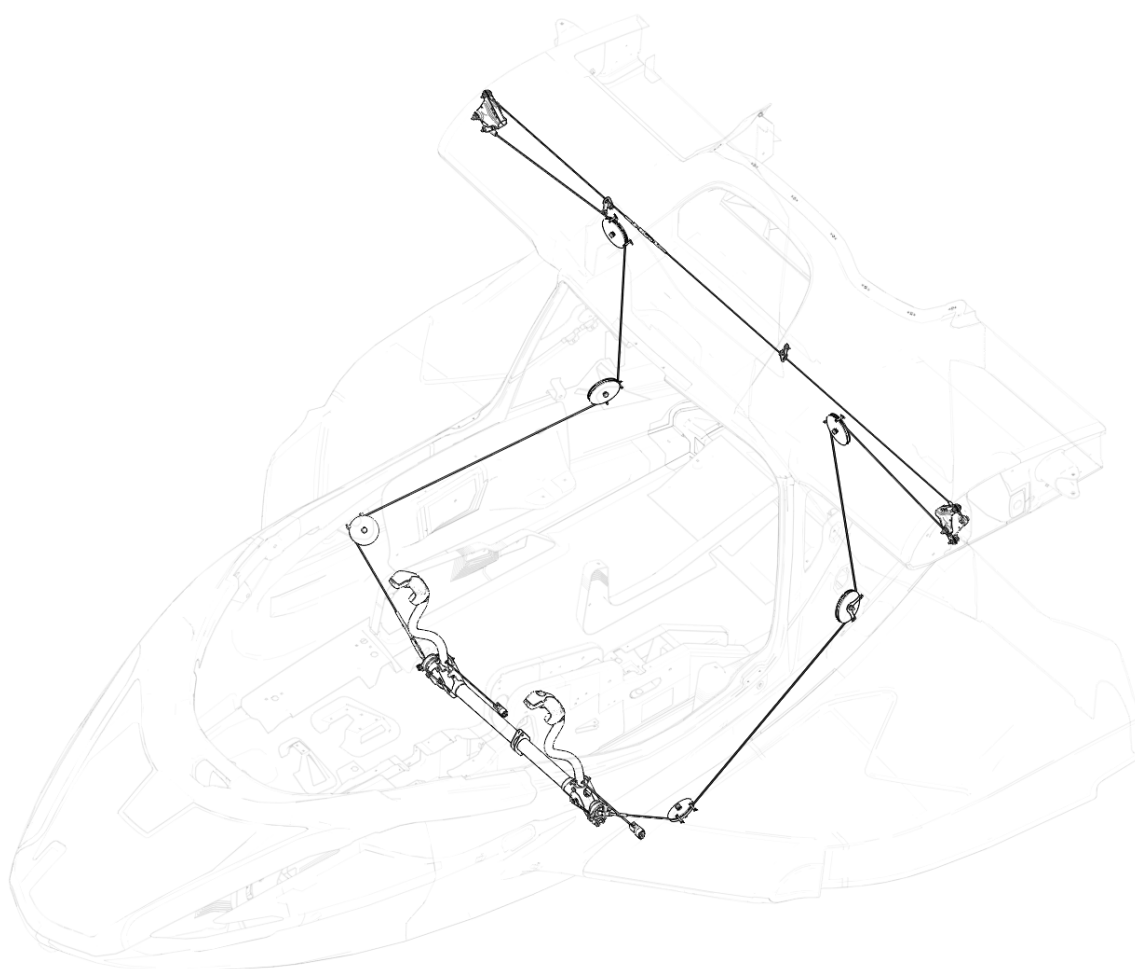
"Remove Roll Cables" on page 9-28

## 9.4 Roll Controls

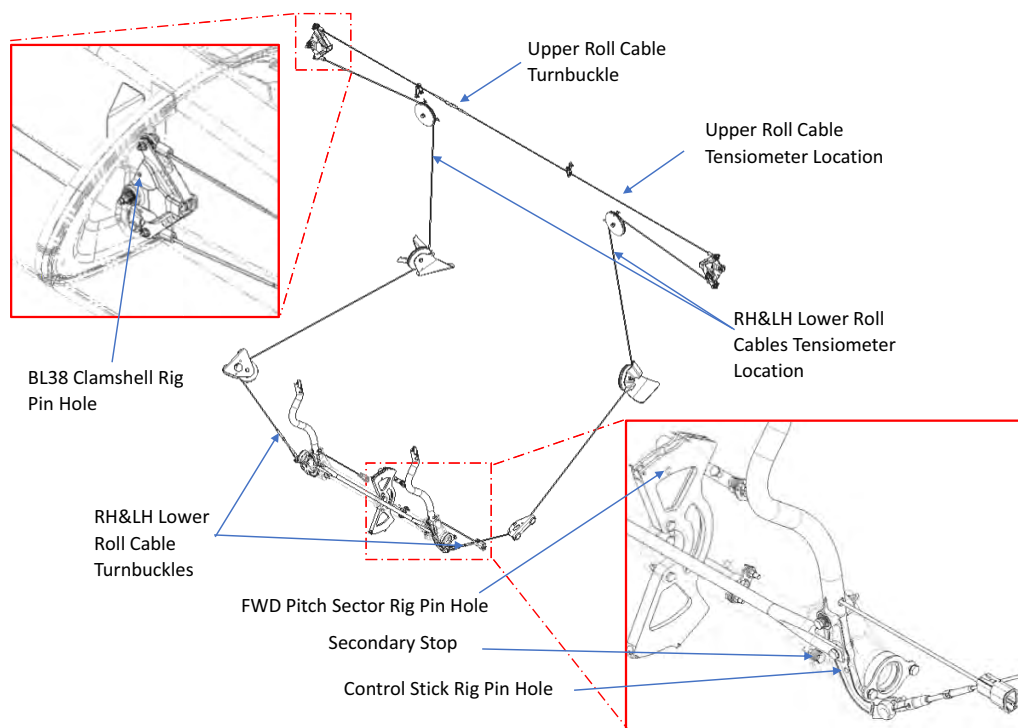
### 9.4.1 Roll Controls Description

The ailerons control the roll of the aircraft by converting the left-right user input at the control stick and changing the pitch of the ailerons. A series of cables and pulleys are used to make this possible. Proper tensions and control cable health is required to achieve a predictable motion of the aircraft.

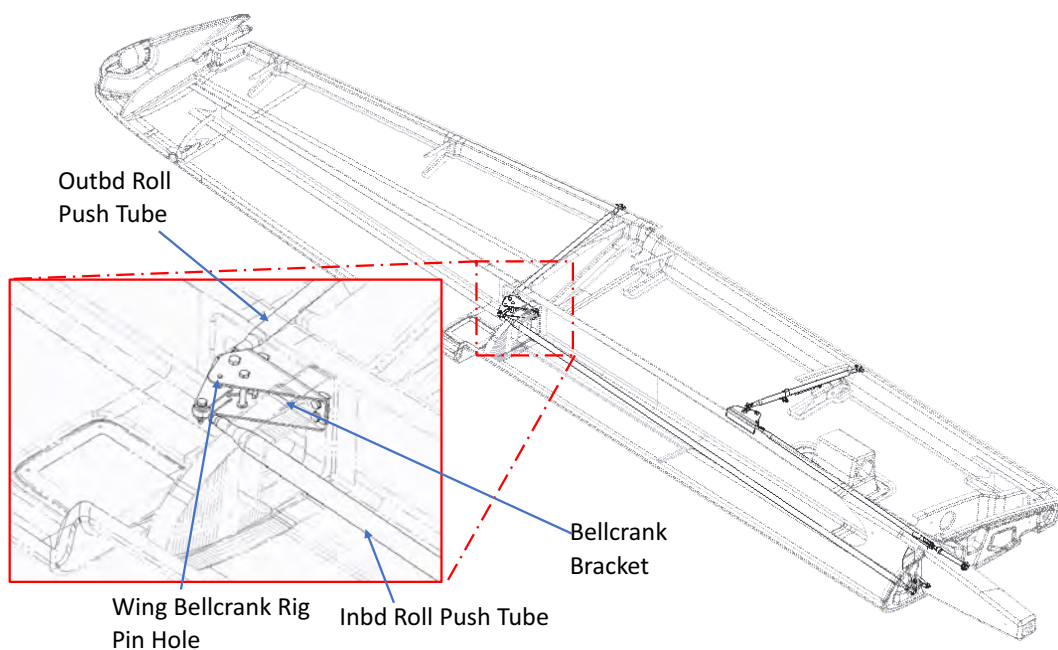
### 9.4.2 Roll Controls Diagram/Schematic



**FIGURE 9-6**  
FUSELAGE ROLL SYSTEM



**FIGURE 9-7**  
FUSELAGE ROLL SYSTEM DETAILED VIEW



**FIGURE 9-8**  
WING ROLL SYSTEM OVERVIEW

### 9.4.3 Inspection Instructions

#### 9.4.3.1 Inspect Roll Cable Tension

This section contains instructions to check roll cables for correct tensions.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

Tensiometer and Operating Instructions

1 x DIA .250 Rig Pin

5 x DIA .1875 Rig Pins

### Parts Required

None

### Aircraft System and Number

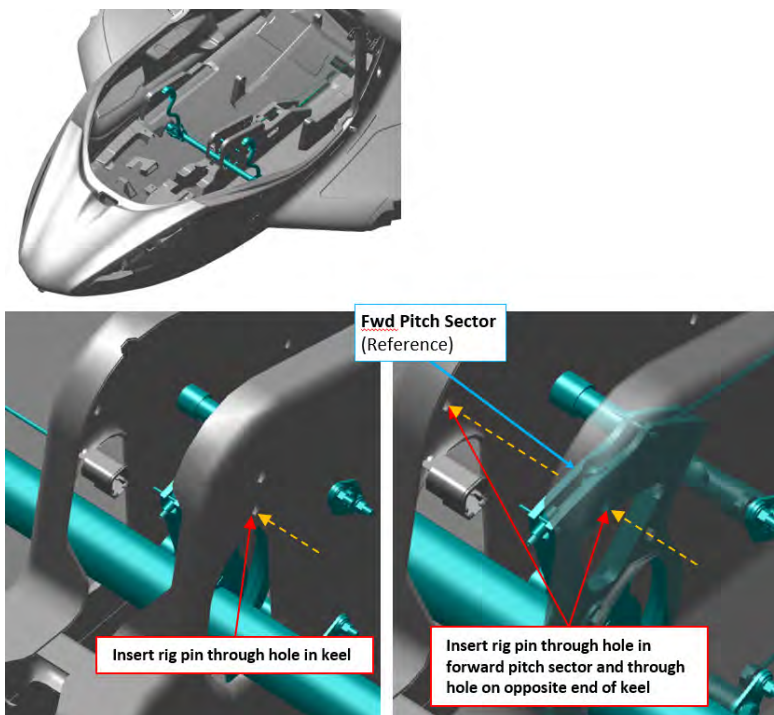
06 – Flight Controls

### Consumables

None

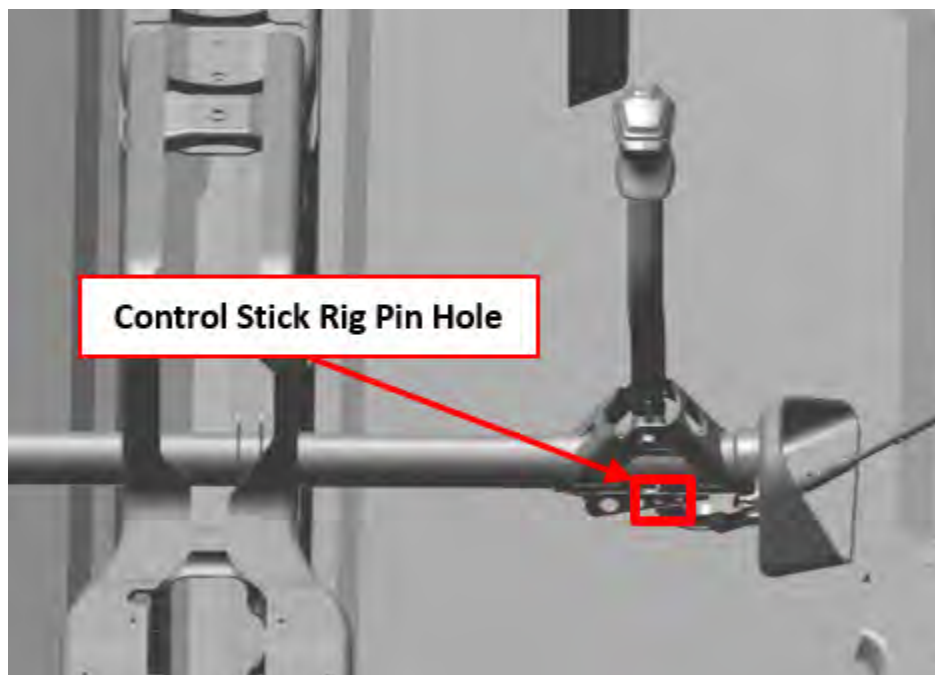
### TASK INSTRUCTIONS:

1. Remove left hand and right hand forward and main cockpit floor boards. (See “Cockpit Floor Board Removal” on page 3-46.)
2. Remove seat back and seat pan. (See “Seat Back Removal” on page 3-50.) (See “Seat Pan Removal” on page 3-52.) Retain all fastening hardware.
3. Remove the baggage floor boards. (See “Baggage Floor Removal” on page 3-41.) Retain all fastening hardware.
4. Remove seatbelt cover, left hand and right hand baggage sidewalls, and baggage headliner. (See “Baggage Sidewall Panel Removal” on page 3-43.) (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.) (See “Seat Back Removal” on page 3-50.) If headliner cannot be removed without removal of overhead console, removal is permitted.
5. Install .250 in diameter rig pin through the center console and forward pitch sector. See Figure 9-9.



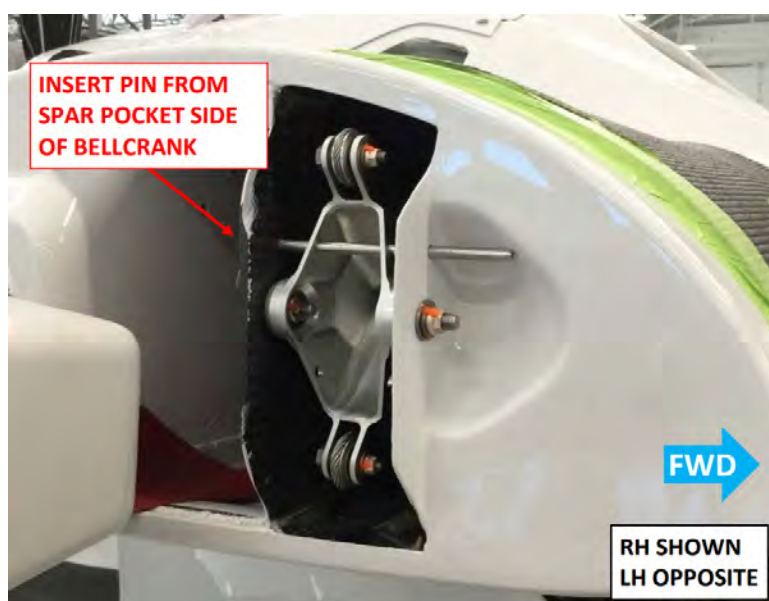
**FIGURE 9-9**  
PITCH SECTOR RIG PIN LOCATION

6. Install .1875 in diameter rig pin through the control stick rig pin hole. See Figure 9-10.



**FIGURE 9-10**  
CONTROL STICK RIG PIN LOCATION

7. Fold both aircraft wings and install a .1875in diameter rig pins at both of the wing socket bellcrank. See Figure 9-11.



**FIGURE 9-11**  
WING SOCKET BELLCRANK RIG PIN LOCATION

8. Use the tensiometer (upper cable thickness = 3/32 in, LH and RH fuselage cable thickness = 1/8 in) to measure roll cable tension at locations specified in, see Figure 9-12. Ensure they all are



within 25-30 lb of tension. Refer to the manufacturers' calibration card to correctly read cable tension for the cable diameter.



**FIGURE 9-12**  
TENSIO METER LOCATIONS

9. Remove all installed rig pins:
  - a. 2X Wing socket bellcrank rig pins
  - b. Control stick rig pin
  - c. FWD pitch sector rig pin
10. Install seatbelt reel cover, left hand and right hand baggage sidewalls, and baggage headliner. If the overhead console was removed, re-install. (See "Seat Belt Inertia Reel Installation" on page 3-40.) (See "Baggage Sidewall Panel Installation" on page 3-45.) (See "Headliner Installation" on page 3-38.) (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
11. Install baggage floor boards using hardware retained during removal. (See "Baggage Floor Installation" on page 3-42.)
12. Install seat back and seat pan using hardware retained during removal. (See "Seat Back Installation" on page 3-51.) (See "Seat Pan Installation" on page 3-53.)
13. Install cockpit floor boards. (See "Cockpit Floor Board Installation" on page 3-47.)

#### VERIFICATION METHOD:

Record results and check against requirement. If requirement is not met complete aileron rigging. (See "Rigging Roll Controls" on page 9-20.)



**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Forward Fuselage and Hull" on page 3-16  
"Rigging Roll Controls" on page 9-20  
"Cockpit Floor Board Removal" on page 3-46  
"Cockpit Floor Board Installation" on page 3-47  
"Seat Back Removal" on page 3-50  
"Seat Back Installation" on page 3-51  
"Seat Pan Removal" on page 3-52  
"Seat Pan Installation" on page 3-53  
"Baggage Floor Removal" on page 3-41  
"Baggage Floor Installation" on page 3-42  
"Seat Belt Inertia Reel Removal" on page 3-39  
"Seat Belt Inertia Reel Installation" on page 3-40  
"Baggage Sidewall Panel Removal" on page 3-43  
"Baggage Sidewall Panel Installation" on page 3-45  
"Headliner Removal" on page 3-37  
"Headliner Installation" on page 3-38  
"Inspect Roll Rigging" on page 9-17  
"Removal and Installation of Inspection Panels and Fairings" on page 3-34  
"Cockpit Panels Removal and Installation" on page 3-36

### 9.4.3.2 Inspect Roll Rigging

The following section contains the information required to perform a rigging check on the roll control system.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Digital level with 0.1° resolution and Alt Ref function, calibrated to manufacturers instructions  
A second person will be required during the inspection processes.

**Parts Required**

None

**Aircraft System and Number**

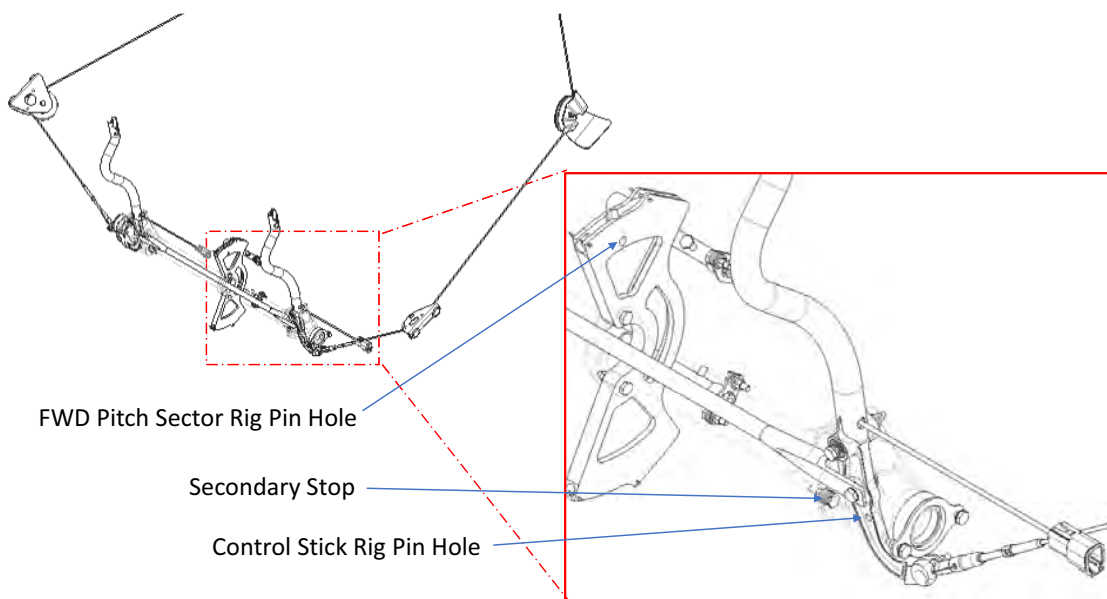
14 – Wing

**Consumables**

None

## TASK INSTRUCTIONS:

1. Ensure that the wings are in the extended and locked position.
2. Secure digital level to aileron surface with its long axis perpendicular to aileron hinge line.
3. Ensure that the adjacent flap trailing edge aligns flush with that of the inboard wing, then aileron trailing edge to that of the flap and then set the Alt Ref function of the level with it in this position.
4. Check the LH and RH roll secondary stop:
  - a. Apply  $15 \pm 2$  lb at the center of the control stick grip. Force should be applied INBD and OUTBD.
  - b. Verify that contact is made with the secondary roll stops (located at the base of the control sticks as shown in Figure 9-13) at the specified force. If not within specified force adjust the length of the secondary stop bolts using NAS1149C0363R washers. If a finer adjustment is necessary it is permissible to use NSAS1149C0332R or NAS1149C0316R washers. A minimum of three and maximum of seven NAS1149C0363R washers are allowed. Verify proper thread protrusion of the bolt and nut of the secondary stop once complete.
  - c. Verifying that the primary roll stop (located in the wing) contracts prior to the RH secondary stop at the control stick.



**FIGURE 9-13**  
LOCATION OF SECONDARY ROLL STOP

5. Have a helper move the control stick to lower the aileron trailing edge down against the stop (stop contact at outboard roll bellcrank should be heard). While holding very light ( $1-2 \text{ lb}_f$ ) upward

pressure on the aileron trailing edge to remove play, record level reading at maximum trailing edge down (TED) travel.

6. Have a helper move the control stick to raise the aileron trailing edge up against the stop (stop contact at outboard roll bellcrank should be heard). Record level reading at maximum TEU travel (the weight of the level should be enough to remove play without hand pressure).

RESULT:

**Reg. No. of Aircraft:**

**Date of Test:**

**Initials of Technician:**

Nominal Position	_____	In-line with the flap trailing edge within $\pm 0.02$ inch	
Left Aileron	___ ° TED ( $15 \pm 2^\circ$ )	_____	___ ° TEU ( $25 \pm 2^\circ$ )
Right Aileron	___ ° TED ( $15 \pm 2^\circ$ )	_____	___ ° TEU ( $25 \pm 2^\circ$ )

VERIFICATION METHOD:

Record results and check against requirement.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Wings" on page 3-11

"Exterior/Interior Wing Control Surfaces" on page 17-5

"Rigging Roll Controls" on page 9-20

"Inspect Roll Cable Tension" on page 9-13

"Rigging Yaw Controls" on page 9-87

"Rigging Pitch Controls" on page 9-46

## 9.4.4 Maintenance Instructions

### 9.4.4.1 Rigging Roll Controls

Use the following procedure for general maintenance and for rigging the roll control system following disassembly, maintenance, and reassembly of the roll cable circuit.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

Aircraft Cable Tensiometer

Digital Protractor

5 x DIA .1875 Rigging Pins

1 x DIA .250 Rigging Pins

**Parts Required**

As needed based upon inspections and condition of parts. Contact ICON Aircraft for assistance as needed. A list of part numbers in the aileron cable system is below.

Part Number	Part Name	Quantity
ICA002294	SOCKET ASSY, ROLL, WING FOLD	2
ICA005909	CONTROL CABLE, ROLL, FUSELAGE, UPR	1
ICA008437	CONTROL CABLE, ROLL, FUSELAGE, RH	2
ICA008437	BRACKET PLATE, PULLEY, ROLL, COCKPIT, AFT	2

Part Number	Part Name	Quantity
ICA008925	BUSHING, FLANGE, .250X.100X.032	4
ICA008926	BUSHING, FLANGE, .250X.132X.032	6
ICA009031	BUSHING, PLAIN, AL, .312X.250X.620	2
ICA009850	CABLE FAIRLEAD, OVERHEAD ROLL	2
ICA012104	CLIP, LOCKING, TURNBUCKLE, .042 WIRE	2
MS20220-2	PULLEY, GROOVE, FLIGHT CONTROL, 1680LB	2
MS20392-1R23	PIN, STR, HEADED, DRILLED SHK, CRES, .125X.719	4
MS20392-1R27	PIN, STR, HEADED, DRILLED SHK, CRES, .125X.844	8
MS21151-7	ROD END, BBRG, EXT THD, .250-28X.188	2
MS21251-B5S	TURNBUCKLE BODY, CLIP LKG, BRASS, .156X.250-28X2.25	2
MS21256-1	CLIP, LKG, TRNBKL, 1.078	6
MS24566-4B	PULLEY, CONT, AFB, .188X3.01	4
MS24665-151	PIN, COTTER, CRES, .063X.500	12
MS24694C101	SCREW, MACH, FLAT CSK HD, .250-28X.906X.375	2
NAS77C4-007	BUSHING, FLNGD, UNLINED, CRES, .250X.070	4

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

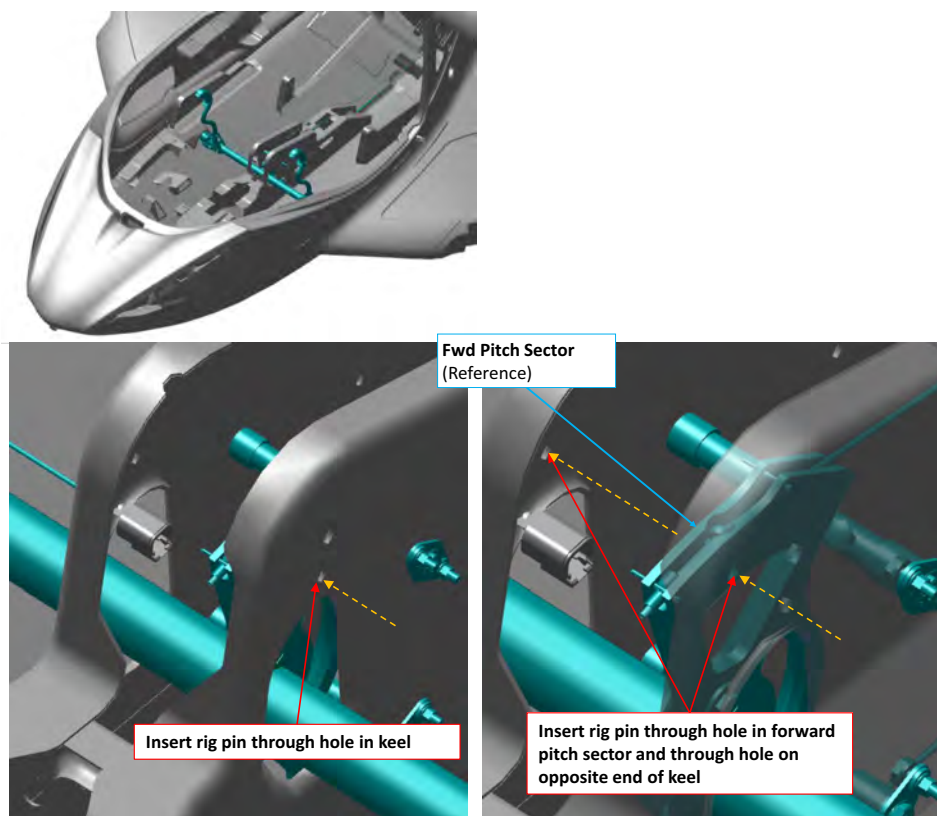
None

*NOTE: Roll rigging sequence is from INBD to OUTBD*

**TASK INSTRUCTIONS:**

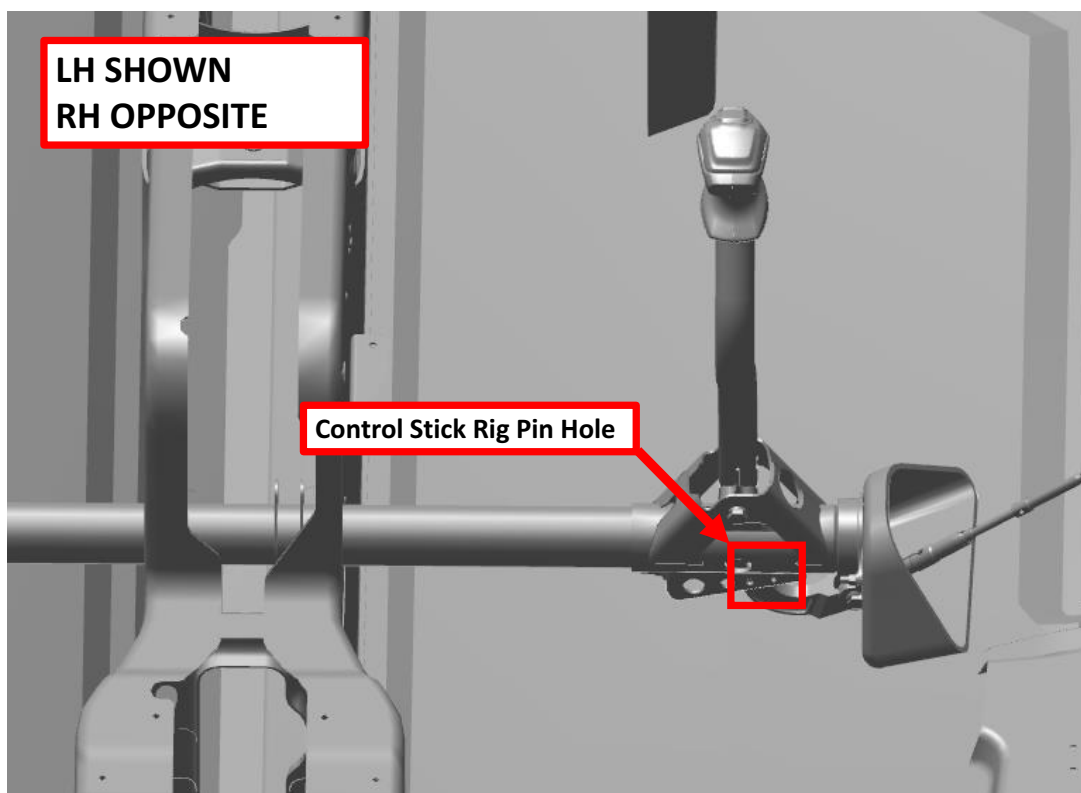
1. Remove left hand and right hand forward and main cockpit floor boards. (See “Cockpit Floor Board Removal” on page 3-46.)
2. Remove seat back and seat pan. (See “Seat Back Removal” on page 3-50.) (See “Seat Pan Removal” on page 3-52.) Retain all fastening hardware.
3. Remove baggage floor boards. (See “Baggage Floor Removal” on page 3-41.) Retain all fastening hardware.
4. Remove seatbelt reel cover, left hand and right hand baggage sidewalls, and baggage headliner. (See “Headliner Removal” on page 3-37.) If headliner cannot be removed without removal of overhead console, temporary removal is permitted.

5. Remove aileron access panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.) Retain all fastening hardware.
6. Inspect all components within the roll circuit for excessive wear. Any components that show excessive wear or damage must be replaced with new components. Refer to table for component list.
7. Install .250" diameter rig pin through the center console and forward pitch sector prior. See Figure 9-14.



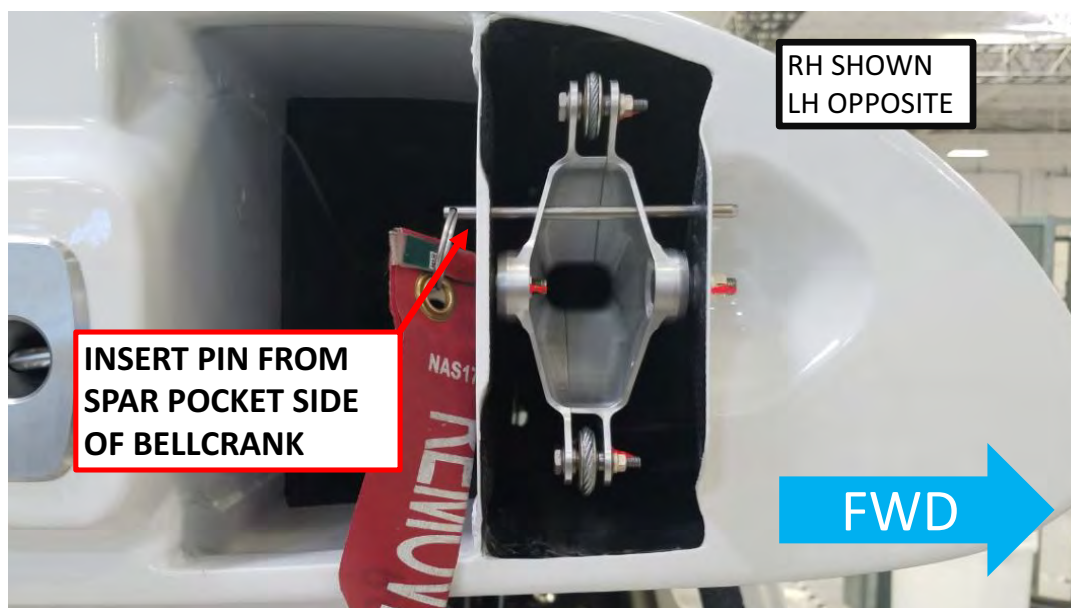
**FIGURE 9-14**  
FWD PITCH SECTOR PIN LOCATIONS

8. Install .1875 in diameter rig pin through the control stick rig pin hole. See Figure 9-15.



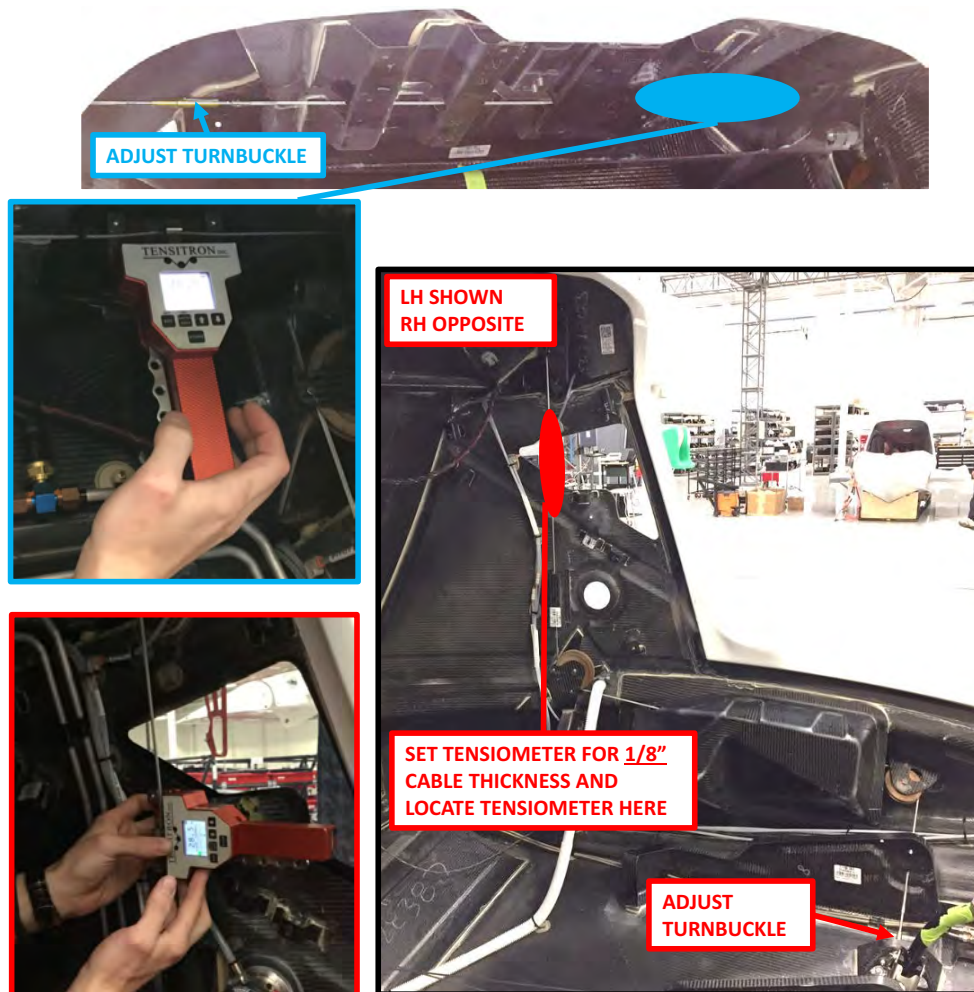
**FIGURE 9-15**  
RIG PIN LOCATIONS – CONTROL STICK RIG PIN HOLE

9. Fold both aircraft wings and install 2X .1875 in diameter rig pins at both of the wing socket bellcrank. See Figure 9-16.



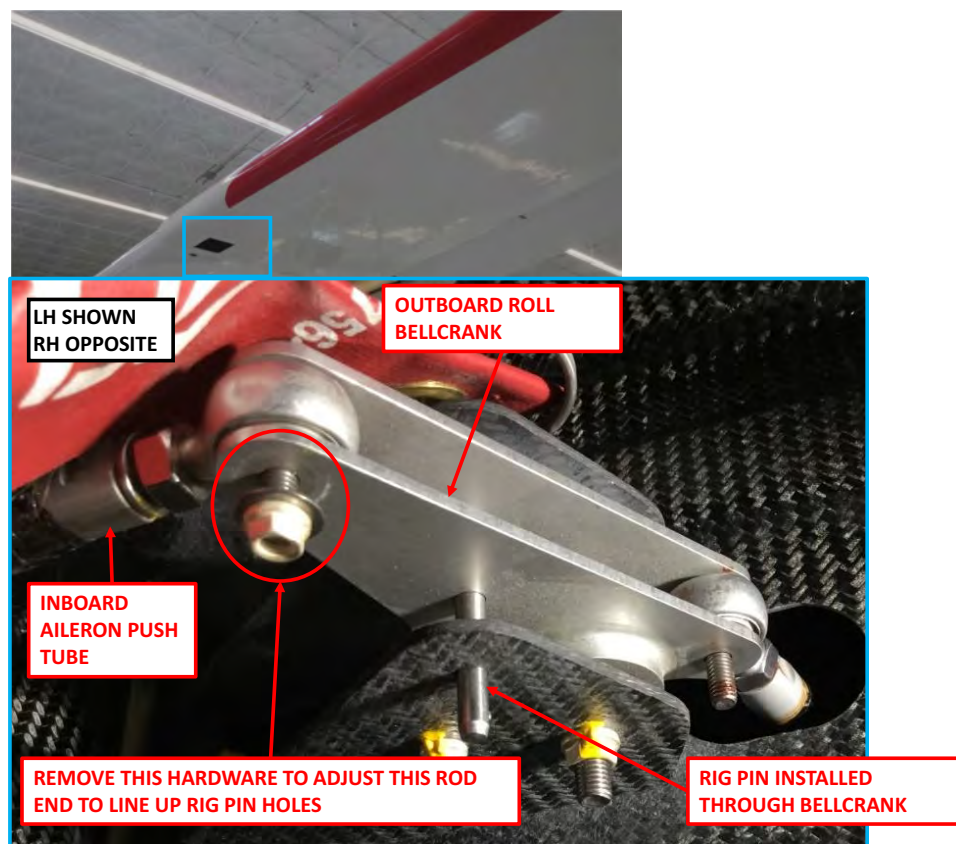
**FIGURE 9-16**  
RIG PIN LOCATIONS

10. Use a tensiometer (upper cable thickness = 3/32 in, LH and RH fuselage cable thickness = 1/8 in) to rig the pilot side fuselage control cable, the copilot side fuselage control cable, and the upper control cable. Achieve the following, refer to Figure 9-17:
  - a. Adjust turnbuckles to set cable tension on all 3 cables to 25-30 lbs.
  - b. After tensions are set on all 3 cables, ensure that only 3 threads or less are exposed on all cable terminal sides and only 12 threads or less are exposed on all rod end sides. Re-rig and adjust as necessary.

**FIGURE 9-17****TENSIOMETER AND CABLE ADJUSTMENT LOCATIONS**

11. Install turnbuckle clips into turnbuckles connecting control cables to control sticks. ICA012104 clip goes on the rod end side and the MS21256-1 clip goes on the control cable side.
12. With rig pins installed, unfold and lock both aircraft wings.
13. Install 2X .1875 in diameter rig pins through the outboard roll bellcranks. If the pin will not install, adjust length of inboard aileron push tube by adjusting rod end lengths as necessary to align the holes in the bracket and bellcrank. Adjust rod end lengths equally. Once adjusted, torque push tube jam nut to 60 inlbs. Torque through bolt and locking nut to 20 inlbs. See Figure 9-18.





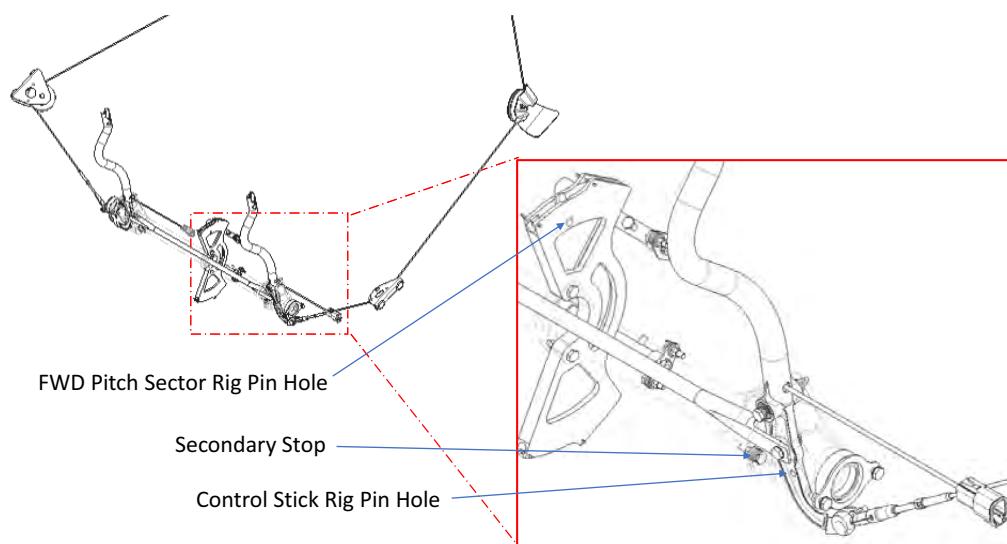
**FIGURE 9-18**  
OUTBOARD ROLL BELLCRANK RIG PIN

14. Ensure flap has been rigged correctly. (See “Inspect Roll Rigging” on page 9-17.)
15. Adjust outboard push tube rod ends equally to align aileron trailing edge with flap trailing edge within 0+/- .02 in. Once adjusted, torque push tube jam nut to 60 in-lbs. Torque through bolt and locking nut to 20 in-lbs.
16. Secure a digital protractor to the top surface of the aileron using double sided tape or equivalent. Set the protractor to zero. See Figure 9-19.



**FIGURE 9-19**  
AILERON DIGITAL PROTRACTOR

17. Remove all rig pins that have been installed.
  - a. 2X Wing socket bellcrank rig pins
  - b. 2X Outboard roll bellcrank rig pins
  - c. Control stick rig pin
18. Ensure ailerons maximum travel limits are set as specified.
  - a. Trailing Edge Down:  $15^{\circ} \pm 2^{\circ}$
  - b. Trailing Edge Up:  $25^{\circ} \pm 2^{\circ}$
19. Check the **LH and RH** roll secondary stop. (See “Inspect Roll Rigging” on page 9-17. Step 4.)
20. Remove FWD pitch sector rig pin.



**FIGURE 9-20**  
LOCATION OF SECONDARY ROLL STOP

21. Install seatbelt reel cover, left hand and right hand baggage sidewalls, and baggage headliner. If the overhead console was removed, re-install.
22. Install baggage floor boards using hardware retained during removal. (See "Baggage Floor Installation" on page 3-42.)
23. Install seat back and seat pan using hardware retained during removal. (See "Seat Back Installation" on page 3-51.) (See "Seat Pan Installation" on page 3-53.)
24. Install cockpit floor boards. (See "Cockpit Floor Board Installation" on page 3-47.)
25. Install aileron access panel using retained fastening hardware.

#### VERIFICATION METHOD:

Conduct the Inspect Roll Rigging procedure (See "Inspect Roll Rigging" on page 9-17.) to verify proper rigging.

## RELATED INFORMATION:

"Inspect Roll Cable Tension" on page 9-13  
 "Cockpit Floor Board Removal" on page 3-46  
 "Cockpit Floor Board Installation" on page 3-47  
 "Seat Back Removal" on page 3-50  
 "Seat Back Installation" on page 3-51  
 "Seat Pan Removal" on page 3-52  
 "Seat Pan Installation" on page 3-53  
 "Baggage Floor Removal" on page 3-41  
 "Baggage Floor Installation" on page 3-42  
 "Seat Belt Inertia Reel Removal" on page 3-39  
 "Seat Belt Inertia Reel Installation" on page 3-40  
 "Baggage Sidewall Panel Removal" on page 3-43  
 "Baggage Sidewall Panel Installation" on page 3-45  
 "Headliner Removal" on page 3-37  
 "Headliner Installation" on page 3-38  
 "Inspect Roll Rigging" on page 9-17  
 "Removal and Installation of Inspection Panels and Fairings" on page 3-34  
 "Cockpit Panels Removal and Installation" on page 3-36

#### 9.4.4.2 Remove Roll Cables

Use the following task to remove any upper or lower control cables that fall outside of the acceptable conditions.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

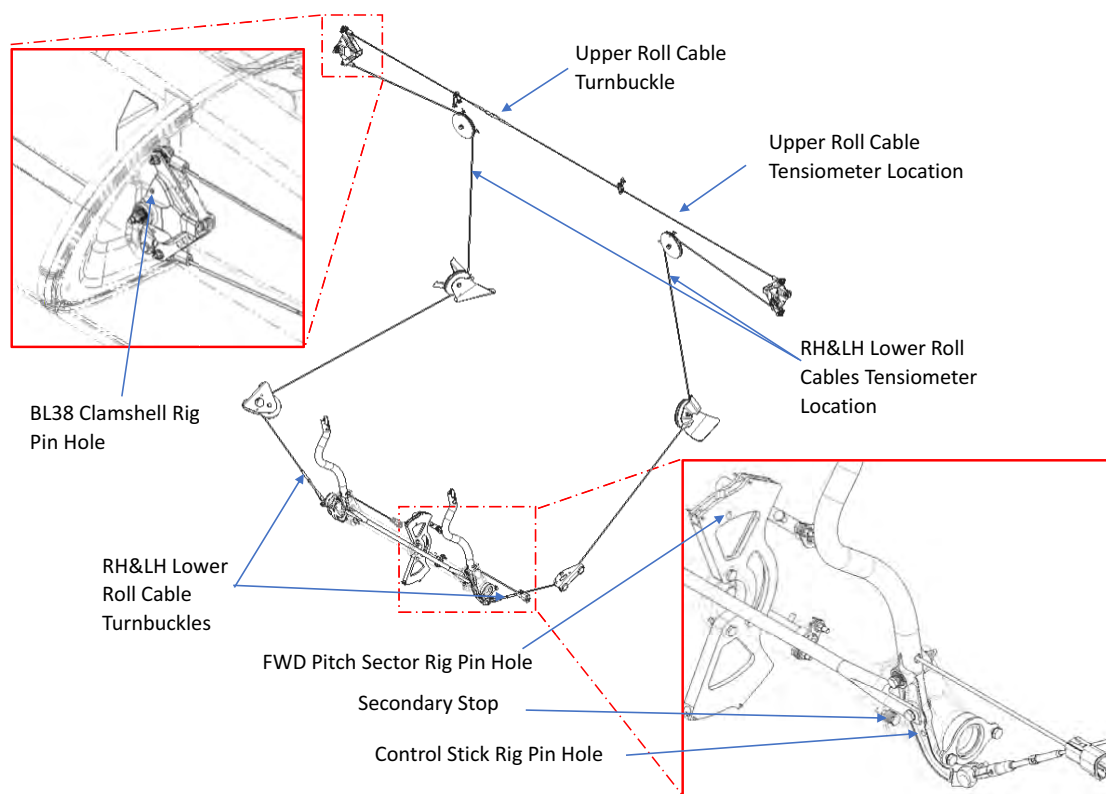
**Consumables**

None

See "Inspect Control Cables" on page 9-8.

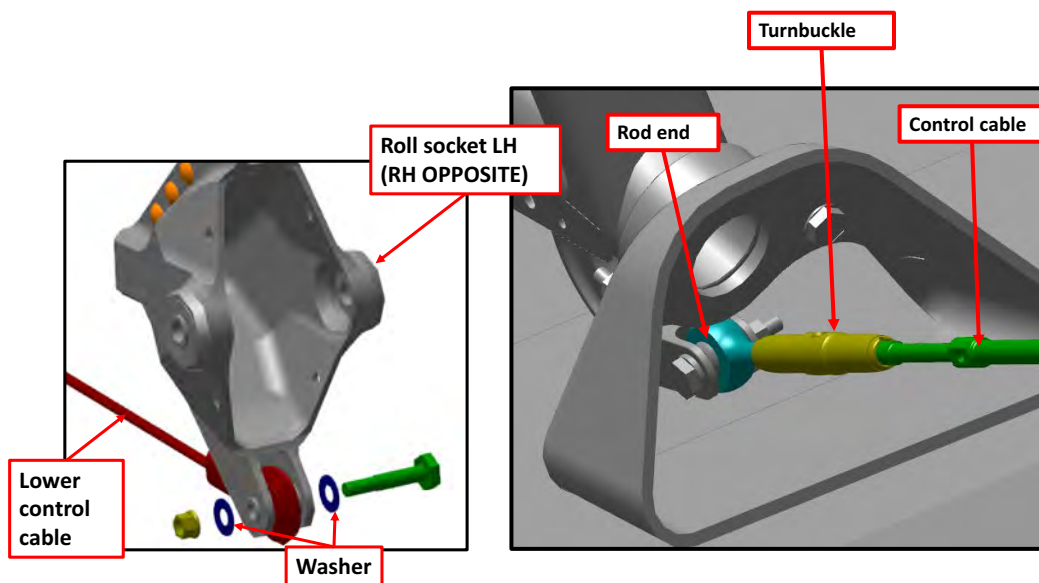
**TASK INSTRUCTIONS:**

1. Remove (See “Baggage Floor Removal” on page 3-41.) Retain all fastening hardware.
2. Remove seat backs and seat pans. (See “Seat Back Removal” on page 3-50.)(See “Seat Pan Removal” on page 3-52.) Retain all fastening hardware.
3. Remove cockpit interior side panels. (See “Cockpit Floor Board Removal” on page 3-46.)
4. Remove baggage side panels. (See “Baggage Sidewall Panel Removal” on page 3-43.)
5. Remove headliner. (See “Headliner Removal” on page 3-37.)
6. De-tension the affected lower flight control cable by removing the safety wire or turnbuckle clips and loosen the turnbuckle located at the torque tube entrance shown in Figure 9-21 below.

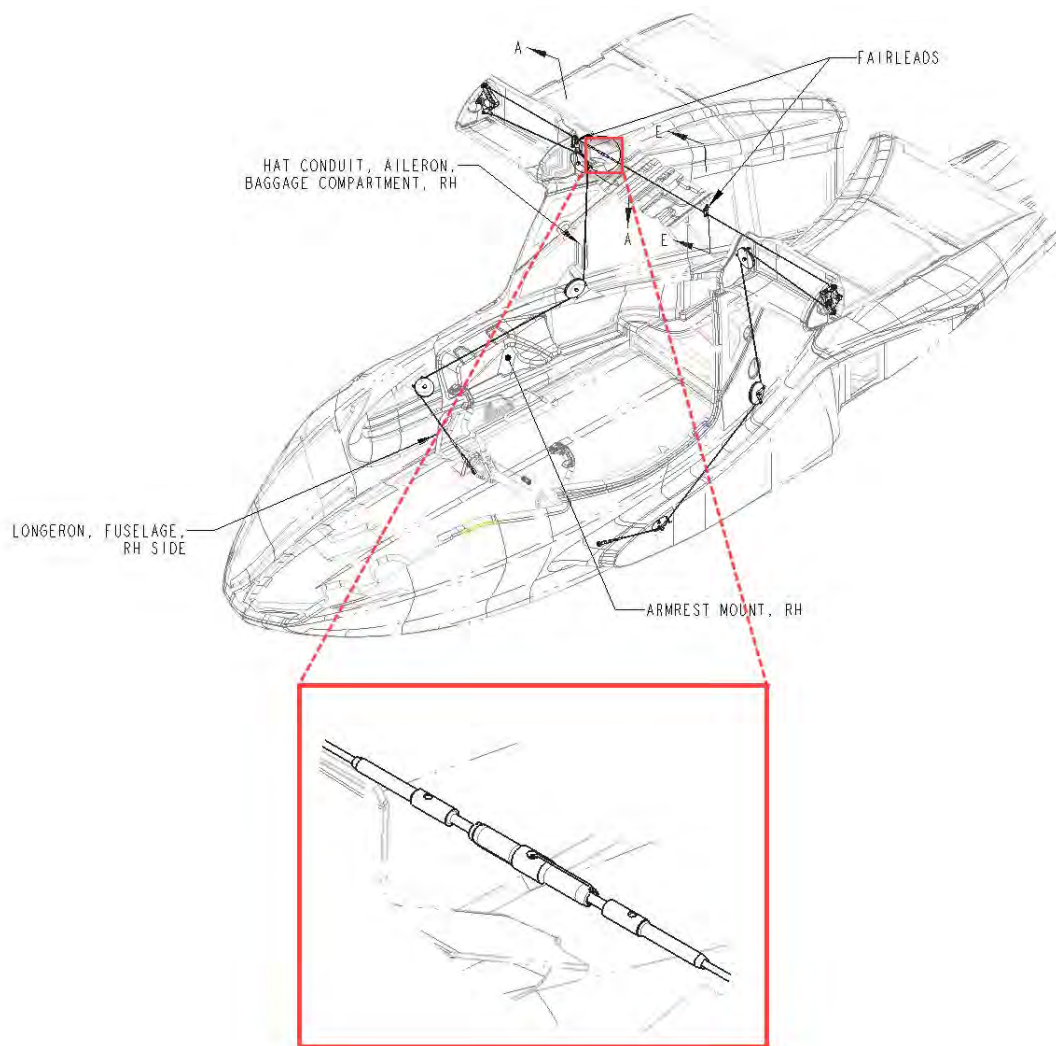


**FIGURE 9-21**  
**ROLL CONTROL SYSTEM OVERVIEW**

7. Disconnect the lower roll cable at the roll socket and at the turnbuckle at the stick. Ensure that cable is held while disconnecting the turnbuckle.

**FIGURE 9-22****ROLL SOCKET AND TORQUE TUBE CONNECTION POINTS**

8. There are two methods to remove the cable from the aircraft, either are acceptable:
  - a. Remove the three pulley pivot bolts
  - b. Remove the two safety pins on each pulley bracket.
9. Remove the worn lower roll cable from the aircraft.



**FIGURE 9-23**  
LOCATION OF UPPER ROLL CABLE TURNBUCKLE

To Remove Upper Roll Cables:

10. De-tension the upper roll cables by removing the safety pins from the turn buckle.
11. Disconnect the upper roll cable at the roll socket and the turnbuckle. Ensure that the cable is held while disconnecting the turnbuckle.
12. Carefully slide the two parts of the old cable out of the aircraft.

#### VERIFICATION METHOD:

Damaged cables have been successfully removed and aircraft is ready for installation of replacement roll cable(s).

## RELATED INFORMATION:

- "Baggage Floor Removal" on page 3-41
- "Seat Back Removal" on page 3-50
- "Seat Pan Removal" on page 3-52
- "Cockpit Floor Board Removal" on page 3-46
- "Baggage Sidewall Panel Removal" on page 3-43
- "Headliner Removal" on page 3-37
- "Inspect Control Cables" on page 9-8

### 9.4.4.3 Install Roll Cables

Use the following task to install the upper and lower control cables.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Flight Control Cable Tensiometer

3xDIA .185" Rig Pins

1xDIA .250" Rig Pins

**Parts Required**

2xICA008437 (CONTROL CABLE, ROLL, FUSELAGE)

2x ICA012104 (CLIP, LOCKING, TURNBUCKLE .042")

2x MS21256-1 (CLIP, LOCKING, TURNBUCKLE)

12x MS25665-151 (PIN, COTTER, CRES, .063" x .500")

1x ICA005909 (CONTROL CABLE, ROLL, FUSELAGE, UPR)

2x-4x MS21043-3 (LOCKING NUT, 10-32)

**Aircraft System and Number**

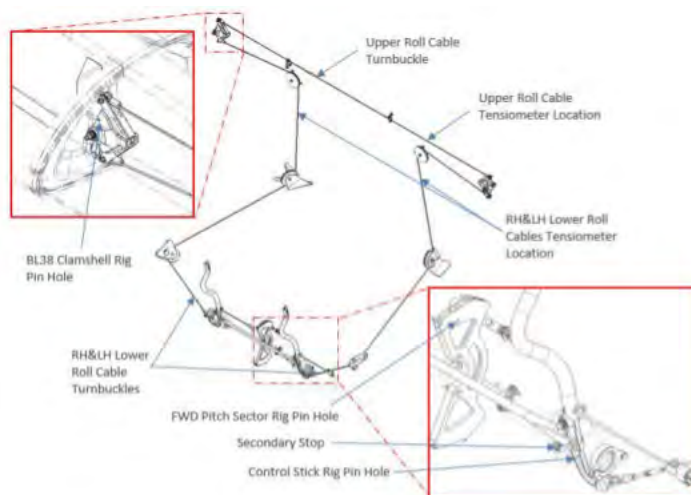
06-Flight Controls

**Consumables**

None

Install Lower Roll Cable:

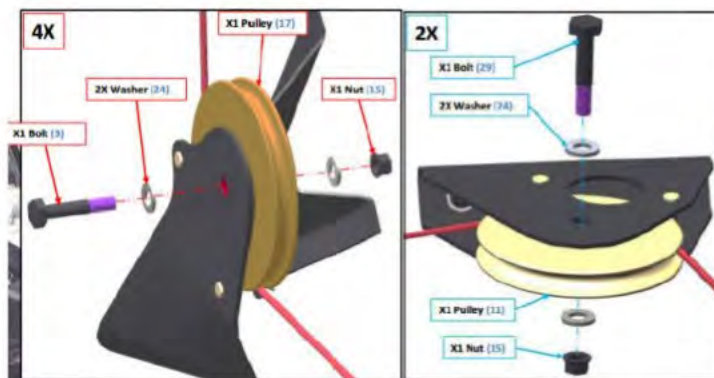




**FIGURE 9-24**  
FUSELAGE ROLL CONTROL SYSTEM

#### TASK INSTRUCTIONS:

1. Remove lower control cable. (See “Remove Roll Cables” on page 9-28.)
2. Starting from the center wing loosely route new lower roll cable from the roll socket to the torque tube bearing. Use Figure 9-22 for routing path. (See “Roll Socket and Torque Tube Connection Points” on page 9-30.)
3. If the roll pulleys were removed, reinstall the bolts and torque to 48 in-lb. If the safety pins were removed, re-install with a new MS25665-151 cotter pins. (See “Roll Pulley Exploded Views” on page 9-33.)



**FIGURE 9-25**  
ROLL PULLEY EXPLODED VIEWS

4. Connect the lower roll cable to the lower roll socket attachment point using new locking nuts (MS21043-3). Torque hardware to 20 in-lb.
5. Connect the roll cable to the rod end still attached to the cockpit control stick at the same time as connecting to the roll cable such that the threads are balanced. Do not fully tension the cable system during this step.

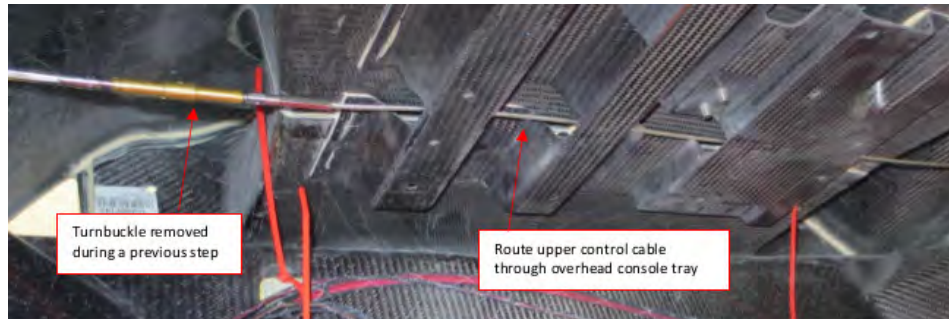
**NOTE:** *Ensure that when tightening the turnbuckle that the cable is held as to not wind the cable.*

### Install Upper Roll Cable

6. Remove upper roll cable.(See “Remove Roll Cables” on page 9-28.)
7. Temporarily separate the new upper roll cable by unthreading the turnbuckle that is connecting both ends.

**NOTE:** *When loosening the turnbuckle, ensure both ends of the cable are held to avoid winding and damaging the new cable.*

8. Route the upper control cable through the overhead console tray. (See Figure 9-26.) Careful not to damage any electrical wires while routing the cable. Snaking the cable is permissible.



**FIGURE 9-26**  
ROUTING UPPER CONTROL CABLE

9. Connect the upper control cable at the upper attachment point of the roll socket using new locking nuts (MS21043-3). Tighten hardware to 20 in-lb.
10. Re-connect the upper control cable at the turnbuckle. Do not fully tension the cables during this step.

**NOTE:** *When tightening the turnbuckle, ensure both ends of the cable are held to avoid winding and damaging the new cable.*

11. Rig the roll system. (See “Rigging Roll Controls” on page 9-20.)

### VERIFICATION METHOD:

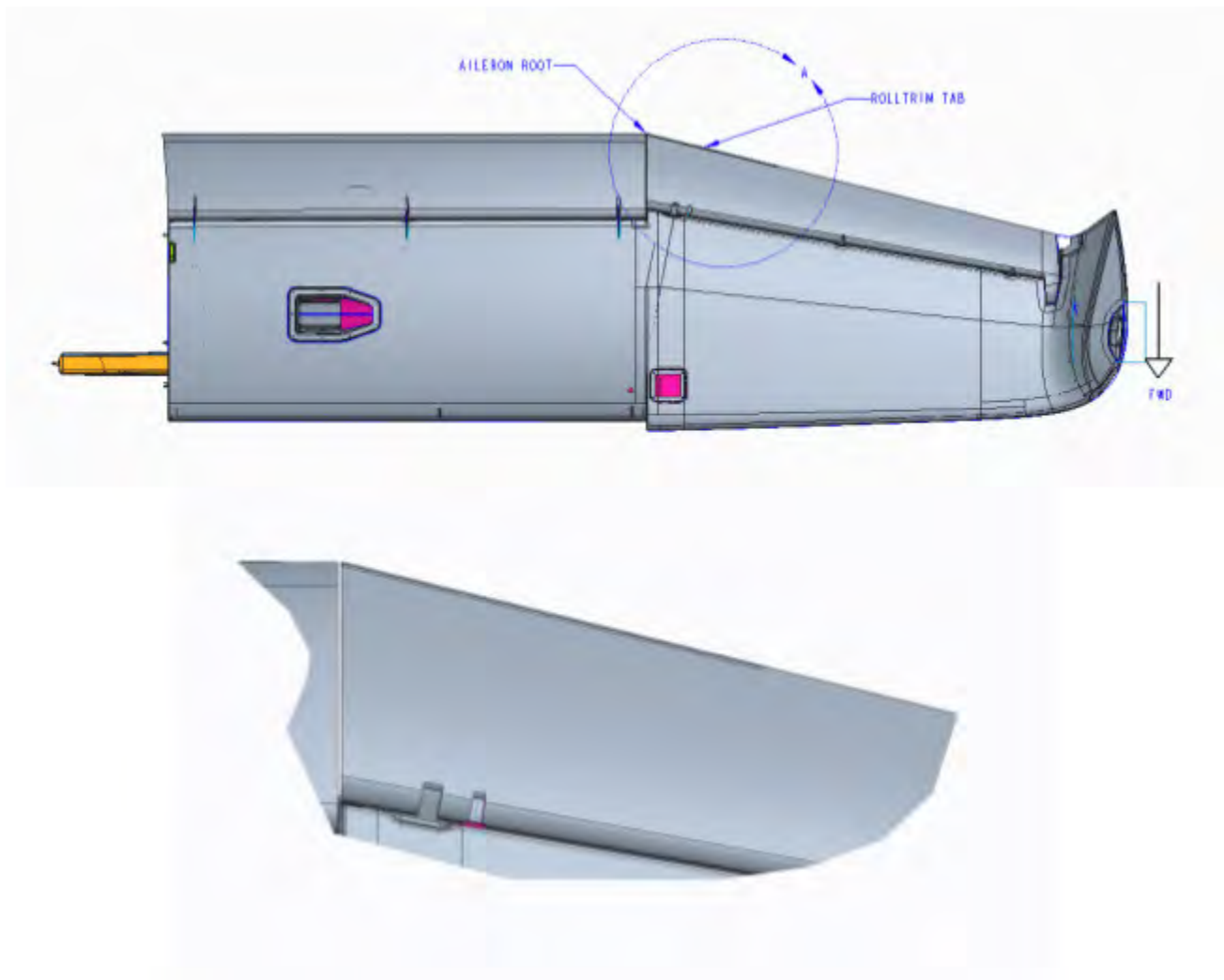
The cables should be re-installed, and hardware torqued to the appropriate spec prior to rigging the system. Tensions should meet the requirements of the rigging section.

## 9.5 Roll Trim Tab

### 9.5.1 Roll Trim Tab Description

The Roll Trim Tab enables the A5 to have zero roll input at the control stick for straight and level flight. Roll trim can be adjusted by removal and installation of a different trim tab length on the aileron.

### 9.5.2 Roll Trim Tab Diagram/Schematic



## 9.5.3 Inspection Instructions

### 9.5.3.1 Determine Roll Trim Tab Length

Use these instructions to determine the roll trim tab length required for straight and level flight.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

##### Aircraft System and Number

06 – Flight Controls

##### Consumables

None

#### TASK INSTRUCTIONS:

1. Remove the existing roll trim tab from the aircraft (if installed). (See “Remove Roll Trim Tab” on page 9-37.)
2. Verify that there is no water in either wing tip. Load the aircraft to the condition most used for flying.
3. In trimmed level flight at 75 KIAS and with skid ball centered, release the control stick and measure the time it takes for the aircraft to roll to 10° and to 20°. Also note the direction of the roll (left or right).
4. Use the table as a guide to find the length of tab required.

#### VERIFICATION METHOD:

**NOTE:** *There should be only one roll trim tab on the aircraft. Roll tabs longer than 12 inches are not approved. If aircraft behavior indi-*

*cates that a longer tab is needed, contact ICON Aircraft for support as this may be an indication of some other problem.*

Trim Tab Length (in)	Time to Roll 10° (sec)	Time to Roll 20° (sec)
0	∞	∞
2	21	36
4	8	14
6	6	10
8	4	7
10	3	6
12	<3	5

#### RELATED INFORMATION:

"Remove Roll Trim Tab" on page 9-37

## 9.5.4 Maintenance Instructions

### 9.5.4.1 Remove Roll Trim Tab

Use these instructions to remove the roll trim tab and clean the leftover adhesive residue from the aileron control surface.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

##### Aircraft System and Number

## 06 – Flight Controls

### Consumables

Isopropyl Alcohol

---

#### TASK INSTRUCTIONS:

1. Soften the bond between roll trim lab and aileron surface with isopropyl alcohol.
  2. Gently peel the tab off the aileron surface.
  3. Clean any excess adhesive off the aileron surface with isopropyl alcohol and a soft cloth.
- 

#### VERIFICATION METHOD:

Verify the entire trim tab has been removed, the surface cleaned, and the underlying attachment surface on the aileron is not damaged.

#### RELATED INFORMATION:

"Install Roll Trim Tab" on page 9-38

"Determine Roll Trim Tab Length" on page 9-36

### 9.5.4.2 Install Roll Trim Tab

Use these instructions to install the roll trim tab on the aileron after the correct length has been determined.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

Roll trim tab stock, 90505, 24"

70006738424; 3M VHB Tape 5915WF White, 1/2 in, 16 mil

##### Aircraft System and Number

06 – Flight Controls

##### Consumables

None

---

**TASK INSTRUCTIONS:**

1. Cut the trim stock to the desired length and record length in the aircraft logbook. (See "Remove Roll Trim Tab" on page 9-37.)
2. The tab is a plastic extruded angle with equal length legs. One leg is adhered to the aileron. The other leg of the tab hangs down beneath the surface of the aileron, flush with its trailing edge and also flush with the inboard end of the aileron (the open face of the angle faces down and forward when installed). Peel off the protective film from one side of the VHB tape and stick it to one leg of the tab.



**FIGURE 9-27**  
RIGHT AILERON SHOWN

3. Trim the tape flush with the edges of the footprint of the tab.
4. Trim both ends of the leg of the tab without tape off at a 45° angle as viewed looking towards aircraft forward with tab installed.
5. Stick the tab to bottom of the aileron that is opposite to the direction the aircraft rolls. For example, if the airplane without a tab tends to roll to the right, the tab should be added to the bottom of the left aileron. Align the tab as noted above and stick it down with firm pressure along its length.

---

**VERIFICATION METHOD:**

After the tape is fully cured, pull firmly on the component to ensure that it is bonded properly to the attaching surface.

**RELATED INFORMATION:**

"Remove Roll Trim Tab" on page 9-37

## 9.6 Pitch Controls

### 9.6.1 Pitch Controls Description

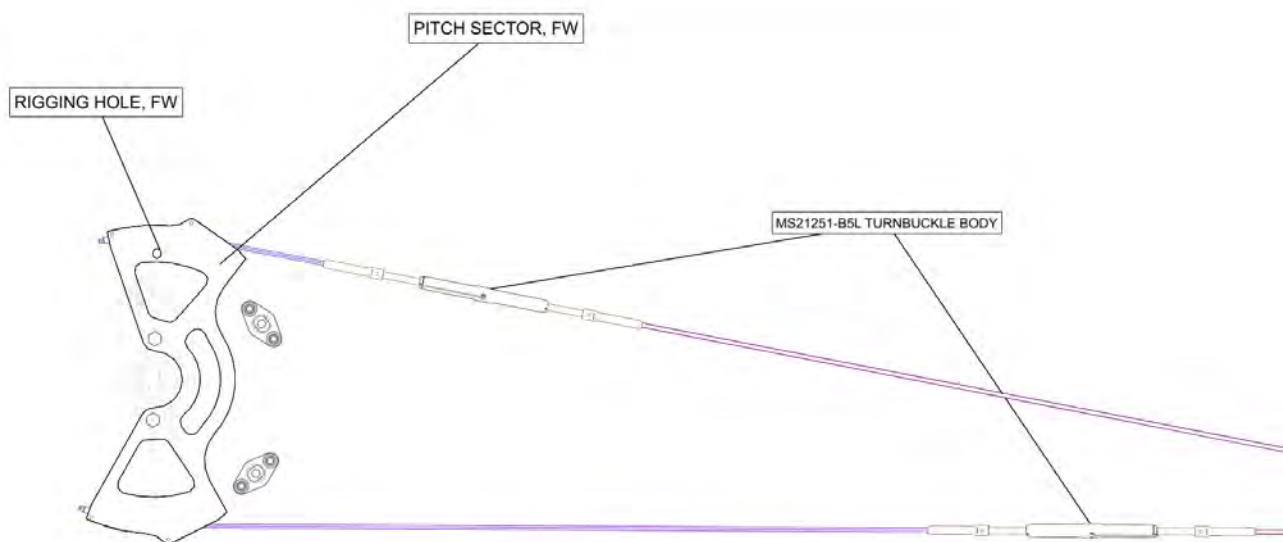
The aircraft's pitch control system is composed of a series of cables, pulleys, pushrods, and FWD/AFT pitch sectors. Input at the control stick in the FWD/AFT direction results in an output at the elevator control surface, controlling the pitch of the aircraft by pointing the nose up or down.

### 9.6.2 Pitch Control Diagram/Schematic

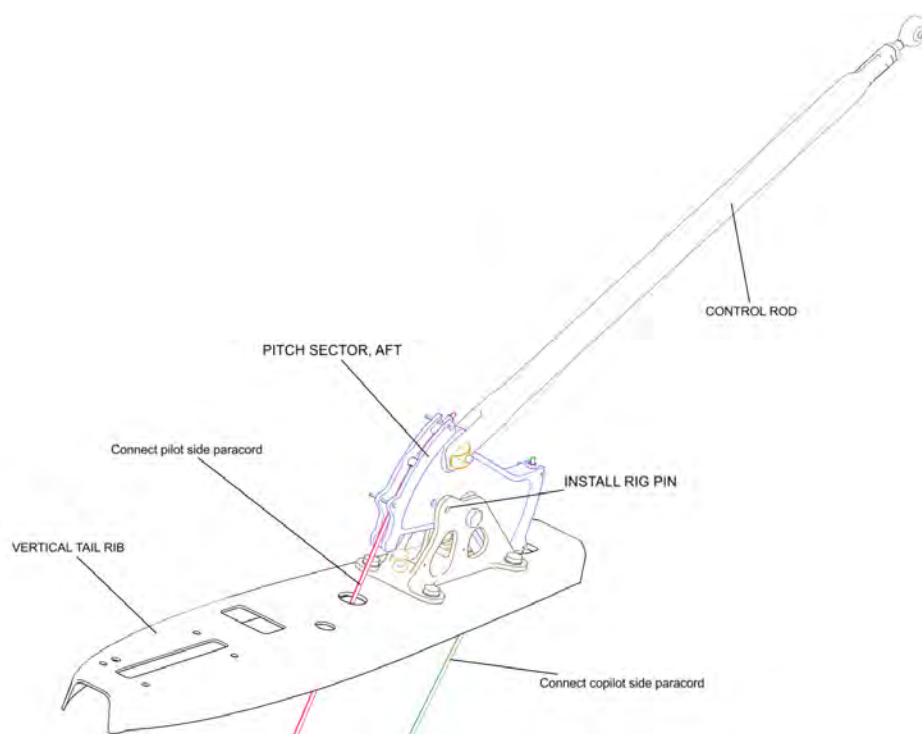


**FIGURE 9-28**  
PITCH CONTROL SYSTEM OVERVIEW





**FIGURE 9-29**  
PITCH SECTOR, FWD DETAIL



**FIGURE 9-30**  
PITCH SECTOR, FWD DETAIL

## 9.6.3 Inspection Instructions

### 9.6.3.1 Inspect Pitch Cable Tension

This section contains instructions to check elevator cables for correction tensions.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Tensiometer

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

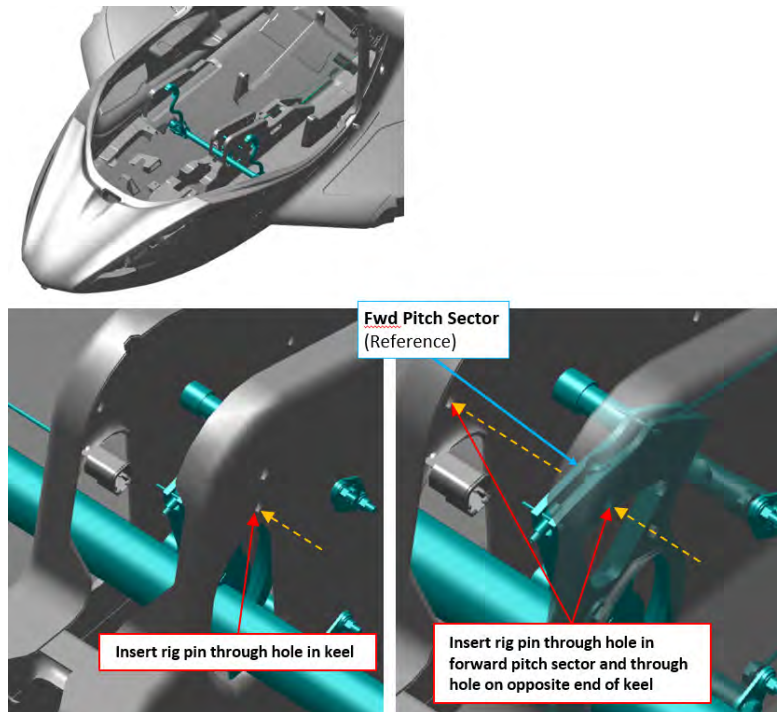
**Consumables**

None

---

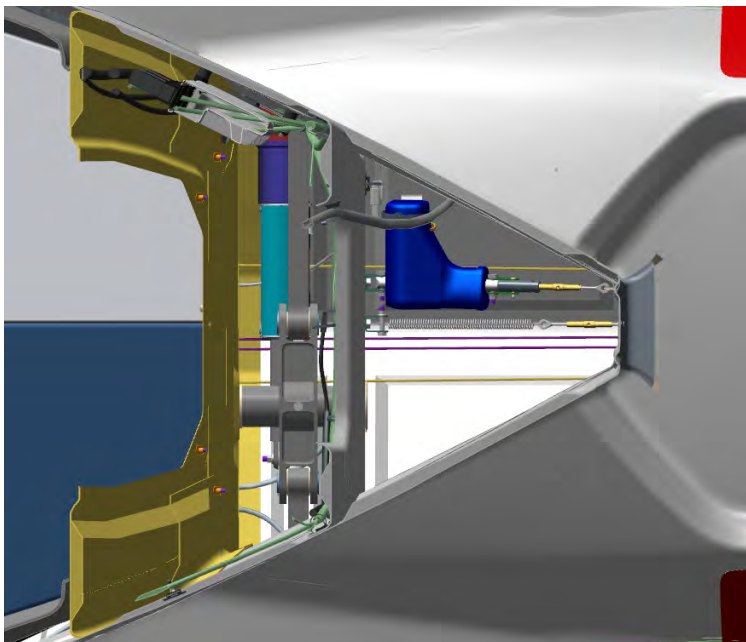
#### TASK INSTRUCTIONS:

1. Remove left hand and right hand forward and main cockpit floor boards. (See “Cockpit Floor Board Removal” on page 3-46.)
2. Remove seat back and seat pan. (See “Seat Back Removal” on page 3-50.) (See “Seat Pan Removal” on page 3-52.) Retain all fastening hardware.
3. Remove AFT bulkhead baggage panel. (See “Baggage Sidewall Panel Removal” on page 3-43.) Retain all fastening hardware.
4. Install .250 in diameter rig pin through the center console and forward pitch sector. See “Rig Pin Location” on page 9-43.



**FIGURE 9-31**  
RIG PIN LOCATION

5. From within the AFT bulkhead baggage access window, use a tensiometer (cable thickness = 1/8 in) to measure elevator cable tension. Refer to figure 2. Ensure they are within 18-33 lb<sub>f</sub> of tension. Refer to the manufacturers' calibration card to correctly read cable tension for the cable diameter.



**FIGURE 9-32**  
ELEVATOR CABLE TENSION CHECK LOCATION. VIEW IS LOOKING DOWN WITHIN THE ACCESS HOLE.

#### VERIFICATION METHOD:

Refer to the manufacturers' calibration card to correctly read cable tension for the cable diameter.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Aft Fuselage and Empennage" on page 3-19

### 9.6.3.2 Inspect Pitch Rigging

The following section contains the information required to perform the A5 maintenance inspection on the elevator.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

**Special Tools Required**

Digital level with 0.1° resolution and Alt Ref function, calibrated to manufacturer's instructions.  
A second person will be required during the inspection process.

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Secure digital level to elevator surface with its long axis perpendicular to elevator hinge line.
2. Hold the elevator so that its trailing edge aligns with horizontal tail tips (take the average if left and right align differently). Set the Alt Ref function of the level.
3. Have a helper move the control stick to lower the elevator trailing edge down hard against the stop (stop contact at aft bellcrank should be heard). While holding very light (1-2 lb<sub>f</sub>) upward pressure on the elevator trailing edge to remove play, record level reading at maximum TED travel.
4. Have a helper move the control stick to raise the elevator trailing edge up hard against the stop (stop contact should be heard). Record level reading at maximum TEU travel.

RESULT:

**Reg. No. of Aircraft:**

**Date of Test:**

**Initials of Technician:**

Elevator	___ ° TED (21±2°)		___ ° TEU (19±1°)
----------	-------------------	--	-------------------

**VERIFICATION METHOD:**

Record results and compare against requirements.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Aft Fuselage and Empennage" on page 3-19

## 9.6.4 Maintenance Instructions

### 9.6.4.1 Rigging Pitch Controls

Use the following procedure for elevator rigging.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

Aircraft Cable Tensiometer

**Parts Required**

As needed based upon inspections and condition of parts. Contact ICON Aircraft for assistance as needed. A list of part numbers in the elevator cable system is below.

Number	Name	Quantity
ICA002203	SECTOR ASSY, PITCH, AFT	1
ICA002491	CONTROL CABLE, PITCH, FWD-UPR	1
ICA002495	CONTROL CABLE, PITCH, FWD-LWR	1
ICA002504	CONTROL CABLE, PITCH, AFT-UPR	1
ICA002508	CONTROL CABLE, PITCH, AFT-LWR	1
ICA008756	BRACKET ASSY, PITCH SECTOR	1
NAS77C4-005	BUSHING, FLNGD, UNLINED, CRES, .250X.050	2
ICA009226	BUSHING, FLANGED, .250X.085X.032	2
MS20392-1R41	PIN, STR, HEADED, DRILLED SHK, CRES, .125X1.281	1

Number	Name	Quantity
MS20392-1R4 3	PIN, STRAIGHT, HEADED, DRILLED SHANK	1
MS21043-4	NUT, SLFLKG, RDC HEX, CRES, .250-28	2
MS21251-B5L	TURNBUCKLE BODY, CLIP LKG, BRASS, .156X.250-28X4.00	2
MS24566-4B	PULLEY, CONT, AFB, .188X3.01	4
MS24665-151	PIN, COTTER, CRES, .063X.500	2
MS24665-153	PIN, COTTER, CRES, .063X.750	8
ICA002195	SECTOR, PITCH, FWD	1
ICA009551	DOWEL, PITCH SECTOR STOP	2
ICA009472	PLATE, ANTI ROT FLG, PITCH SECTOR STOP	2
WS-50-S16	RETAINING RING, EXT SPIRAL, 316 SST, .467X.045	2
AN3C10A	BOLT, MACH, CRES, 10-32X.625	2
ICA012054	PUSHROD, ELEVATOR	1
91630A472	INSERT, HELICAL, SCREW LOCK, 18-8 SST, 10-32X.380	2
MS21256-2	CLIP, LKG, TRNBKL, 1.955	4
MS20995C20	WIRE, SAFETY, CRES, .020	1
ICA012237	BEARING, SLEEVE, NYLON, .625X.500X.750	4

**Aircraft System**

06 – Flight Controls

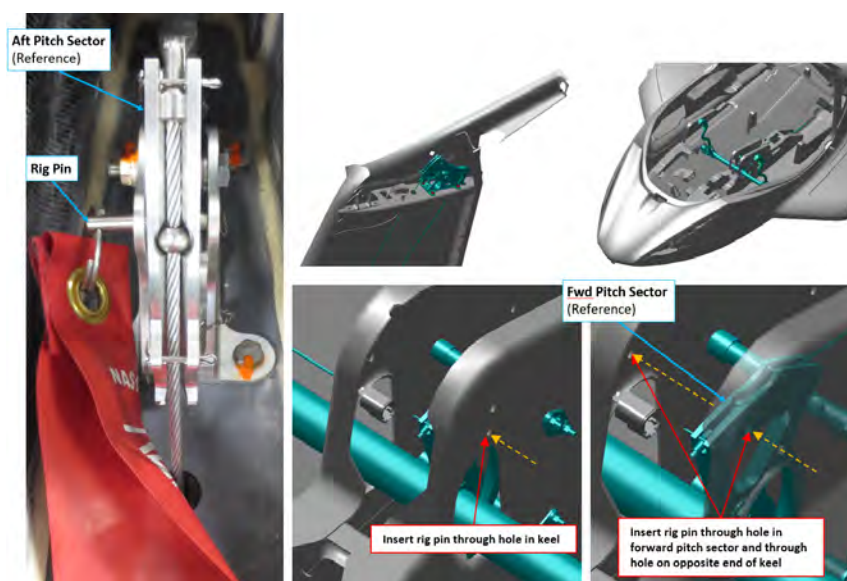
**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove water rudder access panel and AFT bulkhead baggage panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.) (See “Baggage Sidewall Panel Removal” on page 3-43.)
2. Remove left hand and right hand forward and main cockpit floor boards.(See “Cockpit Floor Board Removal” on page 3-46.)
3. Remove seat back and seat pan. (See “Seat Back Removal” on page 3-50.) (See “Seat Pan Removal” on page 3-52.) Retain all fastening hardware.

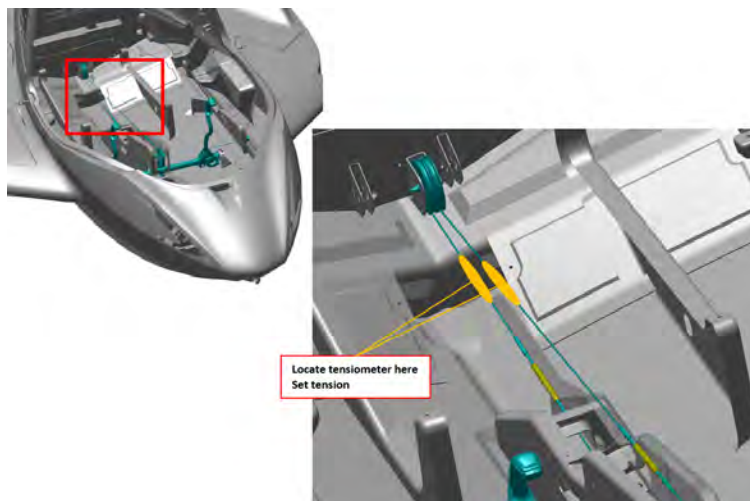
4. Remove baggage floor boards. (See “Baggage Floor Removal” on page 3-41.) Retain all fastening hardware.
5. Remove fuel tank. (See “Remove Fuel Bladder (MY17 Only)” on page 10-11.) Retain all fastening hardware.
6. Remove center console bucket and throttle bezel. (See “Center Console Bucket Removal” on page 8-5.) (See “Throttle Handle and Bezel Removal” on page 8-10.) Retain all fastening hardware.
7. Remove Horizontal Tail. (See “Horizontal Tail Removal” on page 12-11.) Retain all fastening hardware.
8. Inspect all components within the pitch circuit for excessive wear. Any components that show excessive wear or damage must be replaced with new components.
9. Install .250 in diameter rig pin through the center console and forward pitch sector. See Figure 9-33.
10. 10. Install .1875 in diameter rig pin through the aft pitch sector in the vertical tail. See Figure 9-33.



**FIGURE 9-33**  
PITCH SYSTEM RIG PINS

11. Use a tensiometer at least 8 in away from turnbuckles to rig both the upper pitch control cable and lower pitch control cable (cable thickness = 1/8 in). Adjust turnbuckles as required to set cable tension to 20 – 35 lbs. Refer to Figure 9-34. Operate tensiometer per its manufacturer's instructions.





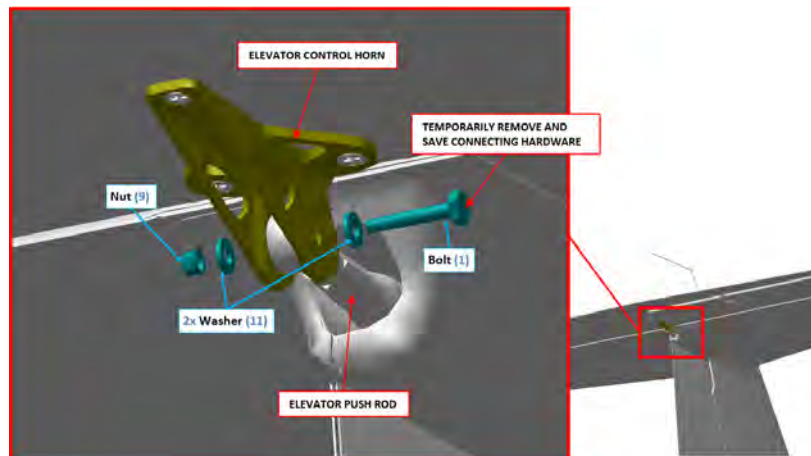
**FIGURE 9-34**  
PITCH CIRCUIT TENSIONING

12. Install locking clips in each turnbuckle. See Figure 9-35.



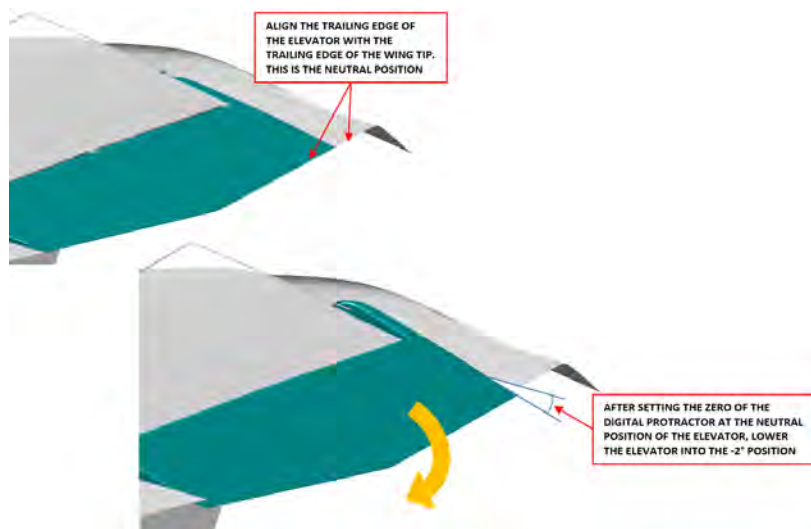
**FIGURE 9-35**  
LOCKING CLIP LOCATIONS

13. Remove rig pin in the aft pitch sector in vertical tail. See Figure 9-33.
14. Install horizontal tail and removable HT tips. (See "Horizontal Tail Removal and Installation" on page 12-6.) (See "Horizontal Tail Tip Pin" on page 12-19.)
15. Ensure the rig pin in the FWD pitch sector is still installed.
16. If installed, remove the hardware which secures the elevator push rod to the elevator control horn. See Figure 9-36.



**FIGURE 9-36**  
CONTROL HORN HARDWARE INSTALLATION

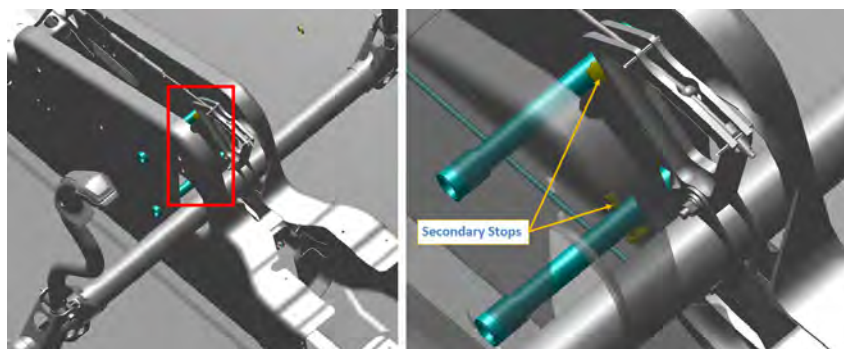
17. Place the digital protractor on top of the elevator and zero the digital protractor while the elevator is in its neutral position, the trailing edge of the elevator should align with the HT tips.
18. After setting the zero position of the elevator, lower the elevator into the -2° position.
19. Adjust the rod end as necessary so that the rod end lines up with the elevator control horn while the elevator is in the -2° position. This will be the initial adjustment. If necessary, final adjustments will be made at a later step if required. See Figure 9-37.



**FIGURE 9-37**  
ELEVATOR RIGGING

20. Temporarily install the hardware which secures the elevator push rod to the elevator control horn. See Figure 9-36.
21. Using the digital protractor, check the maximum upward and downward deflection of the elevator. If required, adjust the elevator push tube rod end as necessary to achieve the following:
  - a. 19° ± 1° upward deflection
  - b. 21° ± 2° downward deflection

22. Check the FWD and AFT pitch secondary stop:
  - a. Apply  $16 \pm 2$  lb at the center of the control stick grip. Force should be applied FWD and AFT.
  - b. Verify that contact is made with the secondary pitch stops (located in the vertical tail) at the specified force.
  - c. Verifying that the primary pitch stops (located in vertical tail) contacts prior to the secondary stops. See Figure 9-38.
23. Adjust the bolt on the secondary stops as needed to achieve contact when specified force is applied. See Figure 9-38. If the secondary stops get contacted before the primary stops, not achieving the elevator travel limits, it is acceptable to remove the bolt on the bottom secondary stop.



**FIGURE 9-38**  
SECONDARY STOPS LOCATION

24. Once the requirements for the upward and downward deflections have been met, install the hardware to connect the pushrod to the elevator control horn. Torque the pushrod jam nut to 60 inlbs. Torque the bolt to 20 inlbs.
25. Ensure that there is no rubbing, binding, or any signs of interference while the elevator is moved throughout its entire range of motion.
26. Install Horizontal Tail. (See “Horizontal Tail Installation” on page 12-13.)
27. Install center console bucket and throttle bezel. (See “Center Console Bucket Installation” on page 8-8.) (See “Throttle Handle and Bezel Installation” on page 8-13.)
28. Install fuel tank. (See “Install Fuel Bladder (MY17 Only)” on page 10-12.)
29. Install baggage floor boards. (See “Baggage Floor Installation” on page 3-42.)
30. Install seat back and seat pan. (See “Seat Back Installation” on page 3-51.) (See “Seat Pan Installation” on page 3-53.)
31. Install left hand and right hand forward and main cockpit floor boards. (See “Cockpit Floor Board Installation” on page 3-47.)

#### VERIFICATION METHOD:

Conduct the Check Elevator Rigging Procedure to verify proper rigging. (See “Inspect Pitch Rigging” on page 9-44.)

## RELATED INFORMATION:

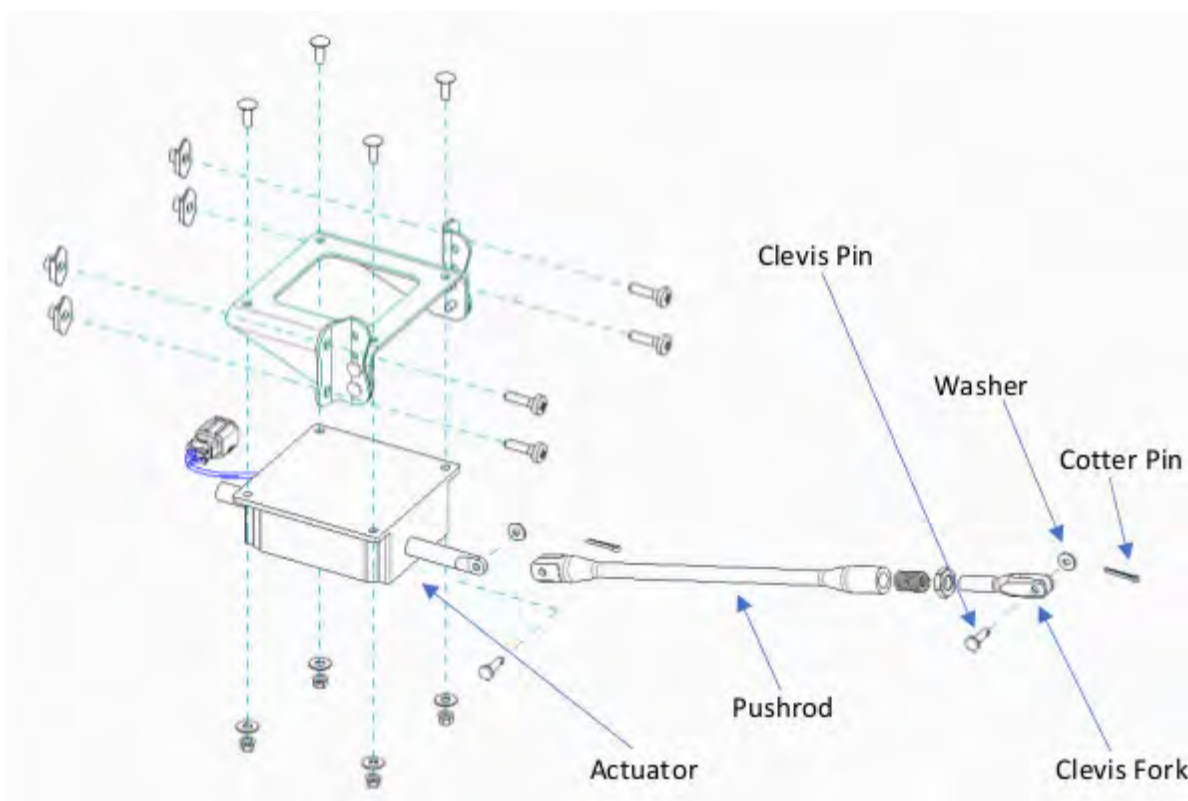
- "Cockpit Floor Board Removal" on page 3-46
- "Cockpit Floor Board Installation" on page 3-47
- "Seat Back Removal" on page 3-50
- "Seat Back Installation" on page 3-51
- "Seat Pan Removal" on page 3-52
- "Seat Pan Installation" on page 3-53
- "Baggage Floor Removal" on page 3-41
- "Baggage Floor Installation" on page 3-42
- "Seat Belt Inertia Reel Removal" on page 3-39
- "Seat Belt Inertia Reel Installation" on page 3-40
- "Baggage Sidewall Panel Removal" on page 3-43
- "Baggage Sidewall Panel Installation" on page 3-45
- "Headliner Removal" on page 3-37
- "Headliner Installation" on page 3-38
- "Inspect Roll Rigging" on page 9-17
- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Cockpit Panels Removal and Installation" on page 3-36
- "Remove Fuel Bladder (MY17 Only)" on page 10-11
- "Install Fuel Bladder (MY17 Only)" on page 10-12
- "Horizontal Tail Removal" on page 12-11
- "Horizontal Tail Installation" on page 12-13
- "Center Console Bucket Removal" on page 8-5
- "Center Console Bucket Installation" on page 8-8
- "Throttle Handle and Bezel Removal" on page 8-10
- "Throttle Handle and Bezel Installation" on page 8-13

## 9.7 Pitch Trim Actuator

### 9.7.1 Pitch Trim Actuator Description

The pitch trim actuator is a linear actuator. It moves a pushrod connected to the pitch trim tab.

### 9.7.2 Pitch Trim Actuator Diagram/Schematic



**FIGURE 9-39**  
PITCH TRIM ACTUATOR ASSEMBLY

### 9.7.3 Maintenance Instructions

#### 9.7.3.1 Remove Pitch Trim Actuator

The pitch trim actuator removal procedure is needed as part of the process of replacing the actuator.

TASK INFORMATION:

#### Type of Maintenance

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the horizontal tail tips.
  2. Disconnect the trim tab pushrod by removing cotter pin, clevis pin, and washer. Discard the cotter pin and replace the clevis pin if worn.
  3. Disconnect elevator pushrod bolt at the center of the elevator.
  4. Push the elevator trailing edge up to gain access to the center hinge hardware.
  5. Disconnect elevator center hinge bolt and washer.
  6. Remove outboard elevator hinge screws – two on each side.
  7. Remove elevator from the aircraft carefully allowing the trim push rod to slide through the elevator.
  8. Remove the trim actuator push rod from the trim actuator by removing the cotter pin, clevis pin, and washer. Discard the cotter pin and replace the clevis pin if worn.
  9. Inspect the trim actuator pin hole for wear and discard actuator if worn.
  10. If trim actuator needs to be replaced, remove the actuator and mounting bracket from the horizontal tail by removing all four cross head screws and then slide the subassembly out of the horizontal tail enough to disconnect electrical harness. Remove actuator subassembly completely from the aircraft.
  11. If trim actuator needs to be replaced, remove the actuator from the mounting bracket by removing the four mounting screws, washers, and nuts.
- 

**VERIFICATION METHOD:**

This procedure is successful when the trim actuator and mounting bracket are successfully removed from the aircraft.

### 9.7.3.2 Install Pitch Trim Actuator

The pitch trim installation procedure is needed as part of the process of replacing the actuator and testing its function.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

ICA006821 TRIM ACTUATOR

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

Tef-Gel®

---

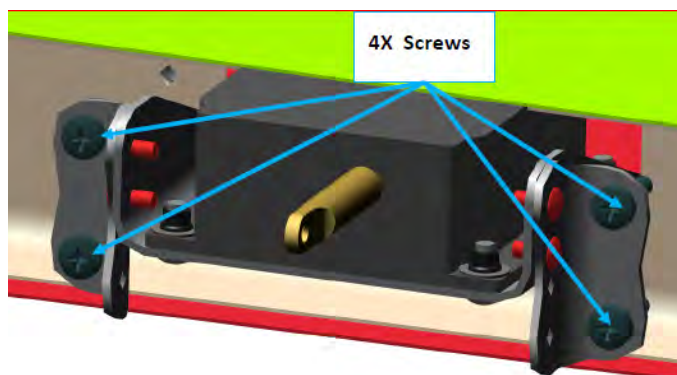
#### TASK INSTRUCTIONS:

1. Mount new ICA006821 trim actuator to the pitch trim bracket by installing the four mounting cross head screws, washers, and nuts previously removed as shown.

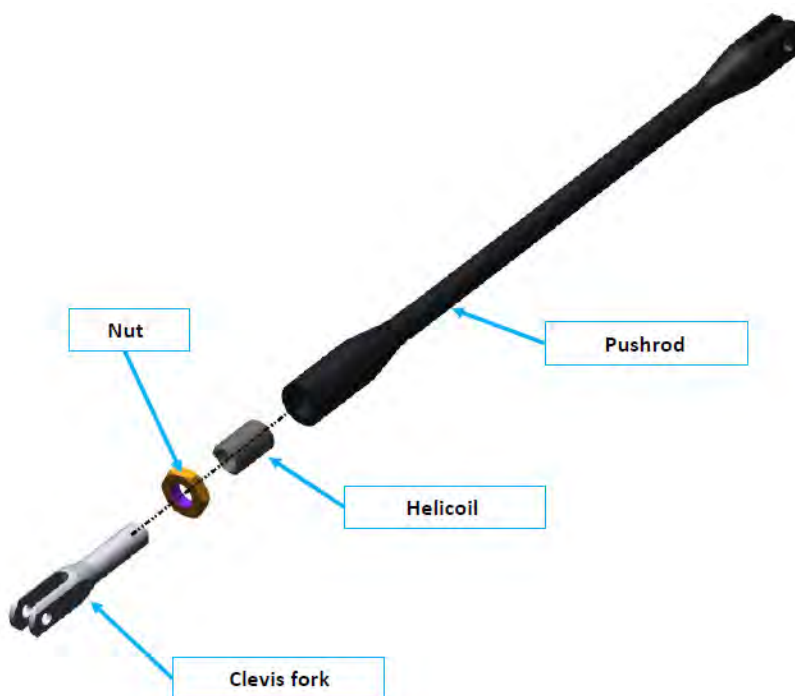




2. Install actuator and bracket back into the horizontal tail by first connecting the D9017J connector to the D9017P connector in the horizontal tail and installing the four cross head screws as shown. Torque to 14 in-lb<sub>f</sub>.

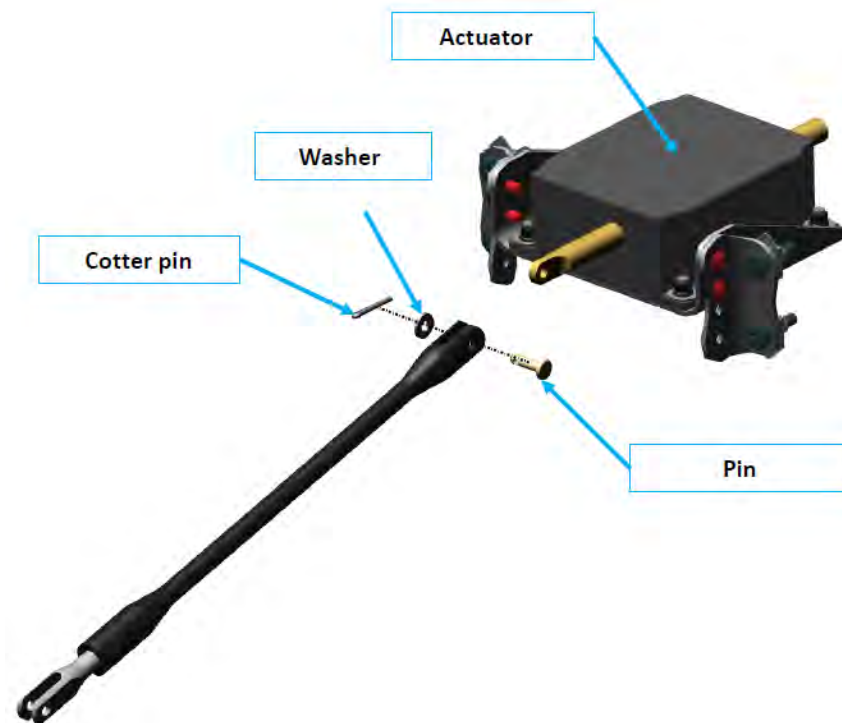


3. If pushrod needs to be replaced for wear, assemble the pushrod (ICA007117), helical coil (1191-4CN500), jam nut (AN316C4R), and fork (ICA008302) as shown.

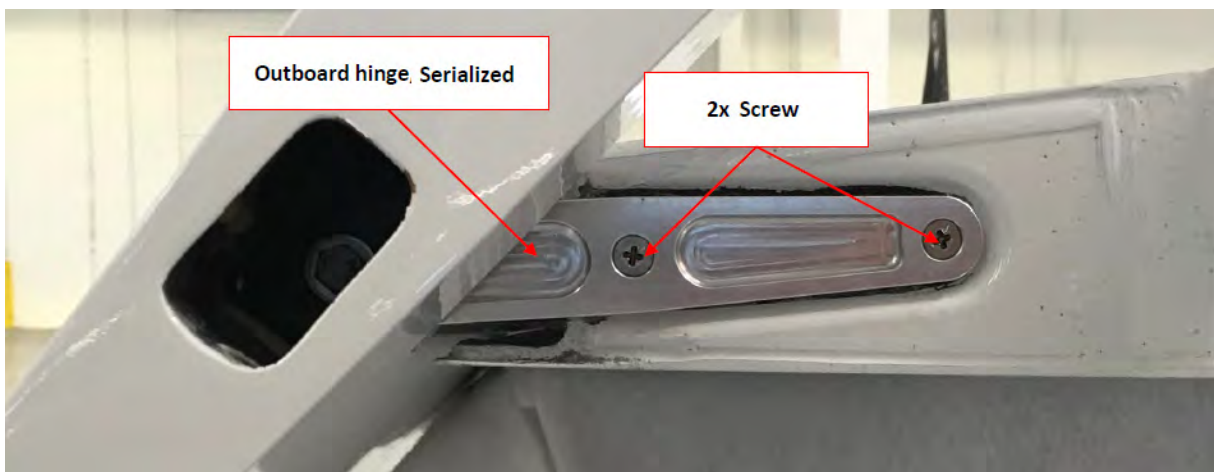


4. Install push rod assembly on actuator by installing clevis pin (MS20392-1R11), washer (NAS1149CN432R), and cotter pin (MS24665-151) as shown.

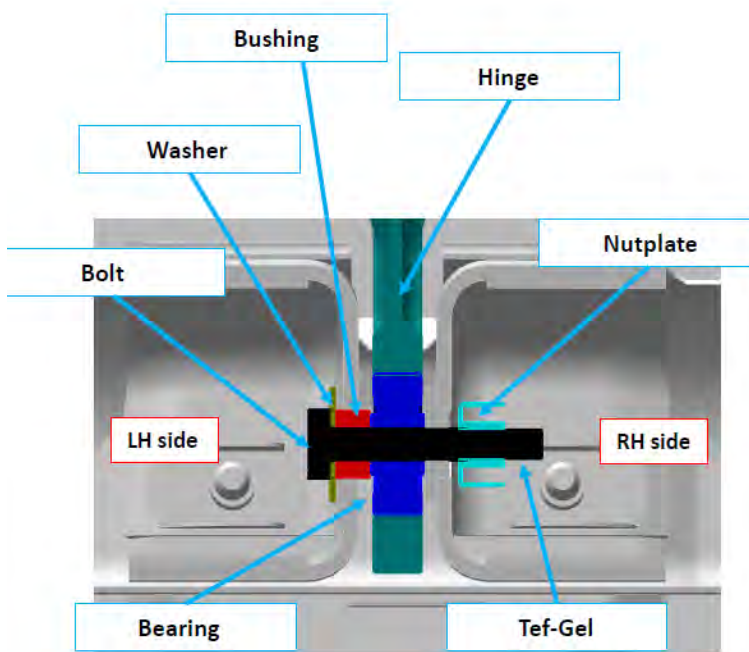




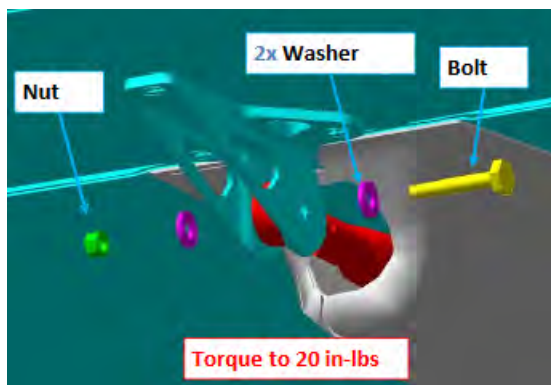
5. Install the elevator by carefully guiding the elevator trim tab pushrod through the elevator and securing the elevator outboard hinges with four screws, (right side shown, repeat for left side). Torque screws to 26 in-lb<sub>f</sub>.



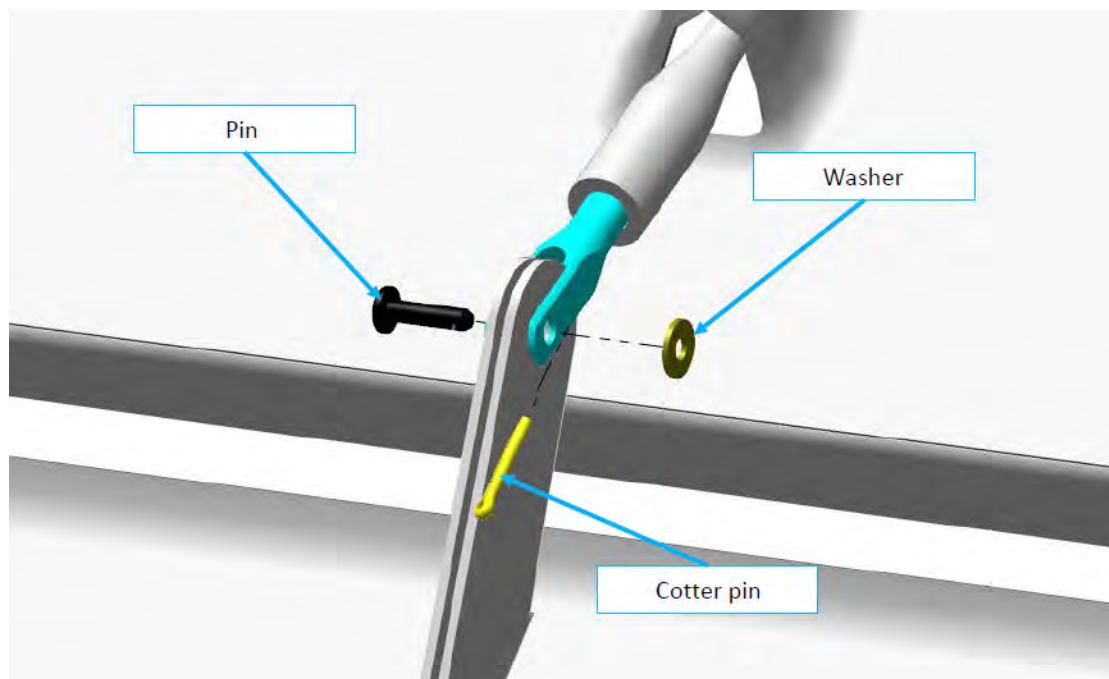
6. Install elevator center hinge bolt and washer as shown. Apply Tef-Gel<sup>®</sup> prior to installing and torque to 26 in-lb<sub>f</sub>.



7. Install the elevator push tube rod end hardware as shown and torque to 20 in-lb<sub>f</sub>.



8. Connect trim tab pushrod to the trim tab, as shown, by installing the pin (MS20392-1R11), washer (NAS1149CN432R), and cotter pin (MS24665-151). Do not bend the cotter pin until rigging in next step is complete.



9. Install the horizontal tail tips.

#### VERIFICATION METHOD:

Check and make adjustments as needed to the pitch trim rigging. (See "Inspect Pitch Trim Tab Rigging" on page 9-61.)

#### RELATED INFORMATION:

"Inspect Pitch Trim Tab Rigging" on page 9-61

## 9.8 Pitch Trim Tab

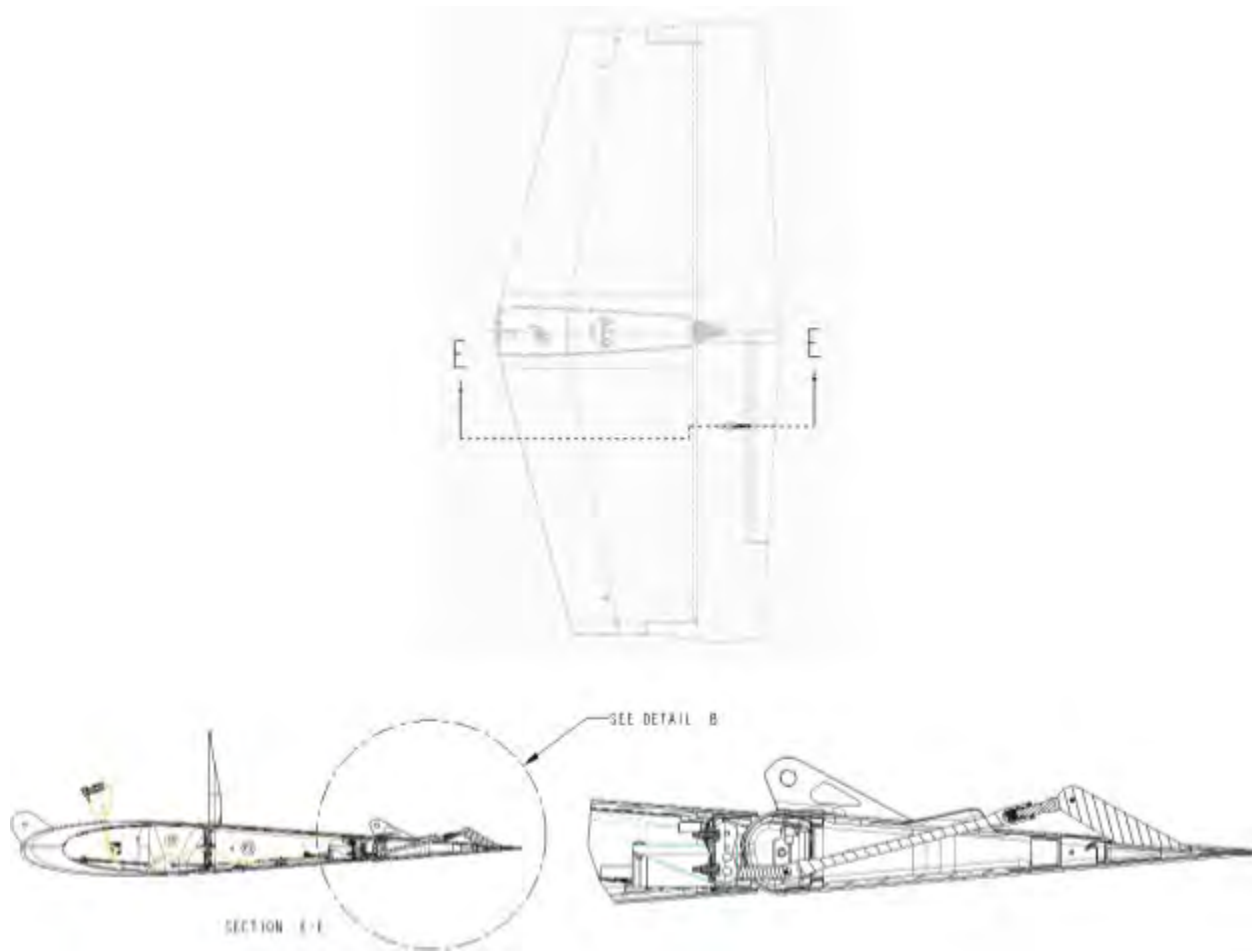
### 9.8.1 Pitch Trim Tab Description

The pitch trim tab is part of the secondary flight controls; it is a small surface connected to the trailing edge of the elevator. This trim tab can only be controlled from the top of the LH control stick. The trim tab is adjusted to relieve the pilot from having to exert a constant pressure on the pitch controls.

### 9.8.2 Pitch Trim Tab Diagram/Schematic



**FIGURE 9-40**  
PITCH TRIM TAB AND VERTICAL TAIL



**FIGURE 9-41**  
PUSHROD AND PITCH TRIM TAB SECTION VIEW

### 9.8.3 Inspection Instructions

#### 9.8.3.1 Inspect Pitch Trim Tab Rigging

The following section contains the information required to perform an inspection of the pitch trim tab rigging.

##### TASK INFORMATION:

###### **Type of Maintenance**

Line

###### **Level of Certification**

LSA-RM

###### **Task Specific Training Required**

No

**Special Tools Required**

Digital level with 0.1° resolution and Alt Ref function, calibrated to manufacturer's instructions.

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Turn on the master switch and verify that the trim indicator light illuminates.
  2. Hold the elevator so that its trailing edge aligns with the horizontal tail tips (take the average if left and right align differently) throughout this procedure. Use adhesive tape between elevator trailing edge and elevator tips to temporarily align the elevator to neutral deflection in alignment with the horizontal tail tips.
  3. Secure digital inclinometer to the top of the trim tab surface with double-sided tape. Ensure that its long axis is perpendicular to tab hinge line and that it does not interfere with tab operation.
  4. Operate the trim tab until its trailing edge aligns with that of the elevator. Set the Alt Ref function of the inclinometer to set the display to zero.
  5. Pull and hold the trim switch down/aft until the tab deflects to its TED limit. Record level reading at maximum TED travel.
  6. Push and hold the trim switch up/fwd until the tab deflects to its TEU limit. Record level reading at maximum TEU travel.
  7. If the tolerances are not met, adjust the trim tab fork in or out to achieve them. Once complete, torque the jamb nut on the fork to 60 in-lb<sub>f</sub> and bend the cotter pin on the fork.
  8. Turn off the master switch.
  9. Remove inclinometer and any tape used to secure it to the elevator trailing edge.
- 

RESULT:

**Reg. No. of Aircraft**

**Date of Test:**

**Initials of Technician:**

Pitch Trim Tab	___ ° TED (21±2°)		___ ° TEU (15±2°)
----------------	-------------------	--	-------------------

VERIFICATION METHOD:  
Record results and check against requirements.

RELATED INFORMATION:  
"Install Pitch Trim Actuator" on page 9-55

9.8.3.2 Measure Pitch Trim Tab Wear

Use the following procedure to measure wear of the pitch trim tab.

TASK INFORMATION:

Type of Maintenance

Line

Level of Certification

LSA-RM

Task Specific Training Required

No

Special Tools Required

None

Parts Required

None

Aircraft System and Number

06 – Flight Controls

Consumables

None

TASK INSTRUCTIONS:

1. Hold the elevator so that its trailing edge aligns with the horizontal tail tips (take the average if left and right align differently) throughout this procedure. Use adhesive tape between elevator trailing edge and elevator tips to temporarily align the elevator to neutral deflection in alignment with the horizontal tail tips.
2. Secure digital inclinometer to the top of the trim tap surface with double-side tape. Ensure that its long axis is perpendicular to tab hinge line and that it does not interfere with tab operation.
3. Operate the trim tab until its trailing edge aligns with that of the elevator. Zero the inclinometer.

4. While securing the elevator with a free hand, Push on the bottom surface of the pitch trim tab, until all upward free play has been removed from the system. Record level reading.
  5. While securing the elevator with a free hand, Push on the top surface of the pitch trim tab, until all downward free play has been removed from the system. Record level reading.
  6. Alternatively, repeat procedure, while measuring displacement due to free play with a scale at the TE of the pitch trim tab.
  7. Inspect the maximum diameter of the pitch trim tab control horn hole using a caliper.
  8. Remove inclinometer and any tape used to secure it to the elevator trailing edge.
- 

#### VERIFICATION METHOD:

Record results and check that free play is within these limits. If the tolerance are not met, replace pitch tab actuator and push rod.

- Maximum system wear =  $\pm 1^\circ$  of pitch trim tab TE free play or  $\pm .081$  inch of linear travel at TE of pitch trim tab

Record results and check trim tab control horn hole is within these limits. If tolerance is larger than specified, repair is required. Contact ICON for repair.

- Maximum trim tab control horn hole diameter =  $\varnothing .160$  inch

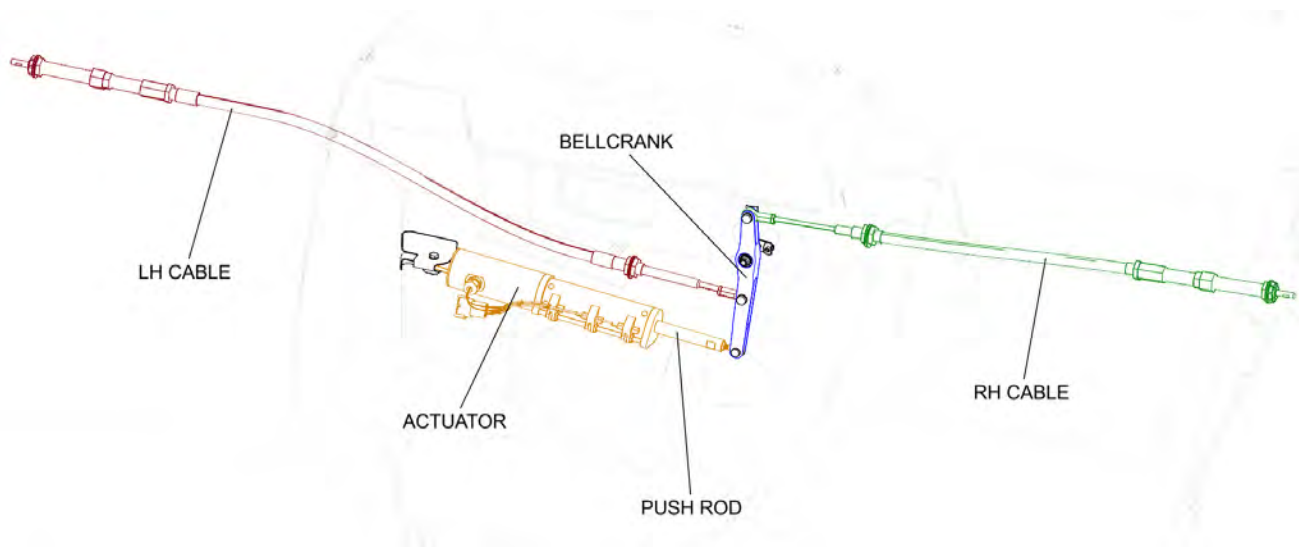


## 9.9 Flap Controls

### 9.9.1 Flap Controls Description

The flap control surfaces are driven by an electric actuator. There are three positions for the flaps: 0°, 15°, and 30°. When the pilot turns the knob to move the flaps, the linear actuator moves a system of pushrods and bellcranks, which in turn moves the wing flaps down. The flaps return to the zero position using gas struts.

### 9.9.2 Flap Controls Diagram/Schematic



**FIGURE 9-42**  
FLAP CONTROLS OVERVIEW

### 9.9.3 Inspection Instructions

#### 9.9.3.1 Inspect Flap Rigging

Perform ground rigging inspection check on A5 flaps.

TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

### Task Specific Training Required

No

### Special Tools Required

Digital level with 0.1° resolution and Alt Ref function, calibrated to manufacturer's instructions.

### Parts Required

None

### Aircraft System and Number

14 – Wing

### Consumables

None

---

### TASK INSTRUCTIONS:

1. Check the radial free play of all flap hinges (3 per flap). Total diametrical clearance (from displaced fully one direction to displaced fully in the opposite direction) in excess of .020 requires replacement of the flap hinge pin.
  2. Cycle flaps through all flap settings to ensure system function.
  3. Select 0° flap and verify flaps are in line with the center wing trailing edge  $\pm .020$ ".
  4. Select 0° flap position and secure digital level to flap surface with its long axis perpendicular to flap hinge line.
  5. Align flap's trailing edge to that of the inboard wing by applying hand pressure to the flap if necessary, and then set the Alt Ref function of the level.
  6. Pull up on flap trailing edge with light pressure (~2 lbf) to remove play. Record the level's reading in table below.
  7. Select 15° flap position. Pull up on flap trailing edge with a light pressure to remove play. Record the level reading in table below.
  8. Select 30° flap position. Again, pull up on flap trailing edge with a light pressure to remove play. Record the level reading in table below.
  9. Repeat steps 1-8 on other side.
- 

RESULT:

**Reg. No. of Aircraft:**

**Date of Test:**

**Initials of Technician:**

Left Flap	___ ° Up (See Step 2)	___ ° Mid (15±3°)	___ ° Down (30±3°)
Right Flap	___ ° Up (See Step 2)	___ ° Mid (15±3°)	___ ° Down (30±3°)

**VERIFICATION METHOD:**

Record results and check deflection limits relative to the 0° position.

**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Wings" on page 3-11  
 "Exterior/Interior Wing Control Surfaces" on page 17-5  
 "Remove Flap Actuator" on page 9-71  
 "Install Flap Gas Strut" on page 9-77  
 "Install Flap Actuator" on page 9-74  
 "Flap Hinge Repair Procedure" on page 17-22  
 "Main Landing Gear (MLG) Removal" on page 14-37  
 "Main Landing Gear (MLG) Installation" on page 14-38  
 "Flap Surface Installation" on page 17-20  
 "Rigging Flap Controls" on page 9-67

**9.9.3.2 Rigging Flap Controls**

Use the following procedure for flap rigging.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

Aircraft Cable Tensiometer

**Parts Required**

As needed based upon inspections and condition of parts. Contact ICON Aircraft for assistance as needed. A list of part numbers in the flap cable system is below.

Part Number	Part Name	Quantity
10F62MTF3/100	SCREW, MACH FLH, 6LOBE, CRES, 10-32X.625	2 EA
59915K483	ROD END, FEMALE THD, PTFE LINED CRES, .312X.312-24X.688	2 EA
AN316C5R	NUT, JAM, HEX, CRES, .313-24RH	2 EA
AN4C10A	BOLT, MACH, CRES, .250-28X.563	2 EA
AN5C11A	BOLT, MACH, CRES, .312-24X.688	2 EA
ICA011314	PIN, BELL CRANK, FLAP	1 EA
ICA009500	NUT, SPANNER, .75X16, FLAP INTERCONNECT	2 EA
ME000683-A	BELLCRANK, FLAP, SUBASSY	1 EA
ME000684-A	CABLE, FLAP, LH, SUBASSY	1 EA
ME000685-A	CABLE, FLAP, RH, SUBASSY	1 EA
MS21043-5	NUT, SLFLKG, RDC HEX, CRES, .312-24	1 EA
NAS1149C0416R	WASHER, FLAT, CRES, .250X.016, PSVT	1 EA
NAS1149C0516R	WASHER, FLAT, CRES, .328X.016, PSVT	1 EA
NAS1149C0563R	WASHER, FLAT, CRES, .312X.63, PSVT	2 EA
NAS1149C1232R	WASHER, FLAT, CRES, .750X.032, PSVT	8 EA
NAS1149C0532R	WASHER, FLAT, CRES, .312X.032, PSVT	1 EA
MET000663-A	FLAP ACTUATOR, SUBASSY, Serialized	1 EA

Part Number	Part Name	Quantity
LOCTITE 243	THREAD LOCKER, LOCTITE 243, 10ml bottle	AS NEEDED
ICA012078	LUBRICANT, GENERAL PURPOSE	AS NEEDED
ICA012079	INSPECTORS LACQUER, ANTI-SABOTAGE, ORANGE	AS NEEDED

### Aircraft System and Number

06 – Flight Controls

### Consumables

Powder-Free Nitrile Gloves

Powder-Free Latex Gloves

Isopropyl Alcohol

Anticorrosion/Lubricant/Tef-Gel

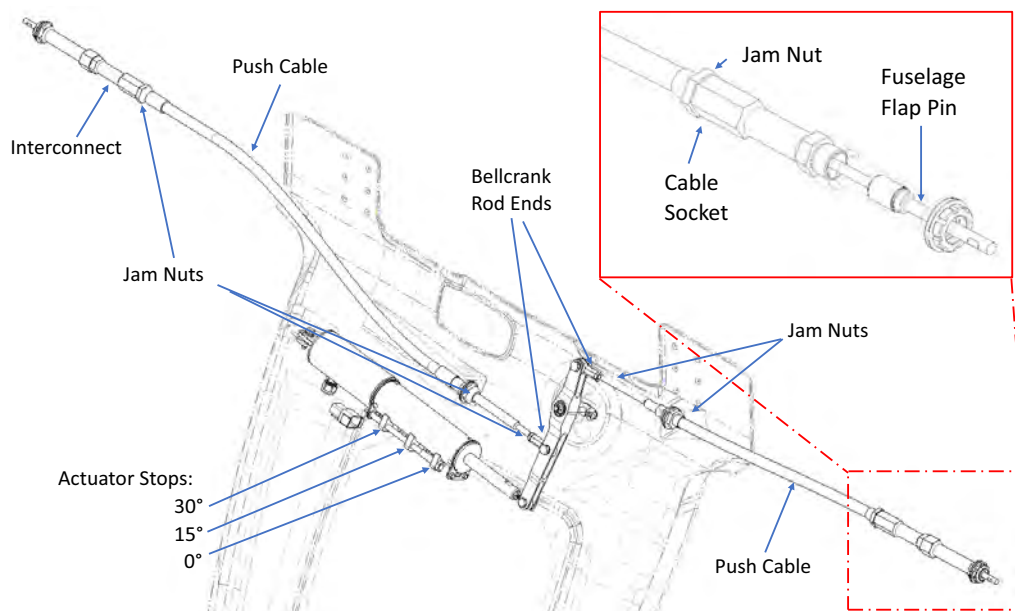
Torque Seal

### TASK INSTRUCTIONS:

1. Remove AFT baggage panel to gain access to the flap actuator. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.)
2. Clean the noted damage area as required in accordance with ICA010822, Section 10.1.
 

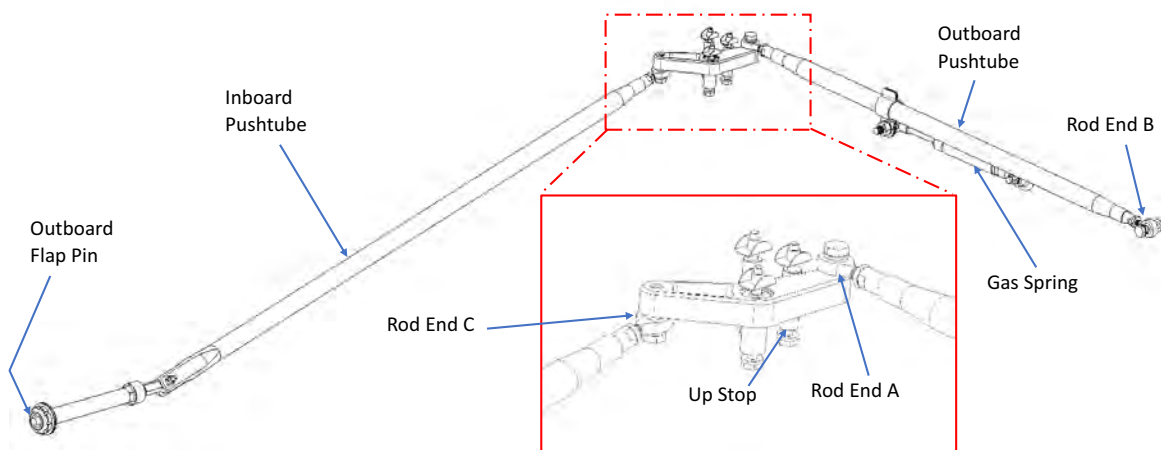
**WARNING:** *Wear safety glasses when installing helicoils. Figure 9-43 shows parts outside the aircraft, inside the aircraft installation orientation might be different for accessibility.*
3. Flap System Rigging Process. See Figure 9-43.
  - a. Set wings to the folded configuration per POH wing fold operation.
  - b. Adjust fuselage flap pin to achieve .200+.030/- .000 protrusion from the pin housing while the actuator is extended to the 0° actuator stop.

**NOTE:** *Push cable range of motion exceeds the required range of motion of the push pins, but in some cases the push cable position must be adjusted in the fuselage to avoid running out of push cable travel in one direction. Push cable position can be changed by loosening all jam nuts and running the bellcrank rod end and cable socket in or out equally.*



**FIGURE 9-43**  
FLAP RIGGING DIAGRAM

4. If not extended, extend and lock wings.
5. Adjust the outboard push tube. Adjust rod end A and B length equally such that the flap bellcrank contacts the up-stop and the flap trailing edge lines up with the trailing edge of the center wing as described in Figure 9-44. Refer to Figure 9-43 for actuator location.



**FIGURE 9-44**  
WING FLAP SYSTEM OVERVIEW

Flap	
Nominal Position	Definition/Tolerance
0°	In line with center wing trailing edge $\pm 0.02$ "
15°	$15^\circ \pm 3^\circ$ relative to 0° position
30°	$30^\circ \pm 3^\circ$ relative to 0° position

**FIGURE 9-45****FLAP POSITION LIMIT**

- a. Actuate the flap by hand. If the pushtube contacts the flap or wings, it is permissible to bias the pushtube body forward as necessary to eliminate the interference.
  - b. The outboard flap pin will move inboard or outboard by adjusting rod end C. Set the rod end length such that the outboard flap pin contacts the fuselage flap pin. Ensure the flap bell-crank still contacts the up-stop after setting rod end C length. Actuate the flaps and set the 15° and 30° actuator stops to limit the flap range of motion as described in Figure 9-45 above.
  - c. See Figure 9-43 for actuator stop locations. Actuate the flaps to 30° then back to 0°. Verify the flap returns to 0° due to the gas spring extension force. If the system does not return, adjust the 30° actuator stop to reduce range of motion. Ensure the flap travel limits are still within the tolerance specified in Figure 9-45.
6. Install AFT baggage panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)

**VERIFICATION METHOD:**

Conduct the Check Flap Rigging Procedure (See "Inspect Flap Rigging" on page 9-65.) to verify proper rigging.

**RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Inspect Flap Rigging" on page 9-65

"Install Flap Actuator" on page 9-74

## 9.9.4 Maintenance Instructions

### 9.9.4.1 Remove Flap Actuator

Use these instructions to remove the flap actuator.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

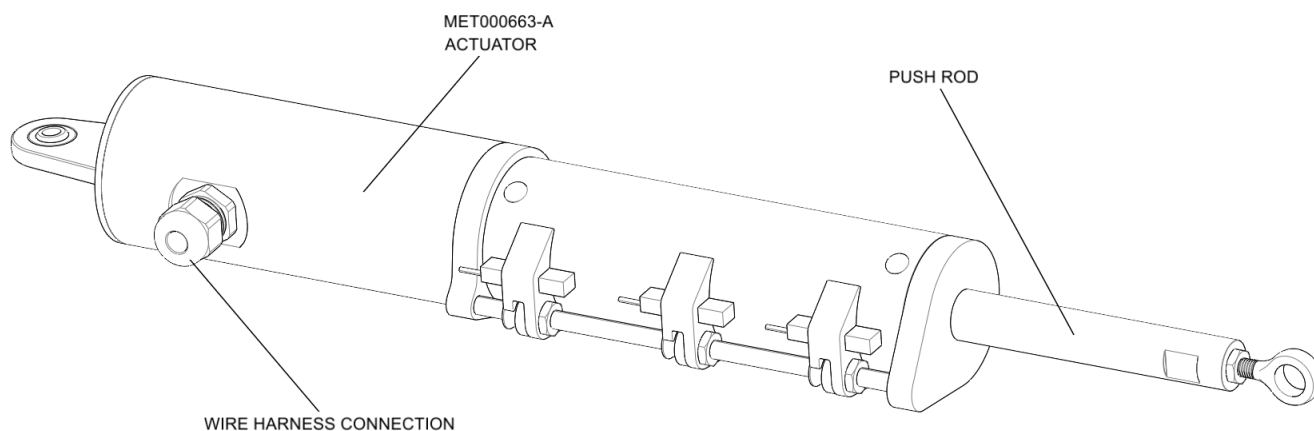
None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

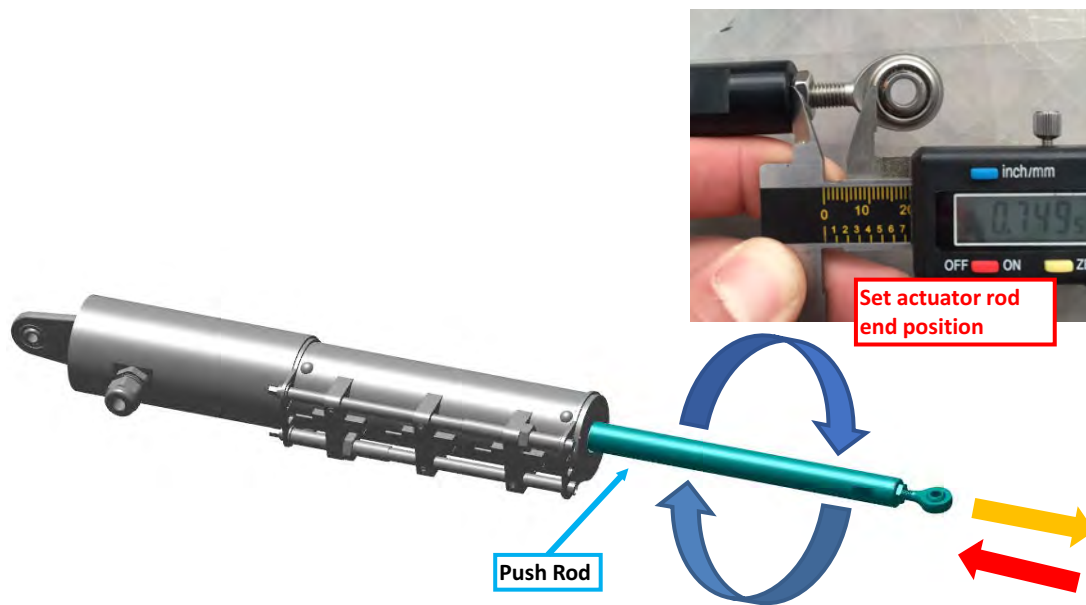


**FIGURE 9-46**  
**FLAP ACTUATOR DIAGRAM**

**TASK INSTRUCTIONS:**

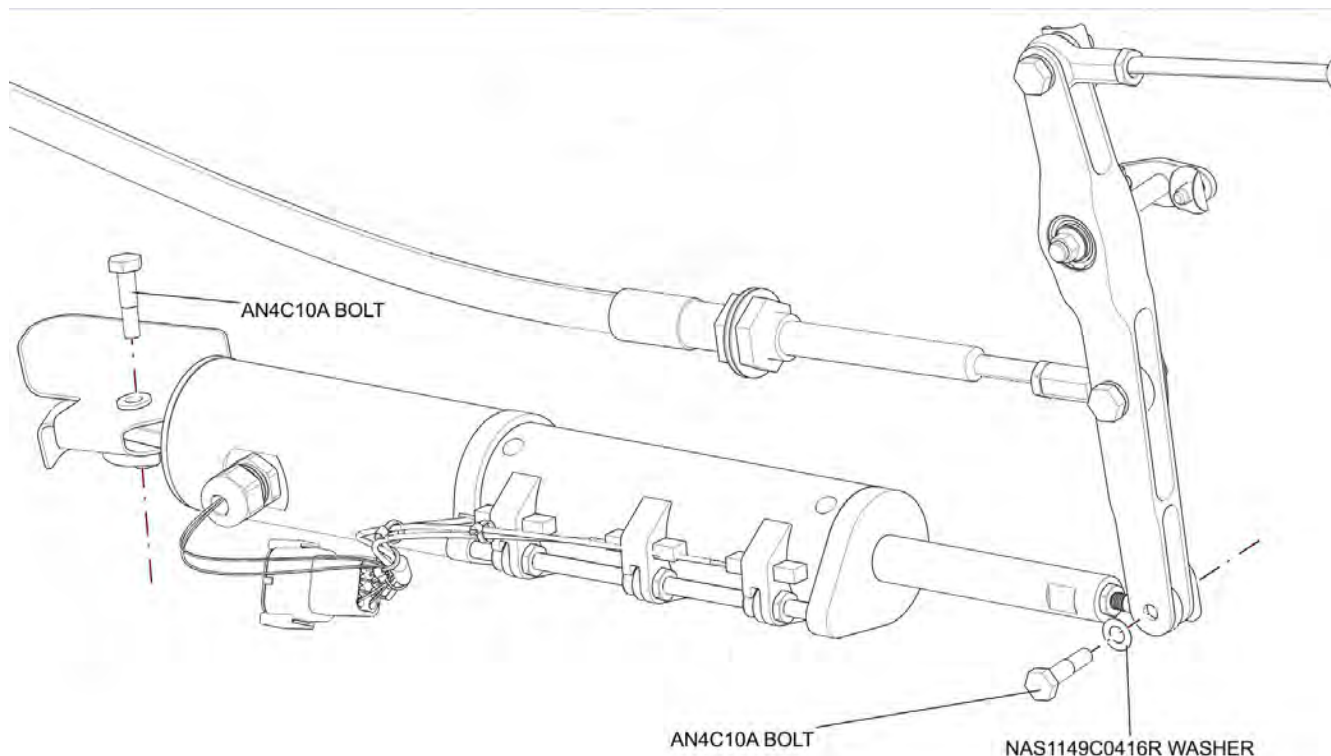
1. Remove main bulkhead panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
2. Set actuator rod end position as shown. Be sure that the rod end is clocked in a way so that it will sit in the flap bellcrank properly. Torque jam nut to 50-70 in-lbs.





**FIGURE 9-47**  
SET ACTUATOR ROD END POSITION

3. Disconnect the flap actuator from its wire harness.
4. Disconnect the flap actuator from the flap bellcrank by removing the AN4C10A bolt that fastens them together. Retain hardware for reinstallation. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)



**FIGURE 9-48**  
REMOVE FLAP ACTUATOR

5. Disconnect the flap actuator from the flap actuator bracket by removing the AN4C10A bolt that fastens them together. Retain hardware for reinstallation.
6. Remove flap actuator.

#### VERIFICATION METHOD:

This task is considered complete when the flap actuator has been removed.

#### RELATED INFORMATION:

"Inspect Flap Rigging" on page 9-65

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Install Flap Actuator" on page 9-74

### 9.9.4.2 Install Flap Actuator

These instructions should be used to install the flap actuator.

#### TASK INFORMATION:

##### Type of Maintenance

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

MET000663-A ACTUATOR

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Install replacement flap actuator by securing it to the flap actuator bracket using the retained AN41C0A bolt. Take care to install the flap actuator in the correct orientation, with the spherical bearing/lug between the bracket walls.

*NOTE: See Figure 9-48 for installation reference.*

2. Connect flap actuator rod end to the flap bellcrank using the retained AN4C10A bolt and NAS1149C0416R washer.

*NOTE: See Figure 9-48 for installation reference.*

3. Connect the flap actuator to the wire harness.
4. Set actuator limit switches. (See “Rigging Flap Controls” on page 9-67.)
5. Reinstall the bulkhead panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.)

---

**VERIFICATION METHOD:**

Verify actuator limit switches against Flaps Rigging. (See “Inspect Flap Rigging” on page 9-65.)

## RELATED INFORMATION:

"Inspect Flap Rigging" on page 9-65

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Remove Flap Actuator" on page 9-71

"Rigging Flap Controls" on page 9-67

### 9.9.4.3 Remove Flap Gas Strut

Use the following instructions to remove the gas strut from the flap system.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

## TASK INSTRUCTIONS:

1. Fold the appropriate wing if desired for easier access.
2. Remove the wing fold access panel located on the bottom surface of the outboard wing. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
3. The gas strut is located just outboard of the access hole. The piston rod end of the strut attaches to the outboard flap pushrod and the cylinder end of the strut attaches to a threaded stud bonded to the wing structure. Remove the ball retaining clip from the rod end of the strut.
4. Pull the rod end socket off the ball-end stud. Be aware that there will be some preload on the strut if its cylinder is still holding pressure.

5. There are two NAS1149C0463R washers located between the base of the stud and the strut; be sure they are not lost when the strut is removed.
6. If desired, remove the ball stud attached to the outboard flap pushrod using two 1/2 inch wrenches.

**VERIFICATION METHOD:**

This task is complete with the flap gas strut is completely removed from the aircraft.

**RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

### 9.9.4.4 Install Flap Gas Strut

Use the following instructions to install the gas strut on the flap system.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

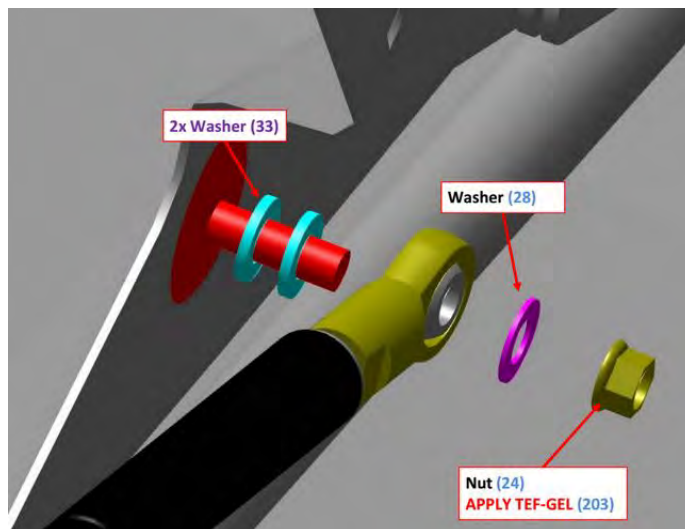
06 – Flight Controls

**Consumables**

LOCTITE® 243™

**TASK INSTRUCTIONS:**

1. Due to the slight compression of the strut on installation, it is easiest to first install the strut's ball stud as a separate part, then install the strut itself. Be sure to locate the ball end of the stud facing outboard. Use LOCITITE® 243™ on the threads of the ball stud. Torque the ball stud nut to 50 in-lb<sub>f</sub>.
2. Ensure that there are two NAS1149C0463R washers on the threaded stud that attaches the cylinder end of the strut to the structure, prior to strut installation. See Figure 9-49.



**FIGURE 9-49**  
LEFT FLAP ASSEMBLY

3. Slide the cylinder end fitting of the strut onto the threaded stud, followed by one NAS1149C0432R washer and an MS21043-4 nut. Use a 5/16 socket wrench to torque the nut to 30-40 in-lb<sub>f</sub>.
4. Slightly compress the strut by hand and snap its socket end onto the ball stud.
5. Slide the ball retaining clip into the locked position.
6. Deflect the flap surface by hand while watching the gas strut and flap pushrod move. Verify that there is no binding or interface.
7. Check for proper flap operation. (See "Inspect Flap Rigging" on page 9-65.) Install the wing fold access panel.

#### VERIFICATION METHOD:

To verify, check the flap rigging. (See "Install Flap Gas Strut" on page 9-77.) Fully actuate the flap through its full range of motion, both up and down. Visually inspect the system for proper function and security.

#### RELATED INFORMATION:

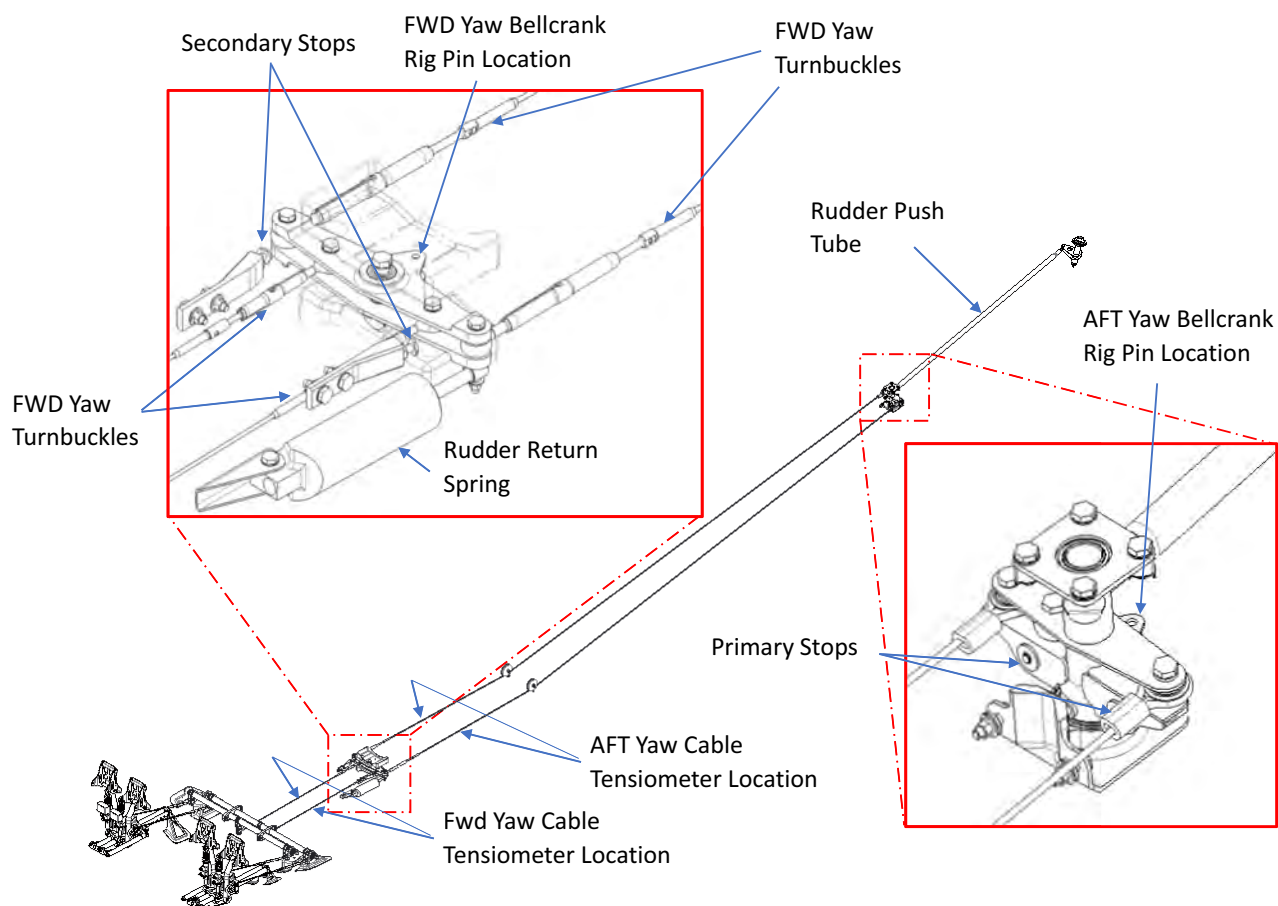
- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Inspect Flap Rigging" on page 9-65

## 9.10 Yaw Controls

### 9.10.1 Yaw Controls Description

The rudder is controlled by the Yaw Control System. When the pilot moves the rudder pedal, the yaw cable connected through FWD and AFT bellcranks will move the rudder accordingly.

### 9.10.2 Yaw Controls Diagram/Schematic



**FIGURE 9-50**  
YAW CONTROLS OVERVIEW

## 9.10.3 Inspection Instructions

### 9.10.3.1 Inspect Yaw Cable Tension

This section contains instructions to check rudder cables for correction tensions.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

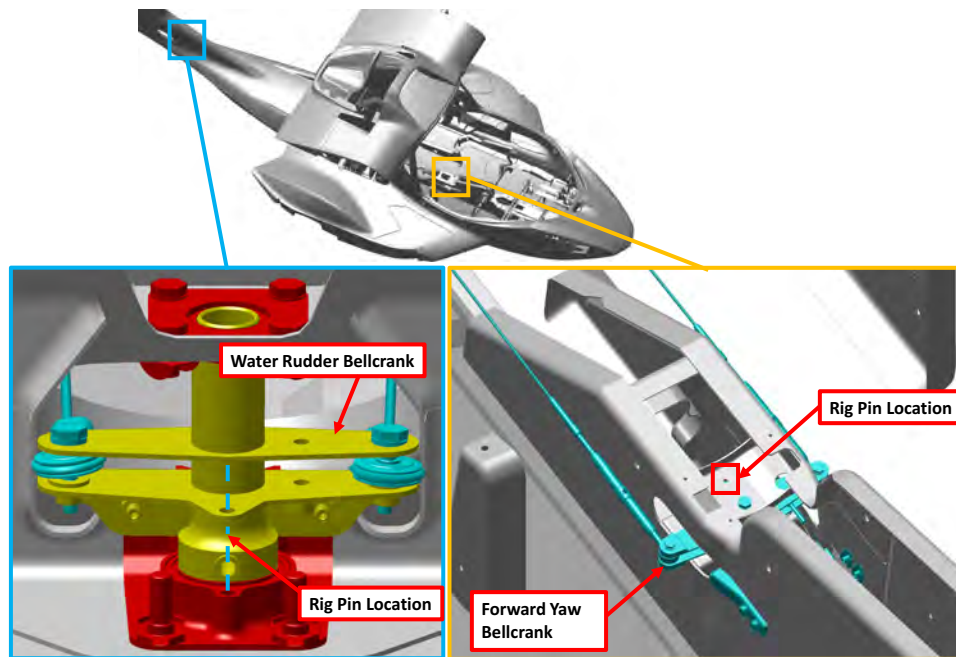
None

---

#### TASK INSTRUCTIONS:

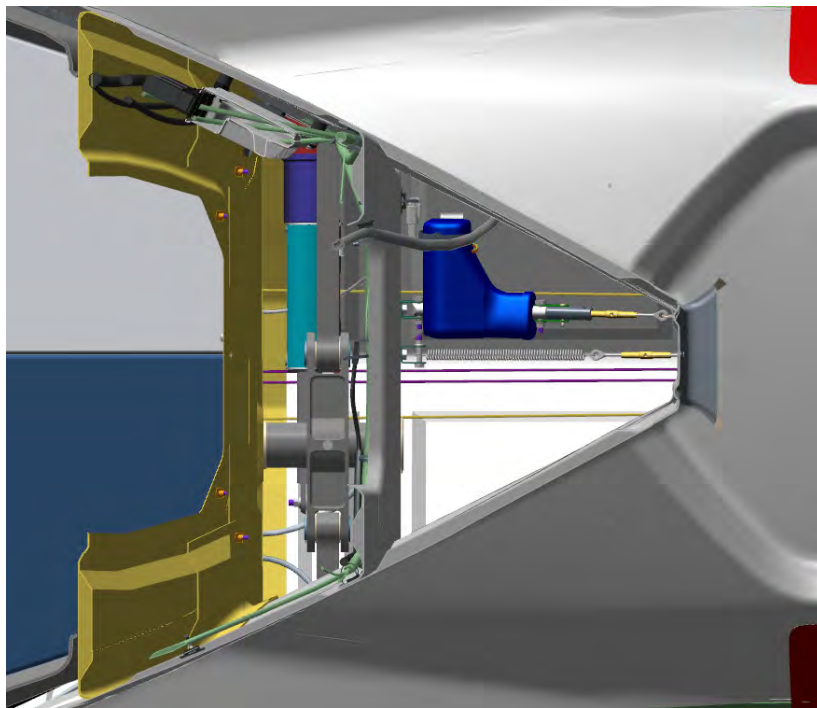
1. Remove AFT Bulkhead Baggage Panel. (See “Baggage Sidewall Panel Removal” on page 3-43.) Retain all fastening hardware.
2. Remove the Water Access Panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.) Retain all fastening hardware.
3. Remove the Center Console Bucket. (See “Center Console Bucket Removal” on page 8-5.) Retain all fastening hardware.
4. Install two .1875 in diameter rig pins, one in FWD Yaw Bellcrank and one in the Water Rudder Bellcrank. See Figure 9-51.





**FIGURE 9-51**  
FWD YAW BELLCRANK AND WATER RUDDER RIG PIN LOCATIONS

5. From within the AFT Bulkhead Baggage Access Window, use a tensiometer (cable thickness = 1/8 in) to measure rudder cable tension. Refer to Figure 9-52. Ensure they all are within 18-22 lb<sub>f</sub> of tension. Refer to the manufacturers' calibration card to correctly read cable tension for the cable diameter.

**FIGURE 9-52**

RUDDER CABLE TENSION CHECK LOCATION. VIEW IS LOOKING DOWN FROM WITHIN THE ACCESS HOLE.

6. Remove all installed rig pins:
  - a. Water Rudder Bellcrank Rig Pin.
  - b. FWD Yaw Bellcrank Rig Pin.
7. Install Center Console Bucket using retained hardware during removal. (See “Center Console Bucket Installation” on page 8-8.)
8. Install the Water Rudder Access Panel using retained hardware during removal. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.)
9. Install AFT Bulkhead Baggage Panel using retained hardware during removal. (See “Baggage Sidewall Panel Installation” on page 3-45.)

#### VERIFICATION METHOD:

Record results and check against requirement. If requirement is not met complete rudder rigging. (See “Inspect Yaw Rigging” on page 9-85.)

## RELATED INFORMATION:

- "Condition and 100-Hour Inspection – Aft Fuselage and Empennage" on page 3-19
- "Baggage Sidewall Panel Removal" on page 3-43
- "Baggage Sidewall Panel Installation" on page 3-45
- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Center Console Bucket Removal" on page 8-5
- "Center Console Bucket Installation" on page 8-8

### 9.10.3.2 Inspect Rudder Pedal Rigging

Use task to inspect the rigging of the rudder pedals to the rudder rails.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

None

**Special Tools Required**

Protractor or inclinometer

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

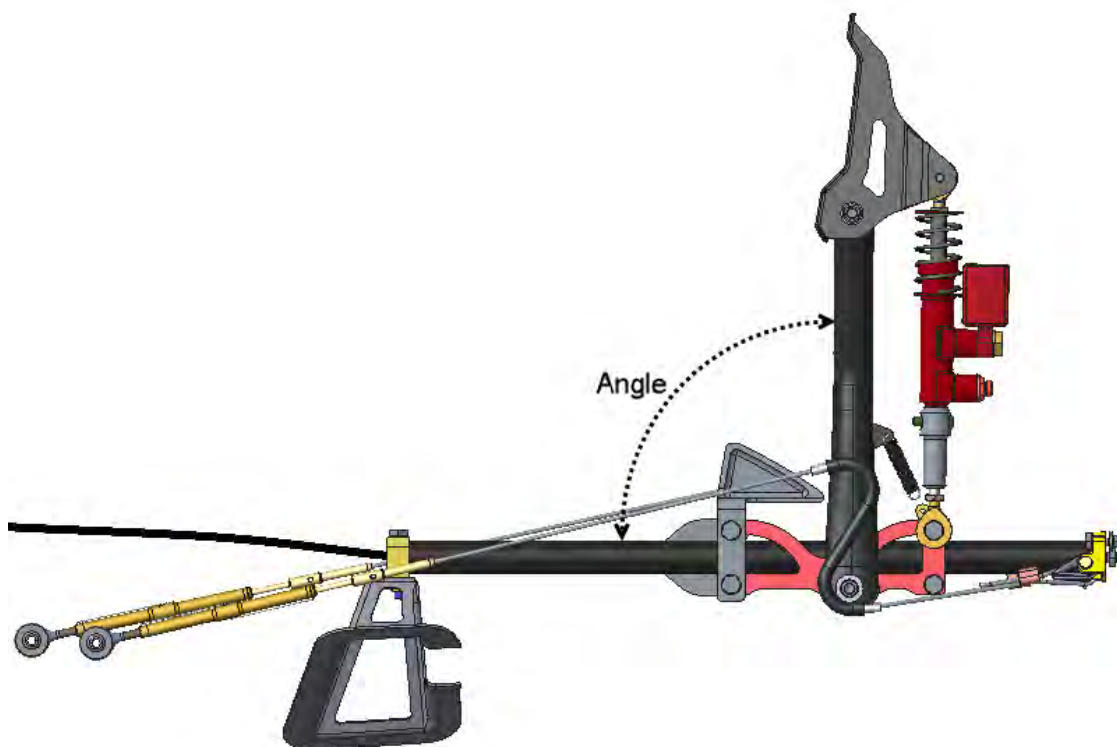
**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the floorboard panels from the aircraft by pulling upward on them. (See “Cockpit Floor Board Removal” on page 3-46.)
  2. With the rudder pedals locked in the middle position, check angle between rudder rails and rudder pedal arm weldments using a protractor or inclinometer.
- 

**VERIFICATION METHOD:**

The measurement should be  $90^{\circ} \pm 1^{\circ}$ . If not within this specification, refer to the re-rigging process/installation for instructions on how to rig correctly. (See “Re-Rigging Rudder Pedals” on page 9-103.)

RELATED INFORMATION:  
"Re-Rigging Rudder Pedals" on page 9-103

### 9.10.3.3 Inspect Yaw Rigging

The following section contains the information required to perform the A5 maintenance inspection on the rudder.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

ICA013055 – Rudder Deflection Template

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

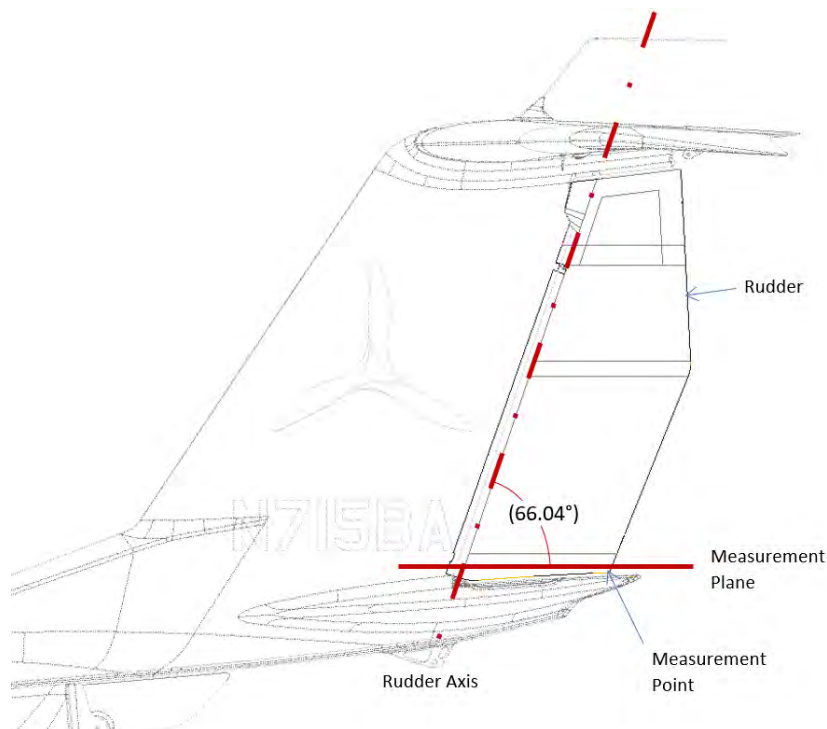
**Consumables**

None

---

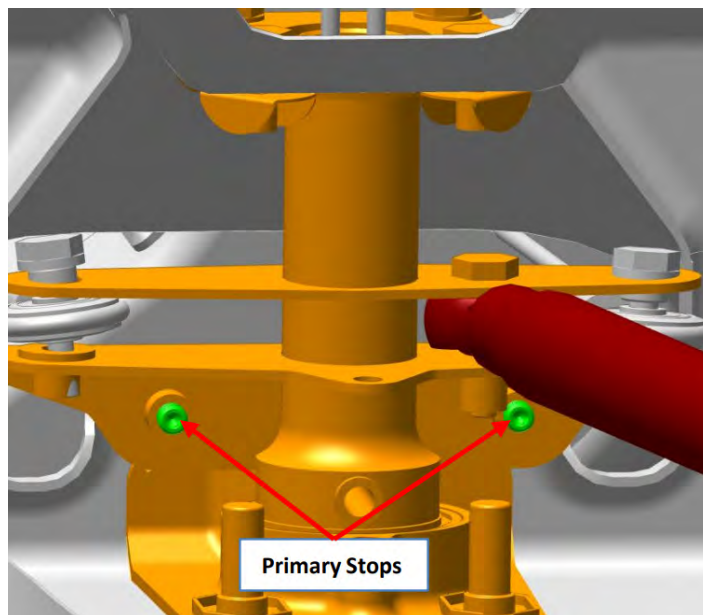
#### TASK INSTRUCTIONS:

1. Position the rudder rigging template (ICA013055) or a protractor as shown in Figure 9-53, Center the 0° indication of the rigging template or protractor with respect to the center of the tail section under the rudder.
2. Swing the rudder surface back and forth by hand and verify it returns to a repeatable neutral position. Record neutral deflection. The neutral position of the rudder should be 1°+/-1° trailing edge right.



**FIGURE 9-53**  
RUDDER MEASUREMENT PLANE

3. With the aid of another person, check the rudder maximum travel limits. Have a helper push each rudder pedal against the stop (stop contacts at water rudder bellcrank should be heard). While holding very light (1-2 lbf) pressure towards neutral on the rudder trailing edge to remove play.
4. Maximum travel limits are set as specified. See Figure 9-54.
  - a. Trailing Edge Left:  $11^{\circ} \pm 1^{\circ}$
  - b. Trailing Edge Right:  $14^{\circ} \pm 1^{\circ}$



**FIGURE 9-54**  
PRIMARY STOP LOCATIONS

**VERIFICATION METHOD:**

Record results and check against requirements.

**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Aft Fuselage and Empennage" on page 3-19

"Re-Rigging Rudder Pedals" on page 9-103

"Adjust Yaw Rigging" on page 9-100

## 9.10.4 Maintenance Instructions

### 9.10.4.1 Rigging Yaw Controls

Use the following procedure for rudder rigging.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

### Special Tools Required

Aircraft Cable Tensiometer

### Parts Required

As needed based upon inspections and condition of parts. Contact ICON Aircraft for assistance as needed. A list of part numbers in the rudder cable system is below.

Number	Name	Quantity
ICA001941	WASHER, PLAIN, CRES.,250X.875X.120	1
ICA002125	SPACER, WATER RUDDER BELLCRANK	1
ICA002388	CONTROL CABLE, RUDDER	2
ICA002392	BELLCRANK WELDMENT,WATER RUDDER	1
ICA007023	BELLCRANK WELDMENT, RUDDER	1
ICA007292	BELLCRANK, INTERCONNECT, RUDDER PEDAL	2
ICA007938	BEARING BLOCK, TORQUE TUBE, RUDDER	1
ICA007939	PIN, BEARING, TORQUE TUBE, RUDDER	1
ICA009269	BUSHING, FLANGED, .250X.438X.102X.063	1
ICA009484	HOUSING, BEARING, YAW TORQUE TUBE	4
ICA009488	TORQUE TUBE WELDMENT, YAW, AFT	1
ICA009490	CONTROL CABLE, YAW, FUSLG, CNTR-LH SIDE	1
ICA009492	CONTROL CABLE, YAW, FUSLG, CNTR-RH SIDE	1
ICA009493	BEARING SUPPORT, YAW TORQUE TUBE, UPR	4
ICA009498	CENTERING SPRING ASSY, 11LB/IN	1
ICA009503	STOP, YAW SECTOR	2
ICA009519	TORQUE TUBE WELDMENT, YAW, FWD	1
ICA009521	BUSHING, PLAIN, NITRONIC, .191X.280X.500	1
ICA010413	ROD END, BBRG, EXT THD, .190-32X_.188, RADIAL GROOVE	2
ICA012055	PUSHROD, RUDDER	1



Number	Name	Quantity
ICA012239	CLIP, LOCKING, TURNBUCKLE, LONG, .042 WIRE	2
1191-3CN380	INSERT, HELICAL COIL, CRES, 10-32X.380	2
92778A121	SET SCREW, HEX, SST, 10-32X.5	2
93013A330	SPACER, AL, .250X.500X.500, BLACK	1
9852	RADIAL SHAFT SEAL	1
AS3582-030	O-RING, VQM (SILICONE), 1.614X.070	1
CN609CR3P	NUT PLATE, TWO LUG, ADH BND, .190-32	12
CN609CR4P	NUT PLATE, TWO LUG, ADH BND, .250-28	1
MS20392-1R 23	PIN, STR, HEADED, DRILLED SHK, CRES, .125X.719	2
MS21151-7C	ROD END, BBRG, MALE, 10-32, SLOTTED	2
MS21251-A3S	TURNBUCKLE BODY, CLIP LKG, AL, .093X.190-32X2.25	2
MS21251-B5L	TURNBUCKLE BODY, CLIP LKG, BRASS, .156X.250-28X4.00	2
MS21256-1	CLIP, LKG, TRNBKL, 1.078	4
MS21256-2	CLIP, LKG, TRNBKL, 1.955	10
MS24566-3B	PULLEY, CONT, AFB, .188X1.51	2
MS24665-151	PIN, COTTER, CRES, .063X.500	2
MS27641-4	BEARING, BALL, AFR AFB, INTMD DUTY, .250X.750X.281	2
MS27641-8	BEARING, BALL, AFR AFB, INTMD DUTY, .500X1.125X.375	4
MS27646-41	BEARING, BALL, AFR AFB, EX LD, 1.06X1.50X.281	1
NAS428H3-7	BOLT, MACH-CRWND HEX HD, ADJUSTING, CRES, 10-32X.875	2
NAS75C4-00 6	BUSHING, PLAIN, CRES, .250X.375X.188	1
NAS77C3-01 5	BUSHING, FLNGD, UNLINED, CRES, .190X.150	2
VH-112-S16	RETAINING RING, PLAIN, LIGHT DUTY, 316SS, 1.25X.025	4

Number	Name	Quantity
VS-50-S16	RETAINING RING, PLAIN EXTERNAL, LIGHT DUTY, 316SS, .500X.022	4

### Aircraft System

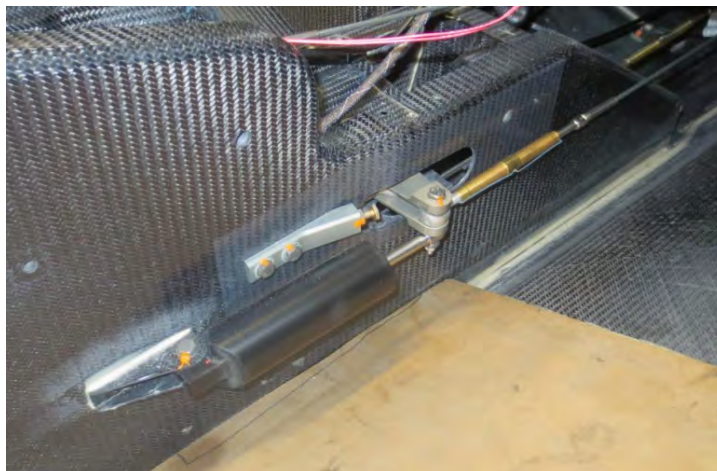
06 – Flight Controls

### Consumables

LOCTITE® 243™

### TASK INSTRUCTIONS:

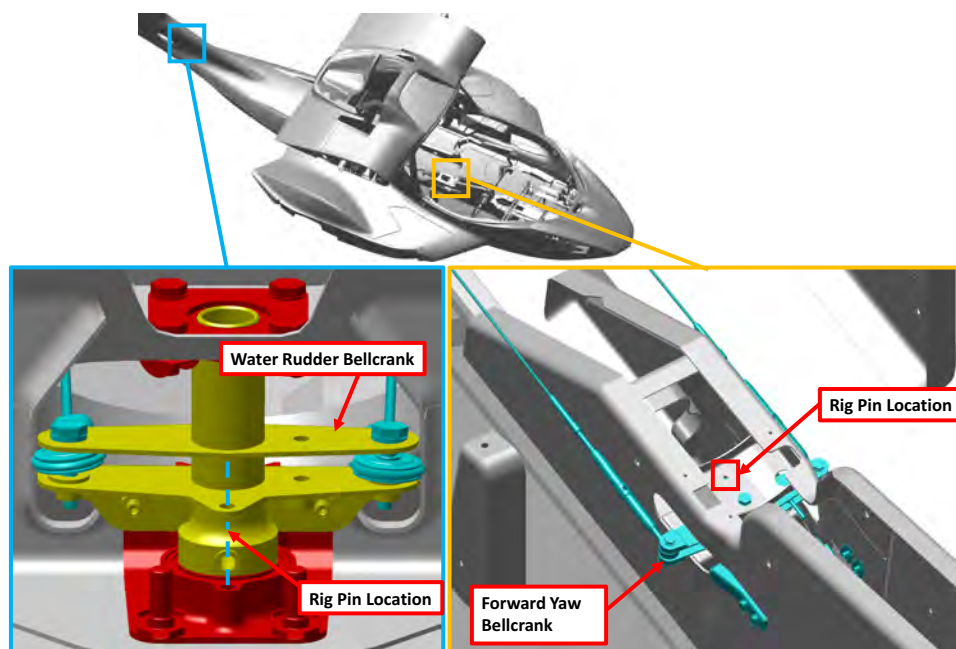
1. Remove AFT Tail Access Panel, Water Rudder Access Panel, and AFT Bulkhead Baggage Panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.) (See “Baggage Floor Removal” on page 3-41.)
2. Check cable tension. (See “Inspect Yaw Cable Tension” on page 9-80.)
3. Remove left hand and right hand FWD and Main Cockpit Floor Bards. (See “Cockpit Floor Board Removal” on page 3-46.)
4. Remove Seat Back and Seat Pan. (See “Seat Back Removal” on page 3-50.) (See “Seat Pan Removal” on page 3-52.) Retain all fastening hardware.
5. Remove Baggage Floor Boards. (See “Baggage Floor Removal” on page 3-41.) Retain all fastening hardware.
6. Remove Seatbelt Reel Cover, left hand and right hand baggage sidewalls, and baggage headliner. (See “Seat Belt Inertia Reel Removal” on page 3-39.) (See “Baggage Sidewall Panel Removal” on page 3-43.) (See “Headliner Removal” on page 3-37.)
7. (Optional) Remove fuel tank if needed. (See “Remove Fuel Bladder (MY17 Only)” on page 10-11. or See “Remove Fuel Tank (MY18+)” on page 10-15.) Retain all fastening hardware.
8. Remove Center Console Bucket and Throttle Bezel. (See “Center Console Bucket Removal” on page 8-5.) (See “Throttle Handle and Bezel Removal” on page 8-10.) Retain all fastening hardware.
9. Inspect all components within the rudder circuit for excessive wear. Any components that show excessive wear or damage must be replaced with new components.
10. Disconnect rudder return spring by removing the FWD bolt. Retain hardware. See Figure 9-55.



**FIGURE 9-55**  
RUDDER RETURN SPRING

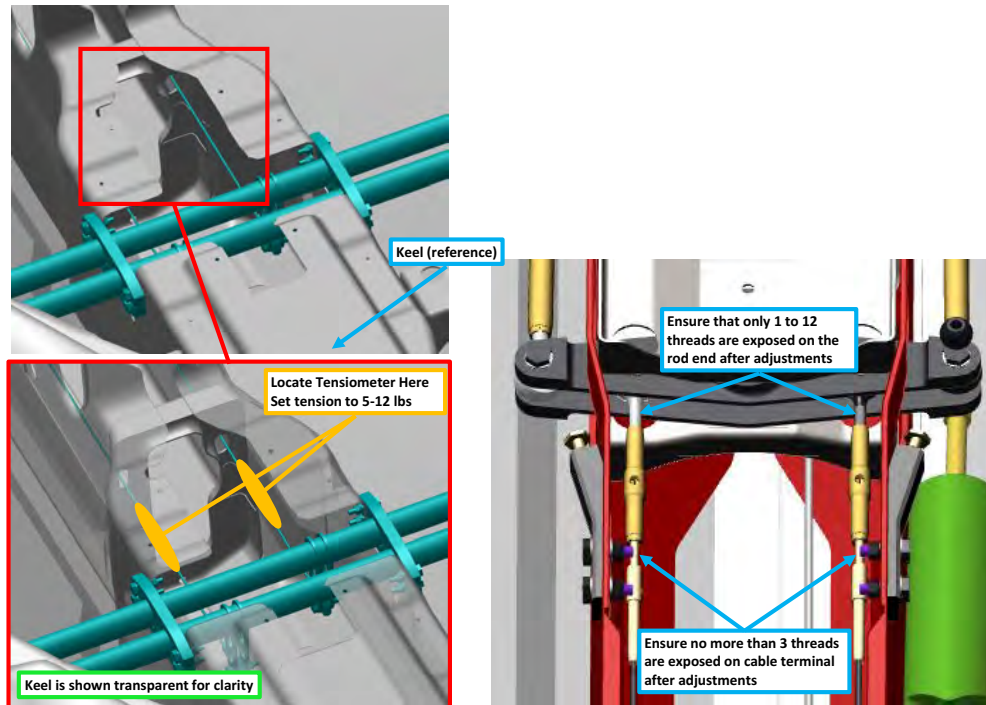
11. Install two .375 in diameter rig pins through the keel in the Yaw Torque Tube Rig Pin holes.

**NOTE:** *Ensure rig pin extends the entire width of the keel, through both holes in the keel.*



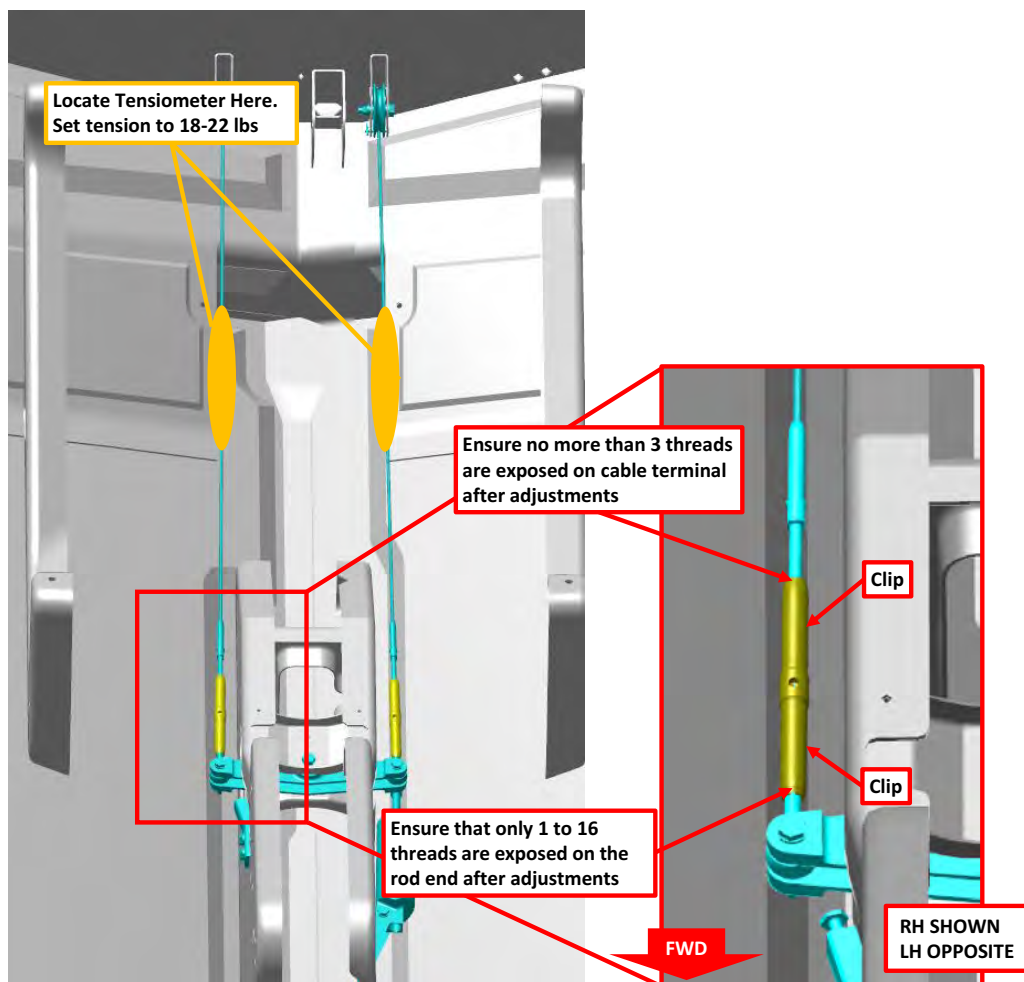
**FIGURE 9-56**  
FWD YAW BELLCRANK AND WATER RUDDER RIG PIN LOCATIONS

12. Use a tensiometer (cable thickness = 3/32 in) to rig both middle yaw control cables. To achieve the following, refer to Figure 9-57:
  - a. Adjust inner set of turnbuckles to set cable tension on both cables to 5-12 lbs
  - b. Ensure 1 to 12 rod end threads are exposed after turnbuckle adjustment
  - c. Ensure that no more than 3 cable terminal threads are exposed after turnbuckle adjustments
  - d. Ensure that water rudder remains centered  $0^\circ \pm .5^\circ$  relative to the BL\_0 plane after rigging is complete



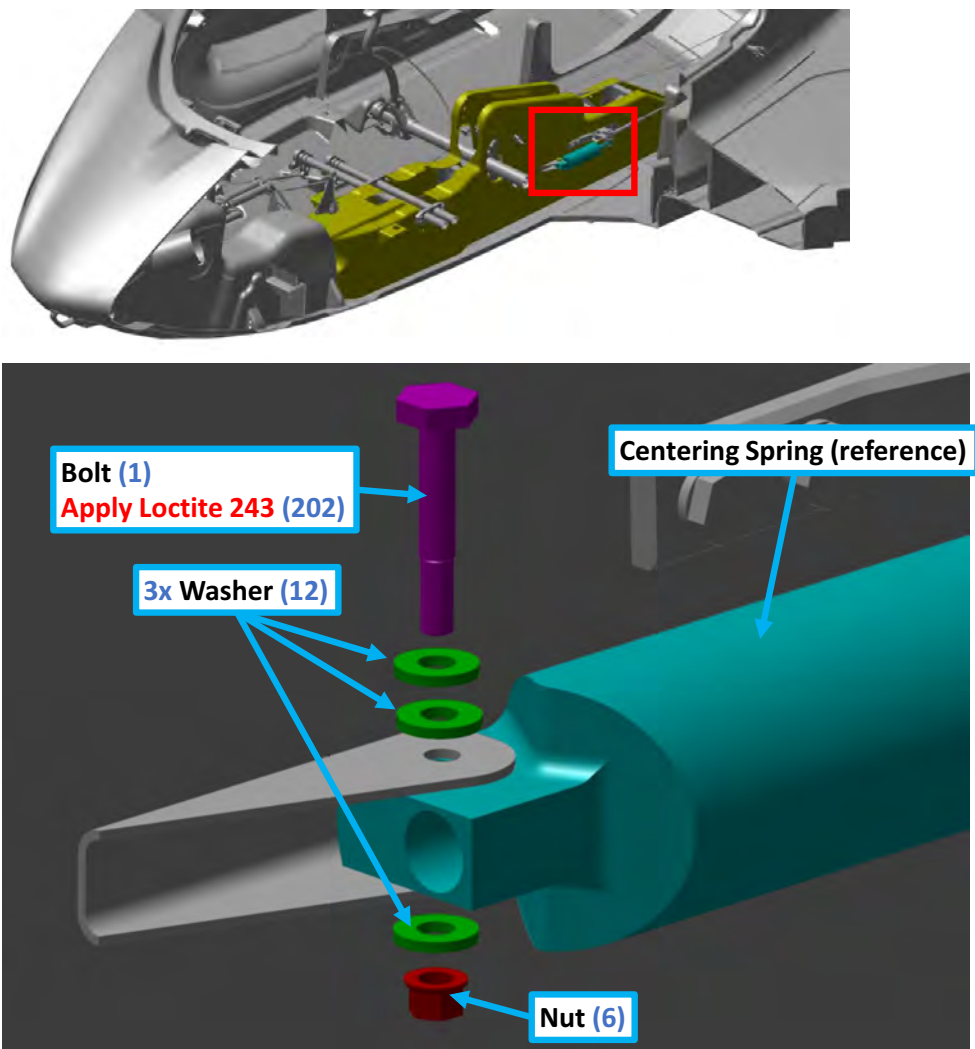
**FIGURE 9-57**  
MIDDLE YAW CIRCUIT

13. Use a tensiometer to rig both AFT Yaw Control Cables (cable thickness = 1/8 in). Refer to the tensiometer manufacturers' calibration card to correctly read cable tension for the cable diameter measured. To achieve the following, refer to Figure 9-58:
  - a. Adjust outer set of turnbuckles to set cable tension on both cables to 18-22 lbs
  - b. Ensure 1 to 16 rod end threads are exposed after turnbuckle adjustment
  - c. Ensure that no more than 3 cable terminal threads are exposed after turnbuckle adjustments
  - d. Ensure that water rudder remains centered  $0^\circ \pm .5^\circ$  relative to the BL\_0 plane after rigging is completed



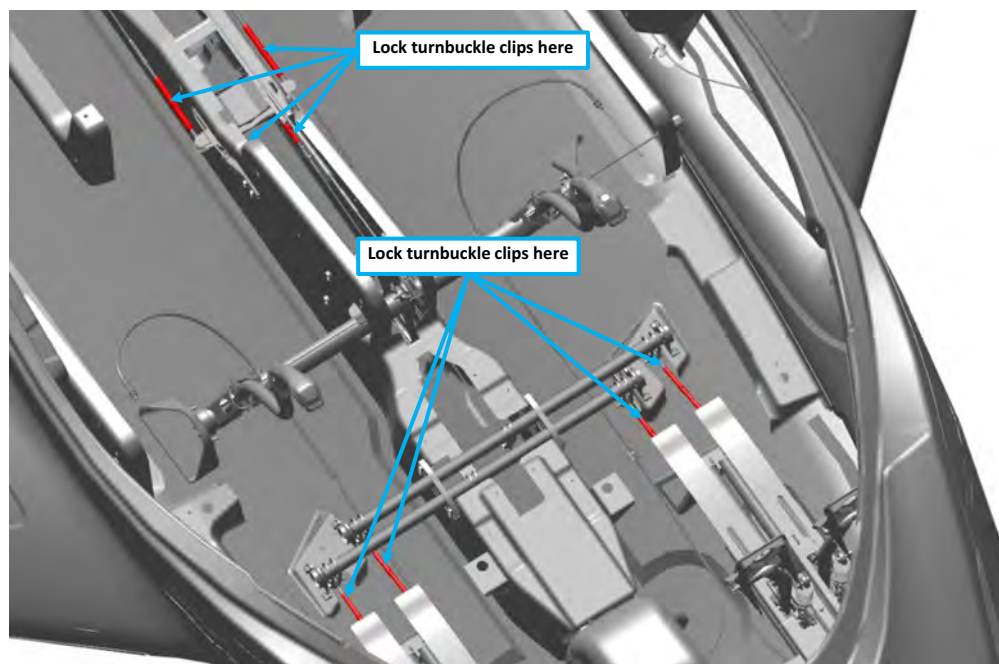
**FIGURE 9-58**  
AFT YAW CIRCUIT TENSIONING

14. Install the forward end of centering spring onto the LH side of the keel using LOCTITE<sup>®</sup> 243™ and the noted hardware. Torque hardware to 10-13 in-lbs. See Figure 9-59.



**FIGURE 9-59**  
CENTERING SPRING INSTALL

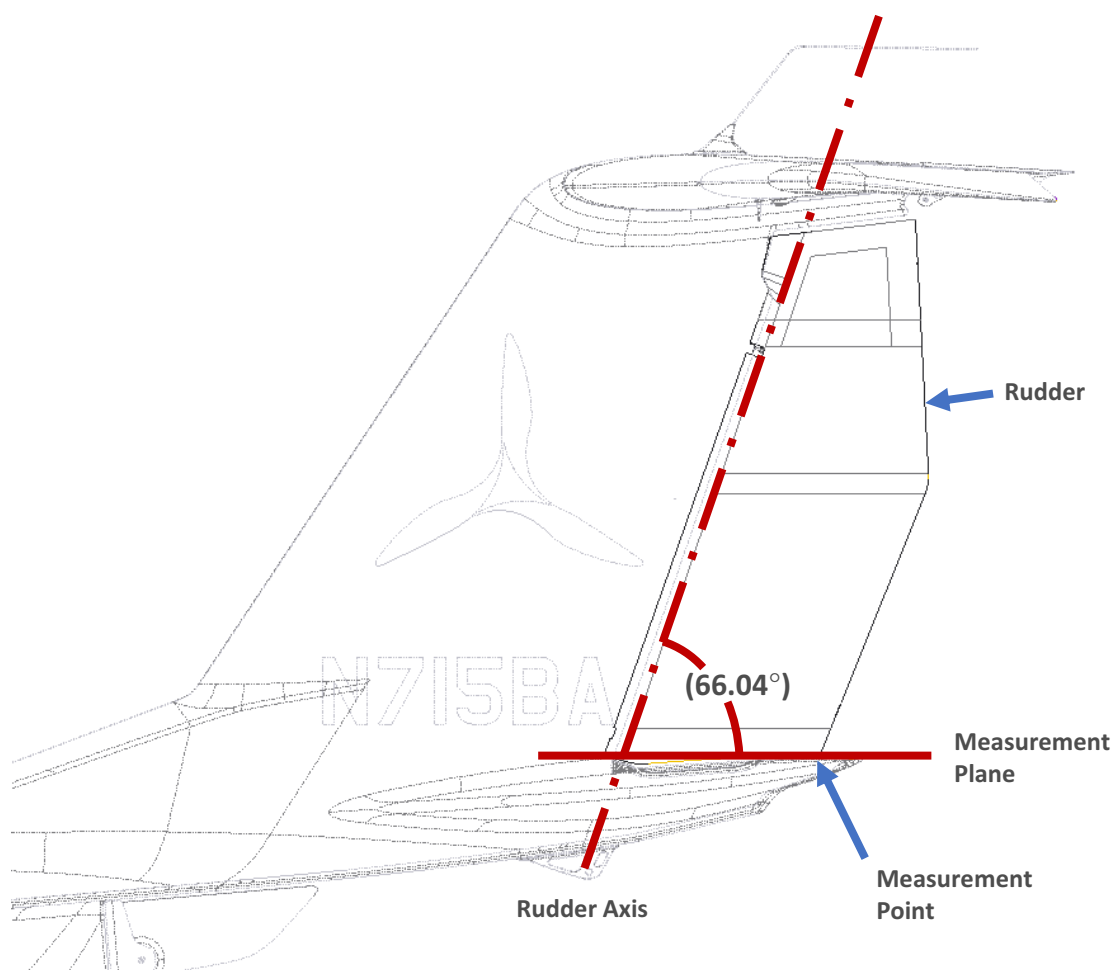
15. Lock all turnbuckle clips (2 per turnbuckle) in place, refer to Figure 9-60:
  - a. 4 total on aft section of Yaw System – 2X ICA012239 (Rod End), 2X MS21256-2 (Wire Terminal)
  - b. 4 total on mid section of Yaw System – 4X MS21256-1
  - c. 8 total on Rudder Pedal Control Cables – 8X MS21256-2



**FIGURE 9-60**  
TURNBUCKLE LOCATION

16. Position the rudder rigging template (ICA013055) or a protractor as shown in Figure 9-61, Center the 0° indication of the rigging template or protractor with respect to the center of the tail section under the rudder.

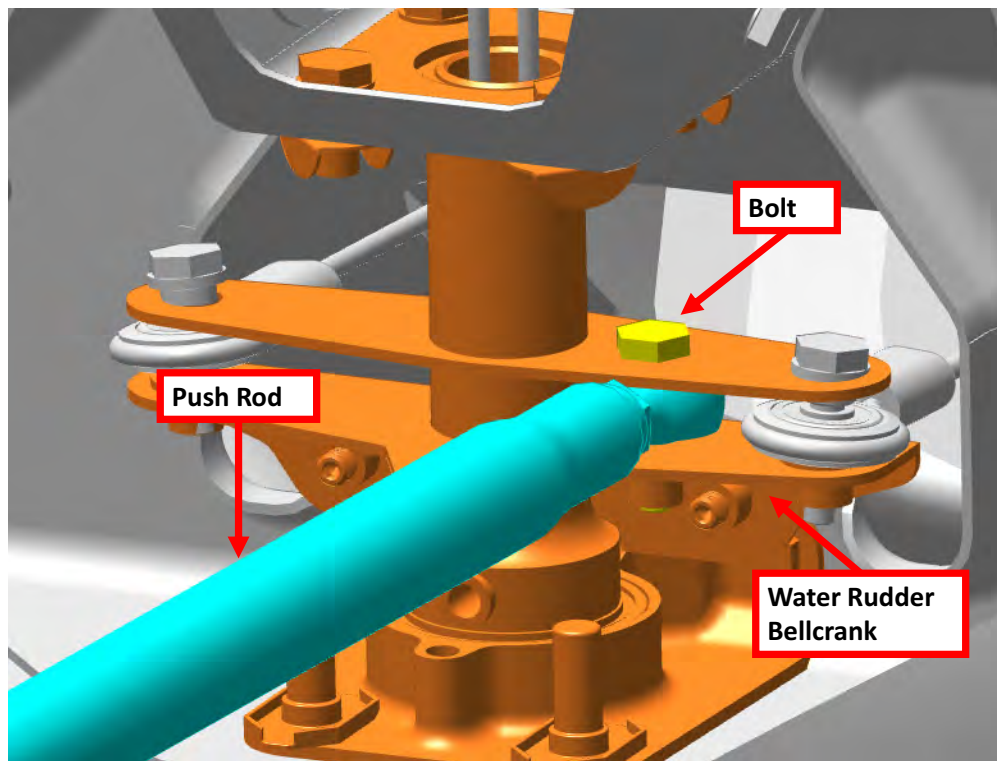




**FIGURE 9-61**  
RUDDER MEASUREMENT PLANE

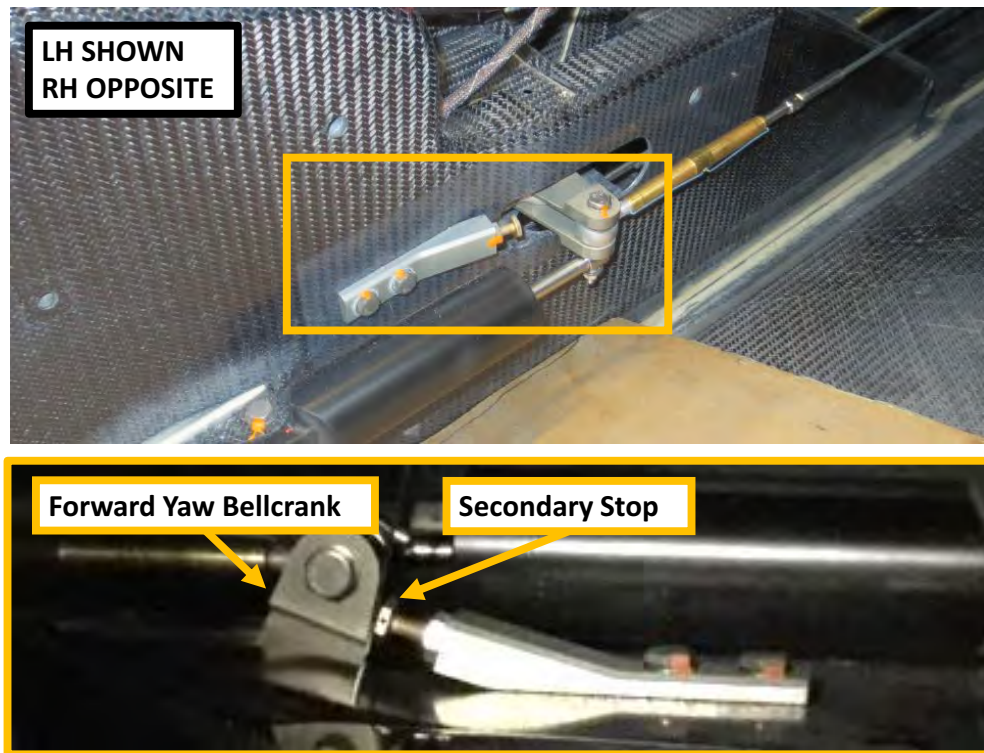
17. Adjust rudder push tube length to set the neutral position of the rudder to be  $1^\circ \pm 1^\circ$  trailing edge right. This must be done by removing the AN3C7A bolt that secures the FWD side of the push rod and adjusting the rod end. See Figure 9-62.





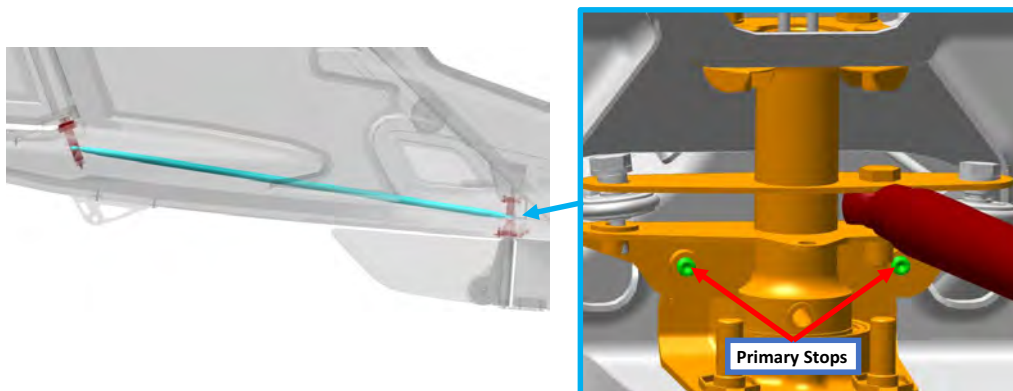
**FIGURE 9-62**  
RUDDER PUSH TUBE ADJUSTMENT

18. Repeat step 17 for the LH pedal.



**FIGURE 9-63**  
SECONDARY STOP ADJUSTMENT

19. Remove all rig pins from the Yaw System:
  - a. 2X rig pins from Yaw Torque Tubes
  - b. Rig pin from FWD Yaw Bellcrank
  - c. Rig pin from AFT Water Rudder Bellcrank
20. Verify that Yaw System components do not contact surrounding carbon surfaces or components during operation.
21. Verify that the rudder neutral position is still within the limits specified. Adjust if necessary. Torque push tube jam nuts to 40 in-lbs. Torque through bolts that secure the push tube to 26 in-lbs.
22. With the aid of another person, check the rudder maximum travel limits. Have a helper push each rudder pedal against the stop (stop contacts at water rudder bellcrank should be heard). While holding very light (1-2 lb<sub>f</sub>) pressure towards neutral on the rudder trailing edge to remove play.
23. Adjust primary stops to ensure rudder maximum travel limits are set as specified. See Figure 9-64.
  - a. Trailing Edge Left: 11°+/-1°
  - b. Trailing Edge Right: 14°+/-1°



**FIGURE 9-64**  
PRIMARY STOP LOCATIONS

24. With the aid of another person, adjust the secondary stops, torque to 12-15 in-lbs. Do not exceed 25 in-lbs. Depress the RH pedal until the primary stop is contacted. Adjust the gap between the secondary stop and bellcrank to 0.032-0.036 in. See Figure 9-63.
25. Repeat step 17 for the LH pedal.
26. Install AFT Tail Access Panel, Water Rudder Access Panel, and AFT Bulkhead Baggage Panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)(See "Baggage Floor Installation" on page 3-42.)
27. Install left hand and right hand forward and Main Cockpit Floor Boards. (See "Cockpit Floor Board Installation" on page 3-47.)
28. Install Seat Back and Seat Pan. (See "Seat Back Installation" on page 3-51.)(See "Seat Pan Installation" on page 3-53.)
29. Install Baggage Floor Boards. (See "Baggage Floor Installation" on page 3-42.)
30. Install Seatbelt Reel Cover, left hand and right hand baggage sidewalls, and Baggage Headliner. (See "Seat Belt Inertia Reel Installation" on page 3-40.)(See "Baggage Sidewall Panel Installation" on page 3-45.)(See "Headliner Installation" on page 3-38.)
31. If fuel tank was removed, install fuel tank. (See "Install Fuel Bladder (MY17 Only)" on page 10-12.)(See "Install Fuel Tank (MY18+)" on page 10-19.)
32. Install Center Console Bucket and Throttle Bezel. (See "Center Console Bucket Installation" on page 8-8.)(See "Throttle Handle and Bezel Installation" on page 8-13.)

#### VERIFICATION METHOD:

Conduct the Check Rudder Rigging procedure (See "Inspect Yaw Rigging" on page 9-85.) to verify proper rigging.

## RELATED INFORMATION:

"Cockpit Floor Board Removal" on page 3-46  
 "Cockpit Floor Board Installation" on page 3-47  
 "Seat Back Removal" on page 3-50  
 "Seat Back Installation" on page 3-51  
 "Seat Pan Removal" on page 3-52  
 "Seat Pan Installation" on page 3-53  
 "Baggage Floor Removal" on page 3-41  
 "Baggage Floor Installation" on page 3-42  
 "Seat Belt Inertia Reel Removal" on page 3-39  
 "Seat Belt Inertia Reel Installation" on page 3-40  
 "Baggage Sidewall Panel Removal" on page 3-43  
 "Baggage Sidewall Panel Installation" on page 3-45  
 "Headliner Removal" on page 3-37  
 "Headliner Installation" on page 3-38  
 "Inspect Roll Rigging" on page 9-17  
 "Removal and Installation of Inspection Panels and Fairings" on page 3-34  
 "Cockpit Panels Removal and Installation" on page 3-36  
 "Remove Fuel Bladder (MY17 Only)" on page 10-11  
 "Install Fuel Bladder (MY17 Only)" on page 10-12  
 "Center Console Bucket Removal" on page 8-5  
 "Center Console Bucket Installation" on page 8-8  
 "Throttle Handle and Bezel Removal" on page 8-10  
 "Throttle Handle and Bezel Installation" on page 8-13

### 9.10.4.2 Adjust Yaw Rigging

Adjust the rigging to prevent slight yaw tendency.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System**

06 – Flight Controls

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove AFT tail access panel directly under the rudder. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
2. The actuation weldment directly under the air rudder has a pushrod attached to it. Remove the bolt that connects that pushrod to the weldment.
3. Loosen jam nut on the pushrod.
4. Rotate the rodend bearing 1/2 turn at a time to obtain the desired rudder position.
5. Reattach bolt and torque per AC43.13 standard torques.
6. Swing rudder through range of motion ensuring the bellcrank does not make contact with surrounding structure.

**NOTE:** *Once reassembled, the rudder travel and deflection limits must fall within the range specified in the maintenance manual. (See "Inspect Yaw Rigging" on page 9-85.)*

7. Reassemble AFT tail access panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
- 

**VERIFICATION METHOD:**

Verify rigging matches rudder travel and deflection limits. (See "Inspect Yaw Rigging" on page 9-85.)  
A functional test flight should be done to ensure proper operation and minimized yawing effect.

**RELATED INFORMATION:**

"Inspect Yaw Rigging" on page 9-85

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

**9.10.4.3 Adjust Rudder Pedal Rigging**

Use this task to adjust the rudder pedal rigging.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Digital level with 0.1° resolution and Alt Ref function, calibrated to manufacturer's instructions.

**Parts Required**

None

**Aircraft System and Number**

06 – Flight Controls

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. With the rudder pedals locked in the middle position, use a digital level to set the angle between the rudder arms and rudder rails to  $90^\circ \pm 1^\circ$ .
  2. Remove MS21256-2 turnbuckle clip. Tension the rudder pedal cables to control the angle of rudder pedal arms using the rudder cable turnbuckles. Re-install MS21256-2 turnbuckle clip.
- 

**VERIFICATION METHOD:**

If the angle between the arms and rails can't be set to  $90^\circ \pm 1^\circ$  by adjusting the turnbuckles, the control cables need to be re-rigged. Follow the process for re-rigging. (See "Re-Rigging Rudder Pedals" on page 9-103.)

## RELATED INFORMATION:

"Inspect Rudder Pedal Adjustment Mechanism" on page 9-5

"Adjust Rudder Pedal Rigging" on page 9-101

"Re-Rigging Rudder Pedals" on page 9-103

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

### 9.10.4.4 Re-Rigging Rudder Pedals

Use this task to re-rig the rudder pedal rigging.

## TASK INFORMATION:

**Type of Maintenance**

Heavy

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Protractor or inclinometer

**Parts Required**

ICA009509 Control Cable

ICA009510 Control Cable

MS51844-23 Sleeves

AN100C-4 Thimbles

MS24665-151 Cotter Pins

**Aircraft System and Number**

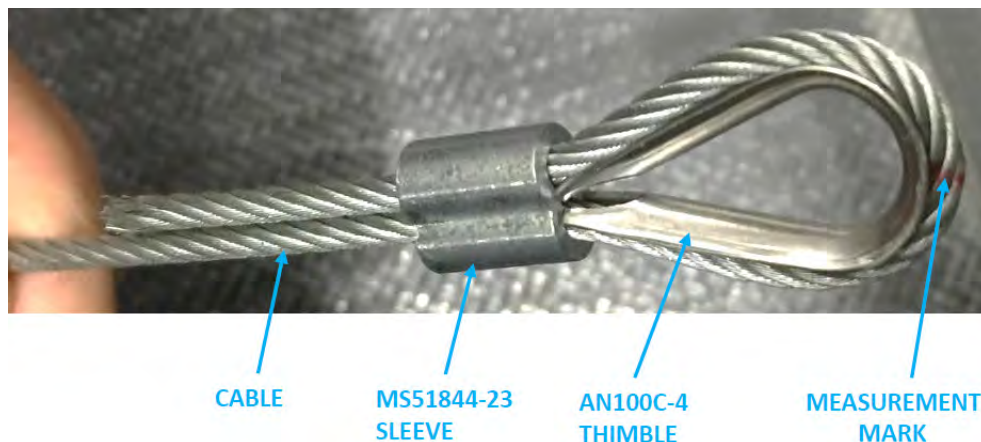
06 – Flight Controls

**Consumables**

None

## TASK INSTRUCTIONS:

1. Remove existing rudder pedal cables. Cut cable just after the MS51844-23 swage sleeve and remove.



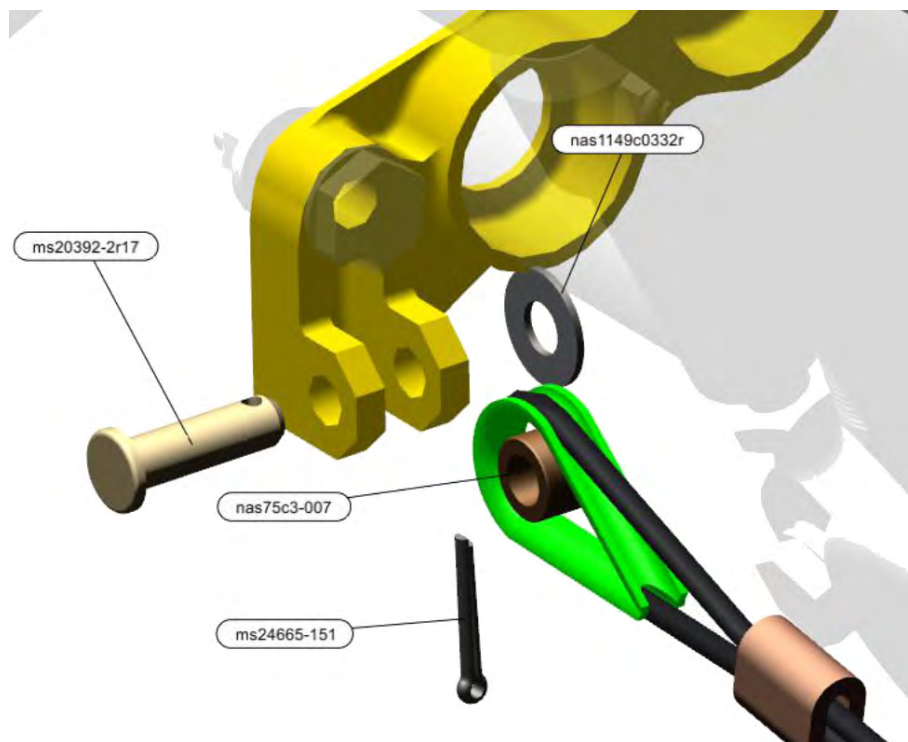
**FIGURE 9-65**  
RUDDER PEDAL CABLE SWAGE

2. With the rudder pedals in the middle position and rudder pedal arms  $90^\circ \pm 1^\circ$  relative to the rudder rails, route cable through the rudder arm “S” tube, sleeve, and cable.

*NOTE: Do not swage sleeve in this step.*

3. Temporarily install the cable to the forward rudder rail mount. Install cable to the rudder pedal turnbuckles, set turnbuckles to the mid position of adjustment.
4. Remove slack from rudder pedal cables while maintaining  $90^\circ \pm 1^\circ$  at the rudder pedal arms. Mark the rudder cables.
5. Uninstall cable from the forward rudder rail mount.
6. Ensure the mark created in Step 4 is in the correct location.
7. Swage MS51844-23 sleeve.
8. Install the rudder pedal cables.





**FIGURE 9-66**  
**RUDDER PEDAL FWD MOUNT CABLE INSTALLATION**

9. Install the floorboard panels to the aircraft by locating them in position and pressing downward.

#### VERIFICATION METHOD:

Perform the rudder pedal inspection procedure. (See "Inspect Rudder Pedal Rigging" on page 9-83.)

Confirm correct rigging for entire yaw control system by performing the water rudder inspection procedure and the rudder inspection procedure. (See "Inspect Yaw Rigging" on page 9-85.) (See "Check Water Rudder Rigging" on page 11-12.)

Confirm that at the pedal movement maximum travel the primary stops in the horizontal tail are met first. The secondary stops, under the center console, should be met after cable tension has been applied.

#### RELATED INFORMATION:

- "Inspect Rudder Pedal Rigging" on page 9-83
- "Inspect Rudder Pedal Adjustment Mechanism" on page 9-5
- "Adjust Rudder Pedal Rigging" on page 9-101
- "Re-Rigging Rudder Pedals" on page 9-103
- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Inspect Yaw Rigging" on page 9-85
- "Check Water Rudder Rigging" on page 11-12



# Chapter 10

## FUEL SYSTEM

Fuel System Description .....	10-2
Troubleshooting .....	10-3
Fuel Low-Level Light Diagnostic .....	10-3
Fuel Pressure Diagnostic .....	10-4
Fuel System General Maintenance .....	10-7
Sump Fuel Tank .....	10-7
Pump Usable Fuel From Fuel Tank .....	10-8
Clear Filler Neck .....	10-10
Fuel Bladder (MY17 Only) .....	10-11
Maintenance Instructions .....	10-11
Remove Fuel Bladder (MY17 Only) .....	10-11
Install Fuel Bladder (MY17 Only) .....	10-12
Fuel Tank (MY18+) .....	10-15
Maintenance Instructions .....	10-15
Remove Fuel Tank (MY18+) .....	10-15
Install Fuel Tank (MY18+) .....	10-19
Coarse Fuel Filter .....	10-25
Coarse Fuel Filter Description .....	10-25
Coarse Fuel Filter Diagram/Schematic .....	10-25
Maintenance Instructions .....	10-25
Clean Coarse Fuel Filter (MY17 Only) .....	10-25
Clean Coarse Fuel Filter (MY18+) .....	10-28
Fine Fuel Filter .....	10-30
Maintenance Instructions .....	10-30
Remove Fine Fuel Filter .....	10-30
Install Fine Fuel Filter .....	10-33
Fuel Tank Vent Line .....	10-35
Maintenance Instructions .....	10-35
Clear Fuel Tank Vent Line .....	10-35

## 10.1 Fuel System Description

Those units and components which store and deliver fuel to the engine. Includes fuel pump and any associated emergency cutoff device, fuel tank, shutoff valve, filler hose/line and cap, fuel distribution tubes and hoses. Does not include fuel flow rate sensing, transmitting and/or indicating, which are covered in the Instruments system.

## 10.2 Troubleshooting

### 10.2.1 Fuel Low-Level Light Diagnostic

Perform this diagnostic procedure if the fuel low-level LED in the fuel gauge fails to illuminate when fuel level is less than 2 gallons.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

No

**Parts Required**

None

**Aircraft System and Number**

07 – Fuel System

**Consumables**

None

#### TASK INSTRUCTIONS:

1. While looking at fuel gauge, turn master switch on, pause for a moment, then off. The red LED in the fuel level gauge should illuminate momentarily after the switch is turned off. Several cycles may be needed to be sure of the result. If the LED is not seen, the gauge could be faulty or the low-level switch may have become disconnected or damaged.
2. Verify that the surface of the fuel in the tank is below the low-level sensor (<2 gallons).
3. Check that signal power is getting to gauge:
  - a. Unplug the connector at the fuel gauge.
  - b. Turn master switch on. The voltage between Pin 1 and Pin 3 at the aircraft harness gauge connector should be 12v. If it is not, the sensor may be faulty.
  - c. Turn master switch off.

4. Check condition of aircraft harness:
    - a. Remove the right baggage floor. (See “Baggage Floor Removal” on page 3-41.)
    - b. Remove the right seat back. (See “Seat Back Removal” on page 3-50.)
    - c. Unplug low-level switch from aircraft harness.
    - d. Check for continuity between the following pins in the aircraft harness connectors. If there is no continuity, then the aircraft harness may be faulty.
      - Gauge Pin 1 and Sensor Pin 1
      - Gauge Pin 2 and Sensor Pin 9
      - Gauge Pin 3 and Sensor Pin 3
  5. Reconnect gauge and low-level switch connectors.
  6. Reinstall right seat back closeout and right baggage floor.
- 

#### VERIFICATION METHOD:

While looking at fuel gauge, turn master switch on, then off. The red LED in the fuel level gauge should flash momentarily after the switch is turned off. Several cycles may be needed to be sure of the results.

### 10.2.2 Fuel Pressure Diagnostic

Use Table 10-1 to diagnose the fuel system when the pressure is outside the normal limits (40.5-46.5 psi) or when FUEL PRESS illuminates on the annunciator panel. See “Annunciator Panel Diagnostic” on page 13-9.

**Table 10-1:** Fuel Pressure Diagnostic Table

Symptom	Possible Cause	Remedy
Low fuel pressure (below 40.5 psi)	Low fuel level.	Check fuel level sensor connection. Inspect fuel tank for damage and leaks. Replace fuel tank if necessary. Add fuel. (See “Fuel Bladder (MY17 Only)” on page 10-11.) (See “Fuel Tank (MY18+)” on page 10-15.)
	Clogged coarse fuel filter.	Clean coarse fuel filter. (See “Clean Coarse Fuel Filter (MY17 Only)” on page 10-25.) (See “Clean Coarse Fuel Filter (MY18+)” on page 10-28.)
	Vapor lock: If lights turn on with full power/high altitude and goes away with reduced power/lower altitude when flying on a hot day.	Check engine fuel and make sure proper fuel is being used per POH requirement, see “Fuel Limitation” in POH. Winter blend fuel or bad/old fuel can cause vapor lock when flying in a lower altitude/warmer area.
	Fuel leak.	Check for leaks. See the “Maintenance Manual Line 912i Series” leak tests section from Rotax®. Tighten fitting or replace damaged lines as necessary. Inspect tank for damage and leaks. (See “Fuel Bladder (MY17 Only)” on page 10-11.) (See “Fuel Tank (MY18+)” on page 10-15.)
	Fuel pressure regulator malfunction.	Inspect fuel pressure regulator. Replace fuel pressure regulator as necessary. See the “Maintenance Manual Line 912i Series” fuel system section from Rotax®.
	Fuel pump malfunction.	Secure electrical connector. Inspect electrical wiring. Replace if necessary. During engine lane changes, fuel pump malfunction should have been identified. See the “Maintenance Manual Line 912i Series” fuel system section from Rotax®.
	Plugged fuel tank vent line.	Clear fuel tank vent line. (See “Clear Fuel Tank Vent Line” on page 10-35.)

Symptom	Possible Cause	Remedy
High fuel pressure (above 46.5 psi)	Clogged fine fuel filter.	Replace clogged fine fuel filter. (See “Fine Fuel Filter” on page 10-30.)
	New fine fuel filter.	It's acceptable if FUEL PRESS lights up after the fine fuel filter has been replaced but goes away with power or after engine warms up. If problem persists, check and replace fuel pressure regulator as necessary. See the “Maintenance Manual Line 912i Series” from Rotax®.
	Blockage between regulator and fuel tank.	Inspect flow between fuel pressure regulator and fuel tank. Check for kinks. Refer to the “Maintenance Manual Line 912i Series” from Rotax®.



## 10.3 Fuel System General Maintenance

### 10.3.1 Sump Fuel Tank

Instructions to sump the fuel tank and check for water or debris.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

ICA009753 Fuel Sumping Tool

**Parts Required**

None

**Aircraft System and Number**

07 – Fuel System

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove fuel cap from aircraft.
2. Connect flexible rubber tube of Fuel Sumping Tool to adapter located inside fuel cap fitting. The adapter is inside the fuel cap fitting on the left side.
3. Pull back on the plunger handle to obtain a vacuum for removal of the fuel from the fuel tank.
4. If contaminants are found, empty syringe, remove tube, and clean for the next scheduled maintenance.
5. Repeat Step 3 to sump all water and contaminants until none remain inside the fuel tank.
6. Check for debris and water.
7. Close and secure the fuel cap onto the fuel cap fitting.

The latch on the fuel cap should swing downward when properly aligned.

---

#### VERIFICATION METHOD:

Fuel tank sump is visually clear of water or debris.

### 10.3.2 Pump Usable Fuel From Fuel Tank

Use this procedure when it is necessary to pump the usable fuel from the fuel tank.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

A suitable length of -6 AN fuel hose with a -6 male AN flare fitting at one end.

**Parts Required**

None

**Aircraft System and Number**

07 – Fuel System

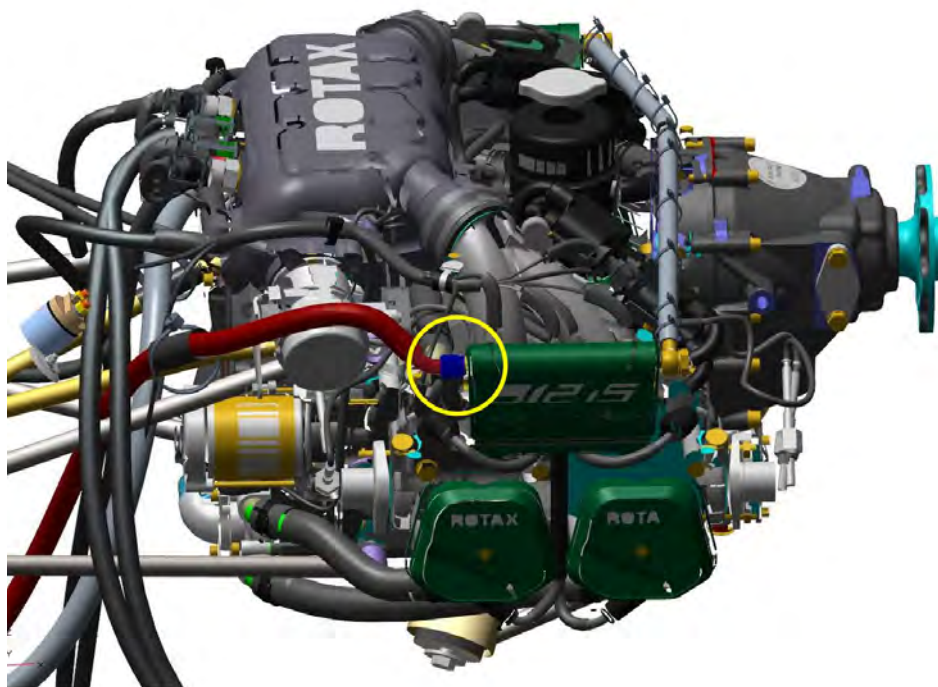
**Consumables**

None

**CAUTION:** Do not perform any work on the aircraft fuel system unless the aircraft is grounded to a suitable ground to earth.

#### TASK INSTRUCTIONS:

1. Attach a grounding cable to the bow ring.
2. Remove the top engine cowl. (See “Remove Engine Cowlings” on page 16-13.)
3. Use an 11/16 wrench to disconnect the fuel supply hose at the fuel rail on the engine's left-forward corner (circled in Figure 10-1). Catch any fuel that drips out.



**FIGURE 10-1**  
FUEL SUPPLY HOSE AT THE FUEL RAIL

4. Connect a length of -6 AN fuel hose to the end of the supply hose and place the free end of the hose into a suitable fuel container.
5. Turn on the aircraft master switch and rotate the ignition key to the first position – Lane A. This will run the main boost fuel pump.
6. Leave the pump running until the desired amount of fuel is removed, then turn off ignition and master switches.

**CAUTION:** Do not leave the fuel pump running unattended. Do not allow the fuel pump to run dry for more than a few seconds.

7. Remove the added length of hose.
8. Reattach the fuel supply line to the fuel rail and torque to 110-130 in-lb with an 11/16 wrench.
9. Install the top engine cow. (See “Install Engine Cowlings” on page 16-16.)

#### VERIFICATION METHOD:

Verify that the fuel line is secured without any leaks. Verify that the Top Cowl is replaced and secured into position.

## RELATED INFORMATION:

- "Empty Weight and CG Measurement While on Gear" on page 3-30
- "Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32
- "Remove Fuel Bladder (MY17 Only)" on page 10-11
- "Remove Fuel Tank (MY18+)" on page 10-15

**10.3.3 Clear Filler Neck**

Clear the fuel filler tube portion of the vent line. The fuel filler tube connects the filler cap to the fuel tank.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

07 – Fuel System

**Consumables**

None

## TASK INSTRUCTIONS:

1. Remove the fuel cap.
2. Pour fuel down the filler tube at a slow rate to confirm free flow of fuel into the tank.
3. After check and confirmation filler tube is clear, replace fuel cap.

## VERIFICATION METHOD:

Fuel flows freely into the fuel tank through the filler neck.

## RELATED INFORMATION:

- "Condition and 100-Hour Inspection – Fuel Systems" on page 3-13

## 10.4 Fuel Bladder (MY17 Only)

### 10.4.1 Maintenance Instructions

#### 10.4.1.1 Remove Fuel Bladder (MY17 Only)

The following procedure should be used to remove the fuel bladder.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Numb**

07 – Fuel System

**Consumables**

None

---

##### TASK INSTRUCTIONS:

1. Pump all fuel from bladder. (See “Pump Usable Fuel From Fuel Tank” on page 10-8.)
2. Remove the seat backs. (See “Seat Back Removal” on page 3-50.)
3. Remove the baggage sidewall panels. (See “Baggage Sidewall Panel Removal” on page 3-43.)
4. Use a 5/16 wrench to remove the nuts attached to forward end of the two hold down straps and move the straps out of the way.
5. Disconnect the following electrical connections.
  - a. Disconnect D9038P from the optical switch.
  - b. Disconnect D9039P from the fuel level sensor.
  - c. With a 7/16 wrench, disconnect the T9028 ring terminal from the fuel level sensor access plate.
  - d. With a 3/8 wrench, disconnect the ground strap at the fuel vent line from the tank’s fuel filler flange.

6. Remove the P-clamp from the coarse fuel filter and then use an 11/16 wrench to disconnect the B-nut of the fuel supply line from the elbow fitting in the bladder.
7. Use an 11/16 wrench to disconnect the B-nut of the fuel return line from the elbow fitting in the bladder.
8. Loosen the hose clamps on both ends of the filler hose.
9. Carefully pull the filler hose from the bladder flange and the fuel filler neck flange, but do not remove the hose.
10. Disconnect the sumping hose (the hose that runs down the inside of the filler hose) from the back of the filler neck by prying its clamp off and pulling the hose off the barb.
11. Remove the filler hose.
12. Disconnect the vent hose from the bladder by removing the hose clamp at the tank interface.
13. With a 5/8 wrench, remove the low-level optical switch (so as to avoid conflict with the bladder support when bladder is removed).
14. Disconnect the fuel bladder retention straps.
15. Remove the fuel bladder assembly from the aircraft.

#### VERIFICATION METHOD:

Procedure is complete when fuel bladder has been removed from the aircraft.

#### RELATED INFORMATION:

- "Baggage Sidewall Panel Removal" on page 3-43
- "Seat Back Removal" on page 3-50
- "Bilge Pump Removal (MY17)" on page 6-43
- "Pump Usable Fuel From Fuel Tank" on page 10-8
- "Rigging Yaw Controls" on page 9-87
- "Rigging Pitch Controls" on page 9-46

### 10.4.1.2 Install Fuel Bladder (MY17 Only)

Use the following procedure to install the fuel bladder.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

### Parts Required

None

### Aircraft System and Number

07 – Fuel System

### Consumables

LOCTITE® 425™

---

#### TASK INSTRUCTIONS:

1. Ensure that the bladder subassembly is complete and in the following state:
  - a. Hook and loop fastening installed on bottom surfaces.
  - b. Fuel level sensor installed.
  - c. Fuel filler flange with return and supply fittings installed.
  - d. Low-level optical switch not installed (avoids conflict with the support structure).
2. Install the fuel bladder subassembly into the aircraft fuel bladder support structure.
3. Install the low-level optical switch by first ensuring its O-ring is in good condition (replace with new 3-905 Vitron O-ring if in doubt), then apply LOCTITE® 425™ to its threads and torquing to 12-15 in-lb<sub>f</sub>.
4. Attach the fuel bladder retention straps to their forward attach studs, torquing the nuts to 44 in-lb<sub>f</sub>.
5. Connect the vent hose and hose clamp to the barbed fitting on bladder filler flange.
6. Thread the sumping hose through the filler hose, then attach the sumping hose to the barb on the back of the filler neck. Secure the hose with a new.344 15300010 Oetiker clamp and tighten with Ear clamp crimpers.
7. Connect the filler hose to the bladder flange and filler neck and tighten the two hose clamps.
8. Connect the B-nut of the fuel return line to the elbow fitting in the bladder and torque to 110-130 in-lb<sub>f</sub> with a 11-16 wrench.
9. Connect the fuel supply line B-nut to the elbow fitting in the bladder filler flange finger tight.
10. Mount the P-clamp to the coarse fuel filter, then the clamp to the stud on the bladder flange with a washer and nut, torqued to 21 in-lb<sub>f</sub> with a 1/4 wrench.
11. Use a 11/16 wrench to torque the fuel supply line B-nut to 110-130 in-lb<sub>f</sub>.
12. Make the following electrical connections:
  - a. Connect D9038P to the optical switch.
  - b. Connect D9039P to the fuel level sensor.
  - c. With a 7/16 wrench, attach the T9028 ring terminal to the fuel level sensor access plate by temporarily removing one of the level sensor's attachment bolts and installing the terminal so that it sits on top of the nylon washer. Torque to 40 in-lbs<sub>f</sub>.
13. Fill the bladder with fuel and check for leaks.

14. Install the baggage sidewall panels. (See "Baggage Sidewall Panel Installation" on page 3-45.)
  15. Install the seat backs. (See "Seat Back Installation" on page 3-51.)
- 

#### VERIFICATION METHOD:

The procedure is complete when the fuel bladder is installed with no leaks.

#### RELATED INFORMATION:

- "Baggage Sidewall Panel Installation" on page 3-45
- "Seat Back Installation" on page 3-51
- "Bilge Pump Installation (MY17)" on page 6-44
- "Rigging Yaw Controls" on page 9-87
- "Rigging Pitch Controls" on page 9-46



## 10.5 Fuel Tank (MY18+)

### 10.5.1 Maintenance Instructions

#### 10.5.1.1 Remove Fuel Tank (MY18+)

Use the following procedure to remove the fuel tank.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

07 – Fuel System

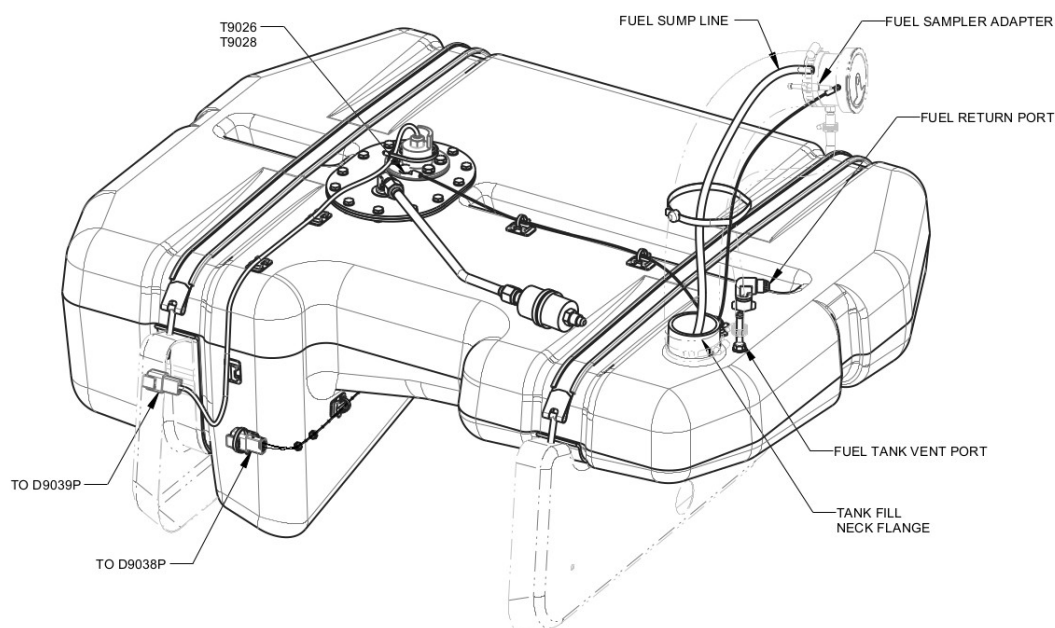
**Consumables**

None

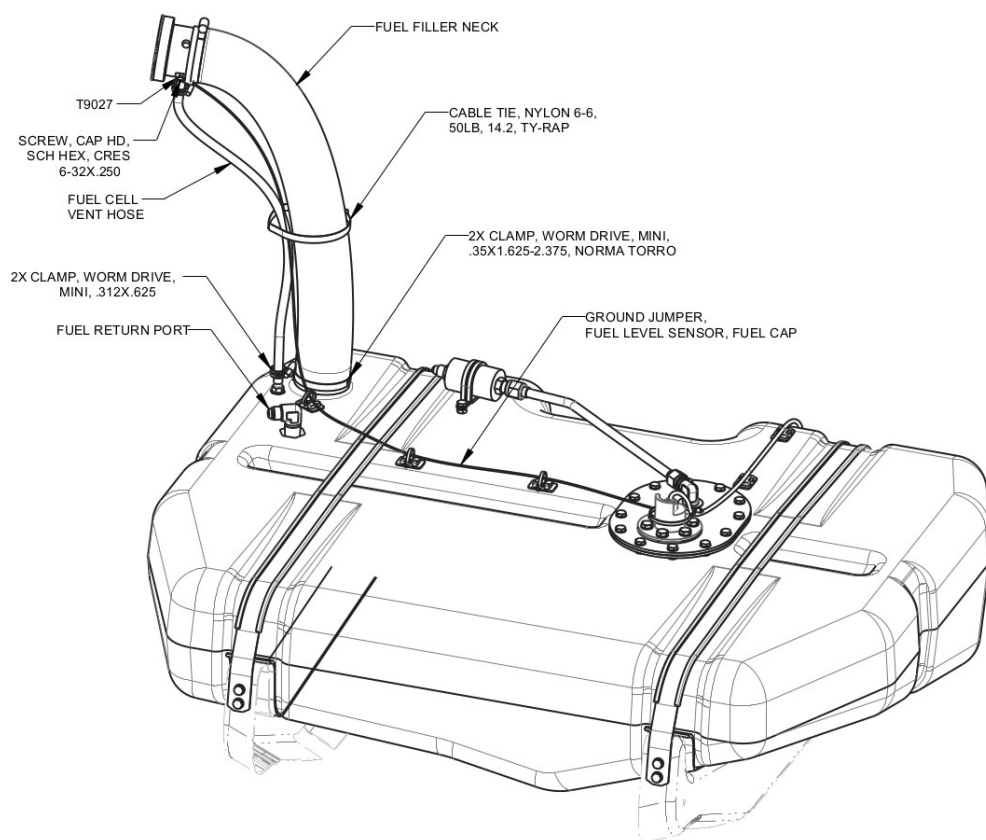
---

##### TASK INSTRUCTIONS:

1. Remove headliner. (See “Headliner Removal” on page 3-37.)
2. Remove baggage floor. (See “Baggage Floor Removal” on page 3-41.)
3. Remove baggage sidewall panels. (See “Baggage Sidewall Panel Removal” on page 3-43.)
4. Remove seat backs. (See “Seat Back Removal” on page 3-50.)
5. Pump all fuel from tank. (See “Pump Usable Fuel From Fuel Tank” on page 10-8.)
6. Disconnect the optical switch connector from D9038P. (See Figure 10-2.)

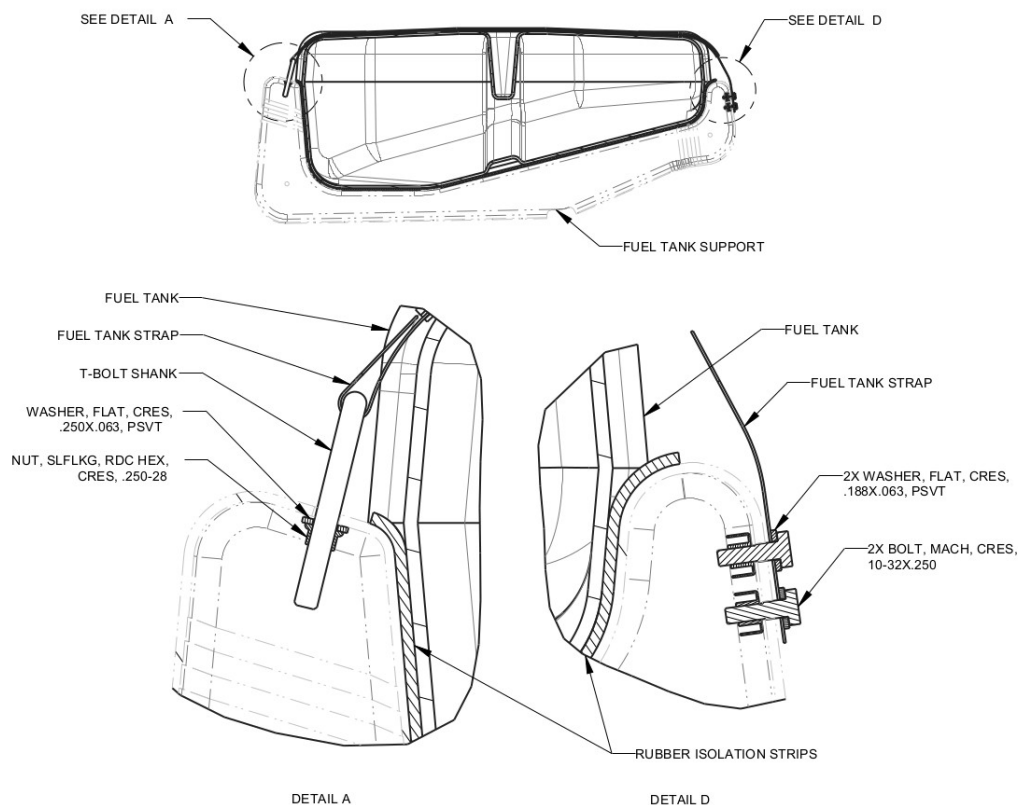
**FIGURE 10-2****FUEL SUMP LINE AND ELECTRICAL CONNECTIONS (T9028 WIRE HARNESS NOT SHOWN)**

7. Disconnect the fuel level sensor connector from D9038P. (See Figure 10-2.)
8. Use a 7/16 wrench to remove bolt, washer, and T9028 terminal on fuel level sensor plate. (See Figure 10-2.)
9. Remove three cable ties securing T9028 terminal wire harness.
10. Remove #6-32 screw securing the T9027 terminal on the fuel cap adapter. (See Figure 10-3.)



**FIGURE 10-3**  
FUEL FILLER NECK INSTALL AND ELECTRICAL CONNECTIONS

11. Remove cable tie from fuel filler neck.
12. Disconnect fuel line from coarse fuel filter using a 11/16 wrench. Cap and plug open lines throughout.
13. Disconnect fuel return line from the elbow fuel return port in the tank using a 11/16 wrench. (See Figure 10-3.)
14. Disconnect fuel cell vent hose from barb in fuel cap adapter by removing the mini worm drive clamp.
15. Remove worm drive clams from both ends of the fuel filler neck. (See Figure 10-3.)
16. Remove the fuel filler neck from fuel cap adapter and fuel tank opening flange to expose fuel sump hose. (See Figure 10-2.)
17. Disconnect fuel sump hose by prying off its clamp and pulling the hose off the barb. (See Figure 10-3.) Remove fuel filler hose completely.
18. Remove self-locking nut from both T-bolt shanks located at FWD end of fuel tank. (See Figure 10-4. Detail A.)



**FIGURE 10-4**  
FUEL TANK STRAP INSTALLATION

19. Remove two bolts and washers securing the fuel tank straps to the aft end of fuel tank. (See Figure 10-4. Detail D.)
20. Remove both fuel tank straps.
21. Lift fuel tank subassembly out of the aircraft.

#### VERIFICATION METHOD:

Task is complete when the fuel tank has been removed from the aircraft.

## RELATED INFORMATION:

- "Baggage Floor Removal" on page 3-41
- "Baggage Sidewall Panel Removal" on page 3-43
- "Headliner Removal" on page 3-37
- "Seat Back Removal" on page 3-50
- "Pump Usable Fuel From Fuel Tank" on page 10-8

### 10.5.1.2 Install Fuel Tank (MY18+)

Use the following procedure to install the fuel tank.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

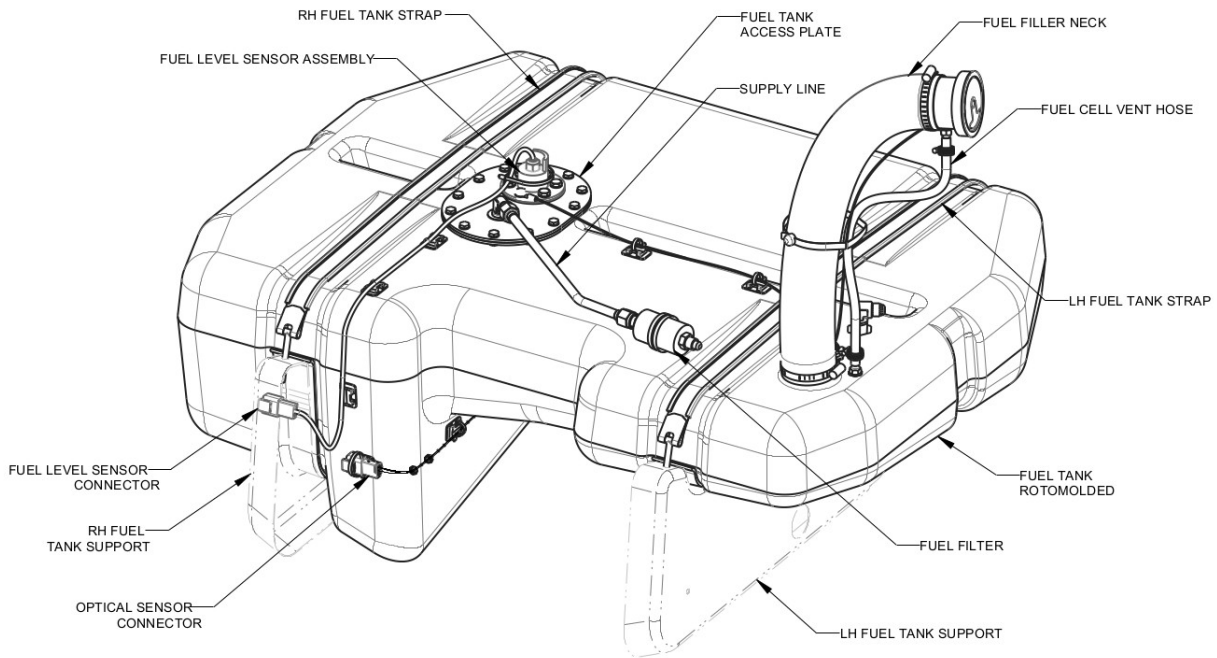
- 15300010 (CLAMP, HOSE, CRIMP, CRES, OETIKER, 0.344)
- TY528MX (CABLE TIE, NYLON 6-6, 50LB, 14.2, TY-RAP)
- TY24MX (CABLE TIE, NYLON 6-6, 30LB, 5.50, TY-RAP)

**Aircraft System and Number**

07 – Fuel System

**Consumables**

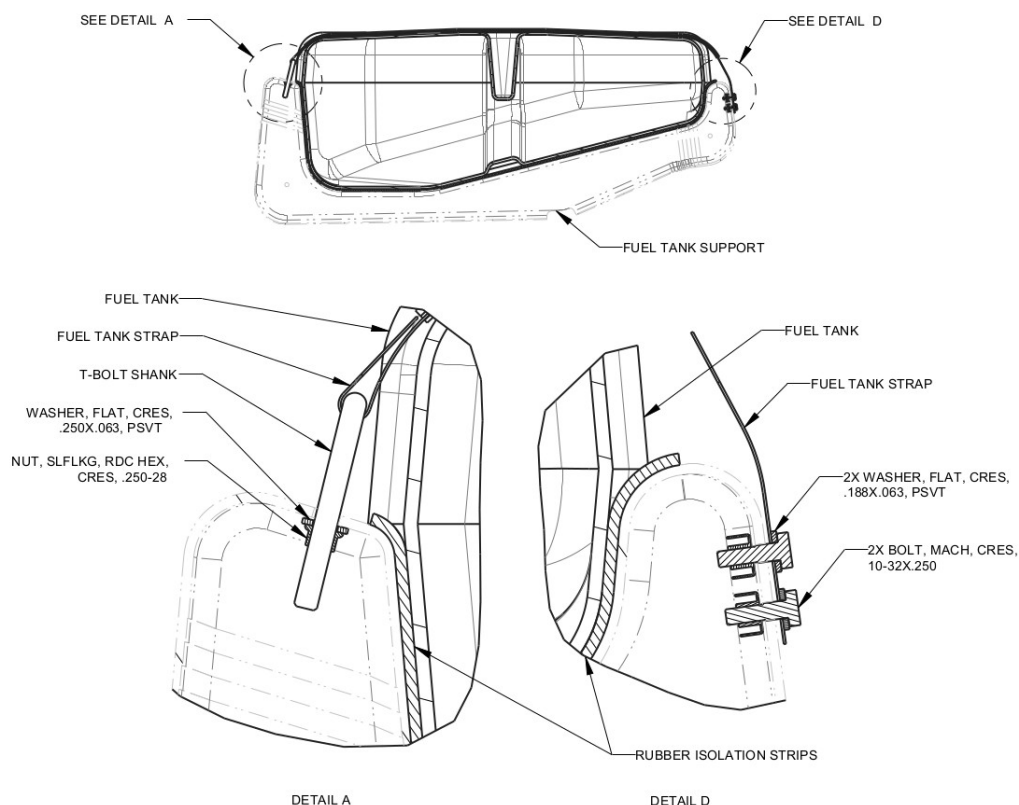
- Tef-Gel®
- LOCTITE 243



**FIGURE 10-5**  
FUEL TANK INSTALLATION

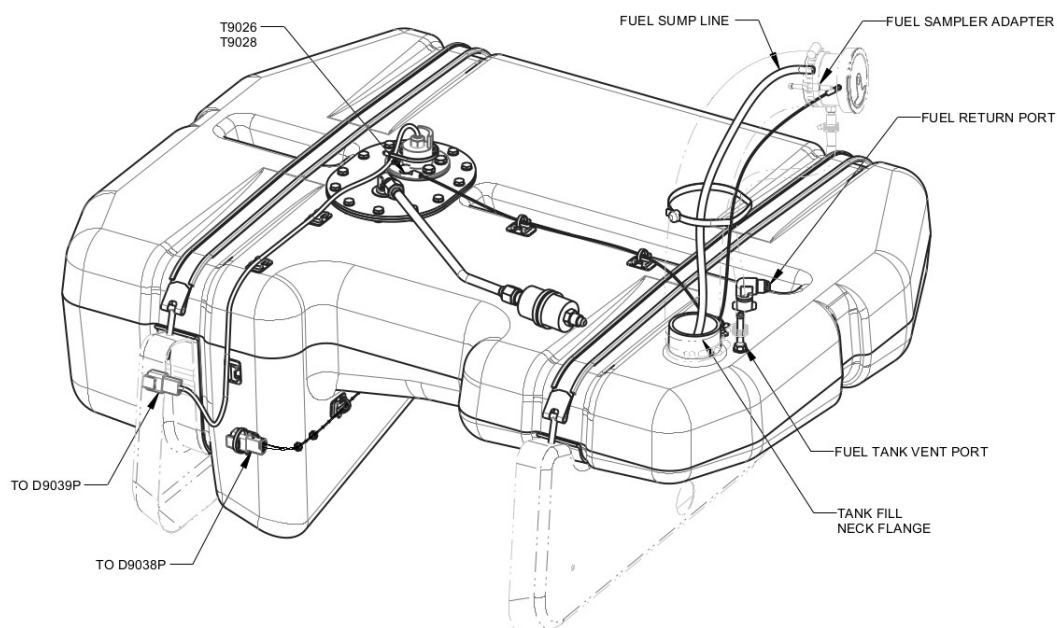
#### TASK INSTRUCTIONS:

1. Ensure isolation strips are properly aligned on fuel tank support structure. (See Figure 10-6.)



**FIGURE 10-6**  
FUEL TANK STRAP INSTALLATION

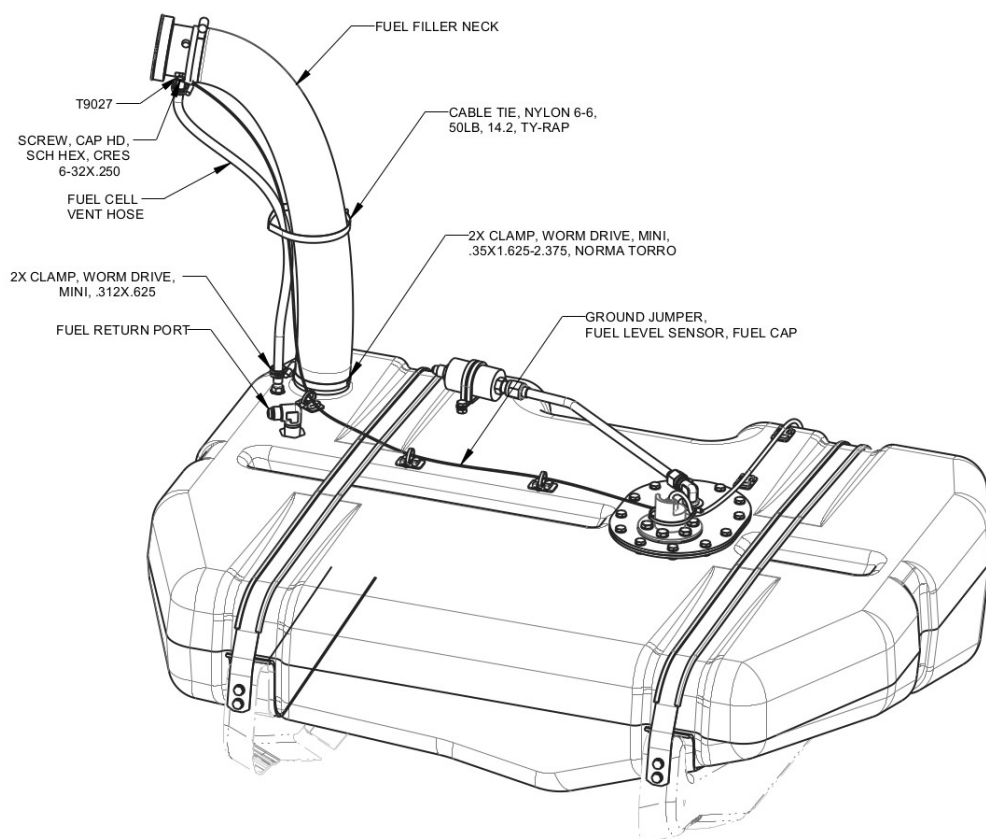
2. Install the fuel tank subassembly into the aircraft fuel tank support structure.
3. Attach the fuel tank strap subassemblies to AFT end of fuel tank support brackets using LUBRICANT and hardware. (See Figure 10-6. Detail D.) Torque bolts to 26 in-lb.
4. Loosely secure the forward ends of the fuel tank straps to the fuel tank brackets using LUBRICANT and hardware. (See Figure 10-6. Detail A.)
5. Adjust isolation channels on the fuel tank straps to ensure that the fuel tank strap will not contact the fuel tank surface after the straps are tensioned. Torque nuts to 10-13 in-lb.
6. Route fuel sump hose through bottom end of fuel filler neck and connect the fuel sump hose to sump hose adapter using a new CLAMP, HOSE, CRIMP (Oetiker clamp). Tighten with ear-clamp crimpers. (See Figure 10-7.)



**FIGURE 10-7**  
FUEL SUMP LINE AND ELECTRICAL CONNECTIONS

7. Install the bottom end of the filler neck onto the fuel tank opening flange so that there is a  $.2" \pm .1"$  gap between the bottom face of the filler neck and the top face of the fuel tank. Attach the top end of the filler neck onto the fuel cap adapter. (See Figure 10-8.)





**FIGURE 10-8**  
FUEL FILLER NECK INSTALL AND ELECTRICAL CONNECTIONS

8. Secure both ends of the fuel filler neck using worm drive clamps. (See Figure 10-8.) Position the bottom hose clamp so that there is a  $.4" \pm .1"$  gap between the bottom edge of the hose clamp and the top face of the fuel tank.
9. Torque both clamps to 10-13 in-lb.
10. Connect fuel cell vent hose to hose barb in fuel cap adapter using the mini worm drive clamp. (See Figure 10-8.) Torque to 10-13 in-lb.
11. Connect fuel return line to the elbow fuel return port in the tank and torque to 110-130 in-lb with a 11/16 wrench. (See Figure 10-8.)
12. Connect fuel line from fuel pump to coarse fuel filter. Torque fittings to 110-130 in-lb with a 11/16 wrench.
13. Secure T9027 ring terminal from ground wire on fuel tank subassembly to the filler cap adapter using #6-32 cap screw. Torque screw to 9 in-lb. (See Figure 10-8.)
14. Secure fuel filler neck, ground wire, and fuel vent hose with CABLE TIE, NYLON 6-6, 50 LB. (See Figure 10-8.)

**CAUTION:** Do not over tension cable tie and create a blockage or kink in fuel vent hose.

15. Connect the optical switch connector to D9038P from fuselage wire harness. (See Figure 10-7.)
16. Connect the fuel level sensor connector to D9038P from fuselage wire harness. (See Figure 10-7.)

17. Connect T9028 ring terminal from fuselage wire harness to bolt and washer on fuel level sensor.
    - a. Use a 7/16 wrench to remove bolt and washer. (See Figure 10-7.)
    - b. Apply LOCTITE 243 to bolt threads and install T9028 ring terminal beneath the washer.
    - c. Torque bolt to 40-45 in-lb.
  18. Secure T9028 ring terminal wire harness and fuel level sensor wire harness to fuel tank with three CABLE-TIE, NYLON 6-6, 30LB.
  19. Fill the tank with fuel and check for leaks.
  20. Run the engine and check for line leaks.
  21. Install the seat backs. (See "Seat Back Installation" on page 3-51.)
  22. Install the baggage sidewall panels. (See "Baggage Sidewall Panel Installation" on page 3-45.)
  23. Install baggage floor. (See "Baggage Floor Installation" on page 3-42.)
  24. Install headliner. (See "Headliner Installation" on page 3-38.)
- 

#### VERIFICATION METHOD:

The procedure is complete when the fuel tank is installed with no leak.

#### RELATED INFORMATION:

- "Headliner Installation" on page 3-38
- "Baggage Floor Installation" on page 3-42
- "Baggage Sidewall Panel Installation" on page 3-45
- "Seat Back Installation" on page 3-51

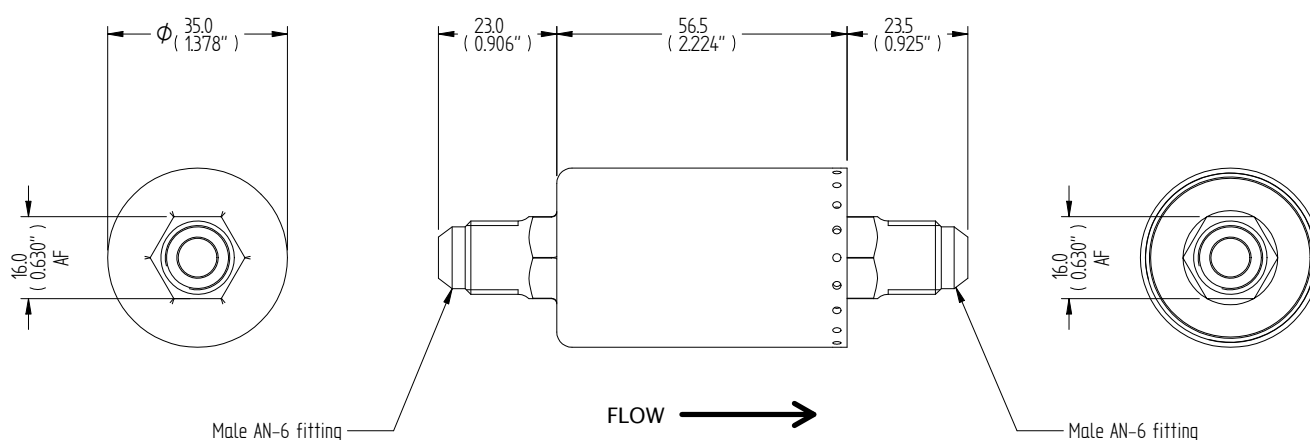
## 10.6 Coarse Fuel Filter

### 10.6.1 Coarse Fuel Filter Description

The coarse fuel filter is one of two filters in the fuel supply line. The same filter, FX375-M, is used in both the MY17 and MY18+ ICON A5 and is located above the fuel bladder/tank. Unlike the fine fuel filter, the coarse fuel filter can be cleaned and does not need to be replaced unless it is damaged.

**NOTE:** *The orientation of the fuel filter is critical to the fuel system.(See "Coarse Fuel Filter Diagram/Schematic" on page 10-25.)*

### 10.6.2 Coarse Fuel Filter Diagram/Schematic



**FIGURE 10-9**  
COARSE FUEL FILTER SCHEMATIC

### 10.6.3 Maintenance Instructions

#### 10.6.3.1 Clean Coarse Fuel Filter (MY17 Only)

Instructions to clean the coarse fuel filter on MY17 aircraft.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

FX375-M (FILTER, FUEL CLEANABLE 62MICRON)

**Aircraft System and Number**

07 – Fuel System

**Consumables**

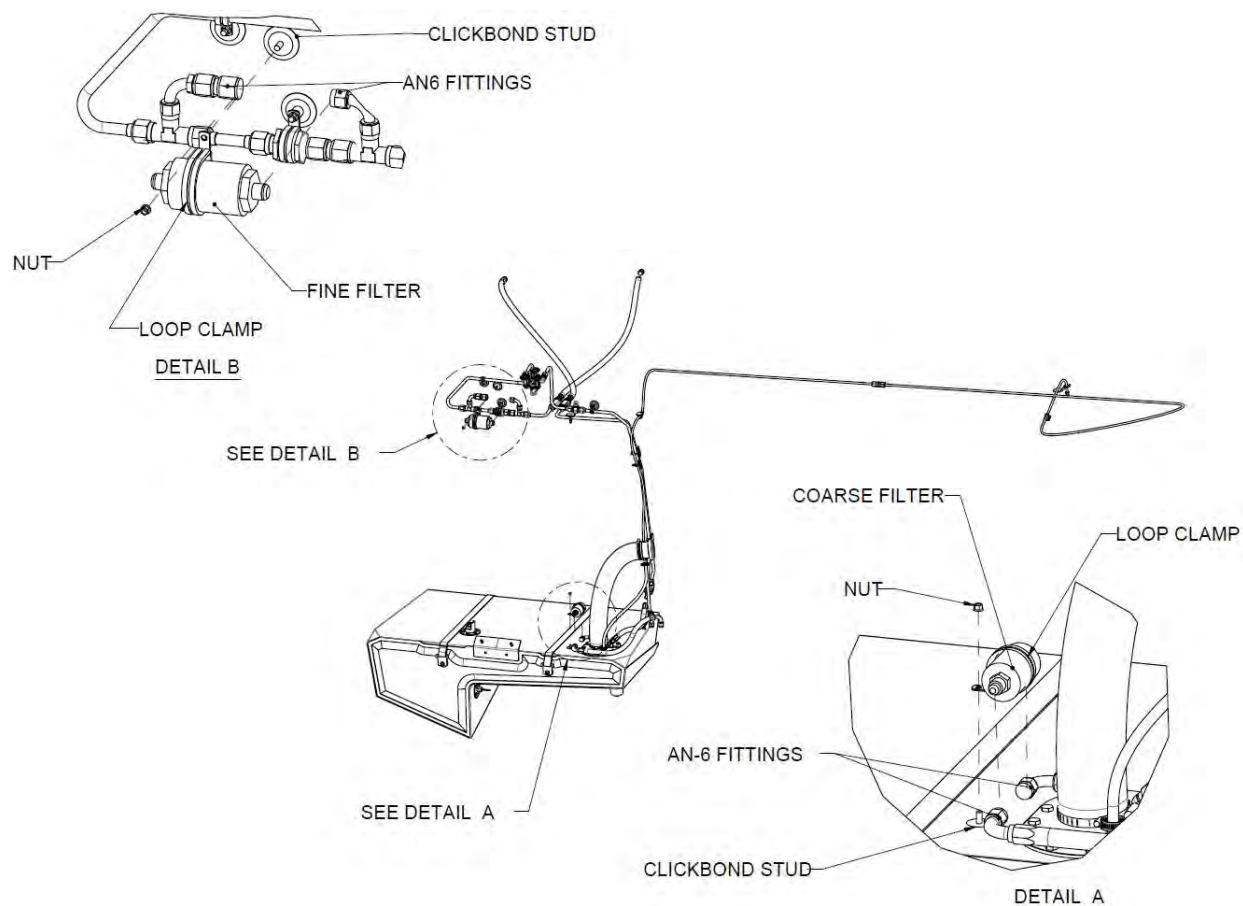
LOCTITE 243 (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE MED STR, BLUE)

MS20995C32 (WIRE, SAFETY, CRES, .032)

---

**TASK INSTRUCTIONS:**

1. Remove baggage floor. (See “Baggage Floor Removal” on page 3-41.)  
*NOTE: Seat backs may be removed for easier access. (See “Seat Back Removal” on page 3-50.)*
2. Close the fuel valve.
3. Use a rag or shallow containers to contain any fuel that leaks from the fuel lines or the filter itself.
4. Make a note of fuel flow direction through the filter.
5. Using an 11/16 wrench, loosen the AN-6 fitting while securing the filter from rotation. Rotate the AN-6 connection fitting until completely free. (See Figure 10-10.)



**FIGURE 10-10**  
MY17 FUEL SYSTEM

6. Repeat Step 5 on the other side of the fuel filter.
7. Loosen the 10-32 nut on the click bond stud holding the loop clamp, which secures the fuel filter, with a 1/4 inch deep socket wrench until the filter is free.
8. Clean the fuel filter with a pressurized cleaner. Dry with compressed air. Lubricate and reinstall O-rings. Tighten end cap and re-safety wire with SAFETY WIRE.

**NOTE:** If the filter is damaged, replace it with **CLEANABLE 62MICRON FUEL FILTER (FX375-M)**.

9. Place the fuel filter approximately midway inside the loop type clamp.
10. Confirm that when installing the filter, the arrow direction is the same as before and the correct in and out fittings are tightened in the appropriate inlet and outlet fittings.
11. Wipe away or clean any fuel which may have dripped inside the cabin.
12. Tighten the AN-6 (9/16-18 thread) fittings on the inlet and outlet sides of the filter. Torque fittings to 110-130 in-lbs.
13. Torque the 10-32 nut on the click bond stud to 40 in-lbs.
14. Turn on fuel valve, turn on master power, turn key to A position, and check for leaks.

15. Install baggage floor. (See "Baggage Floor Installation" on page 3-42.)
16. Install seat backs if previously removed. (See "Seat Back Installation" on page 3-51.)

#### VERIFICATION METHOD:

Complete engine test run and check for leaks. (See "Engine Test Run" on page 16-7.)

### 10.6.3.2 Clean Coarse Fuel Filter (MY18+)

Use the following procedure to clean the coarse fuel filter on MY18+ aircraft.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

FX375-M (FILTER, FUEL, CLEANABLE 62MICRON)

##### Aircraft System and Number

07 – Fuel System

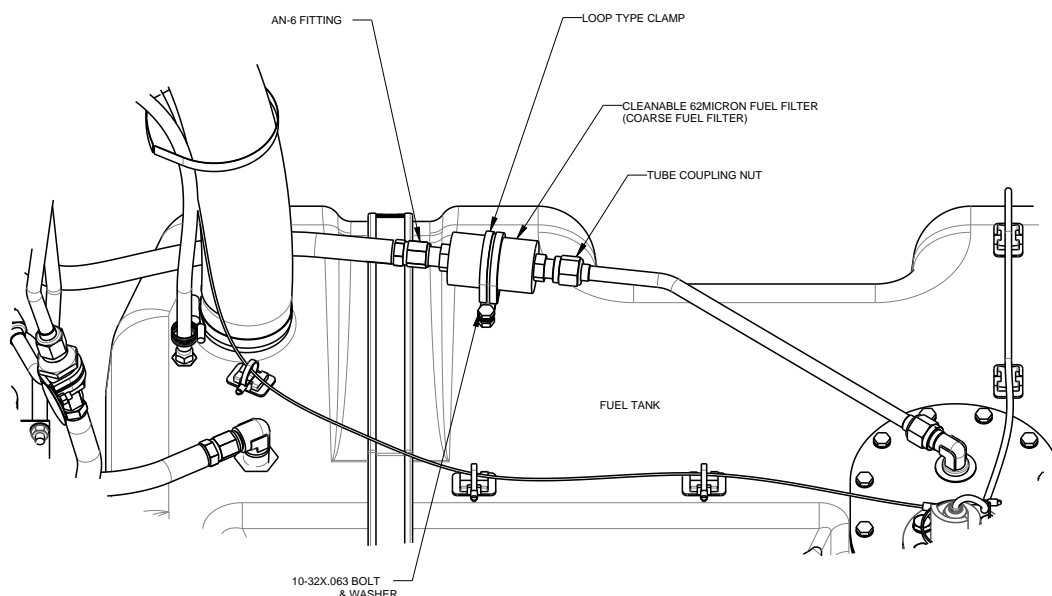
##### Consumables

LOCTITE 243 (THREADLOCKER, PRIMERLESS, OIL TOL REMOVABLE MED STR, BLUE)

MS20995C32 (WIRE, SAFETY, CRES, .032)

#### TASK INSTRUCTIONS:

1. Remove baggage floor. (See "Baggage Floor Removal" on page 3-41.)  
*NOTE: Seat backs may be removed for easier access. (See "Seat Back Removal" on page 3-50.)*
2. Close the fuel valve.
3. Use a rag or shallow container to catch any fuel that leaks from the fuel lines or the filter itself.
4. Make note of fuel filter orientation.
5. Using an 11/16 wrench, rotate the AN-6 fitting while securing the filter from rotation. Rotate the AN-6 connection fitting until completely free. (See Figure 10-11.)



**FIGURE 10-11**  
COARSE FUEL FILTER AND COMPONENTS. VIEW FACING FORWARD.

6. Repeat Step 5 on the tube coupling nut on other side of the fuel filter.
7. Loosen the 10-32 bolt and washer securing the coarse fuel filter with a 1/4 inch socket until the filter is free.
8. Clean the fuel filter with a pressurized cleaner. Dry with compressed air. Lubricate and reinstall O-rings. Tighten end cap and re-safety wire with SAFETY WIRE.

**NOTE:** *If the filter is damaged, replace it with CLEANABLE 62MICRON FUEL FILTER (FX375-M).*

9. Place the fuel filter approximately midway inside the loop type clamp.
10. Confirm that when installing the filter, the arrow direction is the same as before and the correct in and out fittings are tightened in the appropriate inlet and outlet fittings.
11. Wipe away or clean any fuel which may have dripped inside the cabin.
12. Tighten the AN-6 fitting and tube coupling nut on the inlet and outlet sides of the filter. Torque fittings to 110-130 in-lbs.
13. Apply THREADLOCKER to the 10-32 bolt and torque to 25-30 in-lbs.
14. Turn on fuel valve, turn on master power, turn key to A position, and check for leaks.
15. Install baggage floor. (See "Baggage Floor Installation" on page 3-42.)
16. Install seat backs if previously removed. (See "Seat Back Installation" on page 3-51.)

#### VERIFICATION METHOD:

Complete engine test run and check for leaks. (See "Engine Test Run" on page 16-7.)

## 10.7 Fine Fuel Filter

### RELATED INFORMATION:

"Headliner Removal" on page 3-37

"Headliner Installation" on page 3-38

### 10.7.1 Maintenance Instructions

#### 10.7.1.1 Remove Fine Fuel Filter

Use the following instruction to remove the fine fuel filter.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

07 – Fuel System

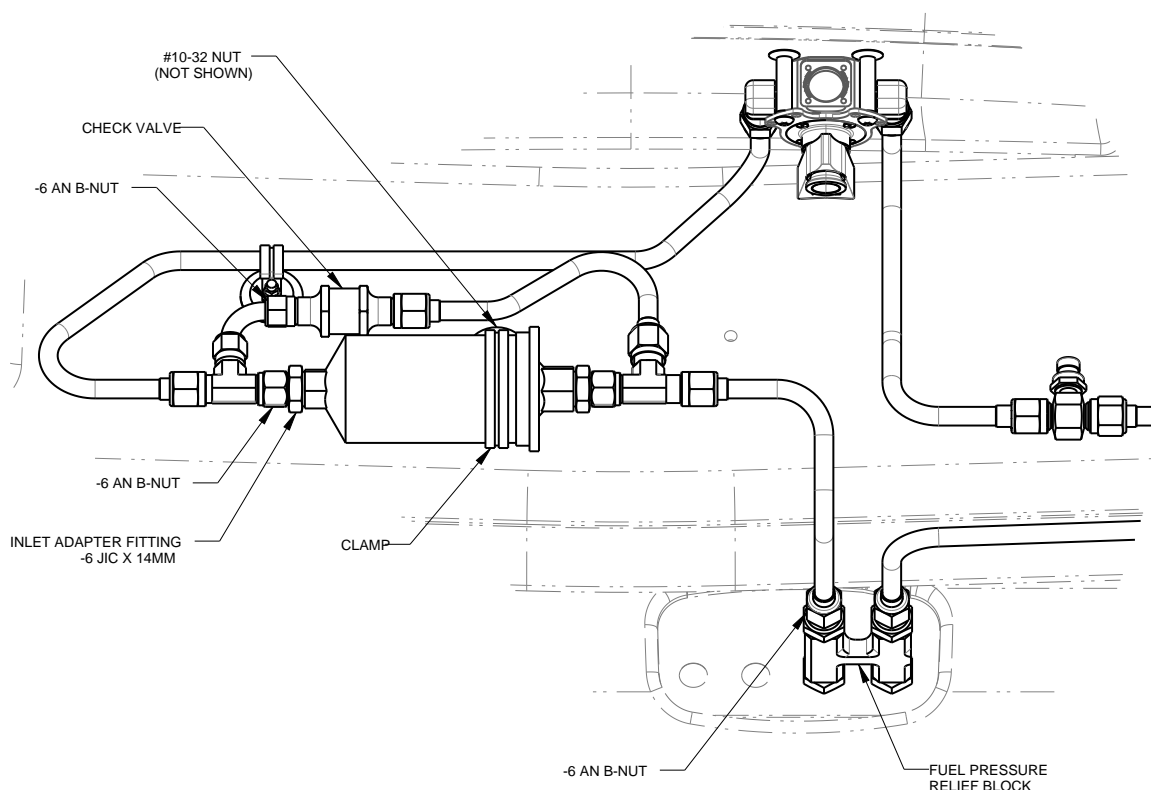
**Consumables**

None

#### TASK INSTRUCTIONS:

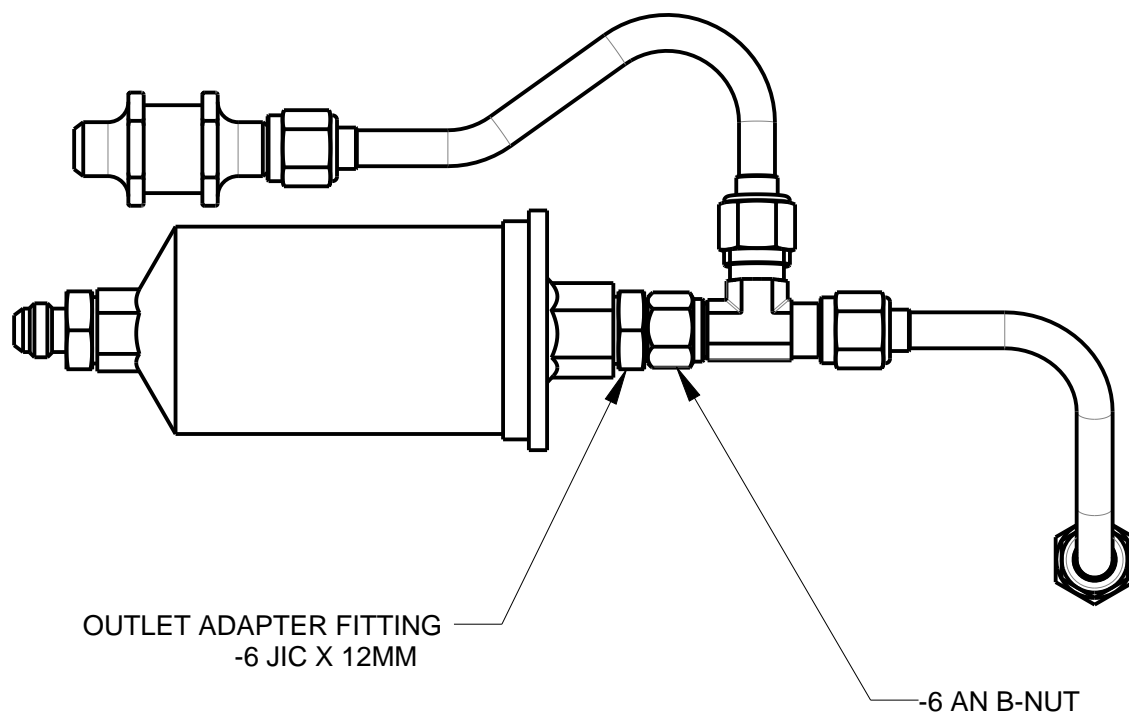
1. Remove headliner. (See "Headliner Removal" on page 3-37.)
2. Close the fuel shutoff valve.
3. Have a rag or container available to contain any fuel that leaks from the fuel lines and filter.
4. Use a 13/16 wrench to hold the union fitting at the fuel pressure relief block while loosening the adjacent -6 AN B-nut with an 11/16 wrench shown in Figure 10-12. Catch the fuel as it leaks from the joint.





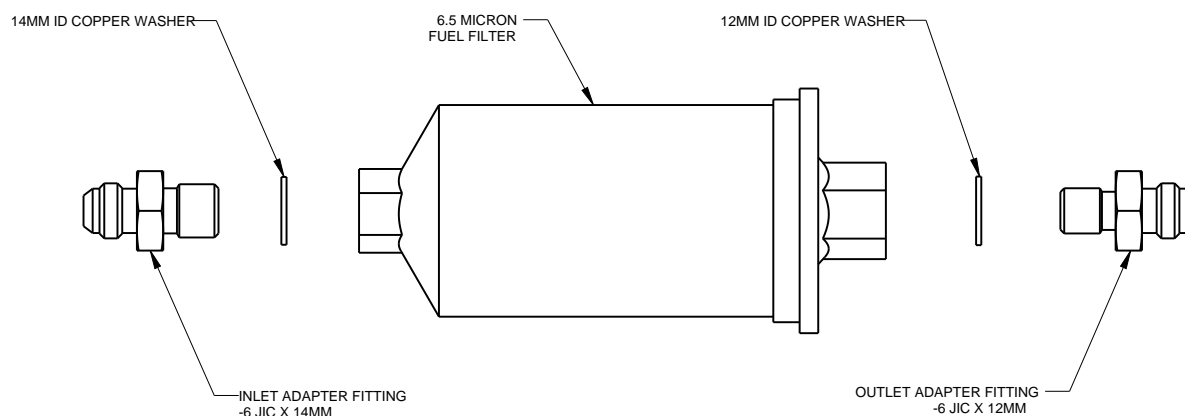
**FIGURE 10-12**  
FINE FUEL FILTER ASSEMBLY

5. Use a 15/16 wrench to hold the check valve while loosening the adjacent -6 AN B-nut with an 11/16 wrench in Figure 10-12.
6. Use a 1/4 wrench to remove the #10-32 nut holding the fuel filter clamp and remove the clamp.
7. At the fuel filter inlet, loosen the -6 AN B-nut with an 11/16 wrench while holding the 14mm adapter fitting with a 3/4 wrench.
8. Remove the fuel filter and attached plumbing and place on a clean work surface.
9. Wipe away or clean any fuel which may have dripped inside the cabin.
10. At the fuel filter outlet, loosen the -6 AN B-nut with an 11/16 wrench while holding the 12mm adapter fitting with a 3/4 wrench. See Figure 10-13.



**FIGURE 10-13**  
FINE FUEL FILTER AND ATTACHED PLUMBING

11. Use two 3/4 wrenches to remove the inlet adapter fitting from the old filter. Discard the 14mm washer. See Figure 10-14.



**FIGURE 10-14**  
FINE FUEL FILTER EXPLODED VIEW LOOKING AFT

12. Use 7/8 and 3/4 wrenches to remove the outlet adapter fitting from the filter. Discard the 12mm washer.

#### VERIFICATION METHOD:

Task is completed when the fine fuel filter has been removed.

#### RELATED INFORMATION:

"Install Fine Fuel Filter" on page 10-33  
"Headliner Removal" on page 3-37

### 10.7.1.2 Install Fine Fuel Filter

Use the following instruction to install the fine fuel filter.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

874060 (FILTER, FUEL, 6.5 MICRON)

**Aircraft System and Number**

07 – Fuel System

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Place a new 14mm ID copper washer, that came with the new filter, on the 14mm adapter fitting. Thread it into the new 6.5 MICRON FUEL FILTER. Torque to 260-280 in-lbs using two 3/4 wrenches. See Figure 10-14.
  2. Place a new 12mm ID copper washer, that came with the new filter, on the 12mm adapter fitting. Thread it into the new 6.5 MICRON FUEL FILTER. Torque to 180-200 in-lbs using a 7/8 and 3/4 wrench.
  3. Use a 3/4 wrench to hold the 12mm adapter fitting at the fuel filter outlet and a 11/16 wrench to torque the -6 AN B-nut to 110-130 in-lbs. See Figure 10-13.
  4. Locate the fuel filter assembly in place on the aircraft and loosely thread on the -6 AN B-nuts. See Figure 10-12.
  5. Position the fuel filter assembly so that there is 0.75 to 1.25-inch clearance between the top bend of the filter bypass tube and the carbon wing spar. (This slightly tipped back positioning ensures clearance to the headliner.) Snug the connecting -6 AN B-nuts finger tight.
  6. Install the B-clamp around the fuel filter, install the #10-32 nut and torque to 20 in-lbs with a 1/4 wrench, verifying that the specified filter orientation established in the last step has been maintained.
  7. Use a 3/4 wrench to hold the 14mm adapter fitting at the fuel filter inlet and a 11/16 wrench to torque the adjacent -6 AN B-nut to 110-130 in-lbs.
  8. Use a 15/16 wrench to hold the check valve and an 11/16 wrench to torque the adjacent -6 AN B-nut to 110-130 in-lbs.
  9. Use a 13/16 wrench to hold the union fitting at the fuel pressure relief block and an 11/16 wrench to torque the -6 AN B-nut to 110-130 in-lbs.
  10. Turn on fuel valve, turn on master power, turn key to A position, and check for leaks.
  11. Install headliner. (See "Headliner Installation" on page 3-38.)
- 

**VERIFICATION METHOD:**

Complete engine test run and check for leaks. (See "Engine Test Run" on page 16-7.)

**RELATED INFORMATION:**

"Remove Fine Fuel Filter" on page 10-30

"Headliner Installation" on page 3-38

"Engine Test Run" on page 16-7

## 10.8 Fuel Tank Vent Line

### 10.8.1 Maintenance Instructions

#### 10.8.1.1 Clear Fuel Tank Vent Line

Use the following procedure to clear the fuel tank vent line.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

07 – Fuel System

**Consumables**

None

---

##### TASK INSTRUCTIONS:

1. Locate the connection between the fuel cap fitting and routed through the fuselage to the left wing.
2. Remove the fuel cap.
3. Place an air hose nozzle inside the fuel cap fitting and close to the vent line.
4. Squeeze a couple of short bursts of air through the vent adapter into the vent line.

**NOTE:** Do not run a continuous burst of air, which would create positive pressure on the fuel tank. To prevent positive pressure, do not cap or seal the fuel cap opening in any way.

---

##### VERIFICATION METHOD:

Ensure air is exiting freely from the vent in the wing.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Fuel Systems" on page 3-13

# Chapter 11

## FUSELAGE AND VERTICAL TAIL

Fuselage and Vertical Tail Description .....	11-2
Fuselage and Vertical Tail General Maintenance.....	11-3
Canopy Removal.....	11-3
Canopy Installation.....	11-4
Seawings™ .....	11-7
Maintenance Instructions.....	11-7
Seawings™ Platform Tip Removal and Installation .....	11-7
Repair of Seawings™ Tip Attach Pins and Bushings .....	11-8
Water Rudder .....	11-11
Inspection Instructions .....	11-11
Water Rudder Actuator and Cables.....	11-11
Check Water Rudder Rigging .....	11-12
Maintenance Instructions.....	11-14
Replace Water Rudder.....	11-14
Removal of Water Rudder Cable .....	11-15
Installation of Water Rudder Cable .....	11-17

## 11.1 Fuselage and Vertical Tail Description

Structural units and associated components and members which make up the fuselage, cockpit, hull and keel, ballast provision, water rudder and water rudder guard, Seawings™, center wing section, IPS riser attachment(s), engine cowl and vertical tail including the air rudder and its hinges and counterbalance. Includes: skins, bulkheads, ribs, fuselage-to-wing fillets, door/canopy jambs, as well as integral or mounted aircraft hand-holds, tie downs and mooring cleats, mid, forward, and aft wing pin receptacles, and firewall structure with thermal protection material(s) as required.



## 11.2 Fuselage and Vertical Tail General Maintenance

### 11.2.1 Canopy Removal

Use the following procedure to remove the canopy.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

08 – Fuselage and Vertical Tail

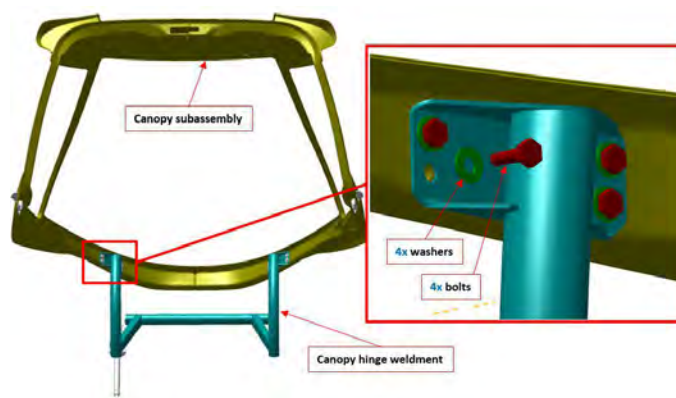
**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. With the canopy raised and supported, use a wrench to remove the eight AN4C6A bolts and 91950A029 washers that secure the ICA005811 canopy hinge weldment to the canopy frame. The bolts are threaded into blind nutplates. See Figure 11-1.



**FIGURE 11-1**  
BLIND NUTPLATES

2. Remove the canopy from the aircraft being careful not to scratch the canopy frame.

#### VERIFICATION METHOD:

The task is complete when the canopy has been removed.

#### RELATED INFORMATION:

- "Left Instrument Panel Top Panel Removal" on page 8-19
- "Right Instrument Panel Top Panel Removal" on page 8-17
- "Left Instrument Panel Top Panel Installation" on page 8-21
- "Right Instrument Panel Top Panel Installation" on page 8-18

## 11.2.2 Canopy Installation

Use the following procedure to install the canopy.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

**Aircraft System and Number**

08 – Fuselage and Vertical Tail

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove the left and right instrument panel top panels. (See “Left Instrument Panel Top Panel Removal” on page 8-19.) (See “Right Instrument Panel Top Panel Removal” on page 8-17.)
2. Move the canopy hinge weldment into the canopy-raised position.
3. Support and locate the canopy into position so that the attachment holes in the weldment line up with the bolt holes in the canopy frame.
4. Use a 7/16 wrench to loosely install the eight AN4C6A bolts and 9150A029 washers that secure the ICA005811 canopy hinge weldment to the canopy frame. Coat the bolts with Tef-Gel<sup>®</sup> prior to installation.
5. Tighten the bolts just enough that the canopy can be moved on the frame with some effort.
6. Have a helper with a 7/16 wrench get in the cockpit and close and latch the canopy.
7. Press inward on the canopy frame to align it. If moved too far, have the helper press outward on the canopy frame as needed. Working in this fashion, align the canopy flush with the surrounding fuselage surfaces.
8. Have a helper torque all eight attachment bolts to 42 in-lb<sub>f</sub> using the sequence shown in Figure 11-2.



**FIGURE 11-2**  
TORQUE ATTACHMENT BOLTS

9. Install left and right instrument panel top panels. (See “Left Instrument Panel Top Panel Installation” on page 8-21.) (See “Right Instrument Panel Top Panel Installation” on page 8-18.)

**VERIFICATION METHOD:**

Open and close the canopy several times, ensuring correct operation and fitment.

## RELATED INFORMATION:

- "Left Instrument Panel Top Panel Removal" on page 8-19
- "Right Instrument Panel Top Panel Removal" on page 8-17
- "Left Instrument Panel Top Panel Installation" on page 8-21
- "Right Instrument Panel Top Panel Installation" on page 8-18

## 11.3 Seawings™

### 11.3.1 Maintenance Instructions

#### 11.3.1.1 Seawings™ Platform Tip Removal and Installation

Remove and replace a Seawings™ platform tip. The tips are designed to be readily replaced in case of damage.

##### TASK INFORMATION:

###### Type of Maintenance

Line

###### Level of Certification

Owner/Pilot

###### Task Specific Training Required

No

###### Special Tools Required

None

###### Parts Required

ICA008108 (RH Seawings™ Tip)

ICA008109 (LH Seawings™ Tip)

###### Aircraft System and Number

08 – Fuselage and Vertical Tail

###### Consumables

None

##### TASK INSTRUCTIONS:

1. Use a 3/8 wrench to remove the single AN3-C5A attachment bolt and two NAS1149C0363R washers from inside the wheel well.
2. Firmly grasp the tip and pulling outward and aft, pull it off the Seawings™. There are four pins and sockets – two forward and two aft – that will slide apart as the Seawings™ tip is removed.
3. Inspect the four pins on the Seawings™, verifying that all are securely bonded.
4. Before installing the original or replacement tip, inspect its condition, verifying no cracks or other structural issues and that the four attachment bushings are in good condition and securely bonded in place.

5. With tip in hand, line up the four pins and slide the tip into place with a firm forward and inward push.
6. Install the AN3-C5A retaining bolt with two NAS1149C0363R washers inside the wheel well. Torque to 26 in-lb<sub>f</sub>

#### VERIFICATION METHOD:

Firmly grasp the Seawings™ tip and, tugging up/down and fore/aft, verify that it is securely attached and that there are no large open gaps between it and the Seawings™.

#### RELATED INFORMATION:

"Description" on page 20-2

"Repair of Seawings™ Tip Attach Pins and Bushings" on page 11-8

### 11.3.1.2 Repair of Seawings™ Tip Attach Pins and Bushings

Use the following procedure to repair the Seawings™ tip attach pins and bushings.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

ICA010317 Bushing (NAS77C3-012 is obsolete for new installations)

SS-M4-RB23-4 Pin

##### Aircraft System and Number

08 – Fuselage and Vertical Tail

##### Consumables

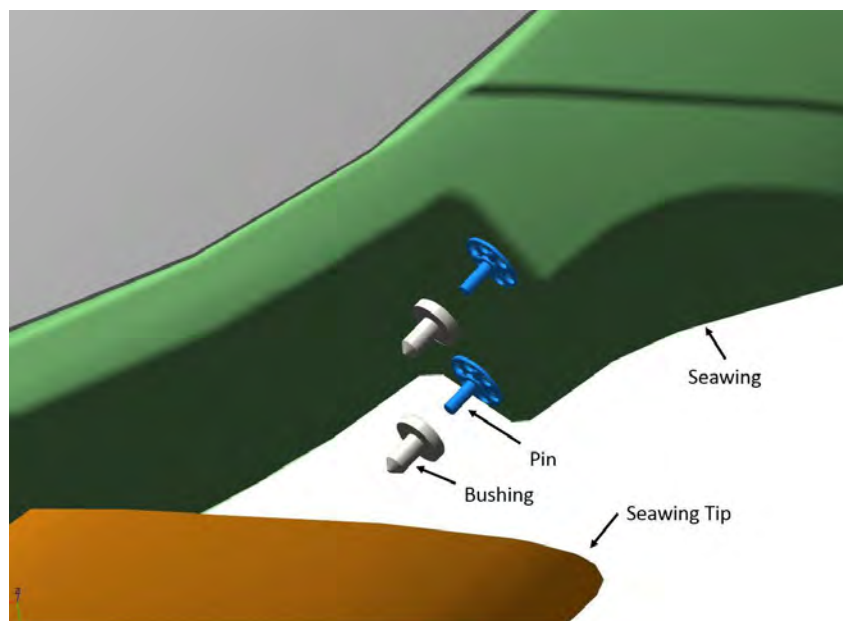
Isopropyl Alcohol

Plexus MA830 Adhesive

#### TASK INSTRUCTIONS:

1. Remove the Seawings™ tip using the removal procedure. (See "Seawings™ Platform Tip Removal and Installation" on page 11-7.)

2. Inspect all bushings in the Seawings™ and interfacing pins bonded to the Seawings™ for security, corrosion and wear. Remove any deficient bushing or pin.
3. If it is necessary to replace a ICA010317 bushing in the Seawings™ tip, proceed as follows:
  - a. Use Plexus MA830 adhesive.
  - b. Prepare all bond surfaces (bushing and carbon structure) by first cleaning with a cloth and isopropyl alcohol, then abrading with 120-180 grit aluminum oxide emery paper. Shiny bond surfaces should be dulled by sanding, but avoid unnecessary sanding of the carbon structure or excessive clearances could result.
  - c. Mix adhesive in accordance with manufacturer's instructions.
  - d. Apply adhesive to both bond surfaces, bushing, and carbon.
  - e. Install the bushing so that it's flange lies flush against the mating carbon structure. Ensure good adhesive squeeze-out around periphery of bushing.
  - f. Allow the adhesive to cure in accordance with manufacturer's instructions.
4. If it is necessary to replace an SS-M4-RB23-4 pin, proceed as follows:
  - a. Use Plexus MA830 adhesive.
  - b. Prepare all bond surfaces (pin and carbon structure) by first cleaning with cloth and isopropyl alcohol, then abrading with 120-180 grit aluminum oxide emery paper. Shiny bond surfaces should be dulled by sanding, but avoid unnecessary sanding of the carbon structure or excessive clearances could result.
  - c. Install the replacement pins in their mating bushings in the Seawings™ tip.
  - d. Apply polyester flash tape or other thin release-type tape to the Seawings™ tip around the bushings, so any excess adhesive that squeezes out of the joint will not bond the Seawings™ and tip together.
  - e. Mix adhesive in accordance with manufacturer's instructions.
  - f. Apply adhesive to both bond surfaces (pin's flange and carbon mating surfaces).
  - g. Install the Seawings™ tip. (See "Seawings™ Platform Tip Removal and Installation" on page 11-7.) Use adhesive tape as necessary to hold the tip in good alignment with Seawings™.
  - h. Allow the adhesive to cure in accordance with manufacturer's instructions.
  - i. Remove the Seawings™ tip. (See "Repair of Seawings™ Tip Attach Pins and Bushings" on page 11-8.)
  - j. Remove the protective tape and check the bond lines for signs of good adhesive squeeze out and bond integrity.
5. Install the Seawings™ tip. (See "Seawings™ Platform Tip Removal and Installation" on page 11-7.)

**VERIFICATION METHOD:**

Procedure is complete when Seawings™ tip has been attached.

**RELATED INFORMATION:**

"Seawings™ Platform Tip Removal and Installation" on page 11-7



## 11.4 Water Rudder

### 11.4.1 Inspection Instructions

#### 11.4.1.1 Water Rudder Actuator and Cables

The water rudder is actuated by cables. This task is used to inspect those cables and the water rudder.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

T20 Torx driver

Flashlight

Inspection mirror

**Parts Required**

None

**Aircraft System and Number**

08 – Fuselage and Vertical Tail

**Consumables**

None

---

##### TASK INSTRUCTIONS:

1. Use a T20 Torx driver to remove the aft bulkhead baggage panel attach screws. Remove the panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
2. Using a flashlight and inspection mirror as required, inspect attachment and integrity of the water actuator, return spring, cables, turnbuckles, and attach points. These parts are located behind the main landing gear bay, near the bottom of the hull. Pay particular attention to any corrosion that may be forming on the steel cables. Any significant visible rust or broken cable fibers are grounds for cable replacement. Now would be a good time to apply corrosion inhibiting oil to all cables in the area.
3. Repeat step 2, while having a second person actuate the water rudder to the extended and retracted position. While observing the actuator area, check for freedom of motion of all parts. The return spring should maintain tension on the cable throughout the entire motion. There should be no slack in the cable at any time.

4. While standing outside by the water rudder surface, have a helper move the rudder pedals through their full travel. Check for correct and full motion of the water rudder; it should rotate  $40\pm5^\circ$  about its steering axis in each direction when corresponding full rudder pedal input is applied. Now would be a good time to apply corrosion inhibiting oil to the cables at the front of the rudder.
5. Have the helper extend and retract the rudder while the rudder is checked for smooth and free motion. Verify that the water rudder retracts with its trailing edge within 1 inch of the bottom of the hull but does not rub on the hull.
6. Verify that when extended the water rudder surface can be deflected aft by hand, the deflection being allowed, but resisted by the return spring.
7. Re-install the aft baggage panel and retract the water rudder.

#### VERIFICATION METHOD:

The inspection is complete once the task instructions have been performed.

#### RELATED INFORMATION:

"Removal of Water Rudder Cable" on page 11-15

"Installation of Water Rudder Cable" on page 11-17

### 11.4.1.2 Check Water Rudder Rigging

The following section contains the information required to perform the A5 maintenance inspection on the water rudder.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

Water rudder travel protractor

A second person will be required to help with the inspection.

##### **Parts Required**

None

##### **Aircraft System and Number**

08 – Fuselage and Vertical Tail

##### **Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Attach the water rudder protractor and ensure that a zero reading coincides with zero water rudder deflection (aircraft longitudinal axis). Swing the water rudder surface back and forth by hand and verify it returns to a repeatable neutral position. Record neutral deflection.
  2. Have a helper push full left rudder pedal against the stop (stop contact at water rudder bellcrank should be heard). While holding very light (1-2 lb<sub>f</sub>) pressure towards neutral on the water rudder trailing edge to remove play, record maximum left water rudder surface travel.
  3. Have a helper push full right rudder pedal against stop (stop contact should be heard). While holding very light (1-2 lb<sub>f</sub>) pressure towards neutral on the water rudder trailing edge to remove play, record maximum right water rudder surface travel.
- 

RESULT:

**Reg. No. of Aircraft:**

**Date of Test:**

**Initials of Technician:**

Water Rudder	___ ° TEL (40±5°)	___ ° Neutral (0±.5°)	___ ° TER (40±5°)
--------------	-------------------	-----------------------	-------------------

**VERIFICATION METHOD:**

Record results and check against requirements.

## RELATED INFORMATION:

"Re-Rigging Rudder Pedals" on page 9-103

"Installation of Water Rudder Cable" on page 11-17

## 11.4.2 Maintenance Instructions

### 11.4.2.1 Replace Water Rudder

The following should be used to replace the water rudder.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

M81934/2-05C012 Bushing

ICA008933 Cable

MS51844-22 Swage Fitting

AN100C-3 Thimble

**Aircraft System and Number**

08 – Fuselage and Vertical Tail

**Consumables**

LOCTITE® 603

LOCTITE® 243™

## TASK INSTRUCTIONS:

1. Install bushing M81934/2-05C012 into water rudder using LOCTITE® 603, allow full cure prior to continuing assembly.
2. Route new cable (ICA008933, FN 017) around the water rudder pulley, through the guide tubes in the water rudder torque tube assembly, over the water rudder retraction pulleys, and through the tail boom up to the existing turnbuckles and eye bolts.
3. Assemble water rudder into flange on aircraft using 91950A029 on the outside, and bolting through the bushing ICA008934 and bolt with 97851A104 using LOCTITE® 243™ and torque to 1/4 turn past sharp rise in torque.

4. Ensure that the swaged ball on the water rudder cable is seated in the groove in the water rudder pulley.
5. Ensure that the cables are not twisted and that the end that will retract the water rudder when pulled is connected with the water rudder actuator.
6. Route and swage cables.  
*NOTE: Trim length of cable beyond swage fitting shall be .125-.50"*
7. Terminate cables with swage fittings (MS51844-22, FN003) and thimbles (AN100C-3, FN 004) through existing eye bolts (FN 006).

**VERIFICATION METHOD:**

Verify that the water rudder rotates horizontally  $40\pm5^\circ$  in both directions when the corresponding full rudder input is applied.

Verify that the water rudder rotates vertically  $90\pm1^\circ$  when extended.

**11.4.2.2 Removal of Water Rudder Cable**

The water rudder is actuated by cables. This task explains how to remove the water rudder cables in preparation for their replacement.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Cable Cutter

**Parts Required**

None

**Aircraft System and Number**

08 – Fuselage and Vertical Tail

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove Aft Bulkhead Baggage Panel (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.) to allow access to the water rudder actuator, extension spring, and connected cables.
  2. Use adhesive tape to attach a piece of string, about 8 ft long, to each water rudder cable, just aft of the swage sleeves. These strings will be used to pull the new cables through the correct path. Label the string connected to the actuator "A" and string connected to the spring end "S".
  3. Use a cable cutter to cleanly cut the two water rudder actuation cables at a point just aft of the swaged sleeves.
  4. Remove the extension turnbuckle assembly by removing the clevis pin that passes through its forward eye.
  5. Remove the retraction turnbuckle assembly by removing the clevis pin that passes through its forward eye.
  6. Remove the remnants of cable, sleeve, and thimble from the aft ends of both turnbuckle assemblies with a cable cutter.
  7. Remove the water rudder inspection panel.
  8. Remove the two MS24694C56 screws that hold the bottom water rudder hinge tang to the hull.
  9. Pull the water rudder assembly down and out of the hull. Doing so, will also pull the actuation cables, so be careful and guide the cables and strings aft and through the pulleys above the water rudder bellcrank. Once the strings are through and aft of the pulleys, remove them from the cables and secure them with tape to the internal structure for use during cable installation.
  10. Pull the cables the rest of the way through the hull fitting and free of the aircraft.
  11. Remove the binding post hardware at the extension pivot of the water rudder and separate the rudder from the pivot flange assembly (the carbon yoke piece that holds the rudder).
  12. Withdraw the cable from the pivot flange assembly.
  13. Remove the ICA008934 Pivot Bushing from the water rudder.
  14. Remove the two flush-head MS24694C53 screws that attach the cable puck to the water rudder, then remove two M81934/2-05C012 bearings from either side of water rudder.
  15. Pull the puck and cable from the rudder.
  16. Using a punch, remove the cable retaining pin 97855A510 from puck.
  17. Remove the cable from the puck by disengaging the swaged bull from the notch in the puck.
  18. Discard the old cable and clean all parts.
- 

**VERIFICATION METHOD:**

Confirm old cables are removed and parts are clean.

## RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Water Rudder Actuator and Cables" on page 11-11

### 11.4.2.3 Installation of Water Rudder Cable

The water rudder is actuated by cables. This task explains how to install the water rudder cables.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification****Task Specific Training Required**

No

**Special Tools Required**

Cable Swaging Tool

**Parts Required**

ICA008933 Cable

97855A510 Retaining Pin

MS24694C53 Screws

97851A104 Binding Post

91950A029 Washer

AN100C-3 Cable Thimble

**Aircraft System and Number**

08 – Fuselage and Vertical Tail

**Consumables**

Tef-Gel<sup>®</sup>

LOCTITE<sup>®</sup> 609<sup>™</sup>

LOCTITE<sup>®</sup> 243<sup>™</sup>

## TASK INSTRUCTIONS:

1. Route a new cable (ICA008933, FN 017) around the groove in the ICA008933 Water Rudder Puck, engaging the swaged ball on the cable in the mating recess in the puck.
2. Install a new retaining pin 97855A510 into puck.
3. Coat the sides of the puck, hardware, and cable that will be hidden, with a light coat of Tef-Gel<sup>®</sup> to help minimize water intrusion.
4. Slide the puck into the water rudder. The puck is properly oriented when the two mating screw holes align and the swaged ball faces aircraft aft when rudder is in the retracted position.

5. Coat two MS24694C53 screws with Tef-Gel<sup>®</sup> and install them through the water rudder, attaching it to the puck inside. Note that one screw installs from the left and one from the right. Torque these screws to 20 in-lb<sub>f</sub>.
6. Reinstall the two M81934/2-05C012 bearings M81934/2-05C012 in water rudder using LOCTITE<sup>®</sup> 609™.
7. Slide a ICA008934 Pivot Bushing into the pivot bore in the water rudder.
8. Verify that nylon tubes are still bonded to pivot flange and secure. Run cable through each one to make sure the cables slides through freely. If either of these are not OK, the nylon tubing will need to be replaced and rebonded.
9. Insert the cable ends into the Nylon tubes in the aft face of the pivot flange. The cable coming off the top of the puck inserts into the top tube, bottom into the bottom.
10. Pull the cable ends out through the top of the pivot flange while guiding the rudder into position with pivot bores aligned. Pay special attention as to not kink the cable.
11. Connect the water rudder to the pivot flange with a 97851A104 Binding Post, with a 91950A029 Washer under each head. Use LOCTITE<sup>®</sup> 243™ on the threads and torque to 20 in-lb<sub>f</sub>.
12. Measure each cable from the top face of the pivot flange torque tube and mark with a paint marker. The cable on aircraft right-hand side gets a mark at 71-9/16" from the top face. The cable on aircraft left-hand side gets a mark at 70-1/4" from the top face.
13. Insert the two cable ends up through the water rudder bellcrank assembly in the hull. There is a fore/aft bushing in the bore of the water rudder bellcrank, visible from the bottom. The rudder right-side cable must pass to the right of the bushing and the left cable to the left of it.
14. Pull cable ends out through the water rudder access panel and keep pulling while guiding the water rudder assembly into position, pushing its steering shaft up into the water rudder bellcrank assembly. Use caution to not damage the shaft seal.
15. Install the ICA009078 Bottom Pivot Tang with two MS24694C56 screws coated with Tef-Gel<sup>®</sup>. Torque these to 26 in-lb<sub>f</sub>.
16. Tape the cable that comes off the top of the water rudder puck to the previously installed "A" string and the cable end that comes off the bottom of the puck to the "S" string. Use the strings to pull the cable ends under the pulley cable guard bolt, over the water rudder retraction pulleys, and once around the pulleys, pull the cable ends out through the water rudder access panel. Remove the string from the cable ends temporarily (keep them marked).

**NOTE:** *It helps to pull one cable at a time through the pulley, swage it, then go to the actuator bay and connect it before doing the other. This prevents any accidental crossing of cables.*

17. Terminate the two cable ends as follows:
  - a. Spread open an AN100C-3 cable thimble just enough to slide it through the aft cable eye of the retraction turnbuckle assembly. Repeat this with the aft cable eye of the extension turnbuckle assembly.
  - b. Feed the end of the retraction cable first through one side of an MS51844-22 sleeve then through the retraction turnbuckle eye from the previous step, then back around through the other end of the sleeve. Repeat this for the extension end of the cable and its turnbuckle.
  - c. Find the swage location mark on the retraction cable end. Position the cable so that the center mark is located at the center point of the thimble of the retraction turnbuckle



- assembly and tighten the cable by drawing the free end through the sleeve and running the sleeve up against the thimble.
- d. Verify that the cable is tight around the thimble, the sleeve is hard against the thimble and the mark on the cable is located on the center apex of the thimble, then use a swaging tool to swage the sleeve. Use a go-no-go gauge to verify a correct swage.
  - e. The length of the free end of the cable beyond the edge of the swage fitting should be 125-.50" when finished.
  - f. Repeat steps c-e with the extension end of the cable.
18. Use adhesive tape to attach cable end to the appropriate string used earlier and use these strings to pull the cable ends up to the retraction actuator and spring.
  19. Ensure that the cables are not twisted and that the "retraction" end will connect to the water rudder actuator and the "extension" end to the extension spring.
  20. Attach the retraction turnbuckle assembly by inserting the clevis pin through its forward eye, connecting it to the cheek plates attached to the actuator. Install an NAS1149CN616R washer under the cotter pin. Insert and bend a new MS24665-151 cotter pin in the clevis pin per standard practice.
  21. Attach the extension turnbuckle assembly by slipping its forward eye onto the aft hook end of the extension spring.
  22. Adjust the turnbuckles per rigging procedure. (See "Inspect Yaw Rigging" on page 9-85.)
- 

#### VERIFICATION METHOD:

Perform the Water Rudder Actuator and Cables inspection and the Water Rudder Rigging Check procedure. (See "Installation of Water Rudder Cable" on page 11-17.) (See "Water Rudder Actuator and Cables" on page 11-11.)

#### RELATED INFORMATION:

- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Check Water Rudder Rigging" on page 11-12
- "Water Rudder Actuator and Cables" on page 11-11



# Chapter 12

## HORIZONTAL TAIL

Horizontal Tail Description .....	12-2
Troubleshooting .....	12-3
Horizontal Tail .....	12-3
Inspect Empennage Skin .....	12-4
Horizontal Tail General Maintenance .....	12-6
Horizontal Tail Removal and Installation .....	12-6
Remove Horizontal Tail Tip Lock Switches .....	12-6
Air Rudder Removal .....	12-9
Elevator Pushrod Removal .....	12-10
Horizontal Tail Removal .....	12-11
Horizontal Tail Installation .....	12-13
Elevator Pushrod Installation .....	12-14
Air Rudder Installation .....	12-15
Install Horizontal Tail Tip Lock Switches .....	12-16
Horizontal Tail Tip Pin .....	12-19
Inspection Instructions .....	12-19
Measure Horizontal Tail Tip Anti Rotation Pin Wear .....	12-19
Maintenance Instructions .....	12-20
Horizontal Tail Tip Pin .....	12-20

## 12.1 Horizontal Tail Description

Horizontal tail includes the structure of the elevator control surface. Includes: skins, ribs, webs, hinges and counterbalance.

## 12.2 Troubleshooting

### 12.2.1 Horizontal Tail

The following section contains the information required to check the horizontal tail for excessive mounting play.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove horizontal tail tips.
2. Check horizontal tail for play in forward-aft direction by applying load to the outboard side of horizontal tail forward and aft.

The joint between the vertical tail and the horizontal tail should maintain form and gapping as well.

3. Check horizontal tail for play in up-down direction by applying load to the outboard side of tail up and down.

The joint between the vertical tail and the horizontal tail should maintain form and gapping as well.

4. Install horizontal tail tips and repeat play steps 2 and 3.
  5. Examine the tips and tail for excessive play. Tips should feel secure without relative motion to the tail.
- 

#### VERIFICATION METHOD:

Confirm results are within acceptable limits.

## 12.2.2 Inspect Empennage Skin

Use the following to inspect the Horizontal Tail Empennage skin for damage/delaminations.

### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

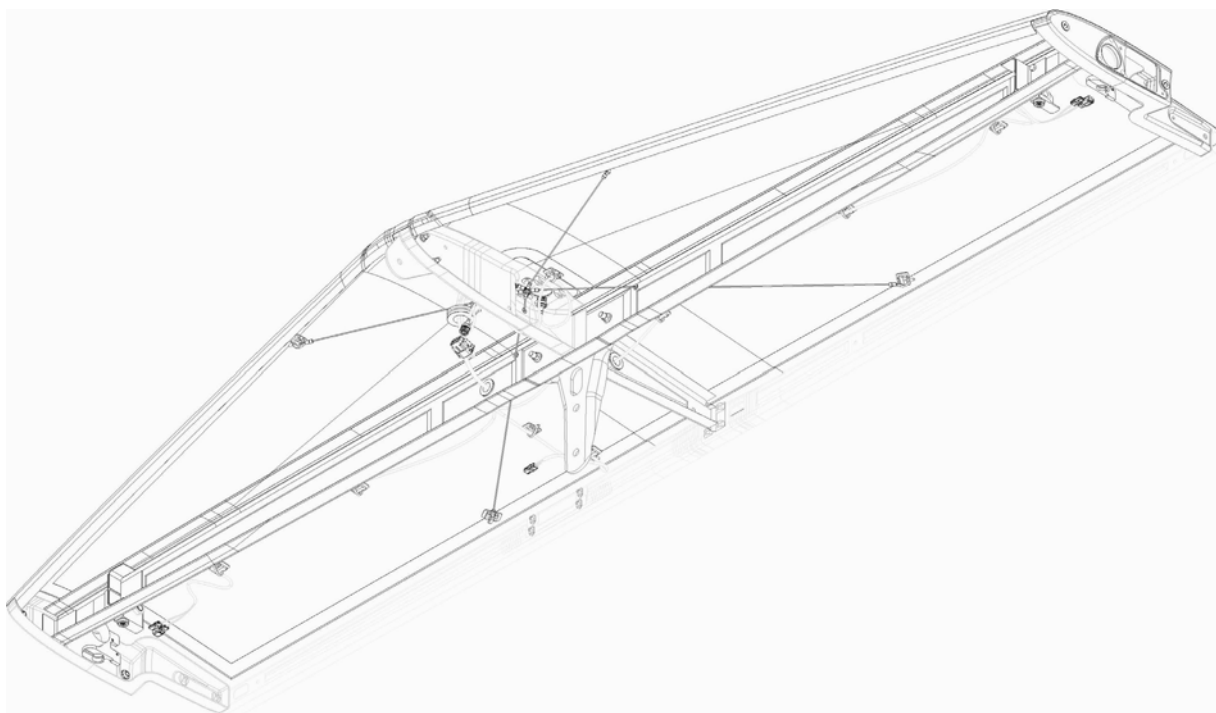
None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

None



**FIGURE 12-1**  
INTERNAL STRUCTURAL LAYOUT OF HT (LOWER SKIN REMOVED)

---

**TASK INSTRUCTIONS:**

1. Conduct a tap test on all horizontal tail skins over bond lines for the main and aft HT spar. (See "Manual Tap Test" on page 3-55.)
  2. Conduct a tap test on all horizontal tail skins over bond lines for center and tip ribs.
  3. Remove horizontal tail tip access panels. Using a flashlight, visually inspect bond lines and structure for damage and cracks.
- 

**VERIFICATION METHOD:**

Tap testing described will verify whether there is damage or delaminations.

**RELATED INFORMATION:**

"Manual Tap Test" on page 3-55

## 12.3 Horizontal Tail General Maintenance

### 12.3.1 Horizontal Tail Removal and Installation

Use the following procedures to remove and install the horizontal tail.

#### 12.3.1.1 Remove Horizontal Tail Tip Lock Switches

Use the following procedure to remove the two horizontal tail tip lock switches.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

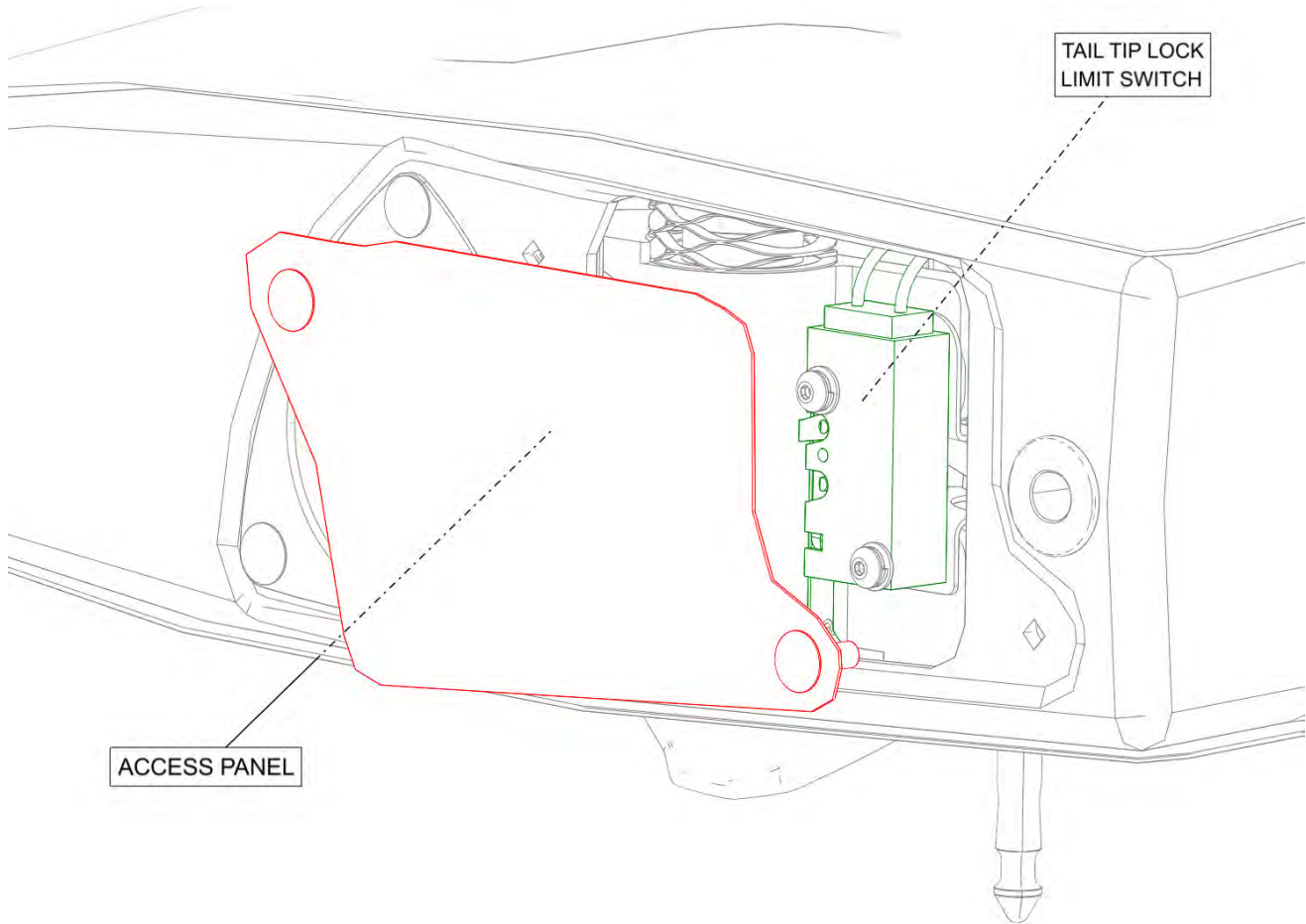
None

---

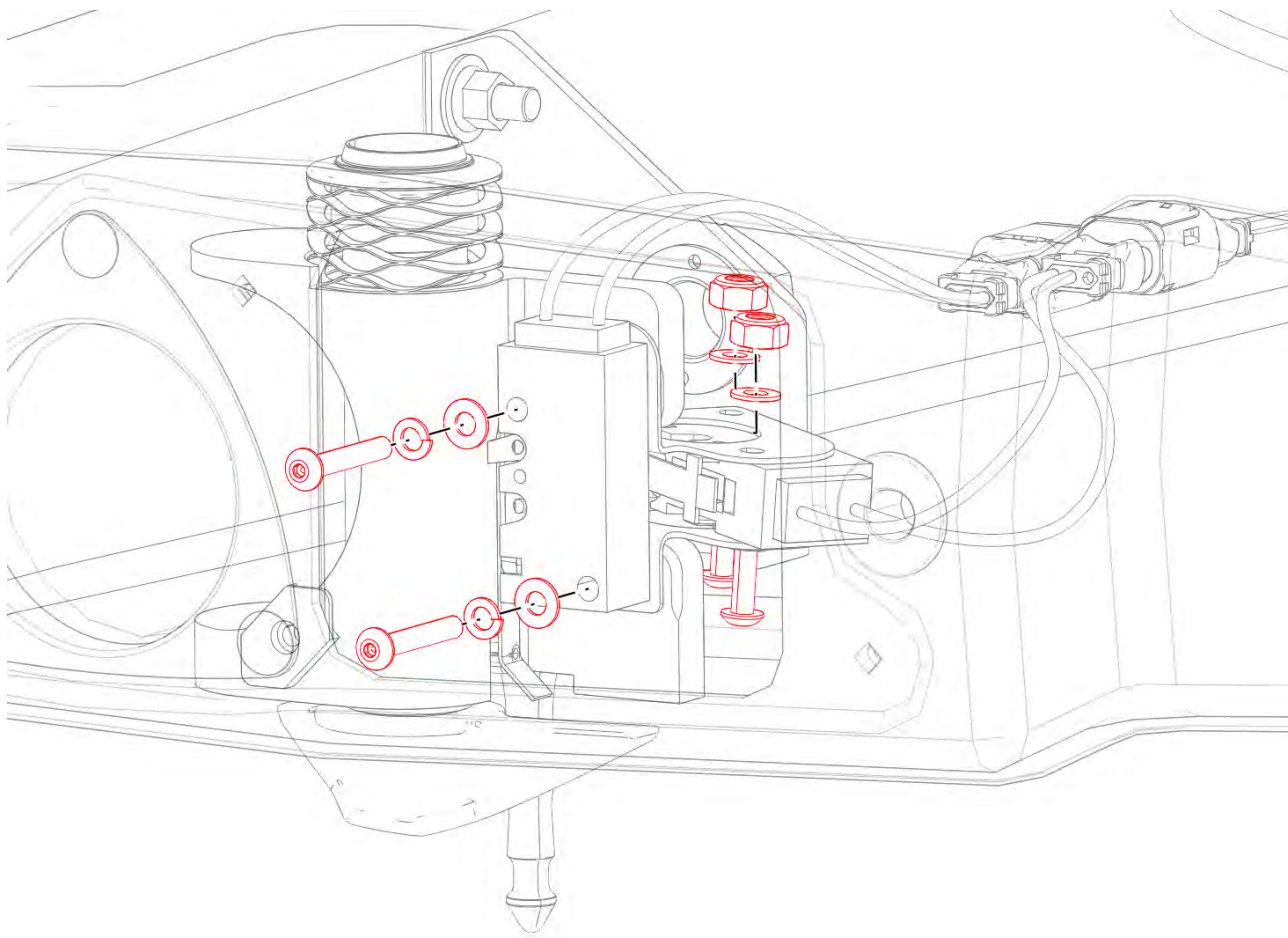
##### TASK INSTRUCTIONS:

1. Remove horizontal tail tip access panel. Keep screws for reinstallation. (See Figure 12-2.)



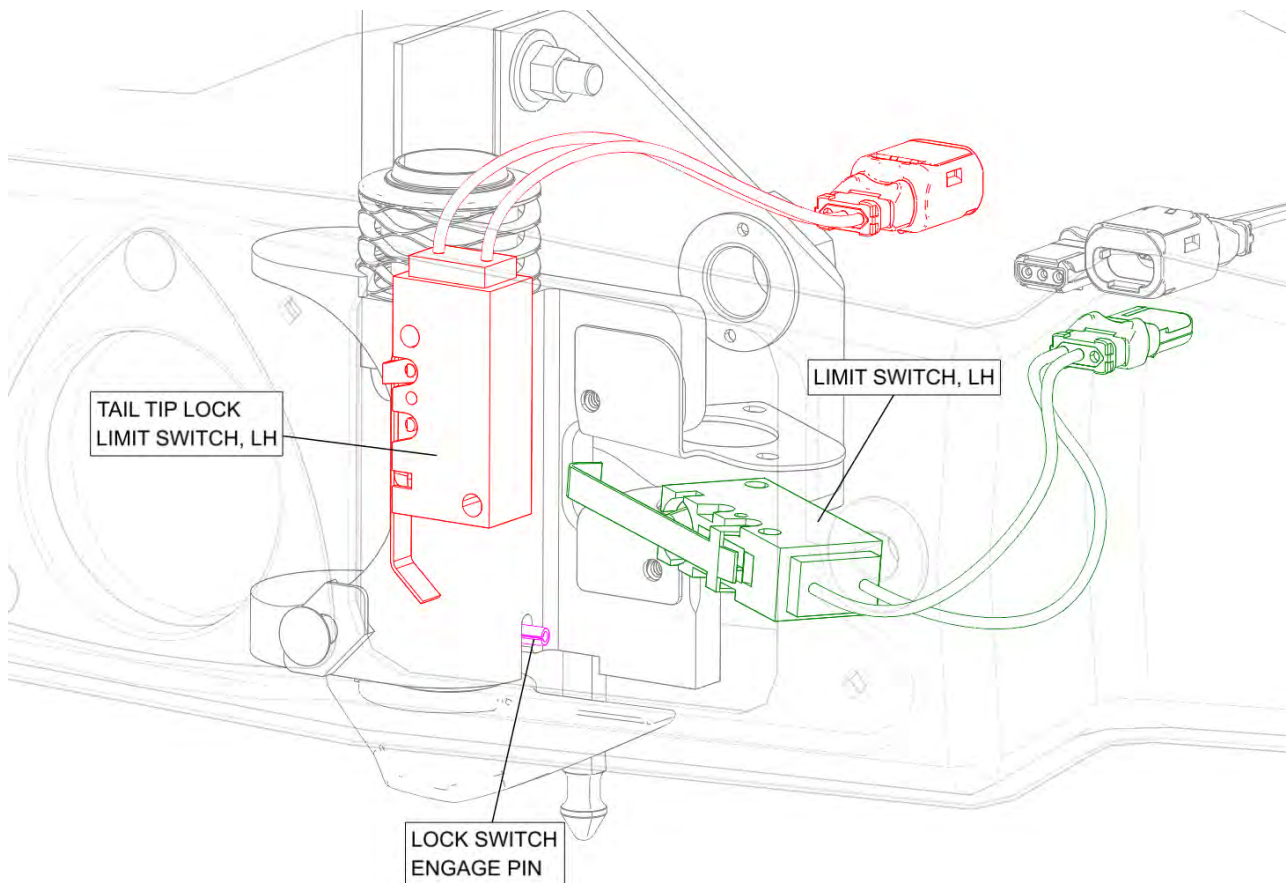
**FIGURE 12-2****REMOVE HORIZONTAL TAIL TIP ACCESS PANEL (LH SHOWN, RH OPPOSITE)**

2. Remove the 4 screws, washers, and nuts securing limit switches. Set aside for installation. (See Figure 12-3.)



**FIGURE 12-3**  
REMOVE SCREWS SECURING SWITCHES

3. Unplug and remove limit switches from wiring harness. (See Figure 12-4.)



**FIGURE 12-4**  
REMOVE SWITCHES FROM WIRING HARNESS

**VERIFICATION METHOD:**

Once the two limit switches are completely removed from horizontal tail, this task is complete.

**RELATED INFORMATION:**

"Horizontal Tail Removal" on page 12-11

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Install Horizontal Tail Tip Lock Switches" on page 12-16

### 12.3.1.2 Air Rudder Removal

Use these instructions to remove the air rudder.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

None

The air rudder can be removed separately from the elevator pushrod and the horizontal tail.

---

**TASK INSTRUCTIONS:**

1. Remove air rudder access panel. (below rudder; See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
  2. Disconnect rudder pushrod from water rudder bell crank by removing the AN3C10A bolt.
  3. Deflect rudder to the left and working through the cutout in the skin at the root of the rudder, remove the AN3C6A bolt and NAS1149C0332R washer attaching the rudder root fitting to the drive fitting in the fuselage.
  4. Remove the rudder by sliding it up along the hinge disengaging the upper rudder hinge pin from hinge plate in the VT, and separating the engagement at the lower drive lugs.
- 

**VERIFICATION METHOD:**

Once the air rudder is completely detached from the aircraft, this task is complete.

**RELATED INFORMATION:**

"Horizontal Tail Removal" on page 12-11

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

### 12.3.1.3 Elevator Pushrod Removal

Use these instructions to remove the elevator pushrod.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

None

The elevator pushrod can be removed separately from the horizontal tail and the air rudder.

---

**TASK INSTRUCTIONS:**

1. Remove the aft ME000640 surface plug at the top right side of the VT tip.
  2. Remove the MS21043-3 nut, AN3C11A bolt and NAS1149C0332R washers that attach the aft end of the pitch pushrod to the elevator horn.
  3. Working through the aft small circular hole in the top right side of VT tip, remove the AN3C7A bolt and NAS1149C0332R washer that connects the forward end of the pitch pushrod to the pitch bellcrank. The bolt is threaded into a nutplate.
  4. Slide the final pitch pushrod aft through the hole at the aft end of the VT-HT joint fairing, and remove it from the aircraft.
- 

**VERIFICATION METHOD:**

Once the elevator pushrod is completely detached from the aircraft, this task is complete.

**RELATED INFORMATION:**

"Horizontal Tail Removal" on page 12-11

### 12.3.1.4 Horizontal Tail Removal

Instructions for removing the Horizontal Tail.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

None

Must complete air rudder removal and elevator pushrod removal in order before completing the horizontal tail removal. (See “Air Rudder Removal” on page 12-9.) (See “Elevator Pushrod Removal” on page 12-10.)

---

**TASK INSTRUCTIONS:**

1. Prepare a way to support the horizontal tail just above the vertical tail once the two are separated. This can be with padded scaffolding, ladders, or with two helpers.
2. Remove the forward ME000640 surface plug at the top right side of the vertical tail tip.
3. Remove the safety wire from the heads of the aft vertical tail/horizontal tail attach bolts.
4. At the forward vertical tail/horizontal tail attach, accessed through the forward access hole on the right side of the vertical tail tip, remove the AN4C10A bolt and NAS1149C0432. The bolt threads into a nutplate.
5. Remove the two AN4CH10A drilled-head bolts and NAS1149C0432 washers from the aft vertical tail/horizontal tail joint. These bolts thread into nutplates in the vertical tail spar.

**CAUTION:** *The horizontal tail will not be attached at this point.*

6. Carefully raise the horizontal tail a few inches above the vertical tail, feeding the two wire harnesses through the vertical tail tip rib to gain slack. Support the horizontal tail in the position.
  7. Disconnect the multi-pin wire connector and coaxial cable connectors at the vertical tail/horizontal tail joint.
  8. Remove the horizontal tail.
- 

**VERIFICATION METHOD:**

Once horizontal tail is completely detached from the aircraft, this task is complete.

## RELATED INFORMATION:

- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Horizontal Tail Installation" on page 12-13
- "Elevator Pushrod Removal" on page 12-10
- "Air Rudder Removal" on page 12-9
- "Rigging Pitch Controls" on page 9-46
- "Remove Horizontal Tail Tip Lock Switches" on page 12-6
- "Install Horizontal Tail Tip Lock Switches" on page 12-16

### 12.3.1.5 Horizontal Tail Installation

Use these instructions to install the horizontal tail.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

None

For the steps involved in removing the horizontal tail, See "Horizontal Tail Removal" on page 12-11.

---

**TASK INSTRUCTIONS:**

1. Verify that the final pitch pushrod and air rudder are not installed. The pushrod passes through the horizontal tail aft attach fitting and so it cannot be in place during horizontal tail installation.
2. Lift horizontal tail into position on top of the vertical tail and support it just above its final position with padded scaffolding, ladders, or with two helpers.
3. Connect the multi-pin wire connector and coaxial cable connectors at the vertical tail/horizontal tail joint.
4. Lower the horizontal tail into position so that the composite fitting projecting down from the horizontal tail lies flush with the vertical tail spar. Use care to avoid pinching the electrical cables; feed slack in cables through hole in top vertical tail rib.

5. In two locations on the aft vertical tail/horizontal tail joint, install an AN4CH10A drilled-head bolt with two NAS1149C0432 washers under the head. Thread the bolts into the nutplates in the vertical tail finger tight.
6. At the forward vertical tail/horizontal tail attach, accessed through the forward access hole on the right side of the vertical tail tip, install one AN4C10A bolt with one NAS1149C0432 washer under the head. Thread the bolt into the nutplate finger tight. The bolt threads into a nutplate.
7. Verify the assembly looks correct with no pinched cables.
8. Tighten all three attach bolts at 53 lb-in.
9. Safety wire the heads of the aft attach bolts together using MS20995C32 safety wire (reference: AC 43.13-1B).
10. Install an ME000640 plug into the forward access hole on the right side of the VT tip.

#### VERIFICATION METHOD:

The task is complete when the horizontal tail has been installed and secured into position. Proceed to Elevator Pushrod Installation. (See "Elevator Pushrod Installation" on page 12-14.)

#### RELATED INFORMATION:

- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Horizontal Tail Removal" on page 12-11
- "Elevator Pushrod Installation" on page 12-14
- "Air Rudder Installation" on page 12-15
- "Rigging Pitch Controls" on page 9-46

### 12.3.1.6 Elevator Pushrod Installation

Use these instructions to install the elevator pushrod after the horizontal tail has been installed.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**



## 09 – Horizontal Tail

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Slide the final pitch pushrod forward through the hole at the end of the aft end of the vertical tail/horizontal tail joint fairing, fork end first.
2. Position the forward end of the pushrod so that its fork engages the pitch bellcrank with holes aligned.
3. Working through the aft small circular hole in the top right side of the vertical tip, install an AN3C7A bolt with an NAS1149C0332R washer under its head through the pushrod fork, attaching it to the bellcrank. The bolt threads into a nutplate. Torque to 26 in-lb<sub>f</sub>.
4. Position the rodend at the aft end of the pitch pushrod so that it inserts into the elevator horn with holes aligned.
5. Install an AN3C11A bolt with one NAS1149C0332R washer under its head through the elevator horn, attaching it to the pushrod. Slide an NAS1149C033R washer over the threaded end of the bolt, then install an MS21043-3 nut. Torque to 26 in-lb<sub>f</sub> and check that hardware is secure.
6. Install an ME000640 plug into the aft access hole on the right side of the vertical tail tip.

**VERIFICATION METHOD:**

Task is complete when elevator pushrod is installed. Proceed to Air Rudder Installation. (See "Air Rudder Installation" on page 12-15.)

**RELATED INFORMATION:**

"Horizontal Tail Installation" on page 12-13

**12.3.1.7 Air Rudder Installation**

Use these instructions to install the air rudder after the elevator pushrod had been installed.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

Tef-Gel®

**TASK INSTRUCTIONS:**

1. Clean mating surfaces of rudder and fuselage drive lugs, then lubricate them with Tef-Gel®.
2. Slide rudder down along the hinge line to install, engaging upper rudder hinge pin with hinge plate in vertical tail, and engaging the lower drive lugs.
3. Deflect rudder to the left and working through the cutout in the skin at the root of the rudder, install an NAS1149C0332R washer and AN3C6A bolt, attaching rudder root fitting to drive fitting in fuselage.
4. Connect rudder pushrod to rudder with an NAS1149C0363R washer and AN3C10A bolt.
5. Install air rudder access panel. (below rudder; See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)

**VERIFICATION METHOD:**

Task is complete when air rudder is installed.

**RELATED INFORMATION:**

"Horizontal Tail Installation" on page 12-13

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

**12.3.1.8 Install Horizontal Tail Tip Lock Switches**

Use the following procedure to install the two horizontal tail tip lock switches.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

ICA009628 Limit switch  
ICA009630 Limit switch, RH  
ICA009629 Limit switch  
ICA009631 Limit switch, LH

**Aircraft System and Number**

09 – Horizontal Tail

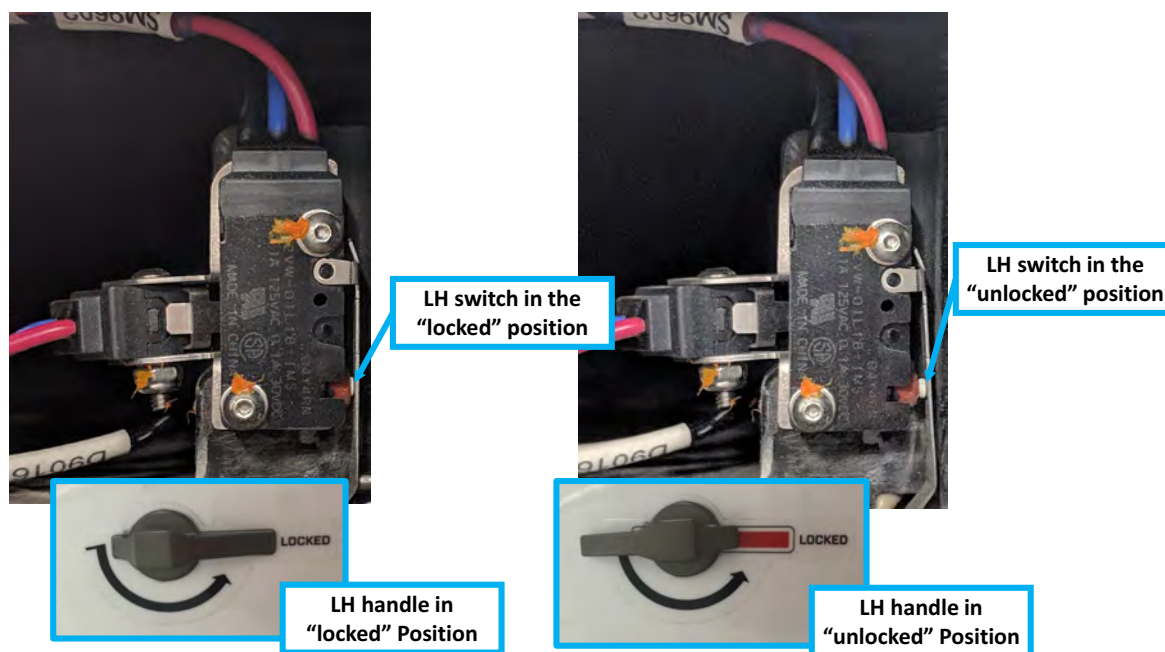
**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Connect wiring harness.
  - a. LH switches: D9013P to D9013J, D9014P to D9014J
  - b. RH switches: D9015P to D9015J, D9016P to D9016J
2. Install switches. (See Figure 12-3.) Torque LIMIT SWITCH screws to 8 in-lbs. Torque TAIL TIP LOCK LIMIT SWITCH screws to 2-4 in-lbs.
3. Verify the wing tip lock switch installation. Start with the wing tip lock in the “Unlocked” position. Rotate the lock handle to the “Locked” position. Verify the wing tip lock switch is engaged. The switch will click when it is fully engaged. Verify at the annunciator panel that “LOCK WING/TAIL” light is out. See Figure 12-5.



**FIGURE 12-5**  
VERIFY SWITCH POSITION

4. Reinstall access panel. See Figure 12-2. Torque screws to 6.5-8.0 in-lbs.

**VERIFICATION METHOD:**

- Once the two limit switches are installed and functional, this task is complete.

**RELATED INFORMATION:**

- "Horizontal Tail Removal" on page 12-11
- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Remove Horizontal Tail Tip Lock Switches" on page 12-6

## 12.4 Horizontal Tail Tip Pin

### 12.4.1 Inspection Instructions

#### 12.4.1.1 Measure Horizontal Tail Tip Anti Rotation Pin Wear

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

None

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

None

---

##### TASK INSTRUCTIONS:

1. Pull downward on the tip lock latch to remove it from the detent position and rotate the latch approximately 180°.
2. Grasp the tip and slide it away from main horizontal tail until the cylindrical spar clears the structure.
3. Support the horizontal tail tip on a soft protective surface.
4. Inspect the minimum pin diameter of the two anti-rotation pins that protrude from the surface of the tip's root rib. Inspection can be completed with a micrometer, caliper, or gage pin.

*NOTE: Pin diameter measurement needs to be taken on the circular surface of the pin, avoiding the flats used for removal.*

---

##### VERIFICATION METHOD:

Record results and check that wear is within these limits. Replace if outside limit (See "Horizontal Tail Tip Pin" on page 12-20.)

- Minimum pin diameter = .240"

**RELATED INFORMATION:**

"Horizontal Tail Tip Pin" on page 12-20

## 12.4.2 Maintenance Instructions

### 12.4.2.1 Horizontal Tail Tip Pin

Removing and replacing the horizontal tail tip pins.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

09 – Horizontal Tail

**Consumables**

LOCTITE® 220™

**TASK INSTRUCTIONS:**

1. Pull downward on the tip lock latch to remove it from the detent position and rotate the latch approximately 180°.
2. Grasp the tip and slide it away from main horizontal tail until the cylindrical spar clears the structure.
3. Support the horizontal tail tip on a soft protective surface.
4. Two retaining pins protrude from the surface of the tip's root rib. Each pin has flats to engage a 1/8 in open-end wrench. Remove a pin using a wrench to rotate the pin as one would a bolt or stud. Ensure that the wrench fits securely and turn the pin carefully to avoid rounding off the flats.

5. Install the new pin by screwing it in first by hand to ensure that the threads are engaging properly, then torque to 5-10 in-lb<sub>f</sub>. If this torque is insufficient to fully engage the pin, remove it, clean the threads and reinstall.
  6. Apply LOCITITE® 220™ to the base of the new pin after torquing. This is a wicking type of LOCITITE® and it will be drawn into the threads. Wipe off any excess.
- 

#### VERIFICATION METHOD:

After pin replacement, install the tip on the horizontal tail and verify correct fit and that the secure wing/tail light on the pilot's annunciator panel indicates correctly.

#### RELATED INFORMATION:

"Measure Horizontal Tail Tip Anti Rotation Pin Wear" on page 12-19





# Chapter 13

## INSTRUMENTS (AND AVIONICS)

Instruments and Avionics Description .....	13-3
Troubleshooting .....	13-4
Cockpit Instrument Markings .....	13-4
Transponder .....	13-8
Magnetic Direction Indicator Calibration .....	13-8
Annunciator Panel Diagnostic .....	13-9
Instruments and Avionics General Maintenance .....	13-15
Overhead Console Component Replacement .....	13-15
Replace Overhead Console Fuses .....	13-18
Calibrate AOA Pressure Transducer .....	13-25
Replace Instrument Panel Gauge .....	13-26
Multiple Systems Controller (MSC) Replacement .....	13-27
Remove Instrument Cluster .....	13-29
Install Instrument Cluster .....	13-31
Access Center Stack Instruments and Switches .....	13-32
Remove and Install Hour Meter .....	13-36
Annunciator Panel .....	13-38
Annunciator Panel Description .....	13-38
Annunciator Panel Diagram/Schematic .....	13-38
Inspection Instructions .....	13-38
Annunciator Panel Function .....	13-38
Maintenance Instructions .....	13-39
Replace Annunciator Panel .....	13-39
ELT .....	13-41
ELT Description .....	13-41
ELT Diagram/Schematic .....	13-41
Inspection Instructions .....	13-42
ELT Access .....	13-42
ELT Inspection and Function Check .....	13-44
ELT Battery Self Test .....	13-47
Maintenance Instructions .....	13-48
ELT Battery Replacement .....	13-48
ELT Remote Control Panel Battery Replacement .....	13-50

ELT Audio Alert Indicator Battery Replacement .....	13-52
ELT Transponder and Transmitter Replacement .....	13-54
ELT Transponder and Transmitter Antenna Replacement .....	13-54
ELT Transponder and Transmitter Antenna Assembly.....	13-55
VHF Comm Antenna.....	13-62
VHF Comm Antenna Description.....	13-62
VHF Comm Antenna Diagram/Schematic.....	13-62
Maintenance Instructions.....	13-62
Comm Antenna Removal.....	13-62
Comm Antenna Installation.....	13-63
DAC Memory Unit .....	13-65
Maintenance Instructions.....	13-65
DAC Memory Unit Removal .....	13-65
DAC Memory Unit Re-Installation.....	13-66
DAC Software Version.....	13-67
Verify DAC Software Version .....	13-67
Pitot-Static-Angle of Attack (AOA) System.....	13-70
Inspection Instructions .....	13-70
Pitot-Static-AOA Leak Test Procedures .....	13-70
Preston Pressure Pitot-Static Tester Set-Up.....	13-72
Pitot Static Leak Check Operation .....	13-75
AOA System Testing.....	13-79
Alternate Pitot-Static Leak Test Procedure .....	13-81
Maintenance Instructions.....	13-83
Verify Altimeter Calibration.....	13-83
Pitot-Static-AOA Leak Troubleshooting.....	13-84
Check MSC .....	13-84
Check Wing Connections.....	13-86

## 13.1 Instruments and Avionics Description

ICON's A5 aircraft components and avionics include all sensors, indicating instruments, flight data recorder, navigation and communication units. This also includes the pitch trim indicator, hour meter, RF antennae and cabling, communication equipment controls, headset jacks, intercom switches and auxiliary microphone input jack. The Angle of Attack indicating includes the sensor and pitot-static ports, and associated hose/tubing if pneumatically driven.

The Landing Gear Indicating are units included with position indicating and warning subsystems.

Engine Indicating are units, components, and associated subsystems that control, indicate, or analyze the operation of the engine external to the engine system, fuel flow rate sensing, transmitting and/or indicating, and not integral to the engine assembly or covered in the Propulsion system.

## 13.2 Troubleshooting

### 13.2.1 Cockpit Instrument Markings

Information in this section should be used to verify that markings shown in solid lines are legible.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

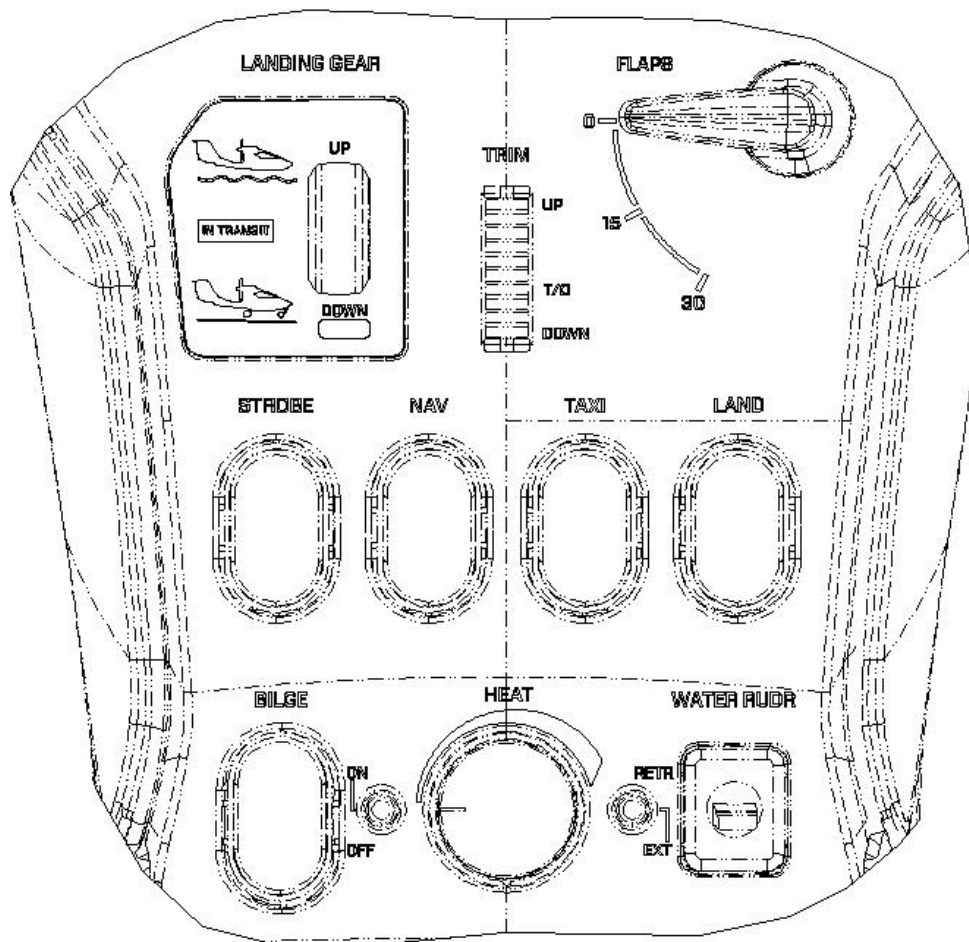
**Consumables**

None

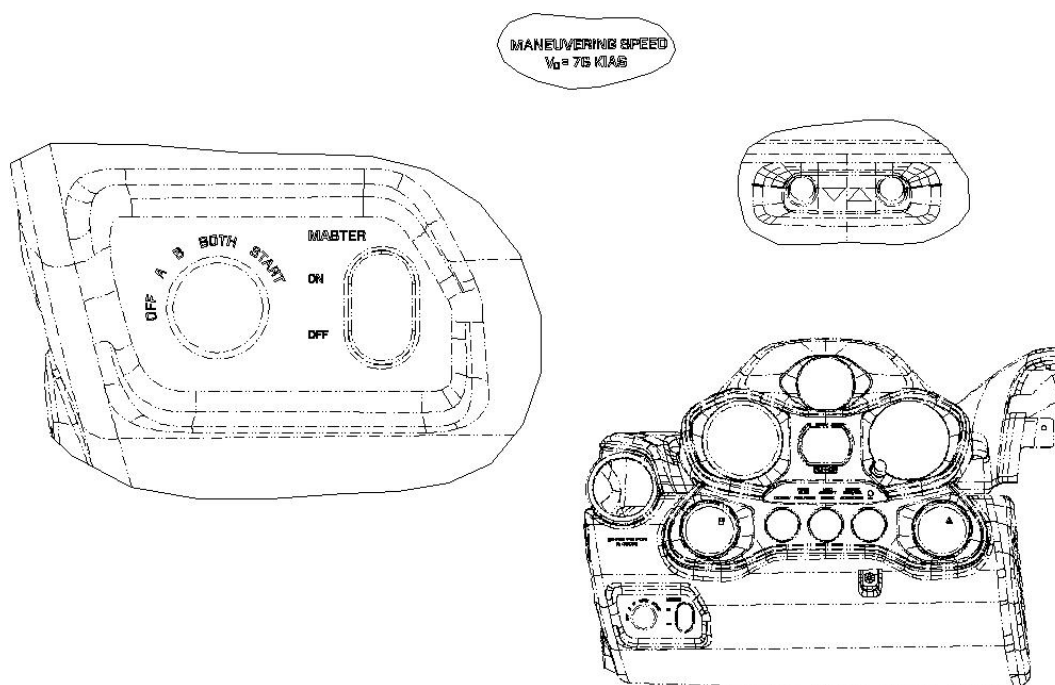
---

#### TASK INSTRUCTIONS:

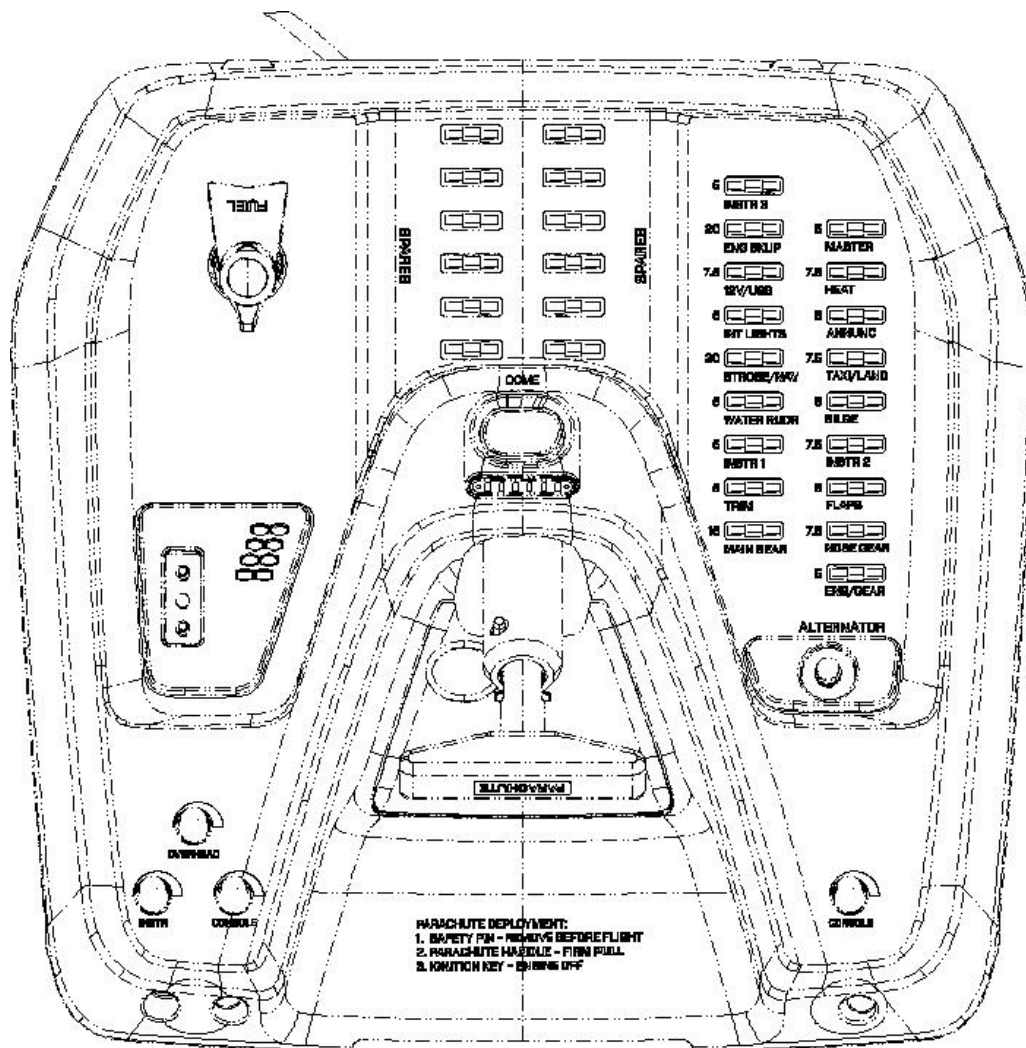
1. Center Console



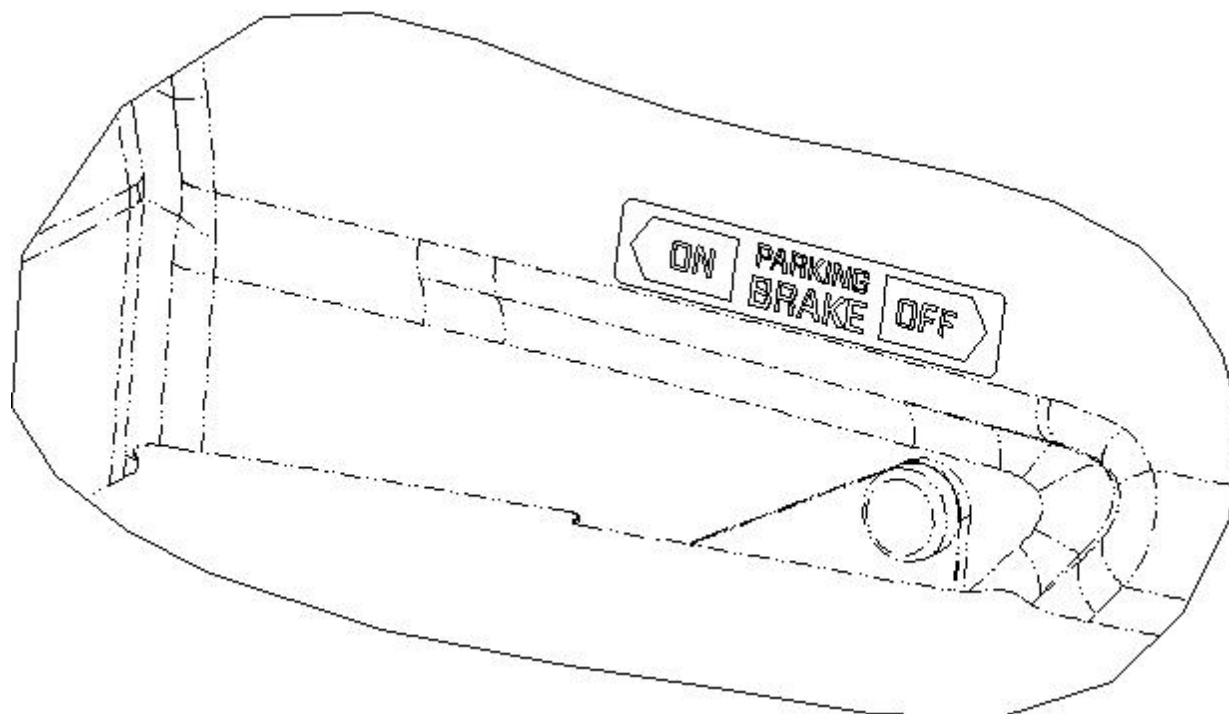
## 2. Left Crossbeam



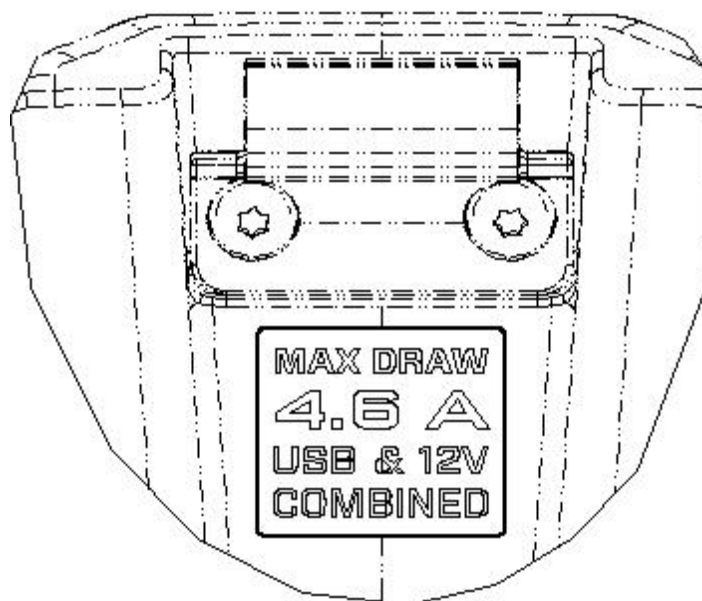
### 3. Overhead Console



### 4. Parking Brake



#### 5. Center Armrest Bucket



#### VERIFICATION METHOD:

Verify all lines and text are visible and legible.

### 13.2.2 Transponder

Contact an FAA approved technician or repair facility to perform transponder tests and inspections per 14 CFR Part 43, Appendix F.

#### RELATED INFORMATION:

"Interval Maintenance – Calendar Intervals" on page 3-5

### 13.2.3 Magnetic Direction Indicator Calibration

The following directions should be used to calibrate the magnetic direction indicator of the A5.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

##### Aircraft System and Number

10 – Instruments (and Avionics)

##### Consumables

None

The magnetic direction indicator is part of the attitude indicator (AI), which is located in the center of the flight instrument cluster.

If the magnetic direction indicator becomes erratic, when deviations in the heading are noticed, or due to new electrical interference, the instrument can be re-calibrated.

#### TASK INSTRUCTIONS:

1. Proceed when in flight and at least 3 minutes from turning on the instrument.
2. Press and hold the two buttons at the same time until the message "Gathering Mag Data" is shown on the display (approximately 10 seconds).

**NOTE:** *The display will rotate through the 3 screen modes until the message appears. The operation resets any previous compensation and the instrument begins to gather data for 10 minutes to perform the magnetic compensation.*



3. During the 10 minutes the instrument is gathering data, perform two standard 360° degree turns to the right and two standard 360° turns to the left.
4. When the 10 minutes is over, the instrument will show the message “Mag Data SAVED”.
5. The message will remain visible until the instrument has been restarted. While still flying, pull INSTR 1 fuse, pause, then re-insert.

*NOTE: During the re-calibration process, the instrument could behave erratically and should not be relied on for accurate directional indication.*

6. The instrument is now calibrated for the magnetic field of the aircraft. When INSTR 1 fuse is pulled, all gauges on the instrument panel will be INOP.
7. Compare magnetic direction indicator heading to GPS mag track.

#### VERIFICATION METHOD:

The magnetic direction indicator is considered calibrated when the AI heading and the GPS mag track are in alignment.

### 13.2.4 Annunciator Panel Diagnostic

This table explains how to decode the annunciator panel indicators. The indicator light illuminated is shown in column 1, the possible cause in column 2, and the remedy is given in column 3.

Trouble Light	Possible Cause	Remedy
<b>ENGINE</b>	LANE A minor fault. LANE B minor fault. LANE A & B minor faults.	Retrieve and review ECU data. See “ECU Troubleshooting” on page 16-9.
<b>LAND AIRCRAFT</b>  <b>+</b>  <b>ENGINE</b>	LANE A or B major fault.	

Trouble Light	Possible Cause	Remedy
<b>FUEL PRESS</b>	Low fuel pressure ( $35.5 \leq \text{FP} < 40.5$ )	Coarse Fuel Filter clogged.
		If lights turn on with full power/high altitude and goes away with reduced power/lower altitude when flying on a hot day, this can be a sign of vapor lock.
		Fuel leak.
		Fuel Pressure Regulator failure.
		Weak/Failed Fuel pump.
		Low fuel level.
	High fuel pressure ( $46.5 < \text{FP} \leq 50.0$ )	Fuel fine filter clogged.
		Blockage between regulator and fuel tank.
<b>LAND AIRCRAFT</b> +	Excessively Low fuel pressure ( $\text{FP} < 38.5$ )	See FUEL PRESS light trouble shooting section for low fuel pressure possible cause and remedy.
<b>FUEL PRESS</b>	Excessively High fuel pressure ( $\text{FP} > 50.0$ )	See FUEL PRESS light trouble shooting section for high fuel pressure possible cause and remedy.

Trouble Light	Possible Cause	Remedy
<b>ALTERNATOR</b>	Engine RPM less than 2400 after start.	Follow startup procedure. See “Engine Test Run” on page 16-7.
	Battery not charging with engine running.	Diagnose issue using wiring schematics. See “Electrical System Wiring Diagrams” on page 6-4.
	Low voltage on main bus (less than 13 VDC).	Diagnose issue using wiring schematics. See “Electrical System Wiring Diagrams” on page 6-4.
	Alternator B failure.	Replace alternator. See “Rotax 912 iS Sport (912 iS 2) Heavy Maintenance Manual” alternator replacement.
<b>ALTERNATOR Flashing</b>	DAC software.	Check and update DAC software version as necessary. See “Verify DAC Software Version” on page 13-67.
<b>LAND AIRCRAFT</b> + <b>ALTERNATOR</b> + <b>ENGINE</b>	Alternator A failure.	Replace alternator. See “Rotax 912 iS Sport (912 iS 2) Heavy Maintenance Manual” alternator replacement.
	Low voltage on main bus (less than 13 VDC)	Diagnose issue using wiring schematics. See “Electrical System Wiring Diagrams” on page 6-4.

Trouble Light	Possible Cause	Remedy
<b>LAND AIRCRAFT</b> <b>+</b> <b>ALTERNATOR</b> <b>+</b> <b>BATTERY</b> <b>+</b> <b>ENGINE</b>	Alternator A failure.	Replace alternator. See "Rotax 912 iS Sport (912 iS 2) Heavy Maintenance Manual" alternator replacement.
	Battery voltage is low (11-12 VDC).	Test battery and replace if necessary. See "Battery Removal and Installation" on page 6-37.
	Battery not charging with engine running.	Diagnose issue using wiring schematics. See "Electrical System Wiring Diagrams" on page 6-4.
	Alternator B failure.	Replace alternator. See "Rotax 9912 iS Sport (912 iS 2) Heavy Maintenance Manual" alternator replacement.
<b>BATTERY</b>	Battery voltage is low (11-12 VDC).	Test battery and replace if necessary. See "Battery Diagnostic" on page 6-32.
	Battery not charging with engine running.	See "Battery Diagnostic" on page 6-32.
	Master Switch is OFF.	Turn Master Switch ON.
	30 amp circuit breaker pulled.	Reset 30 amp circuit breaker.

Trouble Light	Possible Cause	Remedy
<b>LAND AIRCRAFT</b> <b>+</b> <b>BATTERY</b>	Battery voltage is very low (less than 11 VDC).	Test battery and replace. See "Battery Diagnostic" on page 6-32. See "Battery Removal and Installation" on page 6-37.
	Master Switch is OFF.	Turn Master Switch ON.
	30 amp circuit breaker is pulled.	Reset 30 amp circuit breaker.
	INSTR 3 fuse is blown.	Replace INSTR 3 fuses. See "Replace Overhead Console Fuses" on page 13-18.
	Electrical connection loose or disconnected.	Inspect electrical connections. Check wiring T9913 to 30 amp circuit breaker. Check for continuity between D9069P and D9069J at Fuse Box X3 connector pin 3. Inspect wiring through SM9062. Check wiring from T9110 30 amp circuit breaker to Overhead Console connector A2 between D9079P and D9079J. Check wiring T9054 from battery positive terminal to T9053 aircraft master solenoid A1. See "Electrical System Wiring Diagrams" on page 6-4.
<b>LAND AIRCRAFT</b> <b>+</b> <b>BATTERY</b> <b>+</b> <b>ALTERNATOR</b>	Alternator B failure.	Replace Alternator B.
	Battery voltage is low (11-12 VDC).	Test battery and replace if necessary. See "Battery Removal and Installation" on page 6-37.
	Battery not charging with engine running.	See "Battery Diagnostic" on page 6-32. See "Electrical System Wiring Diagrams" on page 6-4.

Trouble Light	Possible Cause	Remedy
<b>SECURE WING/TAIL</b>	LH or RH wing not secured.	Secure LH/RH wing. See "Install Left Wing" on page 17-12. See "Install Right Wing" on page 17-14.
	LH or RH wing lock switch malfunction	Check for wire connections at the switch. Verify actuator deactivates light switch. Replace winglock switch if necessary. See "Wing Lock" on page 17-24.
	LH or RH horizontal tail tip not secured.	Secure LH/RH HT tip. See "Horizontal Tail" on page 12-1.
	LH or RH horizontal tail tip lock switch malfunction.	Check for wire connections and switch deactivates light switch. Replace tail lock switch if necessary. See "Remove Horizontal Tail Tip Lock Switches" on page 12-6. See "Install Horizontal Tail Tip Lock Switches" on page 12-16.
<b>PURGE BILGE</b>	More than 1 gallon in bilge.	Run bilge pump. See "Check Bilge Pump Function" on page 6-42.

## 13.3 Instruments and Avionics General Maintenance

### 13.3.1 Overhead Console Component Replacement

Use this procedure to replace any indicated component mounted in the overhead console.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

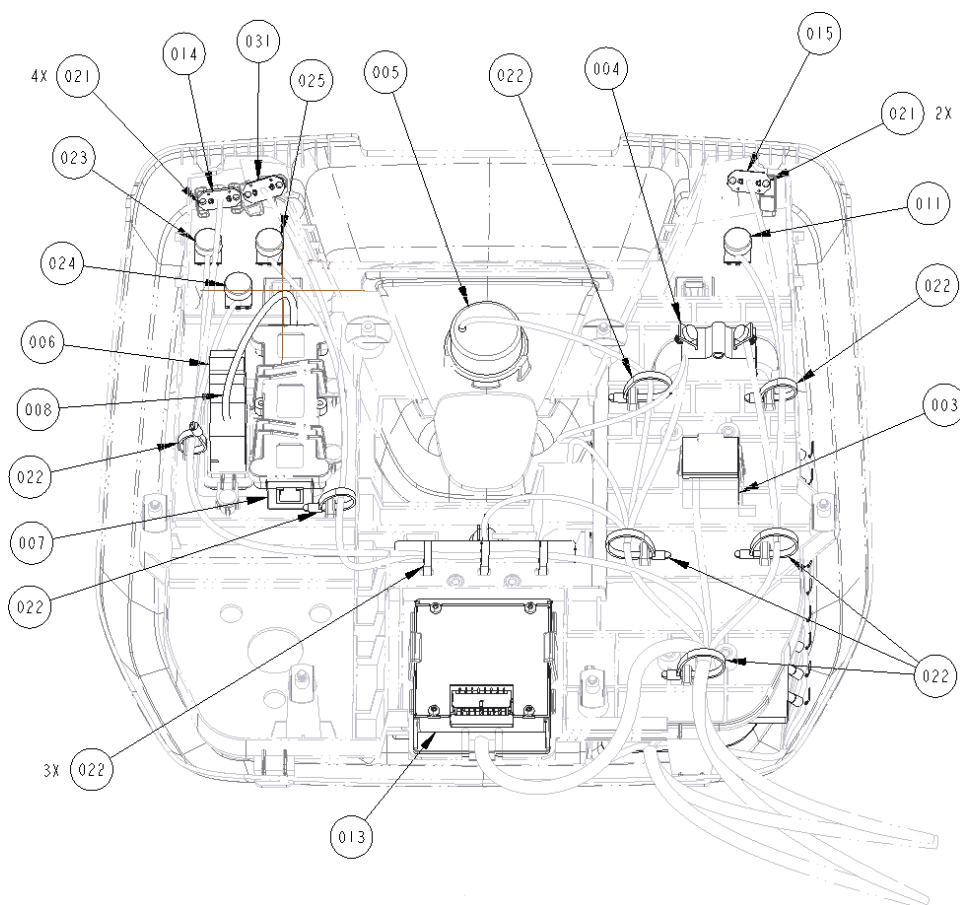
None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

**TASK INFORMATION:**



Find Number	Part Number	Name
003	SJTC02000	Terminal Block, Mounting Track
004	W23-X1A1G-30	Circuit Breaker, 30A
005	ICA006179	Horn, Stall Warning
006	E-04-5	Switch, Remote, ELT Test/Reset
007	E-04-7	Horn, ELT Audio Alert
008	E-04-10-3	Cable, Audio Alert, ELT
011	ICA010402	Potentiometer, 10K Map Light



Find Number	Part Number	Name
013	ICA010373	Driver Module, OHC
014	ICA010374	Illuminator Light, OHC, Instr PNL, Red
015	ICA010376	Illuminator Light, OHC, White
021	96817A890	Screw, Torx Panhead, 18-8, M2.5X0.95
022	TY24MX	Cable-tie, Nylon 6-6, 30lb, 5.50, TY-RAP
023	ICA010401	Potentiometer, 10K, Instrument Panel Lighting
024	ICA010403	Potentiometer, 10K, OHC Lighting
025	ICA010404	Potentiometer, 10K, Center Stack Lighting
031	ICA010375	Illuminator Light, OHC, Ctr Stk, Red

#### TASK INSTRUCTIONS:

1. Remove the four light control knobs from the overhead console by pulling each down and off their D-shafts.
2. Remove the overhead console bezel by pulling down on its forward edge, disengaging two spring clips. Disengage the two indexing tabs at the aft edge of the bezel, then remove the bezel.
3. Disconnect the D9078P and D9079J wire harness connectors and the ELT remote cable connector (telephone-type) from the overhead console.
4. Detach the overhead console by using a T15 Torx driver to remove the six 96710A318 pan-head screws that secure it (the screws thread into nutplates).
5. Place the overhead console on a clean work surface and replace any damaged or faulty component indicated in the figure and table below.
6. Use the graphic and associated parts list table to select the appropriate replacement components and then remove and replace the components.
7. After component replacement, install the overhead console with the six 96710A318 pan-head screws. Watch out for pinch points at the screw bosses to avoid damaging wiring. Torque each screw to 13 in-lb<sub>f</sub>.
8. Connect the D9078P and D9079J wire harness connectors and the ELT phone connector.

9. Install the overhead console bezel by engaging the tabs at its aft edge, then swinging the forward edge up until the spring fasteners snap into place.
  10. Push the four light control knobs onto their D-shafts.
- 

**VERIFICATION METHOD:**

Check the correct function of a replaced component.

**RELATED INFORMATION:**

"ELT Audio Alert Indicator Battery Replacement" on page 13-52  
"ELT Remote Control Panel Battery Replacement" on page 13-50  
"Remove Dome Light Switch" on page 6-64  
"Install Dome Light Switch" on page 6-65

### 13.3.2 Replace Overhead Console Fuses

Use this procedure to replace any indicated fuse mounted in the overhead console shown in Figure 13-1.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

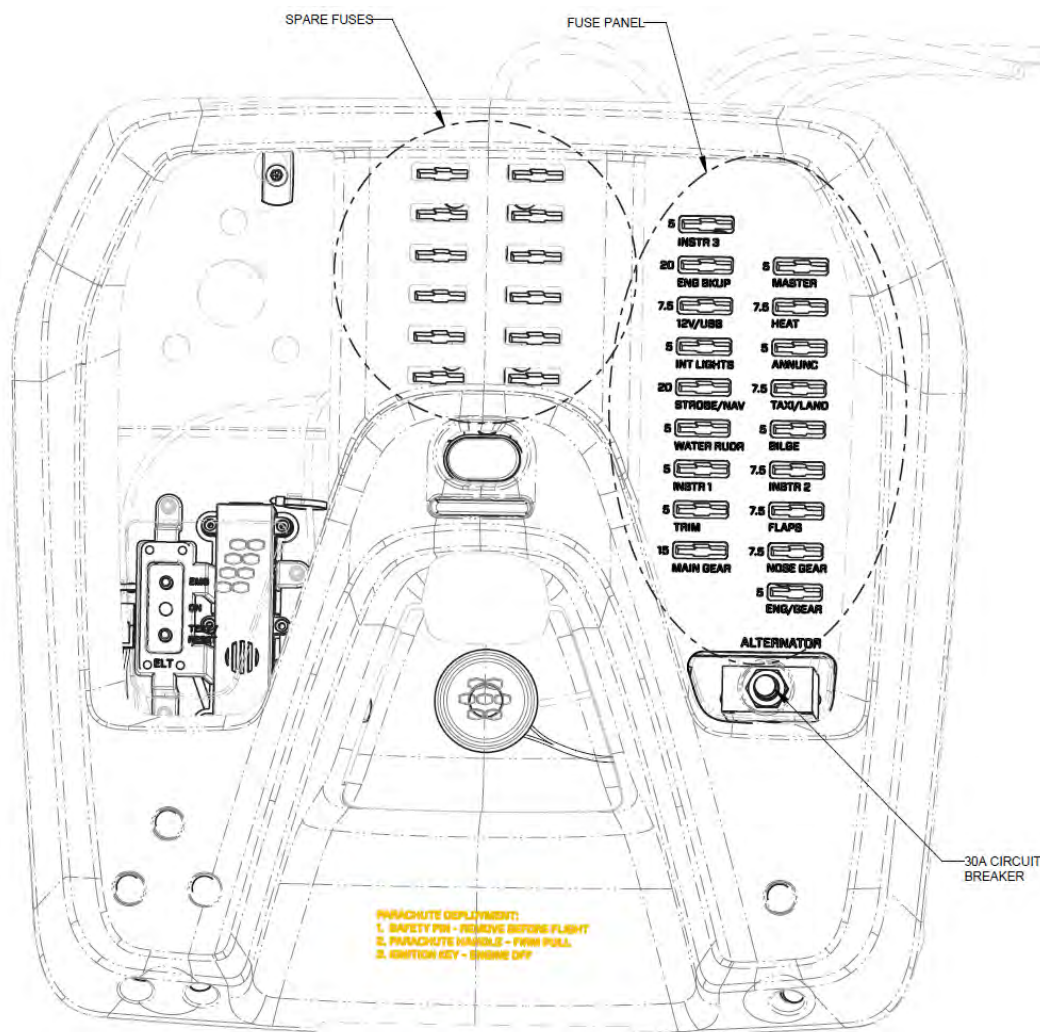
None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

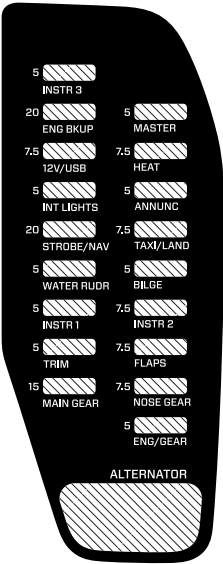
None



**FIGURE 13-1**  
BOTTOM VIEW OF OVERHEAD CONSOLE AND FUSES.

#### TASK INSTRUCTIONS:

1. Use and the associated table to identify the blown fuse to replace.  
*NOTE: A blown fuse will light up when the master switch is ON. Alternatively, visually check that the fuse is blown by removing it from the fuse panel.*
2. Pull down on the fuse to remove it from the overhead fuse panel.
3. Select the appropriate spare fuse. The spare fuses are located in the middle of the overhead console as shown in Figure 13-1. The fuse should match the blown fuse in both color and amp rating. Discard the blown fuse.
4. Insert the spare fuse firmly into the appropriate location identified in Step 1.



**FIGURE 13-2**  
FUSE PANEL

Fuse ID	Description	Sub Components	Reference
INSTR 3	Secondary Power	Annunciator panel	"Annunciator Panel Function" on page 13-38
		DAC	"DAC Memory Unit" on page 13-65 "System Wiring Diagram, Engine Interface" on page 6-8 "System Wiring Diagram, Instrument Signals" on page 6-20
		Engine relays	"System Wiring Diagram, Engine Interface" on page 6-8
ENG BKUP	Engine Backup Power	Engine	"System Wiring Diagram, Engine Interface" on page 6-8
12V/USB	Outlets	12V outlet	"System Wiring Diagram, Outlets" on page 6-26
		USB outlet	"System Wiring Diagram, Outlets" on page 6-26
INT LIGHTS	Interior Lights	Lighting controller	"System Wiring Diagram, Interior Lighting" on page 6-21
		Dome light	"System Wiring Diagram, Interior Lighting" on page 6-21
STROBE/NAV	Anti – Collision Lights – Position	RH ACL-position	"System Wiring Diagram, Exterior Lights" on page 6-12
		LH-ACL-position	"System Wiring Diagram, Exterior Lights" on page 6-12
		Strobe controller	"System Wiring Diagram, Exterior Lights" on page 6-12
WATER RUDDR	Water Rudder	Actuator	"Water Rudder" on page 11-11 "System Wiring Diagram, Water Rudder" on page 6-29

Fuse ID	Description	Sub Components	Reference
INSTR 1	Instruments	Gauges	"System Wiring Diagram, Instrument Signals" on page 6-20
		Backlight potentiometer	"System Wiring Diagram, Instrument Lighting" on page 6-19
		Hour meter	"System Wiring Diagram, Hour Meter" on page 6-18
		Transponder	"Transponder" on page 13-8 "System Wiring Diagram, Mode C" on page 6-25
TRIM	Pitch Trim	Actuator	"Pitch Trim Actuator" on page 9-53 "System Wiring Diagram, Control Sticks, Pitch Trim" on page 6-6
MAIN GEAR	Main Landing Gear	Actuator	"Main Landing Gear" on page 14-37 "System Wiring Diagram, Landing Gear" on page 6-22
MASTER	Master Contactor	Contactor	"System Wiring Diagram, Engine Interface" on page 6-8
HEAT	Cabin Heat	Fan	"Cabin Heater" on page 7-3 "System Wiring Diagram, Heater" on page 6-17
		Solenoid valve	"System Wiring Diagram, Heater" on page 6-17

Fuse ID	Description	Sub Components	Reference
ANNUNC	Annunciators	Annunciator panel	"Annunciator Panel Function" on page 13-38
		Trim annunciator	"System Wiring Diagram, Control Sticks, Pitch Trim" on page 6-6
		Fuel level sensor	"Fuel Low-Level Light Diagnostic" on page 10-3 "System Wiring Diagram, Fuel" on page 6-15
		Fuel low sensor	"Fuel Low-Level Light Diagnostic" on page 10-3 "System Wiring Diagram, Fuel" on page 6-15
		Bilge sensor	"System Wiring Diagram, Bilge" on page 6-5
		Water rudder LED	"System Wiring Diagram, Water Rudder" on page 6-29
		Bilge pump LED	"System Wiring Diagram, Bilge" on page 6-5
TAXI/LAND	Taxi-Landing	LH taxi-landing	"System Wiring Diagram, Exterior Lights" on page 6-12
		RH taxi-landing	"System Wiring Diagram, Exterior Lights" on page 6-12
BILGE	Bilge Pump	Bilge Pump	"Check Bilge Pump Function" on page 6-42 "System Wiring Diagram, Bilge" on page 6-5

Fuse ID	Description	Sub Components	Reference
INSTR 2	Instruments	GPS	"System Wiring Diagram, GPS" on page 6-16
		VHR radio	"System Wiring Diagram, VHF" on page 6-27
		DAC	"DAC Memory Unit" on page 13-65 "System Wiring Diagram, Engine Interface" on page 6-8 "System Wiring Diagram, Instrument Signals" on page 6-20
		MSC	"System Wiring Diagram, Flaps" on page 6-14 "System Wiring Diagram, Heater" on page 6-17
FLAPS	Flaps	Actuator	"System Wiring Diagram, Flaps" on page 6-14
NOSE GEAR	Nose Landing Gear	Actuator	"System Wiring Diagram, Landing Gear" on page 6-22
ENG/GEAR	Relays	LANE A relay	"System Wiring Diagram, Engine Interface" on page 6-8
		LANE B relay	"System Wiring Diagram, Engine Interface" on page 6-8
		Fuel pump 1 relay	"System Wiring Diagram, Engine Interface" on page 6-8
		Fuel pump 2 relay	"System Wiring Diagram, Engine Interface" on page 6-8
		Starter relay	"System Wiring Diagram, Engine Interface" on page 6-8
		Main gear up relay	"System Wiring Diagram, Landing Gear" on page 6-22
		Main gear down relay	"System Wiring Diagram, Landing Gear" on page 6-22
		Nose gear up relay	"System Wiring Diagram, Landing Gear" on page 6-22



## VERIFICATION METHOD:

- 1) Turn the master switch on. Verify that the fuse does NOT light up.
- 2) Check the correct function of the system associated with the replaced fuse.

## RELATED INFORMATION:

"Landing Gear Actuator Fuse Blown" on page 14-15

### 13.3.3 Calibrate AOA Pressure Transducer

The following section contains the information necessary to perform the calibration of the AOA pressure transducer.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

## TASK INSTRUCTIONS:

1. Turn on the master switch (or confirm on).
2. Locate the calibration push button switch on the bottom side of the MSC computer.

*NOTE: The MSC computer is located behind the right hand crossbeam and can be reached through the passenger footwell.*

3. Press button and hold for 5 seconds.

*NOTE: During this time, an LED next to the switch will flash at a 2 Hz rate and flashes a GREEN indicator.*

4. The light goes solid GREEN at the end of the calibration mode. If there are any errors the light is left in a solid RED illuminated state.
  5. Turn off the master switch.
- 

**RESULT:**

Increased accuracy and the ability to adjust for sensor aging and varying environmental conditions to obtain the most accurate result possible.

**VERIFICATION METHOD:**

Inspect the indicator LED to ensure that it is solid GREEN color.

**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Avionics and Electrical" on page 3-23

### 13.3.4 Replace Instrument Panel Gauge

Use the following to replace any of the nine gauges in the flight instrument panel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

ICA010987 (INDICATOR, ANGLE OF ATTACK, 2.25DIA)

ICA013217 (INDICATOR, AIRSPEED, 3.12DIA)

ICA011296 (INDICATOR, ATTITUDE)

ICA010989 (INDICATOR, ALTIMETER, SINGLE PTR, 3.12DIA)

ICA010990 (INDICATOR, FUEL QTY, 2.25 DIA)

ICA010992 (INDICATOR, OIL TEMP, 1.25 DIA)

ICA010993 (INDICATOR, OIL PRESSURE, 1.25 DIA)

ICA010994 (INDICATOR, COOLANT TEMP, 1.25 DIA)

ICA010991 (INDICATOR, TACHOMETER, 2.25 DIA)

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

LOCTITE 222 (THREADLOCKER, ACRYLIC, REMOVABLE LOW STR, PURPLE)

*NOTE: Retain removed hardware for re-installation.*

This procedure requires a pitot-static-AOA leak test. (See "Pitot-Static-AOA Leak Test Procedures" on page 13-70.)

**TASK INSTRUCTIONS:**

1. Remove instrument cluster bezel. (See "Remove Instrument Cluster" on page 13-29.)
2. Remove a set of four #6-32 screws securing each gauge to mount.  
*NOTE: INDICATOR, ALTIMETER only has three screws.*
3. Replace gauge and install four attachment screws. Apply a small amount of LOCTITE 222. Torque to 6-10 in-lb.
4. Re-install instrument cluster into the aircraft. (See "Install Instrument Cluster" on page 13-31.)

**VERIFICATION METHOD:**

Task is complete when cluster hood shell is re-installed and the gauge has been replaced.

**RELATED INFORMATION:**

"Left Instrument Panel Top Panel Removal" on page 8-19  
 "Install Instrument Cluster" on page 13-31  
 "Remove Instrument Cluster" on page 13-29  
 "Pitot-Static-AOA Leak Test Procedures" on page 13-70  
 "Verify Altimeter Calibration" on page 13-83

**13.3.5 Multiple Systems Controller (MSC) Replacement**

Use the following procedure to replace the multiple systems controller (MSC).

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

T15 Torx Driver

**Parts Required**

ICA011651 MULTIPLE SYSTEMS CONTROLLER

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the Right Instrument Panel Top Panel. (See “Right Instrument Panel Top Panel Removal” on page 8-17.)
  2. Disconnect the five electrical connections going to the Digital to Analog Converter (DAC).
  3. Remove the DAC by removing four 8-32 screws with a T15 Torx driver, two at top, and two at bottom of the DAC.
  4. Disconnect the four electrical connections going to the MSC. Disconnect the four nylon tubes where they insert into the push-on connectors at the MSC. Label where they go and seal all open ends to prevent debris from entering the tubes and MSC.
  5. Reaching in through the access hole previously covered by the DAC, remove the four 8-32 screws securing the MSC to the Right Crossbeam Web using a T15 Torx driver.
  6. Install the replacement MSC and reconnect all cabling and plumbing.
  7. Perform a Pitot/Static/AOA System Leak Check (see Related Information) to confirm no leaks at the MSC connections before proceeding.
  8. Reinstall the DAC and its electrical connections.
  9. Install the Right Instrument Panel Top Panel. (See “Right Instrument Panel Top Panel Installation” on page 8-18.)
- 

**VERIFICATION METHOD:**

Power up and check all avionics and electrical systems for proper function.

## RELATED INFORMATION:

"Right Instrument Panel Top Panel Installation" on page 8-18

"Right Instrument Panel Top Panel Removal" on page 8-17

"Alternate Pitot-Static Leak Test Procedure" on page 13-81

### 13.3.6 Remove Instrument Cluster

Use the following to remove the instrument cluster to perform maintenance on instrument gauges or annunciator panel.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

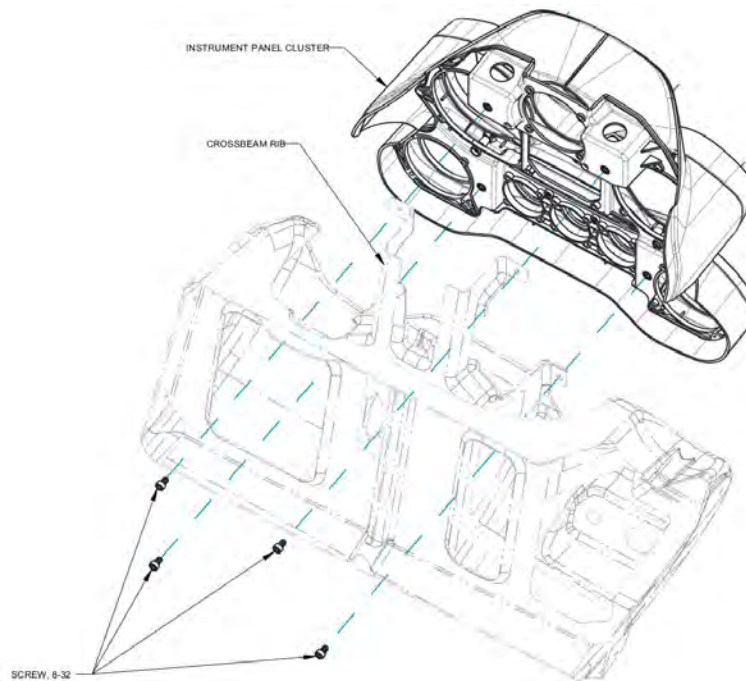
None

A pitot-static-AOA leak test is required whenever a pitot-static or AOA tube is disconnected. (See "Pitot Static Leak Check Operation" on page 13-75.)

## TASK INSTRUCTIONS:

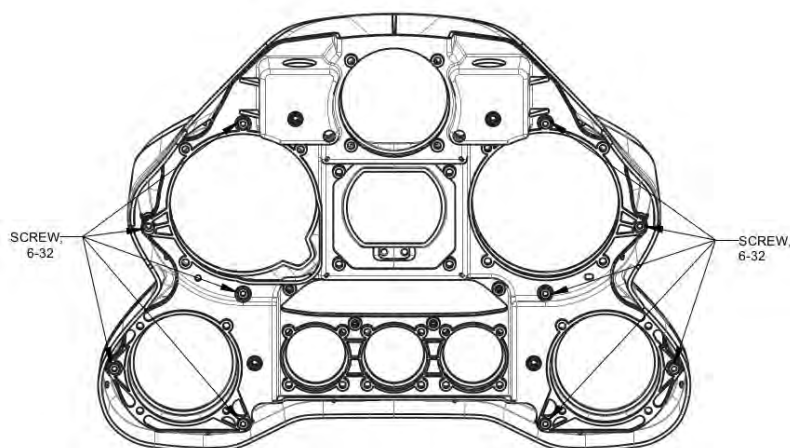
1. Remove cluster hood shell by pulling upon the aft side and sliding hood towards aft aircraft.
2. Remove four #8-32 cluster attachment screws. See Figure 13-3.

*NOTE: Retain removed hardware for re-installation.*



**FIGURE 13-3**  
INSTRUMENT PANEL MOUNT ATTACHMENT DETAIL – EXPLODED VIEW

3. Disconnect all electrical connections to the instrument cluster. Take note of wiring harness layout for re-installation.
4. Disconnect two static and one pitot tube from airspeed indicator and altimeter.
5. Remove cluster from aircraft.
6. Remove cluster bezel by removing 10 #6-32 mounting panel attachment screws. See Figure 13-4.



**FIGURE 13-4**  
INSTRUMENT PANEL BEZEL DETAIL – AIRCRAFT REAR VIEW

**VERIFICATION METHOD:**

The task is complete when the instrument cluster bezel has been removed from the instrument cluster.

**RELATED INFORMATION:**

"Pitot-Static-Angle of Attack (AOA) System" on page 13-70

"Install Instrument Cluster" on page 13-31

"Replace Instrument Panel Gauge" on page 13-26

"Replace Annunciator Panel" on page 13-39

### 13.3.7 Install Instrument Cluster

Use the following to install the instruments cluster.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

### Aircraft System and Number

10 – Instruments (and Avionics)

### Consumables

LOCTITE 222 (THREADLOCKER, ACRYLIC, REMOVALBLE LOW STR, PURPLE)

A pitot-static-AOA leak test is required. See "Pitot-Static-AOA Leak Test Procedures" on page 13-70.

### TASK INSTRUCTIONS:

1. Install cluster bezel with 10 #6-32 mounting panel attachment screws. Apply a small amount of LOCTITE 222. Torque to 6-10 in-lb. See Figure 13-4.
2. Position instrument cluster into aircraft crossbeam rib. Reconnect all electrical connections while holding instrument cluster in place.  
  
*NOTE: Do not damage pitot-static tubes.*
3. Secure instrument cluster to aircraft crossbeam rib with four #8-32 attachment screws. Apply small amount of LOCTITE 222. See Figure 13-3.
4. Attach static tube to the altimeter.
5. Attach static and pitot tubes to airspeed indicator.
6. Perform pitot-static-AOA leak test. (See "Pitot-Static-AOA Leak Test Procedures" on page 13-70.)
7. Re-install hood shell. Slide it forward into the clip hole and then press it down on the instrument cluster.

### VERIFICATION METHOD:

Performing the pitot-static-AOA leak test operates as the verification method for this task.

### RELATED INFORMATION:

"Remove Instrument Cluster" on page 13-29  
 "Replace Instrument Panel Gauge" on page 13-26  
 "Replace Annunciator Panel" on page 13-39

## 13.3.8 Access Center Stack Instruments and Switches

This section contains instructions to remove and install Center Stack instrument wire connections.

### TASK INFORMATION:

#### Type of Maintenance

Line

#### Level of Certification



LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

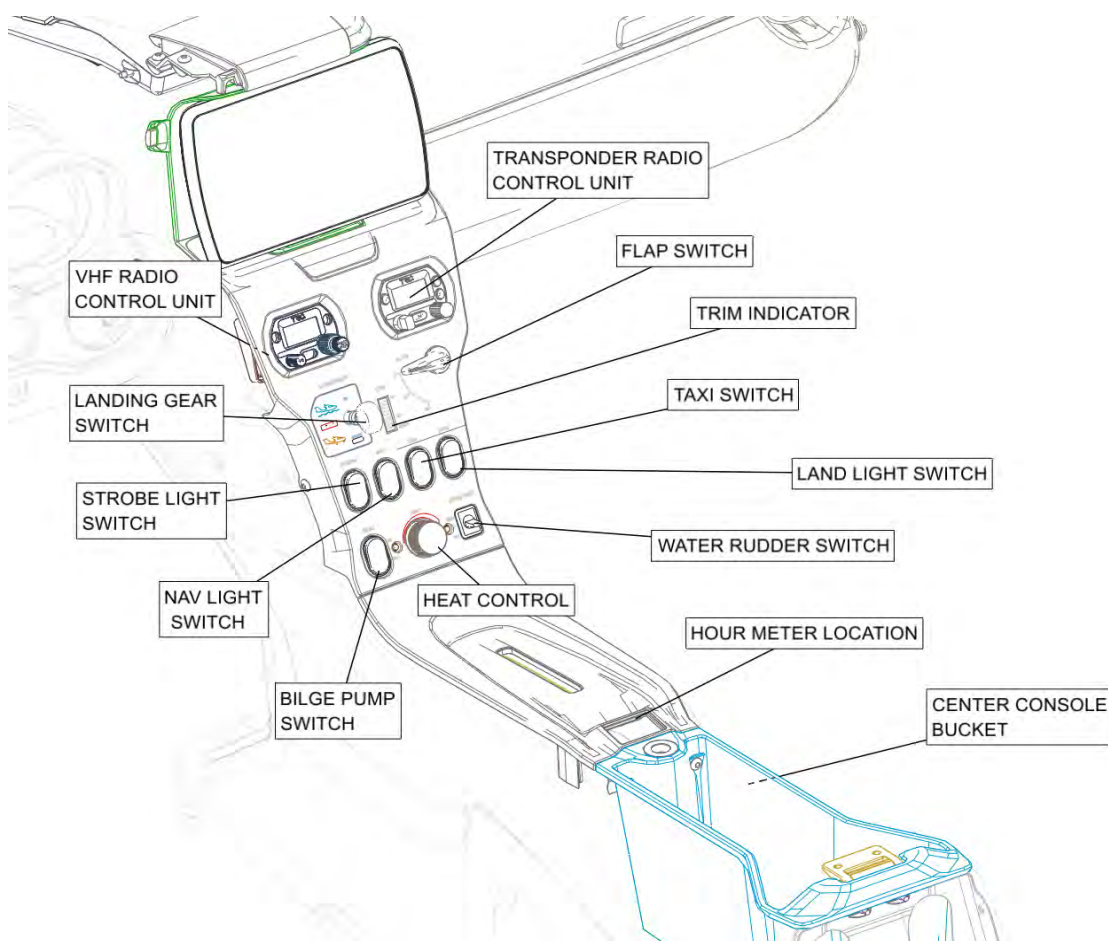
None

**Aircraft System and Number**

10 – Instrument (and Avionics)

**Consumables**

None



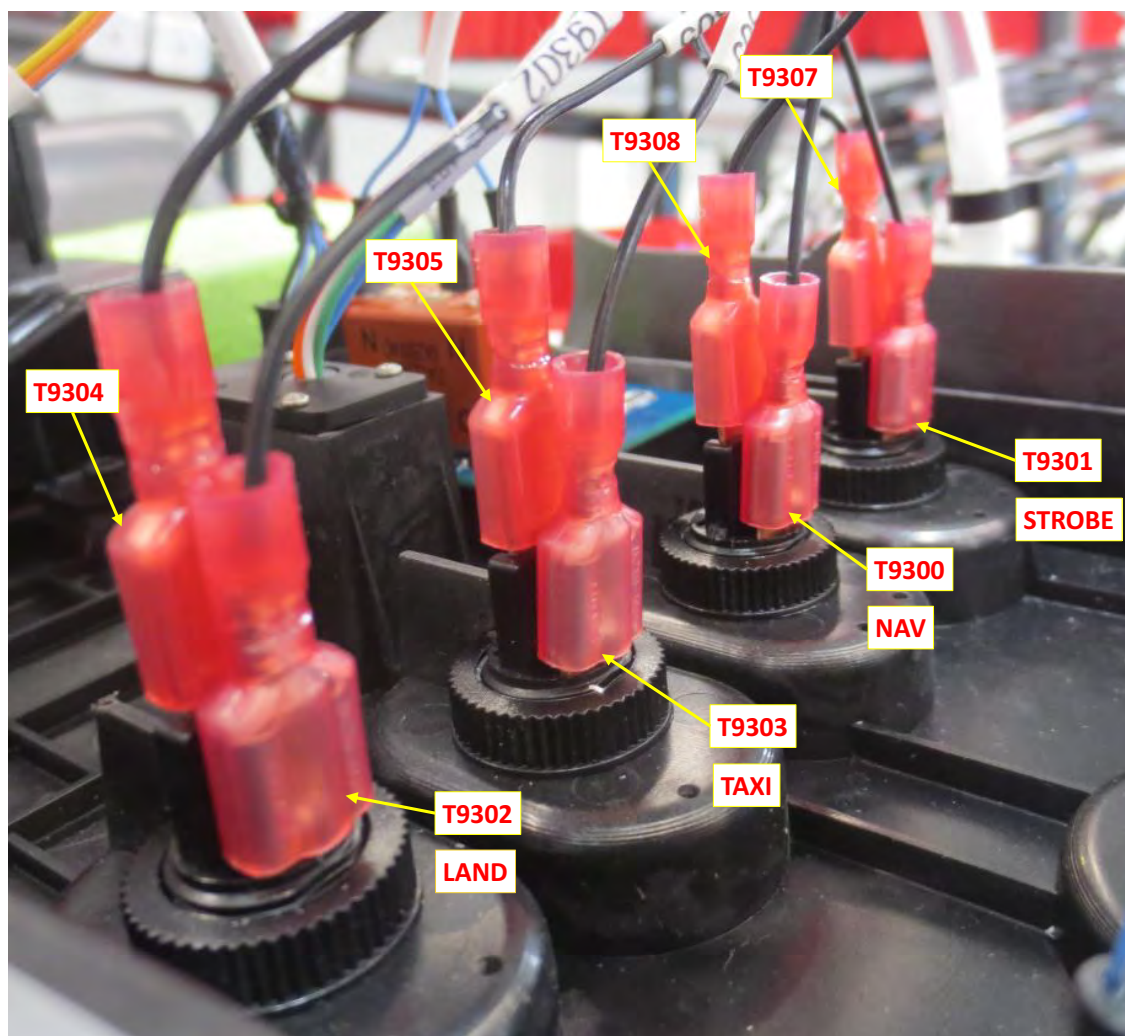
**FIGURE 13-5**  
CENTER STACK OVERVIEW

## TASK INSTRUCTIONS:

1. Access the instruments and switches listed in the following table. (See “GPS Mount and Radio Stack Bezel Removal” on page 8-15.) The following table details the connections for instruments located in the Center Console Bucket.

**Table 13-1:** Center Stack Wire Instruments Wiring

Instrument/Switch	Connection From	Connection To
Trim Indicator	D9046J	D9046P
Flap Switch	D9061J	D9061P
Landing Gear Switch	D9094J	D9094P
Heat Control	D9084J	D9084P
Water Rudder Switch	D9060P	D9060J
Water Rudder LED	D9054J	D9054P
VHF Radio Control Unit	D9058	
Transponder Radio Control Unit	D9068	
STROBE Light Switch	T9307 & T9301	
NAV Light Switch	T9308 & T9300	
TAXI Light Switch	T9305 & T9303	
LAND Light Switch	T9304 & T9302	
Bilge Pump Switch	T9306 & T9309	
Bilge Pump LED	D9055J & D9055P	
Landing Gear Indicator	D9045P	



**FIGURE 13-6**  
CENTER STACK WIRE HARNESS

2. Access the instruments and switches listed in the following table. (See “Center Console Bucket Removal” on page 8-5.) The following table details the connections for instruments located in the Center Console Bucket.

**Table 13-2:** Center Console Bucket Connectors

Instrument	Connection From	Connection To
Cigarette Lighter Connectors	T9117 (+)	T9119 (-)
USB Power Connectors	T9120 (-)	T9116 (+)
AUX Audio In Jack	D9063P	D9063J

**VERIFICATION METHOD:**

Task is complete when it is possible to access the instruments and switches.

**13.3.9 Remove and Install Hour Meter**

This section contains instructions to remove and install hour meter.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments and Avionics

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove center console bucket. (See “Center Console Bucket Removal” on page 8-5.)
  2. Access the hour meter. (See “Throttle Handle and Bezel Removal” on page 8-10.)(See “Throttle Handle and Bezel Installation” on page 8-13.)
- 

**VERIFICATION METHOD:**

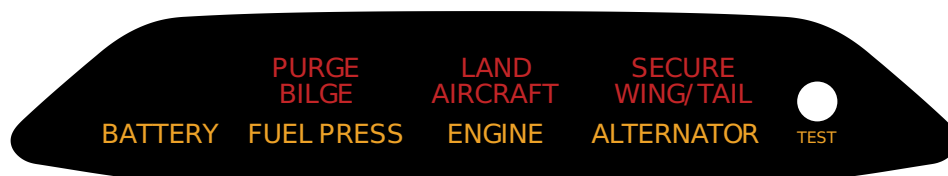
The procedure is complete when you have removed and installed the hour meter.

## 13.4 Annunciator Panel

### 13.4.1 Annunciator Panel Description

The annunciator panel is located near the center of the instrument console between the primary and secondary instrument clusters. The upper row indicators are warning lights, which illuminate in red to draw pilot attention to act on critical safety of flight issues. The three warning lights are PURGE BILGE, LAND AIRCRAFT, and SECURE WING/TAIL. The bottom row indicators are caution lights, which illuminate in amber to draw pilot attention to aircraft system status or failures that may warrant action. The four caution lights are BATTERY, FUEL PRESS, ENGINE, and ALTERNATOR. For detailed meaning of, and responses to, the annunciator lights. (See “Annunciator Panel Diagnostic” on page 13-9.)

### 13.4.2 Annunciator Panel Diagram/Schematic



**FIGURE 13-7**  
ANNUNCIATOR PANEL

### 13.4.3 Inspection Instructions

#### 13.4.3.1 Annunciator Panel Function

The following section contains information needed to test annunciator panel function.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

##### Special Tools Required

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Press and hold the test button.
  2. Verify all text is lit.
  3. Release the test button.
- 

**VERIFICATION METHOD:**

If all lights are lit, the test has been successfully completed.

**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Operational Inspection" on page 3-25  
"Replace Annunciator Panel" on page 13-39

## **13.4.4 Maintenance Instructions**

### **13.4.4.1 Replace Annunciator Panel**

The following can be used to replace the annunciator panel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

LS5000-904 (PANEL, ANNUNCIATOR)

## ICA008907 (GRAPHIC OVERLAY, ANNUNCIATOR PANEL)

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

*NOTE: Retain removed hardware for re-installation.*

---

**TASK INSTRUCTIONS:**

1. Remove instrument cluster bezel. (See "Remove Instrument Cluster" on page 13-29.)
  2. Remove four #4-40 screws attaching annunciator panel to mount.
  3. Remove annunciator.
  4. Replace with new PANEL, ANNUNCIATOR and re-install four attachment screws. Torque screws to 2-4 in-lb. Check that hardware is secure.  
**CAUTION:** *PANEL, ANNUNCIATOR is an electrostatic sensitive device. Do not open or handle except at a static-free work station.*
  5. Remove adhesive backing from GRAPHIC OVERLAY and apply to PANEL, ANNUNCIATOR.
  6. Re-install instrument cluster into the aircraft. (See "Install Instrument Cluster" on page 13-31.)
- 

**VERIFICATION METHOD:**

Check the operation of the annunciator panel (See "Annunciator Panel Function" on page 13-38.)

**RELATED INFORMATION:**

- "Install Instrument Cluster" on page 13-31
- "Remove Instrument Cluster" on page 13-29
- "Annunciator Panel Function" on page 13-38



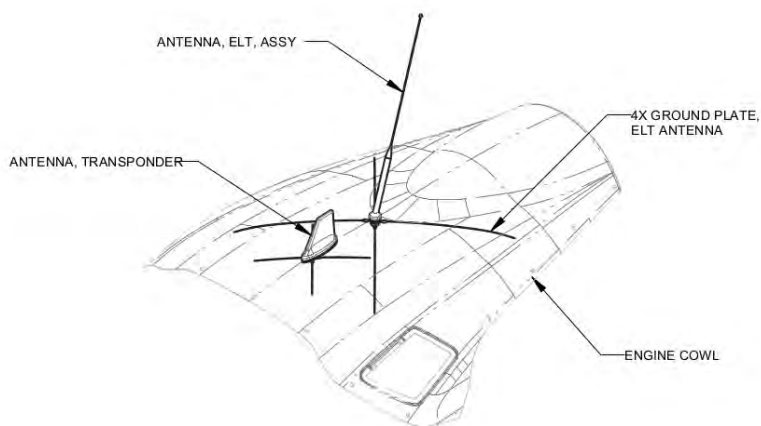
## 13.5 ELT

### 13.5.1 ELT Description

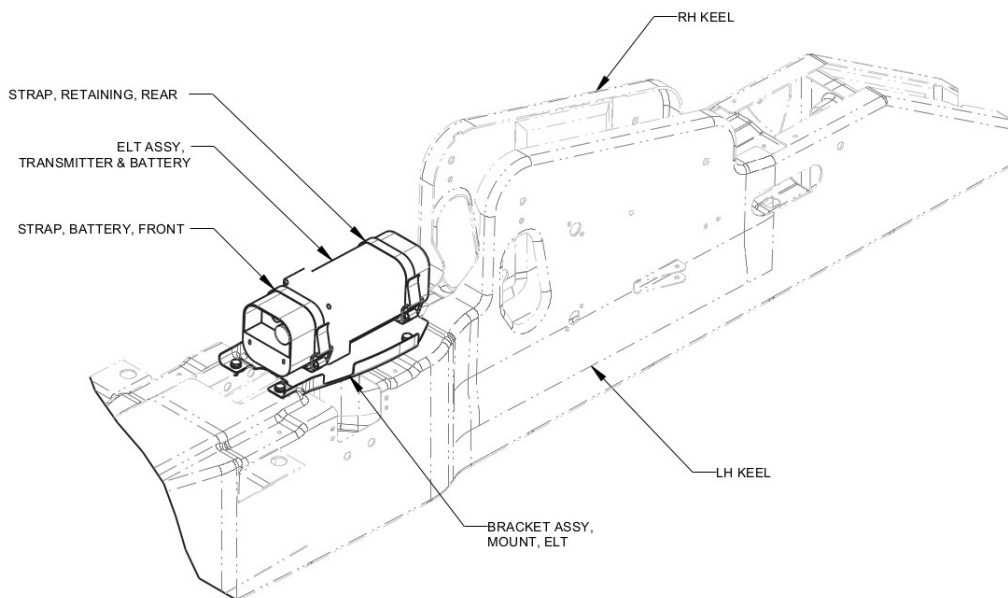
The Emergency Location Transmitter, ELT, sends a distress radio signal and a GPS location in case of an accident. The ELT system includes the transmitter, transmitter battery, test/reset switch, audio alert horn, and antenna. The ELT antenna is located at the top of the engine cowl. (See Figure 13-8.) The transmitter and battery are located beneath the center console panel, forward of the throttle handle. (See Figure 13-9.) The audio alert and switch are in the overhead center console.

**CAUTION:** Do not trigger a false alert when handling the ELT. According to Search and Rescue Satellite Aided Tracking (SARSAT), a majority of ELT false alerts occur during testing and maintenance. Call 1-800-851-3051 to cancel a false alert.

### 13.5.2 ELT Diagram/Schematic



**FIGURE 13-8**  
ELT ANTENNA AND TRANSPONDER ANTENNA



**FIGURE 13-9**  
ELT ASSEMBLY LOCATION

### 13.5.3 Inspection Instructions

#### 13.5.3.1 ELT Access

The following contains instructions for accessing the ELT for inspection and maintenance.

##### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

##### Aircraft System and Number

10 – Instruments (and Avionics)

## Consumables

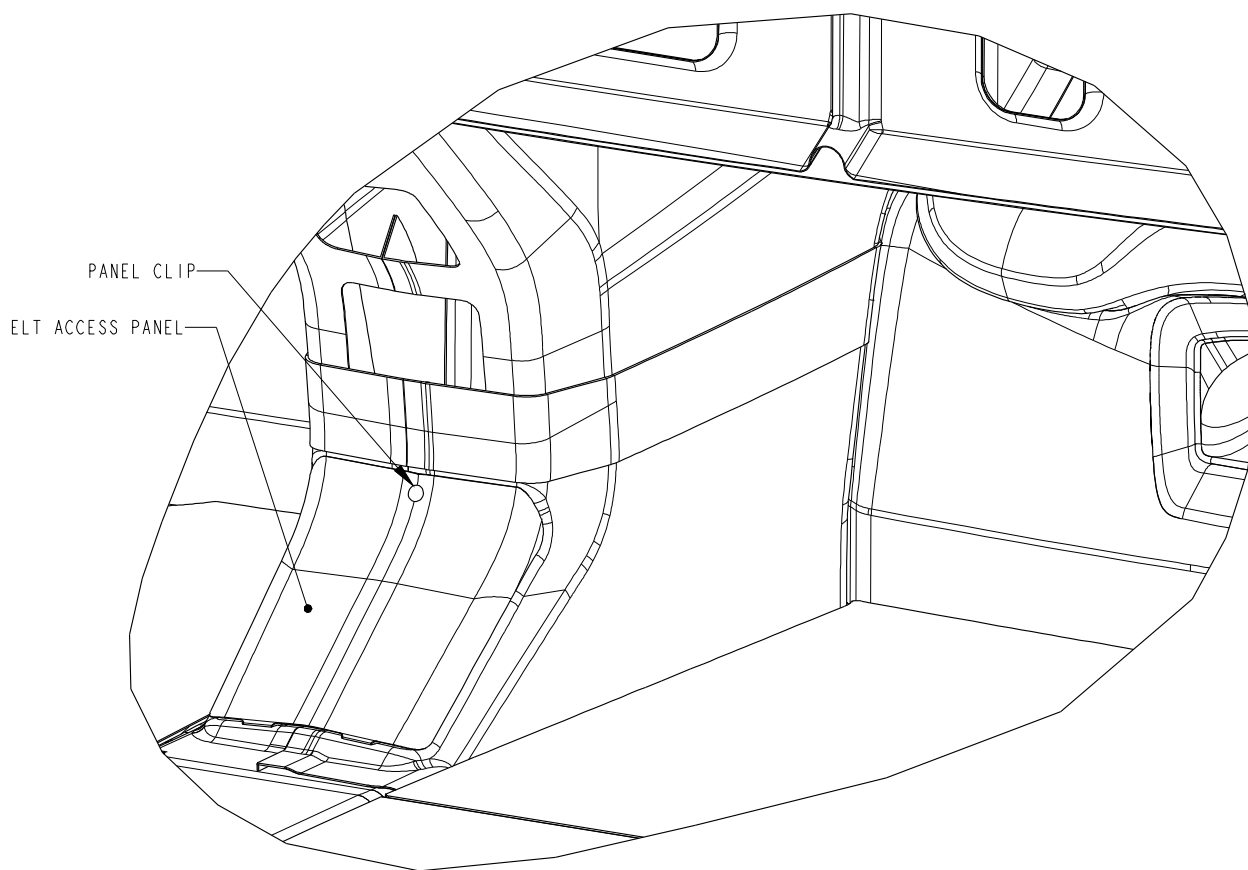
None

---

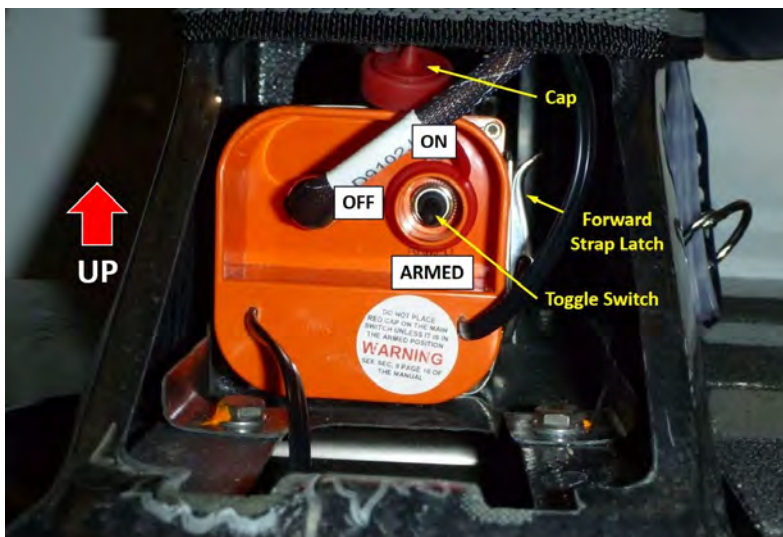
### TASK INSTRUCTIONS:

1. Pry the panel clip off the ELT access panel using a flathead screwdriver.

The access panel is located at the bottom of the forward side of the center console near the kneed pads.



2. Swing the top edge of the access panel forward, then remove it by pulling it up, disengaging the retention tabs on its lower edge.
3. The ELT can now be accessed for service. The figure below shows the view looking aft into the ELT bay. Note the orientation of the toggle switch positions.



#### VERIFICATION METHOD:

After the panel is removed, complete the necessary tasks including the ELT Function Test.

#### RELATED INFORMATION:

- "ELT Inspection and Function Check" on page 13-44
- "ELT Remote Control Panel Battery Replacement" on page 13-50
- "ELT Battery Self Test" on page 13-47
- "ELT Battery Replacement" on page 13-48
- "ELT Audio Alert Indicator Battery Replacement" on page 13-52

### 13.5.3.2 ELT Inspection and Function Check

The following includes directions for the inspection and function check of the ELT.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

**Aircraft System and Number**

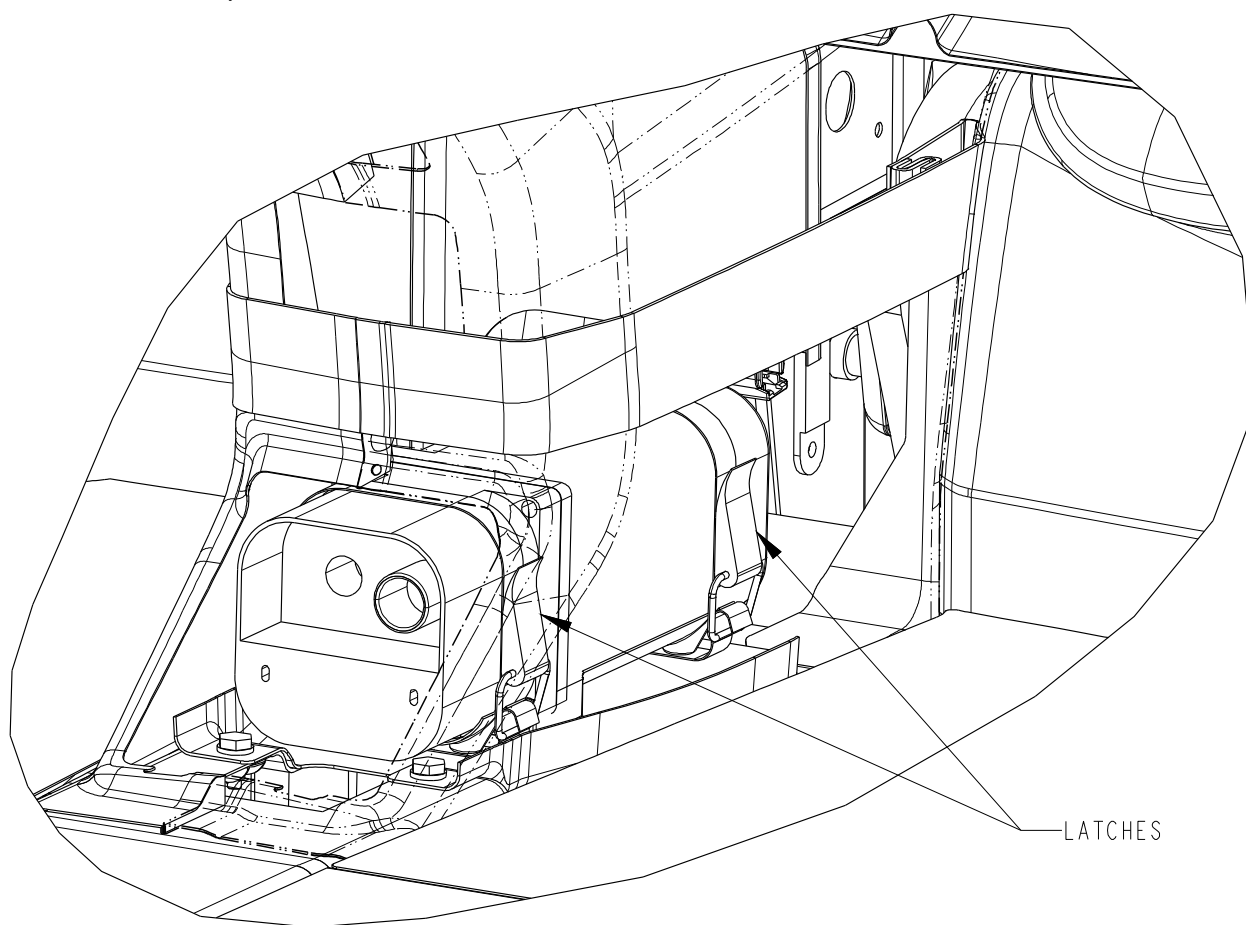
10 – Instruments (and Avionics)

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove ELT access panel. (See “ELT Access” on page 13-42.)
2. Verify ELT mount bracket fasteners are secure.
3. Verify arrow graphic of ELT unit is on top and points forward.
4. Use a screwdriver or similar tool, approximately 10 inches long, to open the latches of the quick release strap.



5. Disconnect cables.

**NOTE:** Although the aircraft is equipped with a GPS unit, the ELT unit is not connected to the GPS unit.

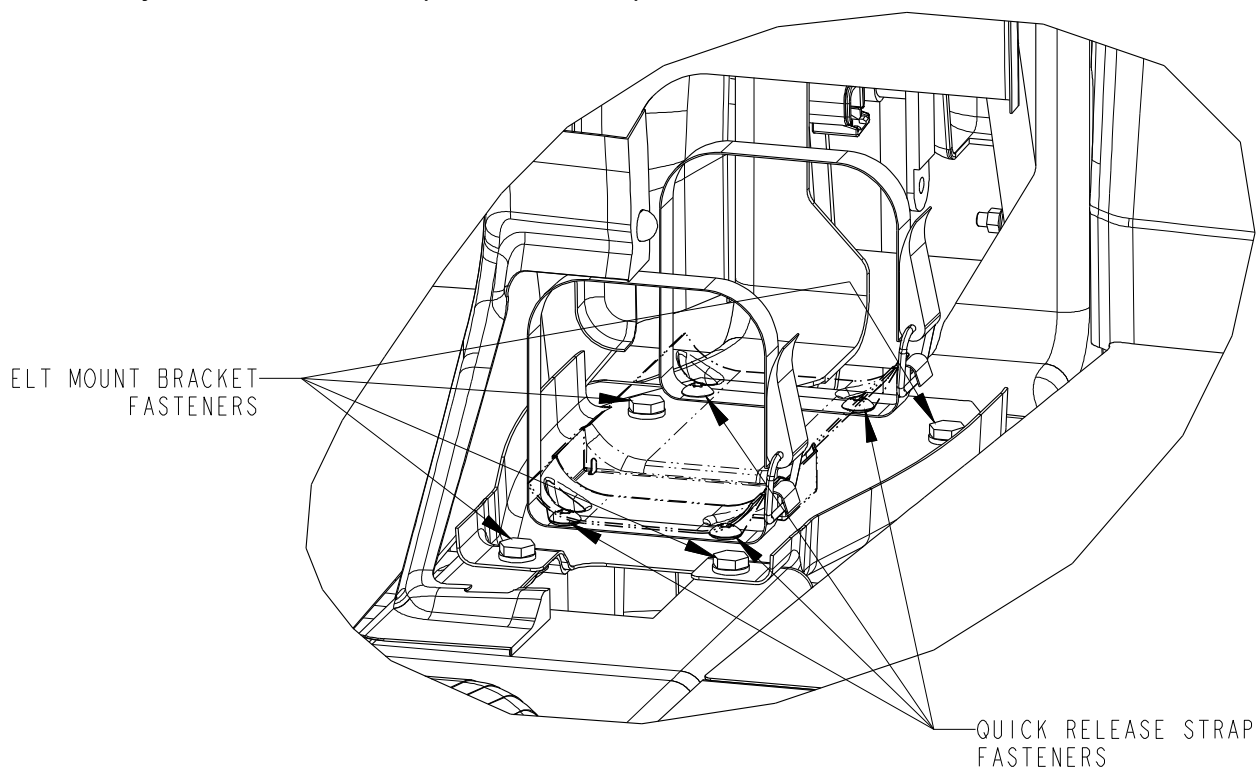
6. Carefully remove the ELT unit from the aircraft.

**NOTE:** There is a raised flange on the ELT just aft of the forward strap. The forward strap will need to be worked around this flange to remove the ELT.

7. Inspect according to Section 10 of ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual.

*NOTE: The ELT unit consists of a battery case and the ELT transmitter assembly.*

8. Remove the battery case from the ELT transmitter assembly according to Section 11 of ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual.
9. Verify the battery case contacts are not corroded.
10. Verify the ELT transmitter assembly contacts are not corroded.
11. Reattach the battery case to the ELT transmitter assembly according to Section 11 of ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual.
12. Verify the fasteners of the quick release straps are secure.



13. Reinstall the ELT unit into the aircraft according to Step 7 of Section 9 of ACK Technologies Inc. Model E-04 Installation/Operation Manual.
14. Verify the latches of the quick release straps are closed.
15. Verify the arrow graphic of ELT unit is on top and points forward.
16. Perform ELT unit self-test according to SELF TESTS of Section 9 of ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual, or See "ELT Battery Self Test" on page 13-47.

#### VERIFICATION METHOD:

Inspection is verified if all ELT functional checks pass.

## RELATED INFORMATION:

"ELT Access" on page 13-42

"ELT Battery Self Test" on page 13-47

### 13.5.3.3 ELT Battery Self Test

The ELT is capable of performing a self test to verify that major ELT systems are functioning properly.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

During the self test, the ELT transmits on 121.5 MHz for 1 second, (3 audio sweeps) then transmits a 406 MHz test burst for 550ms, then returns to the armed mode.

There are two modes in which a self test can be initiated:

- 1) When the ELT is in the "Armed" position, pressing the "Reset/Test" switch on the cockpit remote control (RCPI) initiates a self test.
- 2) When the main switch of the ELT is moved from the "Off" position to the "Armed" position, it does a self test. This mode is primarily designed to provide a method to bench test the ELT, with the remote control disconnected.

## TASK INSTRUCTIONS:

1. Connect an aircraft headset to the headset jacks so that radio transmissions can be heard.
2. Turn on the aircraft master switch (the ELT receives no power from the aircraft).
3. Tune the aircraft radio to 121.5 MHz, and turn the squelch all the way off to listen for the modulated carrier.
4. With the ELT main switch in the "Armed" position, and not operating, press the "Reset/Test" button on the cockpit remote control (RCPI) once. You will hear one second of 121.5 audio on the radio, followed by either one beep from the audio alert indicator, or one beep followed by a two

second delay, and a second beep if all systems are functioning properly. The light will also flash on the remote.

The flashes are random and have no meaning.

5. System OK codes: One Beep or One Beep followed by a second beep two seconds later.
6. A series of 2-5 fast beeps, a 2 second delay, and the beep series repeating again indicates there is a self test function that has returned a trouble condition.

**NOTE:** *The ELT will not be disabled, but it should be inspected by a qualified avionics facility as soon as possible.*

7. The trouble code returns a series of beeps with a two second delay, and then the trouble code is repeated one more time. The first beeps alert you that there is a trouble condition. The two second delay is to allow you to be ready to count the second set of beeps. Trouble code sequence: 2-5 beeps – two second delay – 2-5 beeps. Trouble Codes:
  - 2 Beeps – Battery Low
  - 3 Beeps – Low RF Power
  - 4 Beeps – Frequency not locked
  - 5 Beeps – High VSWR or high current

#### RESULT:

If the self test indicates a problem, have the system inspected by a qualified avionics facility as soon as possible.

#### VERIFICATION METHOD:

The task is complete when a series of beeps is heard indicating a system OK or a trouble code.

#### RELATED INFORMATION:

"ELT Access" on page 13-42

"ELT Battery Replacement" on page 13-48

"ELT Inspection and Function Check" on page 13-44

"ELT Transponder and Transmitter Antenna Assembly" on page 13-55

## 13.5.4 Maintenance Instructions

### 13.5.4.1 ELT Battery Replacement

Use these instructions to access the ELT battery for inspection or replacement.

#### TASK INFORMATION:

##### Type of Maintenance

Line



**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

Lithium Battery P/N E-04.0

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the center console ELT cover panel. (See “ELT Access” on page 13-42.)
2. Remove the forward and aft battery straps.
3. Remove the ELT.

*NOTE: The following steps are directly from the ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual, Section 11*

4. Using a 3/32 hex wrench, remove the four retaining screws that attach the battery case to the ELT transmitter assembly, and gently pull the battery pack from the transmitter section.
  5. With the main switch in the OFF position, install the new sealed battery pack. (P/N E-04.0) The battery pack is designed so the battery can only be installed in the proper orientation.
    - a. Wet the O-ring with a mild dish soap solution, and shake off the excess solution, or use silicon vacuum grease.
    - b. Install the O-ring onto the battery case.
    - c. Remove the two protective caps from the battery contacts. The battery pack should slide easily into the transmitter housing.
  6. Re-attach the transmitter assembly to the battery pack by replacing the four hex head screws. Tighten the screws to 3.5-4.0 in-lb<sub>f</sub>.
  7. Record the new battery expiration date in the airframe logbook.
  8. After re-installation of the ELT into the aircraft, a self test must be performed. Refer to Related Information or section 9 of the ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual.
- 

**VERIFICATION METHOD:**

After re-installation of the ELT into the aircraft, a self test must be performed. (See “ELT Battery Self Test” on page 13-47.)

## RELATED INFORMATION:

"ELT Access" on page 13-42

"ELT Battery Self Test" on page 13-47

### 13.5.4.2 ELT Remote Control Panel Battery Replacement

Directions for replacing the ELT remote control panel indicator battery.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

Duracell PX28L 6 volt lithium battery, or equivalent

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

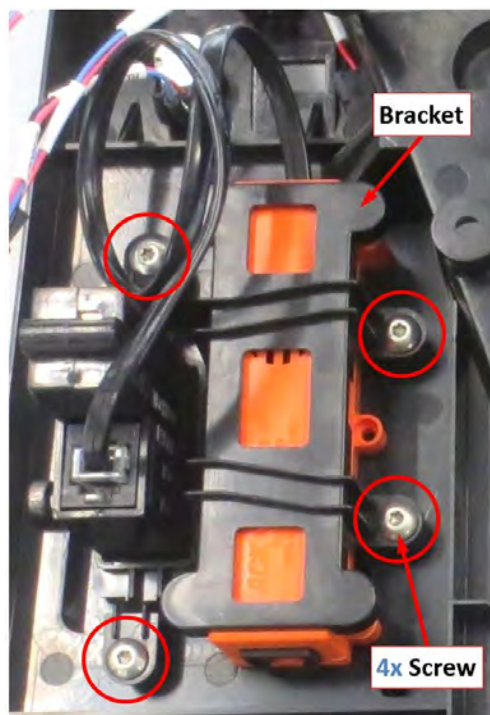
None

The Remote Control Panel Indicator (RCPI) is designed to be powered by a single Duracell PX28L 6 volt lithium battery, or equivalent. Alkaline batteries, such as Eveready A 544, or equivalent may also be used. Under normal operating conditions, the lithium battery must be replaced every 10 years. The alkaline batteries must be replaced every 5 years. If the ELT is activated for an unknown period of time, the battery must be replaced. For additional information see the ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual, Section 4.

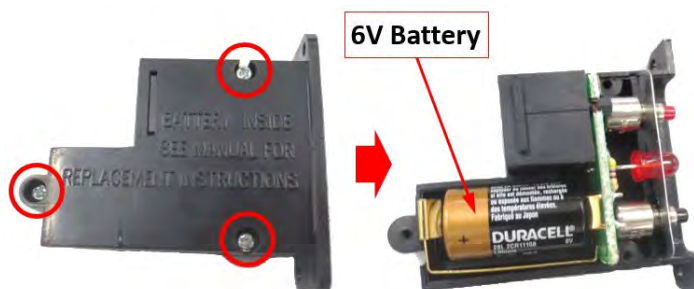
**NOTE:** *The Audio Annunciator Battery should be checked and replaced at the same time. (See "ELT Audio Alert Indicator Battery Replacement" on page 13-52.)*

## TASK INSTRUCTIONS:

1. Remove the overhead console bezel and overhead console mount. (See "Overhead Console Component Replacement" on page 13-15.)
2. Locate the ELT RCPI.
3. Use a T10 Torx driver to remove the four 6-32 screws attaching the black ICA009273 bracket to the RCPI and orange audio alert indicator, then remove the bracket and remove the RCPI.



4. Remove the three 6-32 retaining screws which secure the top and bottom half of the RCPI unit.
5. Carefully remove the top half of the RCPI, exposing the battery compartment.



6. Carefully inspect the battery contacts for dirt or corrosion. If the contacts need cleaning, use only non-abrasive electrical contact cleaner and a stiff brush. Abrasive cleaners will remove the nickel and gold plating from contacts.
7. Insert the battery with the polarity matching the engraving on the bottom of the battery compartment.
8. Join the halves of the RCPI case together and tighten the three remaining screws.
9. Mount the RCPI and audio alert indicator back into the overhead console, securing them with the ICA009273 bracket and four screws.
10. Replace the overhead console mount.

11. Replace the overhead console bezel.
12. The next RCPI battery replacement date should be recorded in the aircraft logbook with a note indicating the battery expiration dates.

#### VERIFICATION METHOD:

This task is complete when the overhead console bezel has been replaced and the new battery expiration date has been recorded in the log book.

#### RELATED INFORMATION:

"ELT Access" on page 13-42

"ELT Audio Alert Indicator Battery Replacement" on page 13-52

"Overhead Console Component Replacement" on page 13-15

### 13.5.4.3 ELT Audio Alert Indicator Battery Replacement

The following instructions detail how to replace the audio annunciator battery.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

Duracell CR-2,3 or equivalent

##### **Aircraft System and Number**

10 – Instruments (and Avionics)

##### **Consumables**

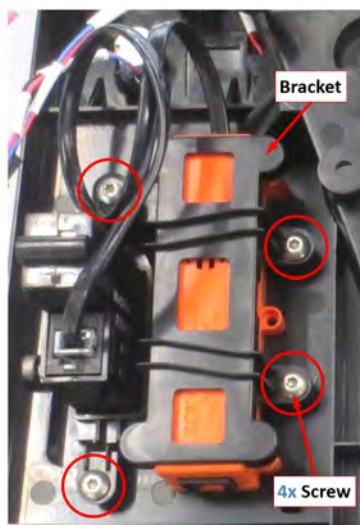
None

**NOTE:** *The ELT audio alert indicator's battery must be replaced every 10 years.*

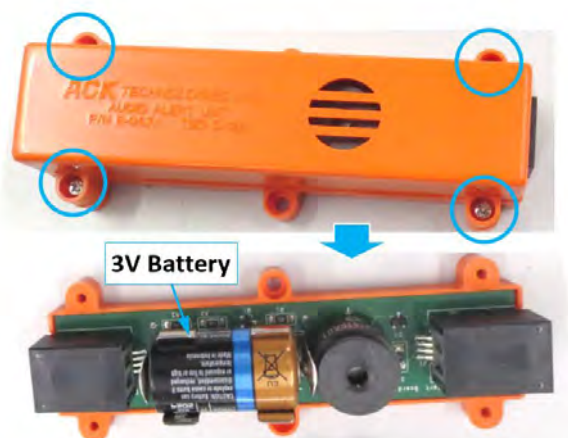
#### TASK INSTRUCTIONS:

1. Remove the overhead console bezel and console mount. (See "Overhead Console Component Replacement" on page 13-15.)

2. Locate the ELT remote control panel.
3. Use a T10 Torx driver to remove the four 6-32 screws attaching the black ICA009273 Bracket to the orange audio alert indicator and RCPI.



4. Remove the four retaining screws which secure the top cover to the audio alert indicator P/N E-04.7
5. Carefully remove the top of the indicator exposing the battery compartment.



6. Install a Duracell CR-2,3 or equivalent battery. Make sure to observe the battery polarity.
7. Replace the top cover, making sure the grill portion of the indicator cover is positioned over the buzzer.
8. Mount the audio alert indicator and RCPI back into the overhead console, securing them with the ICA009273 Bracket and four screws.
9. Replace the overhead console mount.

10. Replace the overhead console bezel.
11. Enter the audio indicator's battery expiration date in the aircraft airframe log book.

#### VERIFICATION METHOD:

This task is complete when the overhead console bezel has been replaced and the new battery expiration date has been recorded in the log book.

**NOTE:** *The ELT Remote Battery should be checked and replaced at the same time.*

#### RELATED INFORMATION:

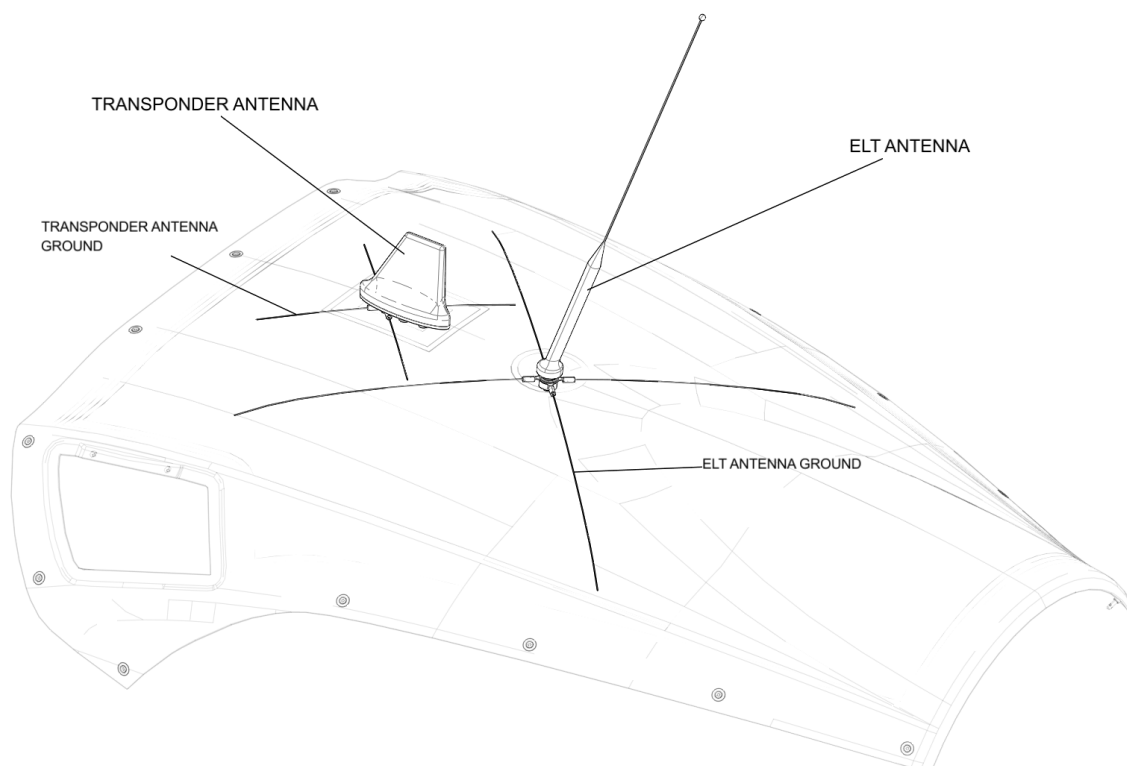
"ELT Access" on page 13-42

"ELT Remote Control Panel Battery Replacement" on page 13-50

"Overhead Console Component Replacement" on page 13-15

### 13.5.4.4 ELT Transponder and Transmitter Replacement

#### 13.5.4.4.1 ELT Transponder and Transmitter Antenna Replacement



**FIGURE 13-10**  
ELT TRANSPONDER AND TRANSMITTER ANTENNA REPLACEMENT

### 13.5.4.4.2 ELT Transponder and Transmitter Antenna Assembly

Use the following task to replace the ELT transponder and transmitter.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

ICA012199 ELT ANTENNA

ICA012182/ICA009540 ELT ANTENNA GROUND

**Aircraft System and Number**

10 – Instruments (and Avionics)

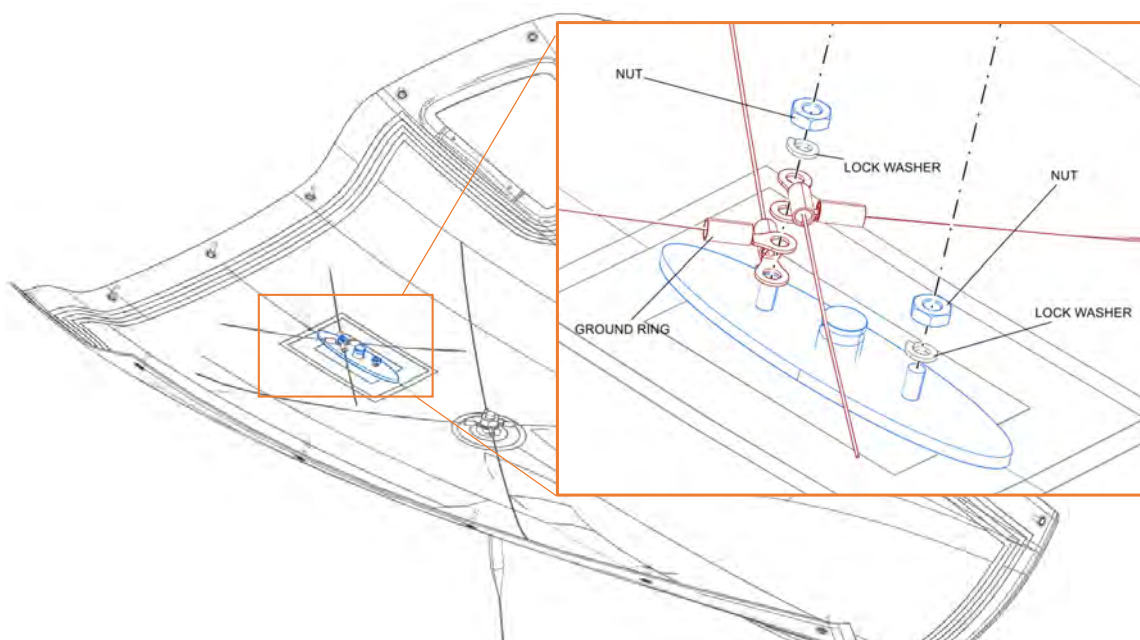
**Consumables**

Loctite 243 THREADLOCKER

---

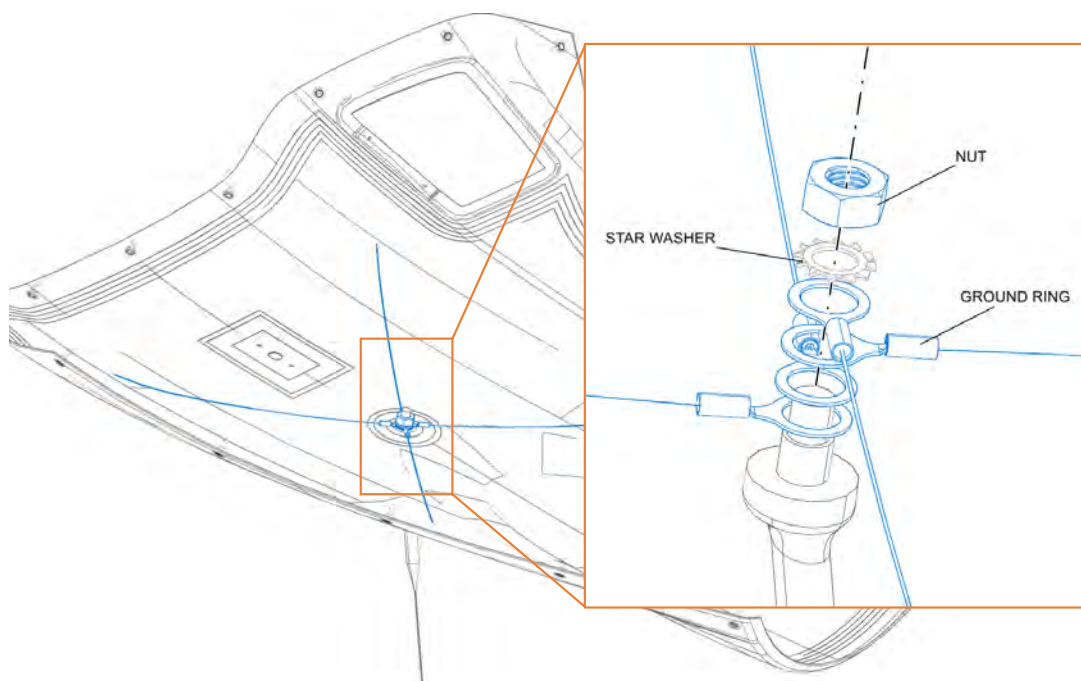
#### TASK INSTRUCTIONS:

1. Remove top engine cowling. (See “Remove Engine Cowlings” on page 16-13.)
2. Loosen the nuts and lock washers to remove the TRANSPONDER ANTENNA.



**FIGURE 13-11**  
REMOVE TRANSPONDER ANTENNA

3. Remove the nut and star washer to remove the ELT ANTENNA.
4. If ground wires need to be replaced, carefully remove the adhesive bonding the eight ground wires to the cowl surface, otherwise leave ground wires in place.

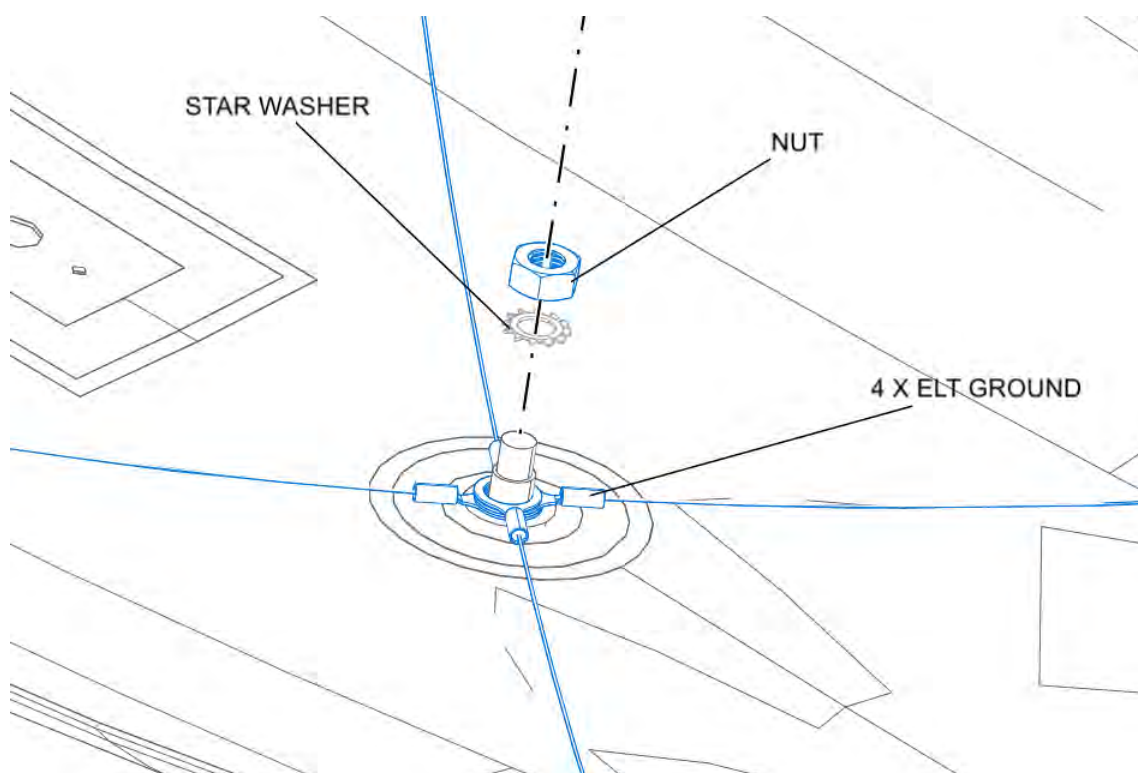


**FIGURE 13-12**  
REMOVE ELT ANTENNA

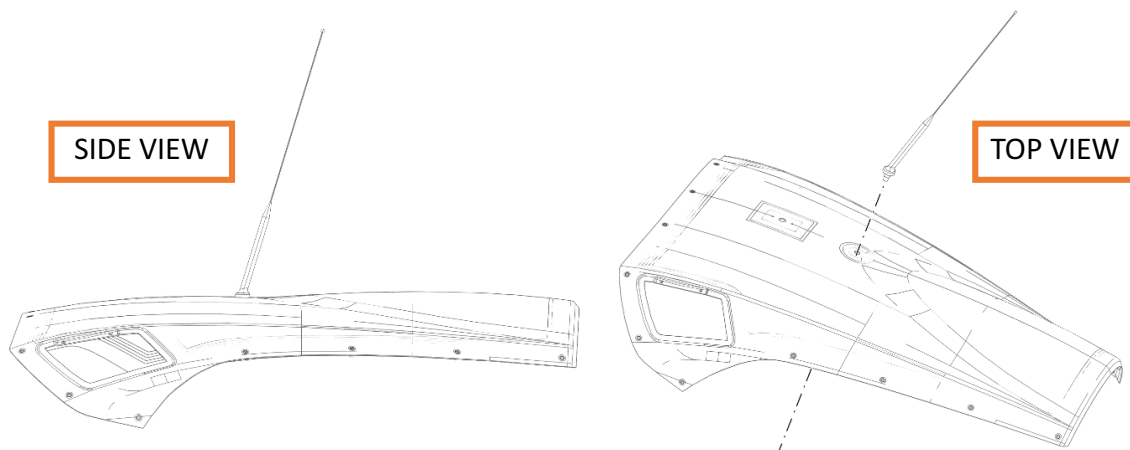


To install ELT ANTENNA, see Figure 13-13 below:

5. Ensure its seal is in its groove.
6. Insert antenna through noted hole in cowl. Ensure antenna is oriented as shown.
7. If no ground wires are in place:
  - a. Install ground wires (4 terminals) on lower unpainted side of cowl and secure using star washer and nut. Ensure that each ring terminal is at a 90° angle from one another.
  - b. Orient the four ground wires 90° from one another as shown. (See Figure 13-14.)
  - c. Temporarily secure ground wires using tape.
  - d. Add Loctite 243 and torque nut to 13-15 in-lbs. Ensure ground wire terminals do not rotate.



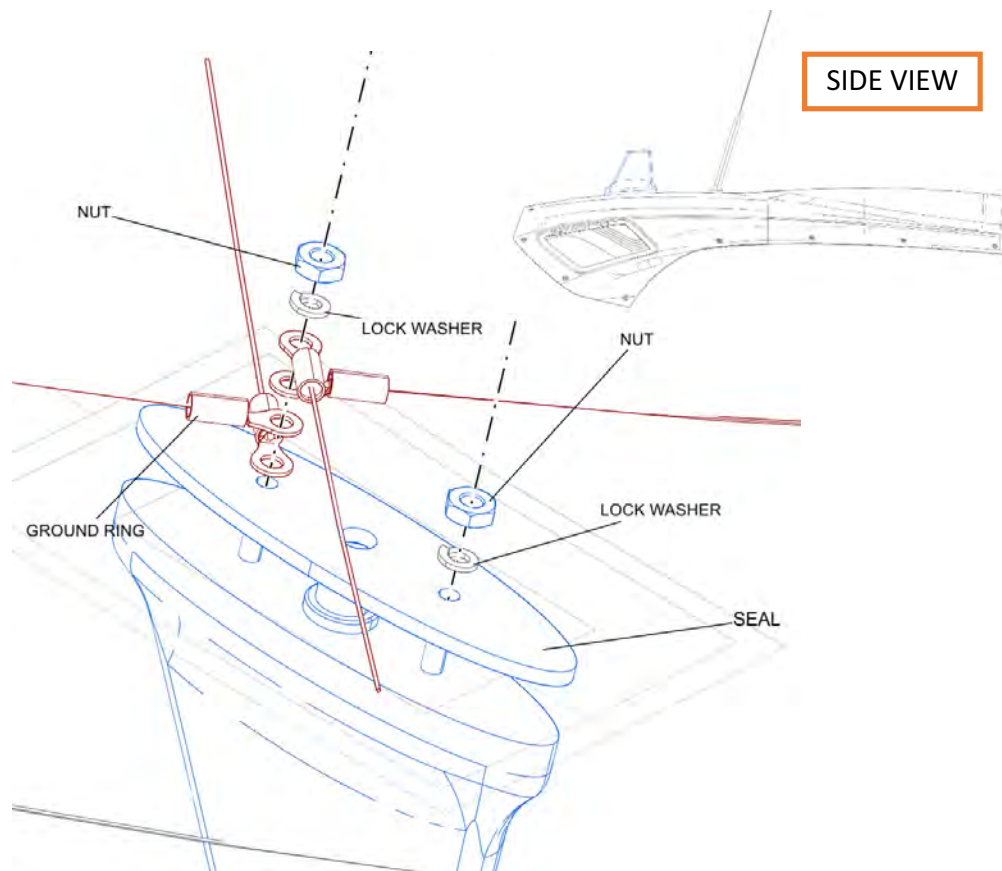
**FIGURE 13-13**  
INSTALL ELT ANTENNA



**FIGURE 13-14**  
ELT ANTENNA ORIENTATION

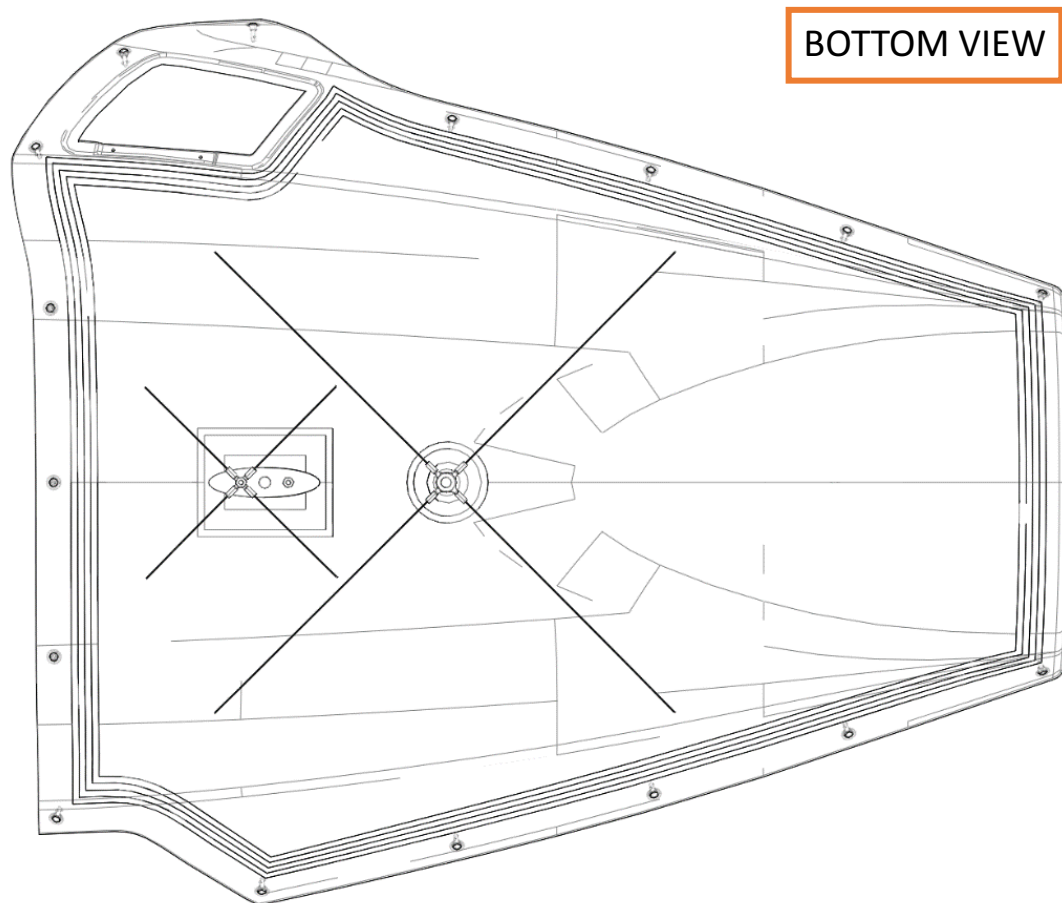
To install TRANSPONDER ANTENNA:

8. Remove and discard metal plate that comes with transponder antenna.
9. Place seal on antenna.
10. Position antenna on cowl with studs inserted in the noted holes. Ensure antenna is oriented as shown in Figure 13-15. Secure the noted stud using lock washer and nut (both included with antenna).
11. If no ground wires already in place:
  - a. Install ground (4 terminals) on the noted stud on lower unpainted side of cowl. Secure using the other lock washer and nut. Ensure each ring terminal is at a 90° angle from one another.
  - b. Orient 4x ground wires 90° from one another as shown.
  - c. Temporarily secure ground wires using tape.
12. Torque nut to 13-15 in-lbs. Ensure ground wire terminals do not rotate.



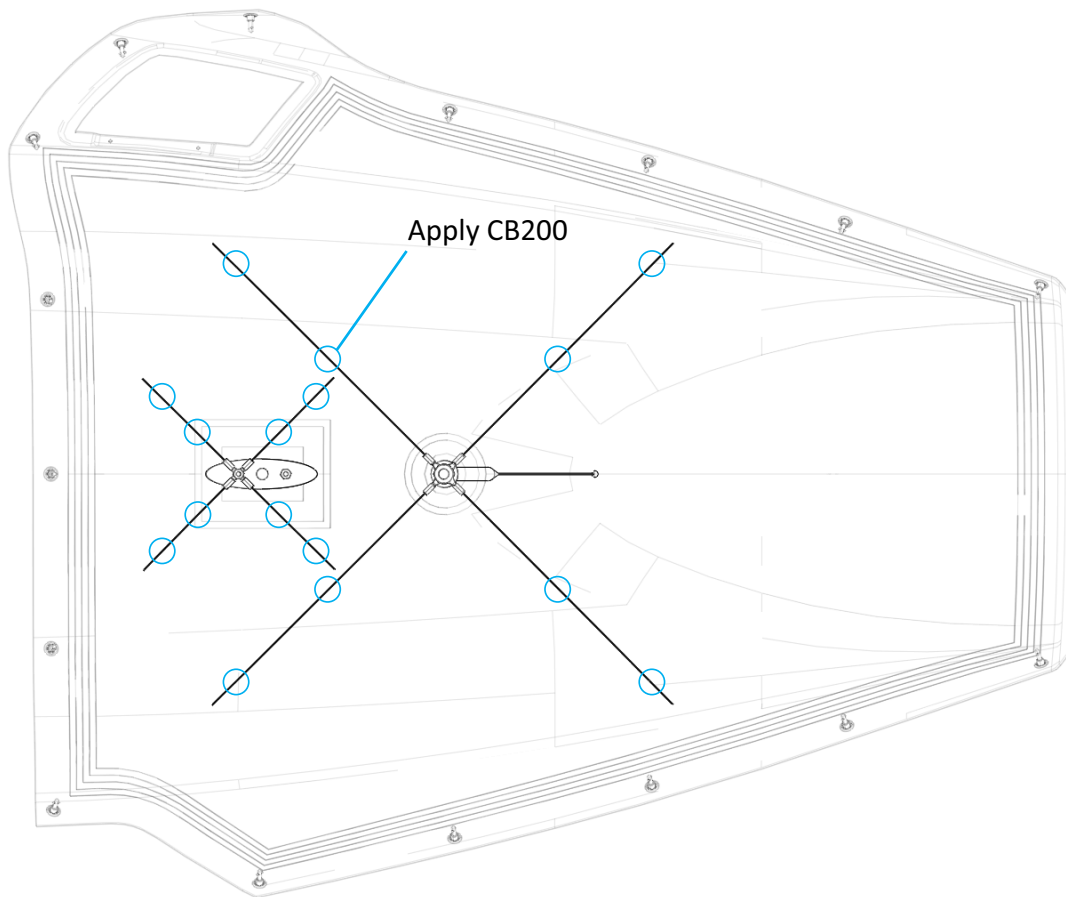
**FIGURE 13-15**  
INSTALL TRANSPONDER ANTENNA

13. Ensure ELT and transponder antenna ground wires do not overlap and are not touching one another.



**FIGURE 13-16**  
BOTTOM VIEW OF TOP ENGINE COWLING AFTER ANTENNAS ARE INSTALLED

14. If ground wires have not been bonded:
  - a. Lightly abrade cowl surface inside tape squares and clean with isopropyl alcohol. Secure ground wires to inside surface of engine cowl using CB200 with nominal diameter of 1/2".



**FIGURE 13-17**  
BOND GROUND WIRES TO COWL SURFACE

- b. Allow adhesive to become tacky before removing masking tape. Use caution to ensure wires do not get pulled out of the adhesive. Allow 30 minutes for the adhesive to cure.
15. Reinstall the top engine cowl. (See "Install Engine Cowlings" on page 16-16.)

#### VERIFICATION METHOD:

Perform ELT unit self-test according to SELF TESTS of Section 9 of ACK Technologies Inc. Model E-04 ELT Installation/Operation Manual, or See "ELT Battery Self Test" on page 13-47.

#### RELATED INFORMATION:

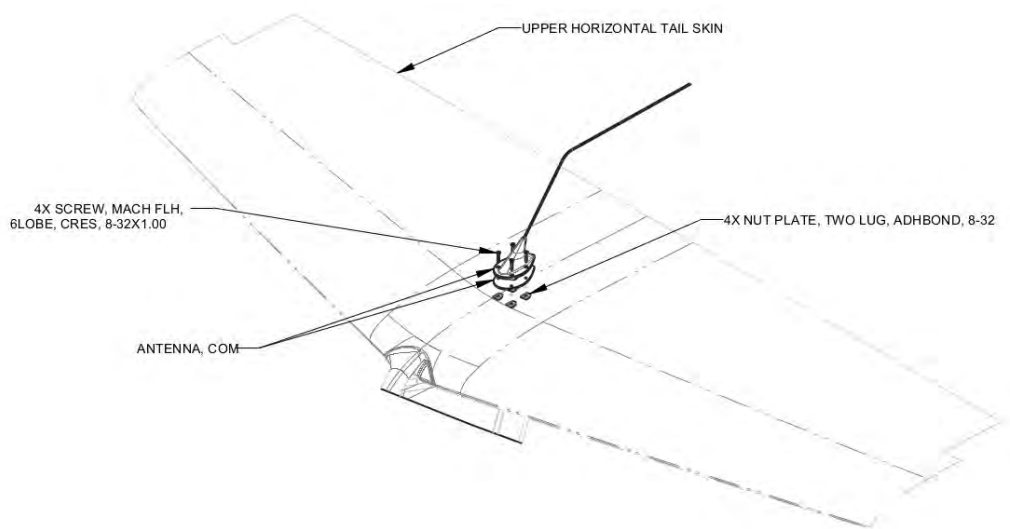
- "Remove Engine Cowlings" on page 16-13
- "Install Engine Cowlings" on page 16-16
- "ELT Battery Self Test" on page 13-47

## 13.6 VHF Comm Antenna

### 13.6.1 VHF Comm Antenna Description

The comm antenna is located on top of the horizontal tail and works in conjunction with the VHF radio located in the front of the aircraft. (See Figure 13-18.) The antenna transmits on the VHF radio spectrum – also known as aircraft band. This allows for communication between air traffic control and aircraft pilot.

### 13.6.2 VHF Comm Antenna Diagram/Schematic



**FIGURE 13-18**  
COMM ANTENNA – EXPLODED VIEW

### 13.6.3 Maintenance Instructions

#### 13.6.3.1 Comm Antenna Removal

These instructions are to be used to remove the comm antenna for transportation or repair.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

The comm antenna is located on top of the horizontal tail.

---

**TASK INSTRUCTIONS:**

1. Remove antenna 4 8-32x1.00 screws.
  2. Raise the antenna from the horizontal tail surface to disconnect the BNC connector.
- 

**VERIFICATION METHOD:**

This task is complete when the comm antenna has been removed from the aircraft.

### 13.6.3.2 Comm Antenna Installation

These instructions are to be used to install the comm antenna after transportation or repair.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

The comm antenna is located on top of the horizontal tail.

---

**TASK INSTRUCTIONS:**

1. Connect the antenna to the BNC connector.
  2. Install antenna 4 8-32x1.00 screws.
- 

**VERIFICATION METHOD:**

The task is finished when the antenna is fully installed.



## 13.7 DAC Memory Unit

### 13.7.1 Maintenance Instructions

#### 13.7.1.1 DAC Memory Unit Removal

The A5 contains a memory unit that records data from operations. Use this task to remove the DAC memory unit.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

2mm long-reach hex head wrench

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

---

##### TASK INSTRUCTIONS:

1. Remove left side instrument panel cover (ICA001703) by carefully lifting up on the aft edge of the cover to release the ball mounts from the rubber sockets. The cover's forward edge is retained by a plastic pin that slides aft out of a receptacle. Set the cover aside.

2. Locate the DAC912iS (ICA010394). It is mounted to the forward face of the right-side instrument panel and can be reached through the instrument panel cover opening.
3. Remove the DAC memory unit (a 1 x1 x 2 inch cube) by removing the four retaining screws using a 2mm long-reach hex wrench. Use care to avoid dropping screws. Retain the screws for re-installation.

**VERIFICATION METHOD:**

Task is complete when DAC memory unit has been removed.

**RELATED INFORMATION:**

"DAC Memory Unit Re-Installation" on page 13-66

### 13.7.1.2 DAC Memory Unit Re-Installation

The A5 has a memory unit that records data from operations. Use this task to re-install the DAC memory unit.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

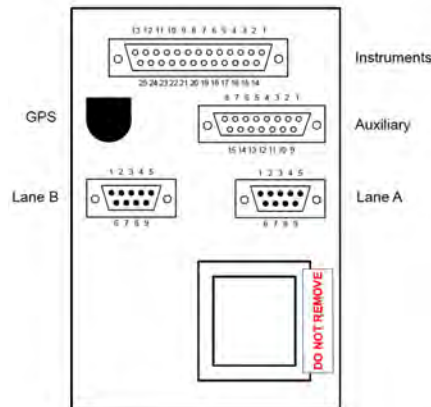
**Consumables**

None

**TASK INSTRUCTIONS:**

1. Position the DAC memory unit such that the pins are facing aft, the two columns of pins are vertical, and the pins are biased to left side of the aircraft, then re-insert the DAC SD card into the DAC912iS unit. The card should slide easily in.

2. Re-install the for 2mm internally wrenched hex screws. Torque to snug (~10 in-lb<sub>f</sub>). Do not over tighten as they are easily stripped.
3. Install "DO NOT REMOVE" tamper-proof placard (ICA010871) as shown below.



4. Re-install left side instrument panel cover (ICA001703) by first inserting the cover's forward plastic pin into the left side instrument panel top receptacle. Align the ball studs on the cover with the receptacles on the instrument panel cover and press the ball studs down into the rubber receptacles.

#### VERIFICATION METHOD:

Verify security of the instrument panels and DAC installation.

#### RELATED INFORMATION:

"DAC Memory Unit Removal" on page 13-65

### 13.7.1.3 DAC Software Version

#### 13.7.1.3.1 Verify DAC Software Version

Use this task to verify the DAC memory unit software version.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

**Special Tools Required**

2mm long-reach hex head wrench

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

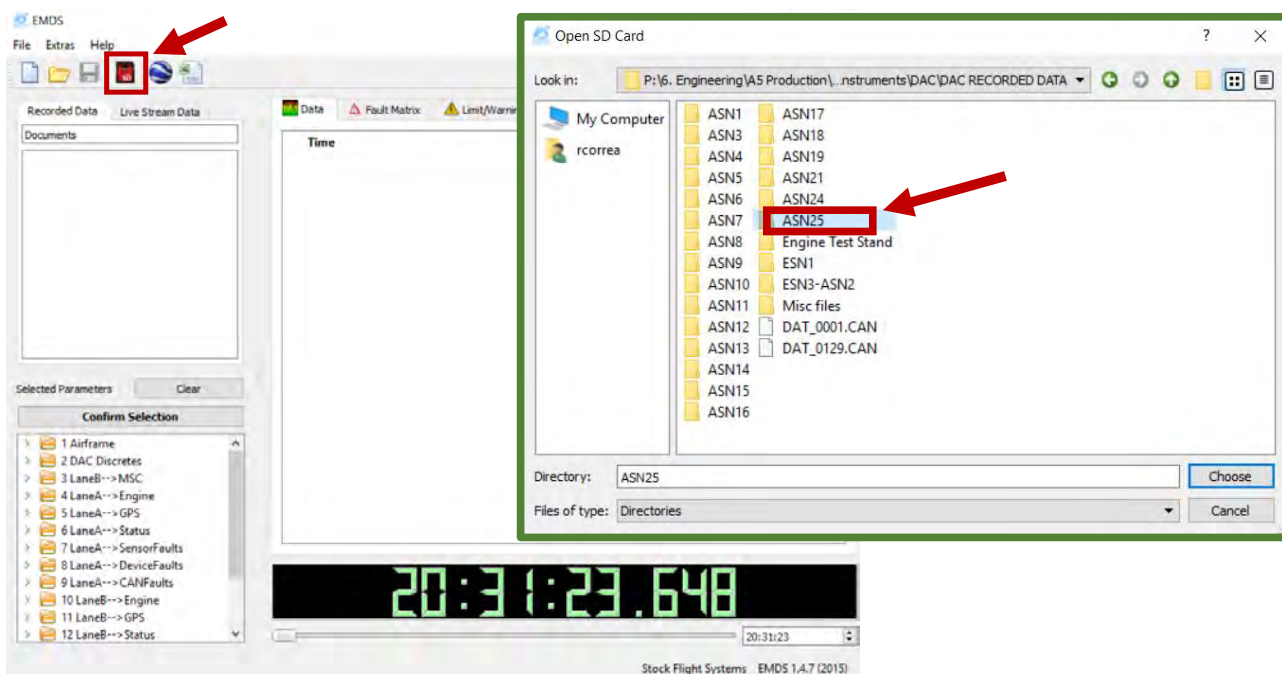
**Consumables**

None

**TASK INSTRUCTIONS:**

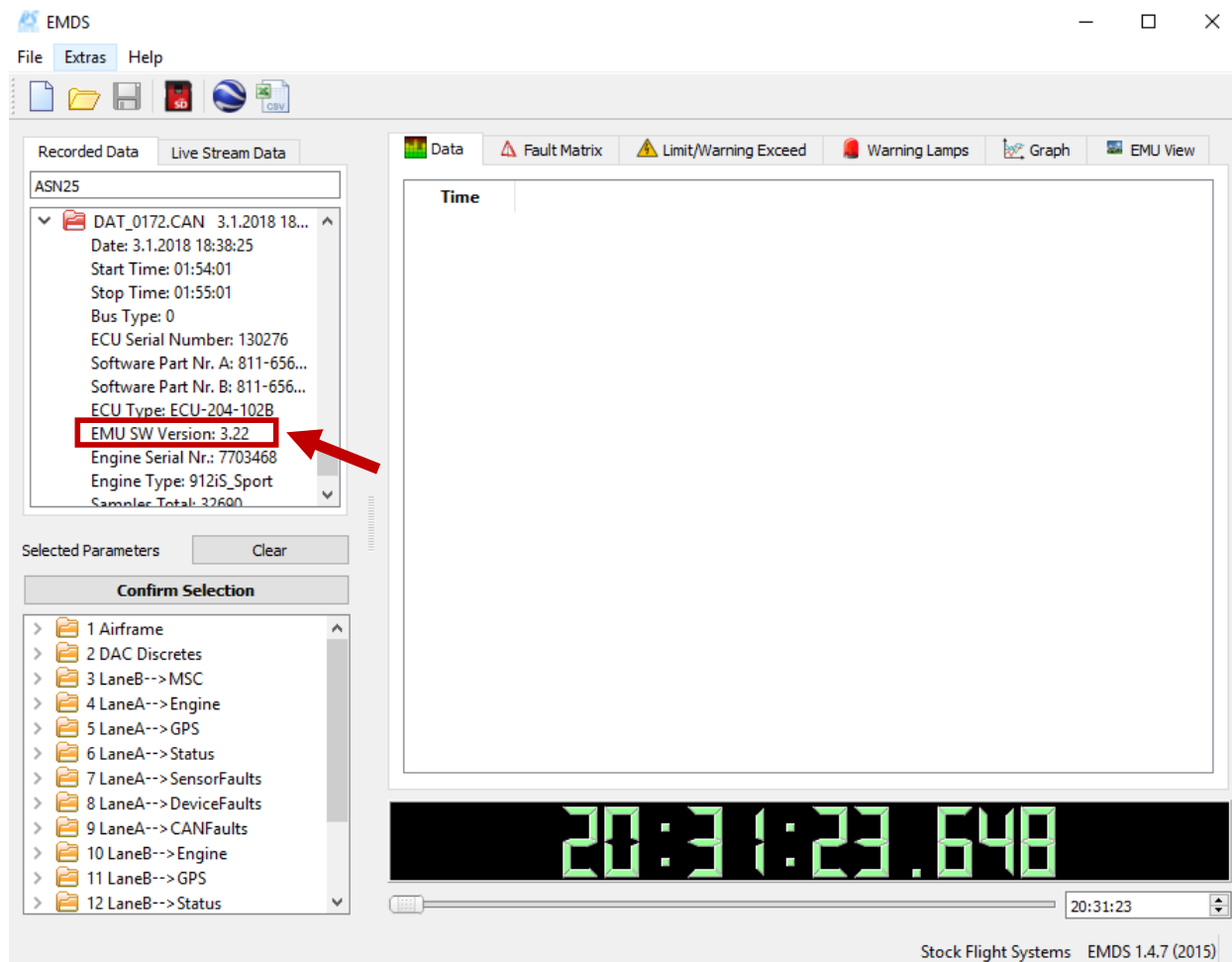
1. Turn on master switch.
2. Turn key switch to A for six minutes with the DAC unit installed.
3. Turn key switch to OFF position and turn OFF master switch.
4. Remove the DAC memory unit. (See “DAC Memory Unit Removal” on page 13-65.)
5. Connect DAC memory unit to the memory unit adapter and connect to USB port on a computer.
6. Open EMDS on the computer, click on the SD card button on top LH side to load folder. Select folder containing recorded DAC data and load the data (See Figure 13-19.) by clicking on “Choose”. The DAC data file is in the following format: DAT\_XXXX.CAN

**NOTE:** “xxxx” is a decimal file number range from 0001 to 9999. For each restart of the DAC unit or after one hour of engine operation a new data file is created, and the previous file will be closed.



**FIGURE 13-19**  
LOAD DAC DATA FILE

7. From the EMDS interface, expand the DAT file by clicking the downward point arrow located to the left of the DAC data file. The expanded view shows the file's basic information. Verify the "EMU SW Version" indicates the latest software. (See Figure 13-20.)



**FIGURE 13-20**  
VERIFY DAC SOFTWARE VERSION

8. If the software is not the most current version, contact ICON to send DAC unit for software update.

#### VERIFICATION METHOD:

This task is complete upon successful verification of current version for the DAC software version.

## 13.8 Pitot-Static-Angle of Attack (AOA) System

### RELATED INFORMATION:

"Remove Instrument Cluster" on page 13-29

### 13.8.1 Inspection Instructions

#### 13.8.1.1 Pitot-Static-AOA Leak Test Procedures

Use the following procedures any time a pitot-static or AOA tube is disconnected. An alternative procedure may be used to test the pitot-static system only. The AOA system test must use a pitot-static test unit.

### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Preston PS-525 Pitot-Static Test Set (or equivalent)

ITW Tacky Tape

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

The Preston PS-525 Pitot-Static Test Set is used to check for leaks in the pitot-static and AOA systems. Other equivalent pitot-static test instruments may also be used, and the procedures for them should be similar. When using a different test set, use these procedures as guide for test methodology while referring to the manufacturer's instructions.

It is acceptable to create connections using alternate means than shown in these procedures so long as they are confirmed to be leak free.

It is preferable that a calibrated test set be used, but if not readily available, the pitot-static system can be tested with simple tools such as a syringe. (See "Pitot Static Leak Check Operation" on page 13-75.)

The AOA system test must use a pitot-static test unit since there is no in-line airspeed or altimeter to use as a pressure reference.

The procedures given within this section describe in detail how to complete the leak testing procedures. (See “Pitot-Static-AOA Leak Test Procedures” on page 13-70.) Record the results of each of the tests in the Verification Method section below.

**CAUTION:** *The airspeed and altimeter are delicate instruments. Care must be taken when applying pressure to the pitot-static system to avoid pressures and rapid changes of pressure that could damage the instruments.*

---

#### TASK INSTRUCTIONS:

1. Perform the pitot-static tester setup. (See “Preston Pressure Pitot-Static Tester Set-Up” on page 13-72.) Record the results in the Verification Method section below.  
  
     *NOTE: There is an alternative procedure if the test equipment is not available.*
  2. Perform the pitot-static leak check or alternative pitot-static leak check operation. (See “Alternate Pitot-Static Leak Test Procedure” on page 13-81.) Record the results in the Verification Method section below.
  3. Perform the AOA system testing. (See “AOA System Testing” on page 13-79.) Record the results in the Verification Method section below.
- 

#### VERIFICATION METHOD:

Complete the following information as the test procedures above are being completed.

FAR Part 23.1325 states that the static system may not leak more than 100 ft in one minute after starting at 1,000 ft above ambient pressure. The ICON flight test standard is 50 ft for the altimeter and AOA tests, and 5 knots for the airspeed test as conducted above.

Check that each of the numbers in the results is within ICON limits.

#### Test Details

Date of Test: \_\_\_\_\_

Initials of Technician: \_\_\_\_\_

#### Pitot Leak Check

Total amount of leak during the test: \_\_\_\_\_ kts

#### Static Leak Check

Total amount of leak during the test: \_\_\_\_\_ ft

#### AOA Leak Check

Total amount of leak during the test:

Upper Port: \_\_\_\_\_ ft

Lower Port: \_\_\_\_\_ ft

If the system is outside of ICON limits, then there is a leak in the pitot-static system and the full system must be inspected and all leaks repaired.

## RELATED INFORMATION:

- "Preston Pressure Pitot-Static Tester Set-Up" on page 13-72
- "Pitot Static Leak Check Operation" on page 13-75
- "AOA System Testing" on page 13-79
- "Alternate Pitot-Static Leak Test Procedure" on page 13-81
- "Replace Instrument Panel Gauge" on page 13-26

### 13.8.1.1.1 Preston Pressure Pitot-Static Tester Set-Up

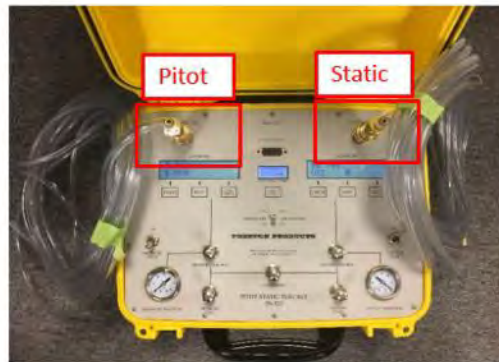
Instructions for setting up the test equipment for completing the pitot-static-AOA leak tests.

---

**TASK INSTRUCTIONS:**

1. Connect the pitot hose to the Pressure side of the PS-525 unit.
2. Connect static port hose to Vacuum side of the PS-525 unit.

**NOTE:** The static port hose has barbed fitting reducer to a smaller hose on one end along with a BFST26-820 fitting at the end.

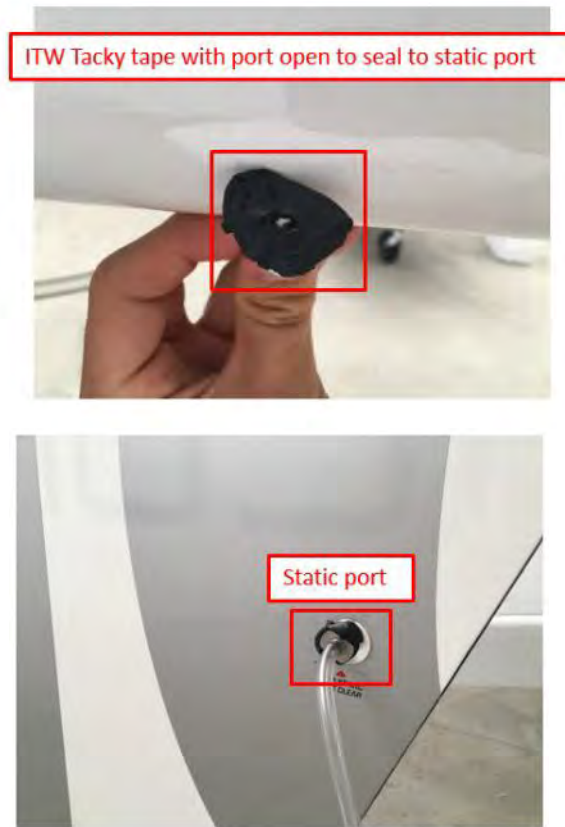


3. Locate the pitot probe on the left side center wing and attach the pressure port hose to the pitot probe. Ensure that the hose is slid onto the pitot probe until it contacts the vertical part of the probe. Secure with a plastic tie wrap.





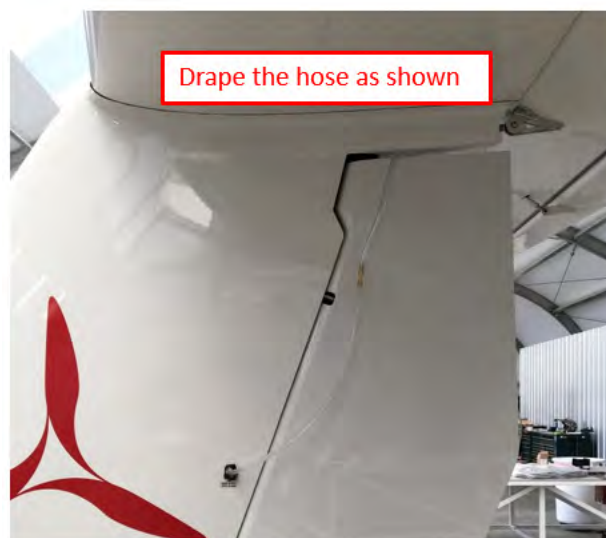
4. Locate left side static port. Using ITW Tacky Tape, secure the BFST26-820 connector to the surface of the vertical tail ensuring there is no air leak. Ensure the center of the connector is clear to allow for air flow.



5. Seal the right side static port with aluminum tape and ensure that an air tight seal is completed by using a plastic scraper to rub the tape around the static port.



6. Drape the static port hose up and over the top of the rudder to remove any strain on the hose that could cause the tacky tape to slowly peel off.



#### VERIFICATION METHOD:

Double check that all connections are made correctly and that there is no strain on hoses.

## RELATED INFORMATION:

"Pitot-Static-AOA Leak Test Procedures" on page 13-70

### 13.8.1.1.2 Pitot Static Leak Check Operation

Instructions for conducting the pitot-static-AOA leak check with the test equipment.



**CAUTION:** The airspeed and altimeter are delicate instruments. Care must be taken when applying pressure to the pitot-static system to avoid pressures and rapid changes of pressure that could damage the instruments.

#### TASK INSTRUCTIONS:

1. On the front panel of the PS-525 tester, ensure that the **Pressure Pump** and **Vacuum Pump** switches are both OFF.
2. Close the **Pressure Control** and **Vacuum Control** and **Crossbleed** valves by rotating clockwise until they seat.

*NOTE: DO NOT Over tighten the valves*

3. Open the **Pressure Vent** and **Vacuum Vent** valves.
4. Ensure that the **Pressure Reservoir** and **Vacuum Reservoir** gages indicate 0 psi and 0 inHg respectively.
5. Power on the PS-525 to 12 volts by pulling up on the power switch in the center of the box to unlock, then swinging the switch down to +12 V.

The system will go through a boot cycle then should display as shown in the top photo with a variation in altitude depending on the ambient conditions of the day. Note the altitude shown as a reference for future steps.

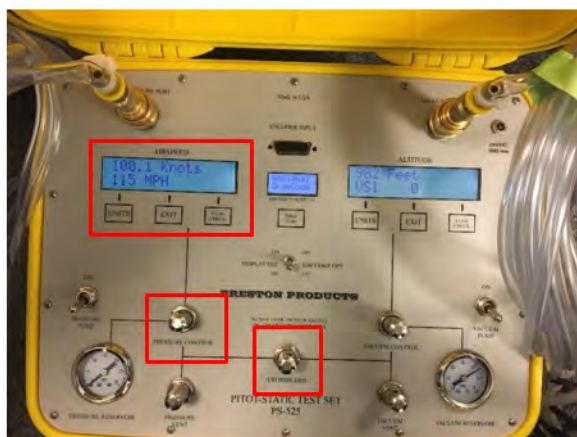
6. Close the **Pressure Vent** and **Vacuum Vent** valves.
7. Switch on the **Pressure Pump** until it reads 10-15 psi.
8. Switch on the **Vacuum Pump** until it reads 15-20 inHg.
9. Open the **Crossbleed** valve.
10. Carefully open the **Vacuum Control** valve. It will turn approximately 3/4 of a turn (counter-clockwise) before the valve opens. Climb the altitude on the display no faster than 4,000 ft/min to approximately 1000 ft greater than the indicated number with the **Vacuum Control** valve closed and the **Vacuum Vent** open. Carefully close the **Vacuum Control** valve.

**NOTE:** In the above example the altitude should be increased to approximately 1066 ft.

**NOTE:** Should you exceed the desired altitude, carefully open the **Vacuum Vent** to bleed off the altitude until the desired altitude is indicated.

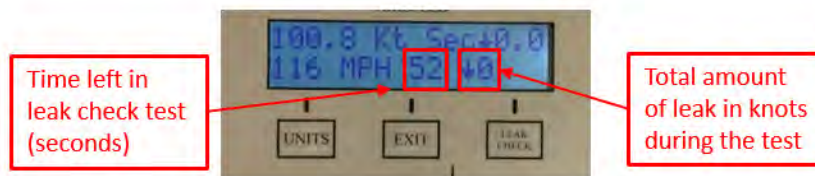


11. Carefully close the **Crossbleed** valve by turning clockwise.
12. Carefully open the **Pressure Control** valve. It will turn approximately 3/4 of a turn before the valve opens. Increase the indicated airspeed on the display to 100 knots. Carefully close the **Pressure Control** valve.



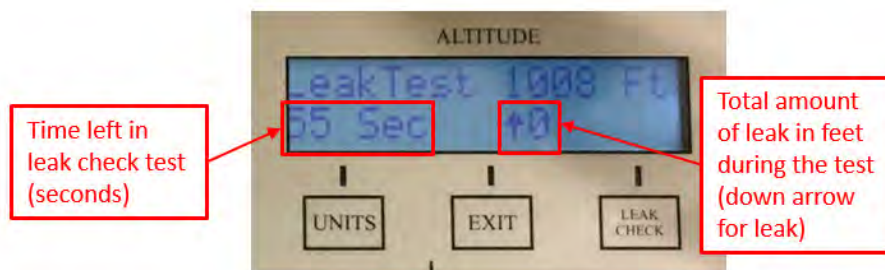
13. Look at the airspeed indicator in the cockpit and verify that the indicated airspeed is within 5 knots of what is displayed on the PS-525 airspeed display.
14. Press the **Leak Check** button under the **Airspeed** display.
15. Press **Leak Check** two more times until the screen indicates 60 sec, then press the **Units** button to start the leak check.

**NOTE:** The ICON standard is no more than a 5-knot total leak over 60 seconds.



16. Press **Exit** on the **Airspeed** display.
17. Press the **Leak Check** button under the **Altitude** display.
18. Press **Leak Check** two more times until the screen indicates 60 sec, then press the **Units** button to start the leak check.

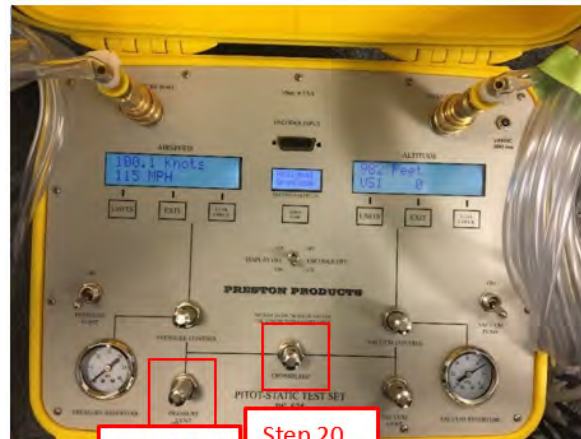
**NOTE:** The ICON standard is no more than a 50 feet total leak over 60 seconds.



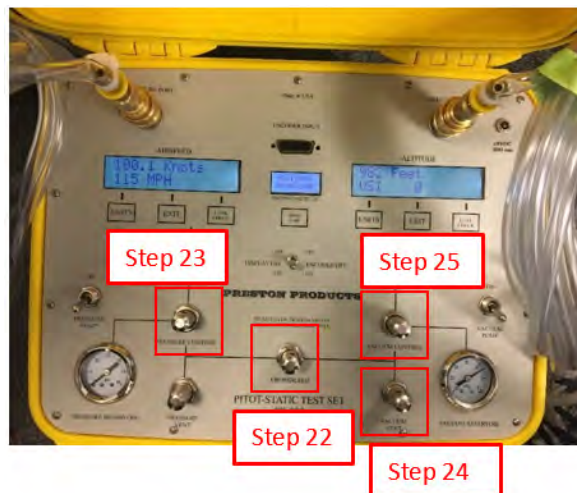
19. Press **Exit** on the **Altitude** display.



20. Return the system to ambient pressures by carefully opening the **Crossbleed** valve ensuring not to exceed 4,000 ft/min on the **Altitude** display. Proceed until the **Airspeed** display shows 0.0 knots.



21. Lower the altitude by carefully opening the **Pressure Vent** ensuring not to exceed 4,000 ft/min on the **Altitude** display.
22. Close the **Crossbleed** valve.



23. Carefully open the **Pressure Control** valve to bring the **Pressure Reservoir** indicator to 0 psi.
24. Carefully open the **Vacuum Vent** valve.
25. Carefully open the **Vacuum Control** valve until the **Vacuum Reservoir** indicator shows 0 inHg.
26. Open the **Crossbleed** valve for storage.
27. Turn the PS-525 tester unit power to **Display Off**.
28. Record the results of the pitot leak check and static leak check in the Verification Method form of the parent task. (See "Pitot-Static-AOA Leak Test Procedures" on page 13-70.)

## RELATED INFORMATION:

"Pitot-Static-AOA Leak Test Procedures" on page 13-70

### 13.8.1.1.3 AOA System Testing

Instructions for conducting the pitot-static-AOA leak check with the test equipment.

**CAUTION:** *The airspeed and altimeter are delicate instruments. Care must be taken when applying pressure to the pitot-static system to avoid pressures and rapid changes of pressure that could damage the instruments.*

---

**TASK INSTRUCTIONS:**

1. Prepare the Preston Pressure Pitot-Static Tester Model PS-525 for use.
2. Connect the static port hose to **Vacuum** side of the PS-525 unit.

**NOTE:** *The static port hose has barbed fitting reducer to a smaller hose on one end along with a BFST26-820 fitting at the end.*



3. Locate the upper AOA port on the left wing mid span. Using ITW Tacky tape, secure the BFST26-820 connector to the upper wing surface ensuring there is no air leak around the AOA port.



4. Drape the hose up to the upper wing surface to remove any strain on the hose that could cause the tacky tape to slowly peel off.
5. Close the **Pressure Control**, **Pressure Vent**, **Vacuum Control**, and **Vacuum Vent** valves.  
*NOTE: DO NOT Over tighten the valves*
6. Open the **Crossbleed** valve.
7. On the front panel of the PS-525 tester, ensure that the **Pressure Pump** and **Vacuum Pump** switches are both OFF.
8. Power on the PS-525 to 12 volts by pulling up on the power switch in the center of the box to unlock, then swinging the switch down to +12 V.

The system will go through a boot cycle then should display as shown in the top photo with a variation in altitude depending on the ambient conditions of the day. Note the altitude shown as a reference for future steps.

9. Switch on the **Vacuum Pump** until it reads 15-20 inHg on the **Vacuum Reservoir** indicator.
10. Carefully open the **Vacuum Control** valve. It will turn approximately 3/4 of a turn (counter-clock-wise) before the valve opens. Climb the altitude on the display no faster than 4,000 ft/min to approximately 1000 ft greater than the indicated number with the **Vacuum Control** valve closed and the **Vacuum Vent** open. Carefully close the **Vacuum Control** valve.

*NOTE: In the above example the altitude should be increased to approximately 1066 ft.*

*NOTE: Should you exceed the desired altitude, carefully open the Vacuum Vent to bleed off the altitude until the desired altitude is indicated.*



11. Press the **Leak Check** button under the **Altitude** display.
12. Press **Leak Check** two more times until the screen indicates 60 sec, then press the **Units** button to start the leak check.

*NOTE: The ICON standard is no more than a 50 feet total leak over 60 seconds.*





13. Press **Exit** on the **Altitude** display.
14. Repeat the steps above for the lower AOA port.
15. Return the system to ambient pressures by carefully opening the **Pressure Vent** valve ensuring not to exceed 4,000 ft/min on the **Altitude** display.
16. Carefully open the **Vacuum Vent** valve.
17. Carefully open the **Vacuum Control** valve until the **Vacuum Reservoir** indicator shows 0 inHg.
18. Repair the AOA system if needed and repeat the leak tests until both upper and lower AOA port pass the test.
19. Open all valves for storage.
20. Turn the PS-525 tester unit power to **Display Off**.
21. Record the results of the AOA system leak check in the Verification Method form of the parent task. (See "Pitot-Static-AOA Leak Test Procedures" on page 13-70.)

RELATED INFORMATION:

"Pitot-Static-AOA Leak Test Procedures" on page 13-70

#### 13.8.1.1.4 Alternate Pitot-Static Leak Test Procedure

This procedure describes a method of testing the pitot-static system for leaks when a proper test instrument is not available. This procedure CANNOT be used to test the AOA system.

TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Plastic Syringe (at least 60 mL capacity)  
Flexible PVC tubing that fits tightly over pitot tube  
ITW Tacky Tape

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Connect syringe to pitot port using flexible tubing pushed over the tip of the pitot tube.
  2. Slowly apply pressure with the syringe until the airspeed indicator reads 100 knots. With 100 knots set, start timing while tapping glass of instrument.
  3. Record the new airspeed reading result after one minute.
  4. Remove test setup.
  5. Adjust the altimeter baro setting until an even altitude is displayed.
  6. Seal one instrument static port with tape.
  7. Secure syringe to open static port with ITW Tacky Tape. Slowly apply suction (this will add suction to both the static and pitot sides at the same time) until a 1,000 ft increase in indicated altitude is displayed.
  8. With the new altitude set, begin timing while tapping glass of instrument. After one minute, note the displayed altitude and record the results.
- 

RESULT:

**Date of Test:**

**Initials of Technician:**

**Airspeed Reading at Time 0 sec:**

**Airspeed Reading at Time 60 sec:**

**Altitude Reading at Time 0 sec:**

**Altitude Reading at Time 60 sec:**

FAR Part 23.1325 states that the static system may not leak more than 100 ft in one minute after starting at 1,000 ft above ambient pressure. The ICON flight test standard is 50 ft for the altimeter test and 5 knots for the airspeed test as conducted above.

**VERIFICATION METHOD:**

If the system is outside of ICON limits, then there is a leak in the pitot-static system and the full system must be inspected and all leaks repaired.

**RELATED INFORMATION:**

"Multiple Systems Controller (MSC) Replacement" on page 13-27

"Pitot-Static-AOA Leak Test Procedures" on page 13-70

## **13.8.2 Maintenance Instructions**

### **13.8.2.1 Verify Altimeter Calibration**

This section contains instructions to calibrate the altimeter for regular inspections.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Call the nearest airport and obtain altitude at the current location and barometric pressure at the time.
2. Turn master switch ON.
3. Adjust the Kollsman knob on the altimeter to match the barometric pressure.
4. Check the altimeter needle reading against current altitude to ensure it is within the allowed tolerance shown in Table 13-3. If the reading is outside the tolerance, contact ICON for warranty, remove and replace the altimeter. (See "Replace Instrument Panel Gauge" on page 13-26.)
5. Turn master switch OFF.

**Table 13-3:** Altimeter Calibration

Altitude	Tolerance
-1,000 to 1,000 feet	±100 feet
1,000 to 10,000	±200 feet
10,000 to 20,000	±400 feet

**VERIFICATION METHOD:**

Ensure the altimeter reading is within tolerance at current location.

**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Avionics and Electrical" on page 3-23  
 "Replace Instrument Panel Gauge" on page 13-26

**13.8.2.2 Pitot-Static-AOA Leak Troubleshooting**

Use the following procedures to troubleshoot the Pitot-Static-AOA System in case of leak during the Pitot-Static-AOA Leak Test. If the leak is not located at one of the following sections, locate the leak section and replace tubing.

**13.8.2.2.1 Check MSC**

Use this procedure to troubleshoot the Pitot-Static-AOA System in case of a leak.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Preston PS-525 Pitot-Static Test Set (or equivalent)

**Parts Required**

None

**Aircraft System and Number**

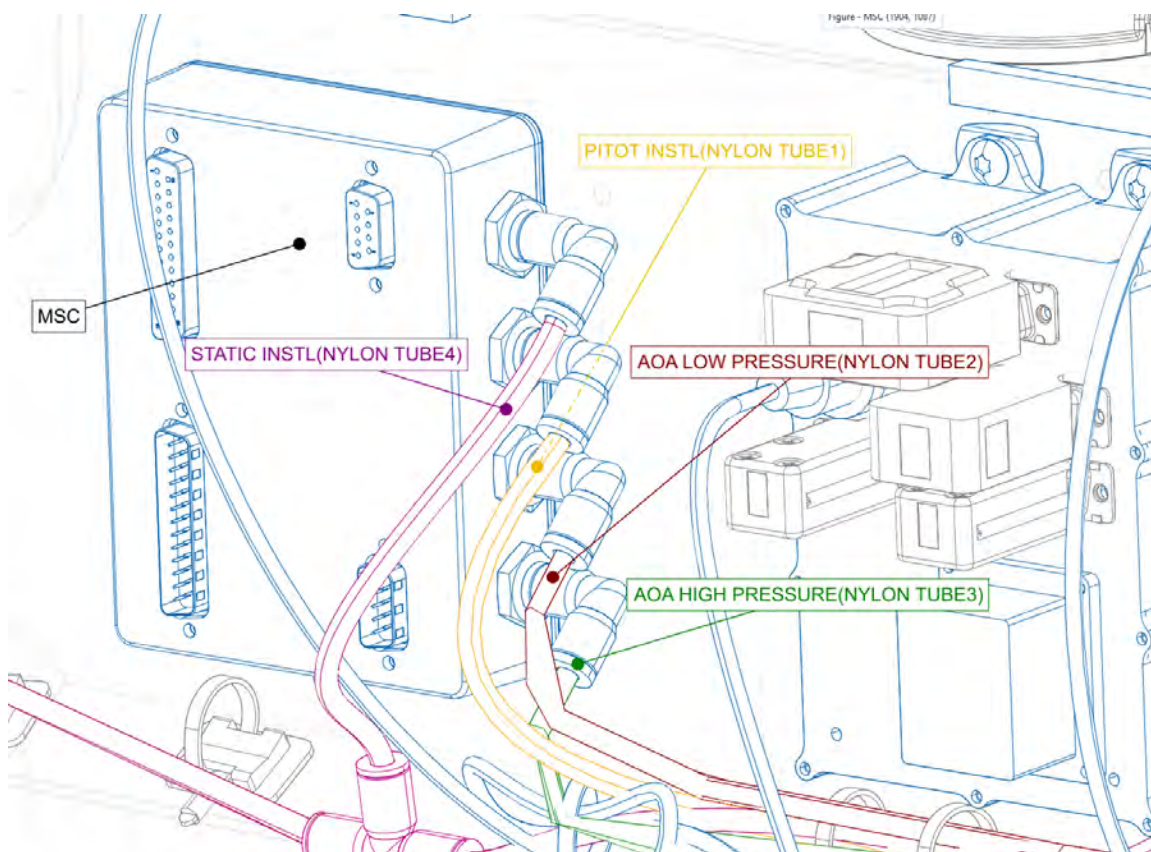
10 – Instruments (and Avionics)

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove the Right Instrument Panel Top Panel. (See “Right Instrument Panel Top Panel Removal” on page 8-17.)



**FIGURE 13-21**  
CONNECTION AT MSC

2. Remove the four nylon tubes connecting Pitot-Static-AOA System to MSC, mark each of them for reconnection.
3. Check the connections between MSC ports and tubing for issues; replace any damaged parts.

4. Reconnect the tubes in their original order.
  5. Perform a Pitot-Static-AOA System Leak Check to confirm no leaks at the MSC connections before proceeding. (See "Pitot-Static-AOA Leak Test Procedures" on page 13-70.)
- 

#### VERIFICATION METHOD:

If no leaks are found proceed to Check Wing Connections. (See "Check Wing Connections" on page 13-86.)

### 13.8.2.2.2 Check Wing Connections

Use the following procedure to check the wing connections for leaks.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Preston PS-525 Pitot-Static Test Set (or equivalent)

**Parts Required**

None

**Aircraft System and Number**

10 – Instruments (and Avionics)

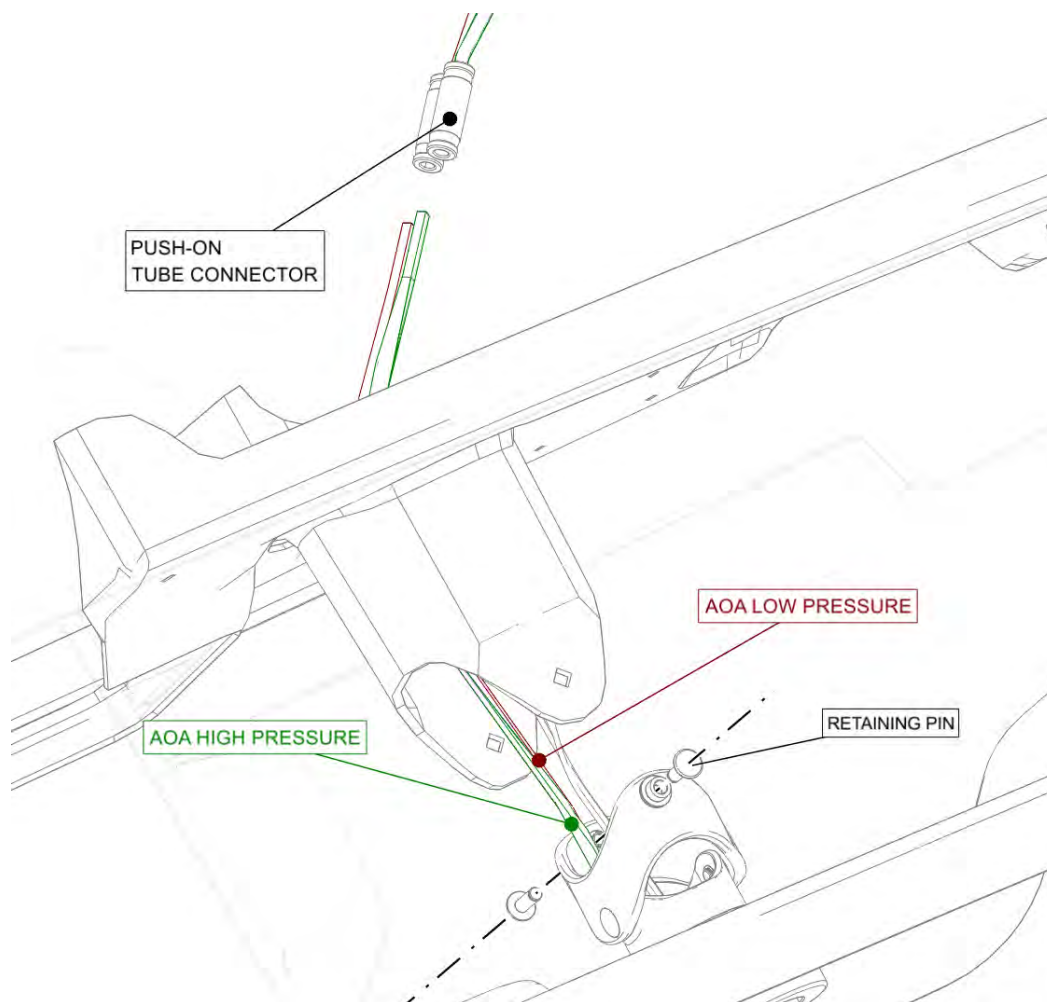
**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Locate the left wing hinge. (See "Remove Left Wing" on page 17-9. Steps one to three.)



**FIGURE 13-22**  
WING END AOA TUBE CONNECTION

2. Remove the retaining pins.
3. Locate the AOA HIGH PRESSURE and AOA LOW PRESSURE tube, pull out to access the push-on tubes connectors.
4. Mark the tube and check connection at push-on tube connectors, blow air into wing lines to clear any moisture or sitting water in lines. Reconnect the tubes in their original order.
5. Perform a Pitot-Static-AOA System Leak Check to confirm no leaks at the MSC connections before proceeding. (See "Pitot-Static-AOA Leak Test Procedures" on page 13-70.)
6. Reinstall the wing. (See "Install Left Wing" on page 17-12.)

**VERIFICATION METHOD:**

This task is complete when AOA system is fully functioning.





# Chapter 14

## LANDING GEAR

Landing Gear Description .....	14-3
Diagram/Schematic .....	14-4
Troubleshooting .....	14-5
Check Landing Gear Extended Position .....	14-5
Check Landing Gear Retracted Position .....	14-6
Main Landing Gear Inspection .....	14-8
Landing Gear Indicator Lights .....	14-10
Retraction and Extension Time .....	14-12
Nose Wheel Centering .....	14-13
Landing Gear Actuator Fuse Blown .....	14-15
Landing Gear Excessive Friction Check .....	14-16
Landing Gear General Maintenance .....	14-18
Wheel and Brake System Maintenance .....	14-18
Landing Gear Actuator Limit Switch Adjustment Procedure .....	14-19
Brake Line .....	14-21
Maintenance Instructions .....	14-21
Brake Line Replacement Procedure .....	14-21
Rudder Pedal Connector Lines Replacement .....	14-21
Forward Lines Replacement .....	14-23
Aft Lines Replacement .....	14-25
General Brake Line Termination Procedure .....	14-29
Parking Brake Valve Replacement Procedure .....	14-32
Parking Brake Valve Removal Procedure .....	14-33
Parking Brake Valve Assembly and Installation Procedure .....	14-34
Main Landing Gear .....	14-37
Maintenance Instructions .....	14-37
Main Landing Gear (MLG) Removal .....	14-37
Main Landing Gear (MLG) Installation .....	14-38
Main Landing Gear (MLG) Boot Removal .....	14-41
Main Landing Gear (MLG) Boot Installation .....	14-42
Re-Bond Main Landing Gear (MLG) Boot .....	14-44
Main Landing Gear (MLG) Wheel and Axle Removal .....	14-45
Main Landing Gear (MLG) Wheel and Axle Installation .....	14-48

Main Landing Gear (MLG) Actuator Removal .....	14-50
Main Landing Gear (MLG) Actuator Installation.....	14-51
Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Up....	14-52
Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down .	14-54
Nose Landing Gear .....	14-56
Inspection Instructions .....	14-56
Nose Gear Inspection.....	14-56
Maintenance Instructions.....	14-58
Nose Landing Gear (NLG) Wheel Removal .....	14-58
Nose Landing Gear (NLG) Wheel Installation .....	14-59
Nose Landing Gear (NLG) Leg Assembly Removal.....	14-60
Nose Landing Gear (NLG) Leg Assembly Installation.....	14-62
Nose Landing Gear (NLG) Cam Follower Replacement .....	14-66
Nose Landing Gear Steering Bearing Replacement Procedure .....	14-68
Remove Nose Landing Gear Steering Bearing .....	14-68
Prepare Nose Gear and Nose Gear Steering Bearing for Bonding.....	14-69
Bond New Nose Landing Gear Steering Bearing .....	14-71
Install New Nose Landing Gear Steering Bearing.....	14-72
Replace Nose Landing Gear Actuator.....	14-73
Nose Landing Gear Actuator Replacement .....	14-73
Nose Landing Gear Actuator Installation and Rigging.....	14-74
Nose Landing Gear (NLG) Rigging and Rigging Check with Landing Gear Up....	14-77
Nose Landing Gear (NLG) Rigging and Rigging Check with Landing Gear Down .	14-78
Nose Wheel Tire Leak .....	14-80
Aft Nose Landing Gear Door .....	14-83
Maintenance Instructions.....	14-83
Aft Nose Landing Gear (NLG) Door Mechanism Removal, Installation, and Rigging	14-83

## 14.1 Landing Gear Description

Those units and components which furnish a means of supporting and steering and stopping the aircraft on the ground and make it possible to retract and store the landing gear. Landing Gear Includes: wheels and tires, hydraulic components and hose/tubing, linkages, brakes, and parking brake handle and actuation mechanism. Also includes the functioning/rigging and maintenance aspects of the nose landing gear door.

The composite landing gear legs are lightweight and corrosion proof. The stainless steel wheel bearings are corrosion-resistant and extend time between required maintenance when used in salt water.

The self-centering, full 360° castering nose wheel allows for ease of movement when moving the A5 on the ground and aligns the nose wheel to the correct position for gear retraction. Steering is accomplished while taxiing via differential braking actuated by toe pressure on the rudder pedals. The electrically actuated, retractable landing gear system takes approximately seven seconds to retract. The left wing includes gear position mirrors used for visual confirmation of the gear position after verifying the indicator lights on the center console of the cockpit.

In the event of IPS deployment, the gear automatically extends to absorb additional energy at touchdown.

## 14.2 Diagram/Schematic



## 14.3 Troubleshooting

### 14.3.1 Check Landing Gear Extended Position

The following section contains the information required to evaluate the rigging of the landing gear components in the extended position.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Inclinometer

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

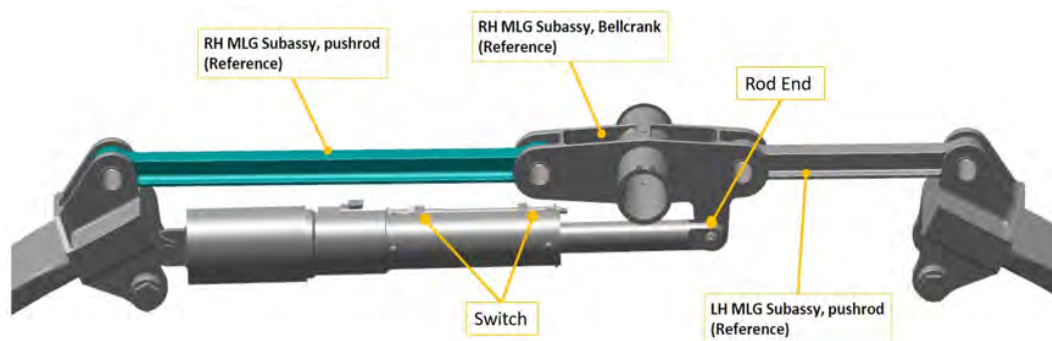
**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Remove the Aft Bulkhead Baggage Panel (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.) to access the landing gear control systems.
2. Jack the aircraft using the built-in jack points. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 3-32.)
3. Extend the landing gear to its deployed position.
4. With the aircraft jacked and level, zero a digital protractor along the longer of the two pushrods.



**FIGURE 14-1**  
MAIN LANDING GEAR INSTALLATION

5. Move the digital protractor to the Bellcrank surface and read measurement.  
*STEP RESULT:* The measurement on the protractor should read  $3.822 \pm .237^\circ$ .
6. Verify that the nose gear bellcrank and drag link are in line with one another in the extended position.
7. Turn on master switch and verify that in the cockpit the landing gear indicator is in the landing gear down position.

#### VERIFICATION METHOD:

Check that the results are within the acceptable limits.

#### RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34  
 "Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32  
 "Condition and 100-Hour Inspection – Landing Gear" on page 3-14

### 14.3.2 Check Landing Gear Retracted Position

The following section contains the information required to evaluate the rigging of the landing gear components in the retracted position.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove the Aft Bulkhead Baggage Panel (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.) to access the landing gear control systems.
  2. Jack the aircraft using the built-in jack points. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 3-32.)
  3. Initiate gear retraction.
  4. Verify landing gear indication moves to “In Transit” while actuators are working.
  5. Once stopped, verify blue landing gear up indication has been obtained.
  6. View the actuation process and verify the main landing gear connects with the up-stop. The up-stops are located near the wheel well, underneath the Seawings™ platform.
  7. Verify that the landing gear has fully retracted and the nose gear doors have withdrawn completely to provide a smooth closed outer surface.
  8. Extend landing gear.
  9. Turn off master switch.
  10. Replace Aft Bulkhead Baggage Panel.
  11. Lower the aircraft.
- 

**VERIFICATION METHOD:**

Verify that each check is passed successfully.

**RELATED INFORMATION:**

- "Removal and Installation of Inspection Panels and Fairings" on page 3-34
- "Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32
- "Condition and 100-Hour Inspection – Landing Gear" on page 3-14

### 14.3.3 Main Landing Gear Inspection

Inspect the main landing gear system.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

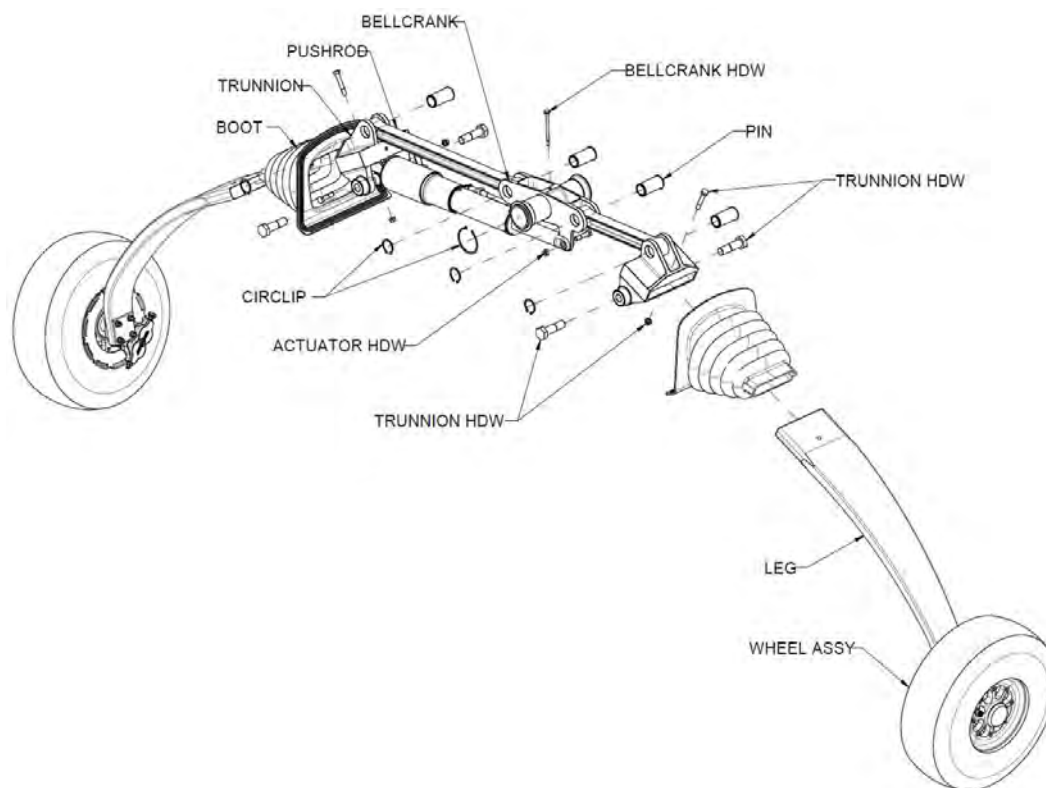
**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None





**FIGURE 14-2**  
MAIN LANDING GEAR ASSEMBLY DETAIL.

#### TASK INSTRUCTIONS:

1. Remove the Aft Bulkhead Baggage Panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.)
2. Jack the aircraft using the built-in jack points. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 3-32.)
3. Check for mechanical attachment.
  - a. Vibrate the entire main landing gear by grabbing the gear from the exterior and applying an alternating force.
  - b. From the interior of the aircraft, again, vibrate the control system by rotating the bell crank clockwise and counter-clockwise. There should not be an excessive amount of play or travel in the system.
4. Ensure the mechanical fasteners has not been broken or tampered with.
5. Confirm that all circlips are still correctly installed, refer to illustration.
6. Verify that attachment hardware for the landing gear trunnions is correctly installed, refer to the illustration for the location of trunnion attachment hardware.
7. Inspect both legs of the main landing gear for any hairline fractures.
8. Inspect both main landing gear boots for wear or tears. Check the bonded joints between boot and leg and between boot and Seawings™. Use care to thoroughly inspect along the entire

circumference of each joint. Any areas where the bonded flanges of the boot can be easily lifted by hand should be corrected. (See "Re-Bond Main Landing Gear (MLG) Boot" on page 14-44.)

9. With the inspector viewing the main landing gear control system located behind the aft baggage panel, actuate the landing gear and verify that nothing unusual occurs.

#### VERIFICATION METHOD:

Verify that each check is passed successfully.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Landing Gear" on page 3-14  
"Removal and Installation of Inspection Panels and Fairings" on page 3-34  
"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32  
"Re-Bond Main Landing Gear (MLG) Boot" on page 14-44

### 14.3.4 Landing Gear Indicator Lights

The following should be used to test and check the landing gear indicator lights.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

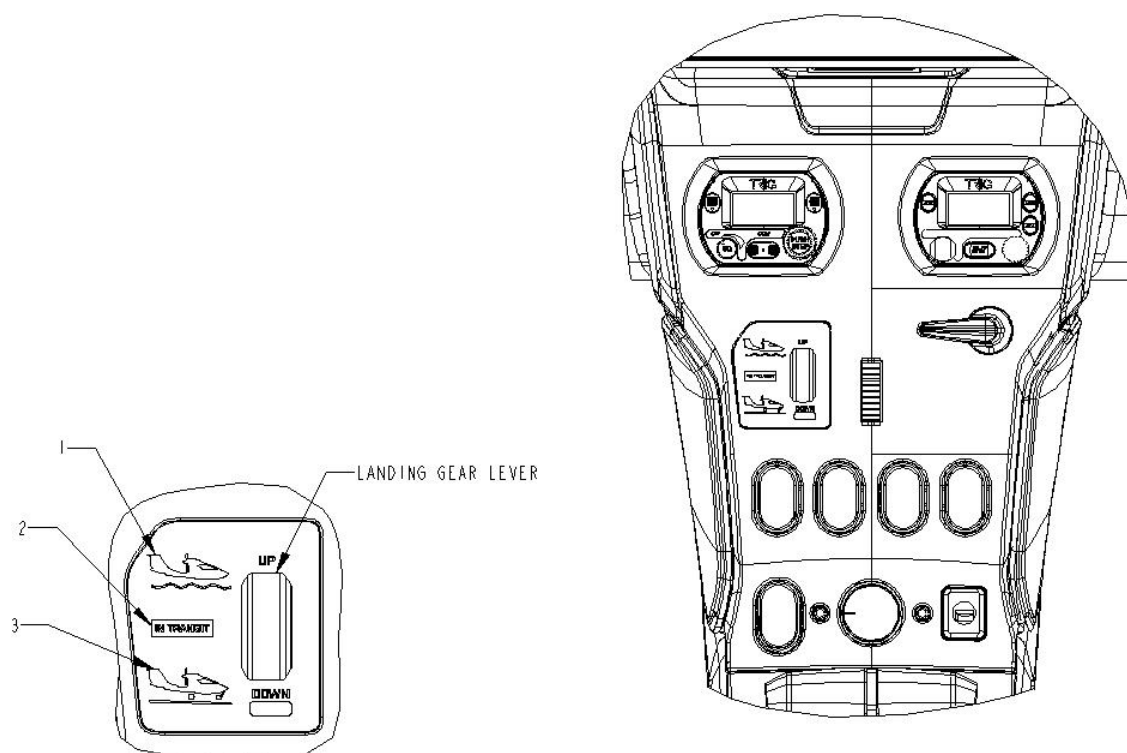
**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

This task can be readily combined with the Landing Gear Retraction and Extension Time task. (See "Retraction and Extension Time" on page 14-12.)



**FIGURE 14-3**  
LANDING GEAR INDICATOR.

---

**TASK INSTRUCTIONS:**

1. Verify Key Switch is in OFF position.
  2. Follow jacking procedure to lift the aircraft off the ground. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 3-32.)
  3. Move Master Switch to ON position.
  4. Verify icon 3 (see illustration) is lit.
  5. Move Landing Gear Lever to UP position.
  6. Verify icon 2 (see illustration) is lit while the landing gear retracts.
  7. Verify icon 1 (see illustration) is lit after the landing gear finishes retracting.
- 

**VERIFICATION METHOD:**

If each of the three lights indicated properly at DOWN, UP, and in transit when commanded, then the check is successful.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Landing Gear" on page 3-14

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

"Retraction and Extension Time" on page 14-12

### 14.3.5 Retraction and Extension Time

The following should be used to inspect the landing gear retraction and extension time.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

This task can be readily combined with the Landing Gear Indicator Lights task. (See "Landing Gear Indicator Lights" on page 14-10.)

## TASK INSTRUCTIONS:

1. Verify Key Switch is in OFF position.
2. Follow jacking procedure to lift the aircraft off the ground.
3. Move Master Switch to ON position.
4. Move Landing Gear Lever to UP position.
5. Using stop watch, immediately start timer for retraction.
6. Stop timer when center consoled UP indicator lights.
7. Record elapsed time.
8. Move Landing Gear Lever to DOWN position.
9. Immediately start timer.

10. Stop timer when the center console DOWN indicator lights.
  11. Record elapsed time for extension.
- 

**VERIFICATION METHOD:**

The retraction and extension time should take approximately seven seconds in each direction. If retraction or extension takes significantly longer, then additional investigation is required. Contact ICON for further instructions.

**RELATED INFORMATION:**

"Landing Gear Indicator Lights" on page 14-10

### 14.3.6 Nose Wheel Centering

The following should be used to inspect the nose wheel centering operation.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

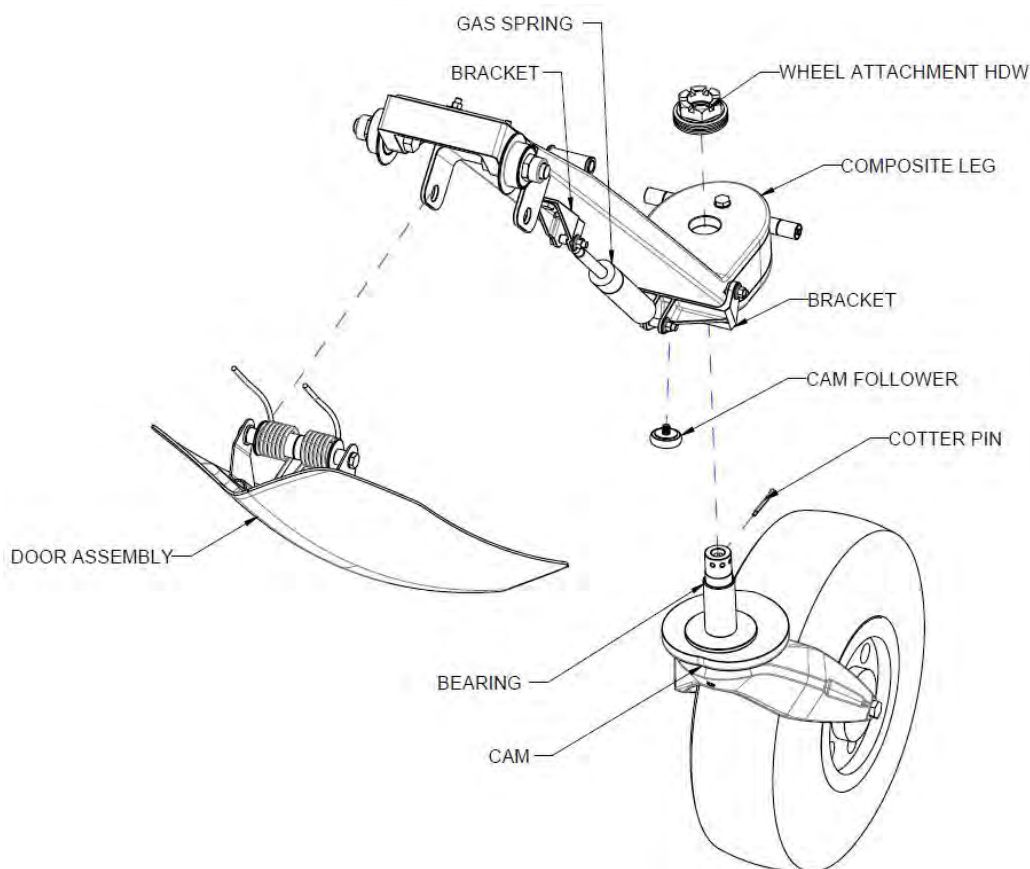
None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None



**FIGURE 14-4**  
NOSE WHEEL CENTERING.

#### TASK INSTRUCTIONS:

1. Inspect cam face, as well as the cam follower face for scaring, pitting, grooving or any visible damage.  
*STEP RESULT:* Both faces should be completely smooth and should be free of all described defects.
2. Verify security of both brackets depicted in illustration.
3. Confirm that all attachment hardware is securely in place, special attention should be given to the cotter pin used to prevent un-threading of the wheel attachment hardware. Refer to illustration.
4. Inspect the proper function of the wheel rotation bearing (Figure 14-4) coupled with cam mechanism.
  - a. Turn the aircraft 60 degrees.
  - b. Lift the nose by hand by firmly grasping the bow ring to ensure proper centering of the nose wheel.

#### VERIFICATION METHOD:

Check is successful if hardware is in good condition and nose wheel rotates to center when lifted off of the ground.

### 14.3.7 Landing Gear Actuator Fuse Blown

The following procedure is used to determine whether the landing gear actuator has a fuse blown.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Check the “NOSE GEAR” or “MAIN GEAR” fuses by inspecting the Overhead Console for the desired blown fuse.



**FIGURE 14-5**  
FUSES TO CHECK ON OVERHEAD CONSOLE

2. If a blown fuse is found, proceed to replace the fuse. (See "Replace Overhead Console Fuses" on page 13-18.)

#### VERIFICATION METHOD:

Retract and extend the landing gear to verify actuation of the landing gear.

#### RELATED INFORMATION:

"Replace Overhead Console Fuses" on page 13-18

### 14.3.8 Landing Gear Excessive Friction Check

Use the following procedure to check for excessive friction in either the MLG or NLG installation.

#### TASK INFORMATION:

##### Type of Maintenance



Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Jack the aircraft using the built-in jack points. (See "Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32.)
  2. Disconnect the actuator from the bell crank.
  3. With the end of the actuator free, continue to watch the excessive friction occurring within the actuator installation after powering up the aircraft and actuating the landing gear.
  4. Retract and extend the disconnected landing gear installation by hand to check for excessive friction between components within that installation.
- 

**VERIFICATION METHOD:**

Retracting and extending the landing gear verifies there is excessive friction within the system. Contact ICON for further instructions.

**RELATED INFORMATION:**

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

## 14.4 Landing Gear General Maintenance

### 14.4.1 Wheel and Brake System Maintenance

Maintenance of the wheel brake systems.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

See Beringer Maintenance Manual.

**Parts Required**

See Beringer Maintenance Manual.

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

See Beringer Maintenance Manual.

---

#### TASK INSTRUCTIONS:

1. All regular maintenance tasks on the braking system shall be done in accordance with the procedures in the Beringer Wheel and Brakes Maintenance Manual. This document includes information and tasks for mounting, maintenance, assembly instructions, bleeding procedures, and changing tires.
2. Only use brake fluid that meets MIL-PRF-83282, such as Royco 782.

**CAUTION:**

---

#### VERIFICATION METHOD:

Review task from Beringer Wheel and Brakes Maintenance Manual and verify all steps completed. Visually inspect the system for any anomalies. Test the braking system thoroughly during taxi before attempting flight.

## RELATED INFORMATION:

- "Condition and 100-Hour Inspection – Landing Gear" on page 3-14
- "Interval Maintenance – Calendar Intervals" on page 3-5
- "Brake Line Replacement Procedure" on page 14-21
- "Rudder Pedal Connector Lines Replacement" on page 14-21
- "Forward Lines Replacement" on page 14-23
- "Aft Lines Replacement" on page 14-25
- "Parking Brake Valve Replacement Procedure" on page 14-32

## 14.4.2 Landing Gear Actuator Limit Switch Adjustment Procedure

There is one limit switch adjustment rod on each actuator that regulates the extension limit and the retraction limit. Use this procedure to adjust the limit switch on the desired actuator.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

## TASK INSTRUCTIONS:

1. Unless already performed, remove any interior panels needed to gain access to the actuator. (See "Right Instrument Panel Top Panel Removal" on page 8-17.) (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
2. Jack the aircraft so that the landing gear is clear of the ground. (See "Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32.)
3. Use a 1/4" open-end wrench to loosen the jam nut tightened against the limit switch adjustment saddle for the affected switch.
4. Use the thumb wheel to set the affected switch to the desired position.
5. Torque the jam nut to 36-40 in-lb<sub>f</sub> to secure the position of the limit switch.
6. Power up the aircraft, and actuate the landing gear to verify adjustment.

7. Repeat steps 3 thru 6 as needed until the landing gear is properly adjusted.
  8. Replace the interior panels, extend the landing gear, and lower the aircraft off the jacks. (See "Right Instrument Panel Top Panel Installation" on page 8-18.) (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
- 

#### VERIFICATION METHOD:

Power up the aircraft, and actuate the landing gear to verify adjustment.

#### RELATED INFORMATION:

"Right Instrument Panel Top Panel Removal" on page 8-17

"Right Instrument Panel Top Panel Installation" on page 8-18

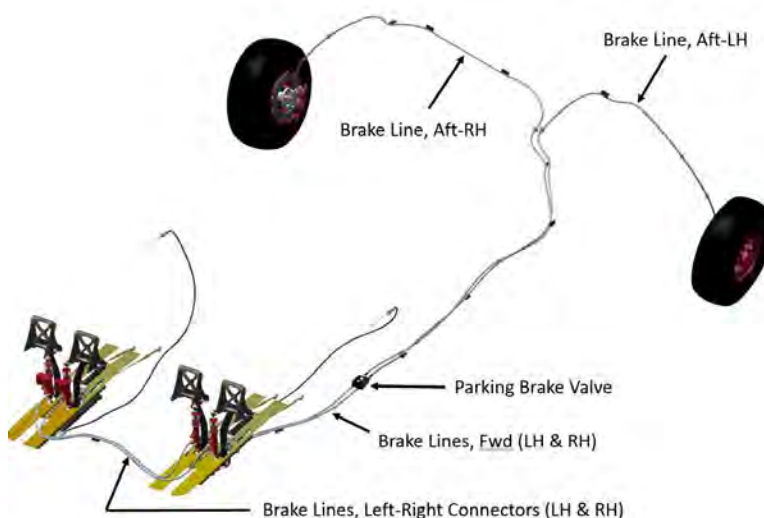
"Removal and Installation of Inspection Panels and Fairings" on page 3-34

## 14.5 Brake Line

### 14.5.1 Maintenance Instructions

#### 14.5.1.1 Brake Line Replacement Procedure

There are six separate lines on the aircraft. Use the appropriate procedure below to replace a line.



#### RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 14-18

"General Brake Line Termination Procedure" on page 14-29

#### 14.5.1.1.1 Rudder Pedal Connector Lines Replacement

Use the following procedure to replace the rudder pedal connector lines.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Specific Tools Required

None

**Parts Required**

HDB01 Stainless Steel Braided Brake Hose  
HYD-008P B-nut or HEA01 Banjo fittings as required  
T25F-C0 Spiral Wrap  
TY24MX Cable Tie

**Aircraft System and Number**

11 – Landing Gear

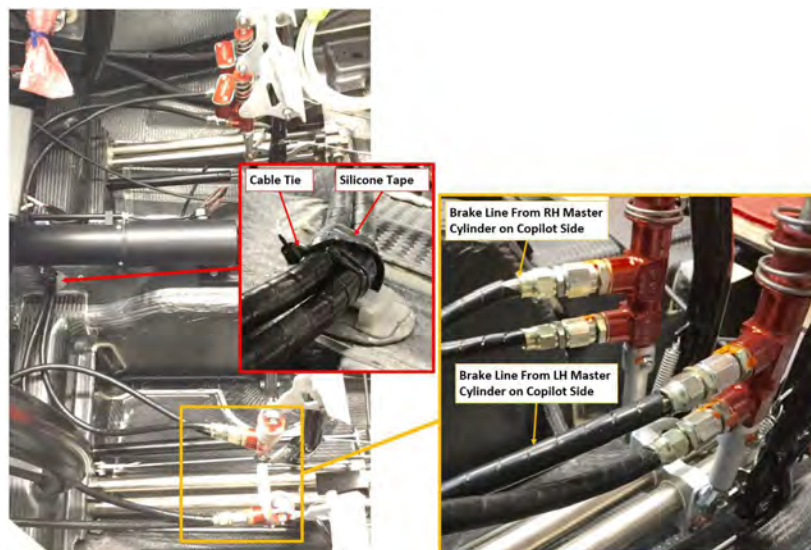
**Consumables**

F4TAPEBLACK Silicone Tape  
Smooth-On Sil-Poxy

The two connector lines that run between pilot and co-pilot master cylinders are identical. Use the procedure below to replace either of them.

**TASK INSTRUCTIONS:**

1. Cut and remove the cable tie holding the center of the brake lines to the structure.
2. Disconnect the brake line by using an 11mm wrench to hold the HYD-006P adapter fitting in the brake cylinders and a 1/2 inch wrench to spin off the B-nut on both ends of the line. Cap or plug the openings to minimize fluid loss. Remove the line.
3. Cut a 36.5-inch length of brake hose.
4. Terminate both ends of the hose with HYD-008P B-nut fittings. (See “General Brake Line Termination Procedure” on page 14-29.)
5. Wrap the entire length of each brake line with spiral wrap.
6. Route the line as shown in Figure 14-6.



**FIGURE 14-6**  
BRAKE LINE REPLACEMENT

7. Connect the brake line to the adapter fittings on the master cylinders.

8. Use an 11mm wrench to hold the adapter fitting in the cylinder and a 1/2 inch wrench to torque each B-nut to 30-40 in-lbs.
9. Cut a 3-inch length of silicone tape and wrap it around the brake line where it will be secured to the cable tie anchor block.
10. Secure the two lines to each other and to the cable tie anchor block with a cable tie.
11. Verify that the line is routed correctly and pilot's and co-pilot's rudder pedals move through their full travel and adjustment range freely with no brake line interference.

**VERIFICATION METHOD:**

Bleed the brakes per the procedure in the Beringer Manual. Check for correct operation and no leaks.

**RELATED INFORMATION:**

"Wheel and Brake System Maintenance" on page 14-18

"General Brake Line Termination Procedure" on page 14-29

### 14.5.1.1.2 Forward Lines Replacement

Use the following procedure to replace the forward lines.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Specific Tools Required**

None

**Parts Required**

HDB01 Stainless Steel Braided Brake Hose

HYD-008P B-nut or HEA01 Banjo fittings as required

T25F-C0 Spiral Wrap

TY24MX Cable Tie

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

F4TAPEBLACK Silicone Tape

Smooth-On Sil-Poxy

**NOTE:** *The two forward brake lines that run between the pilot master cylinders and the parking brake valve are identical. Use the procedure below to replace either of them.*

---

**TASK INSTRUCTIONS:**

1. Use a 7/16 wrench to hold the AN816-3D fitting on the forward port of the parking brake valve, then a 1/2 wrench to disconnect the B-nut of the forward brake line at the parking brake valve. Cap or plug the openings to minimize fluid loss.
  2. Disconnect the brake line at the pilot's master cylinder by using an 11mm wrench to hold the HYD-006P M10 adapter fitting in the cylinder and a 1/2 inch wrench to spin off the B-nut. Cap or plug the openings to minimize fluid loss.
  3. Remove the line.
  4. Cut a 51.0-inch length of hose.
  5. Terminate one end of the hose with a HYD-008P B-nut fitting. (See "General Brake Line Termination Procedure" on page 14-29.)
  6. Connect the brake line B-nuts to the parking brake valve and lower connection point on the brake master cylinder.
  7. With the terminated end, wrap approximately 30 inches of each hose with spiral wrap.
  8. Terminate the parking brake valve end of the hose with a HYD-008P B-nut. (See "General Brake Line Termination Procedure" on page 14-29.)
  9. Connect the brake line B-nuts to the parking valve and lower connection point on the brake master cylinder.
  10. Use a 7/16 wrench to hold the AN816-3D fitting on the forward port of the parking brake valve, then a 1/2 wrench to torque the B-nut to 30-40 in-lb<sub>f</sub>.
  11. Use an 11mm wrench to hold the HYD-006P M10 adapter fitting in the cylinder and a 1/2 inch wrench to torque the B-nut to 30-40 in-lb<sub>f</sub>.
- 

**VERIFICATION METHOD:**

Verify that the line is routed correctly and the pilot's rudder pedals move through their full travel and adjustment range freely with no brake line interference.

Bleed the brakes per the procedure in the Beringer Manual. Check for correct operation and no leaks.



## RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 14-18

"General Brake Line Termination Procedure" on page 14-29

### 14.5.1.1.3 Aft Lines Replacement

Use the following procedure to replace the aft lines.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

HDB01 Stainless Steel Braided Brake Hose

HYD-008P B-nut or HEA01 Banjo fittings as required

T25F-C0 Spiral Wrap

TY24MX Cable Tie

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

F4TAPEBLACK Silicone Tape

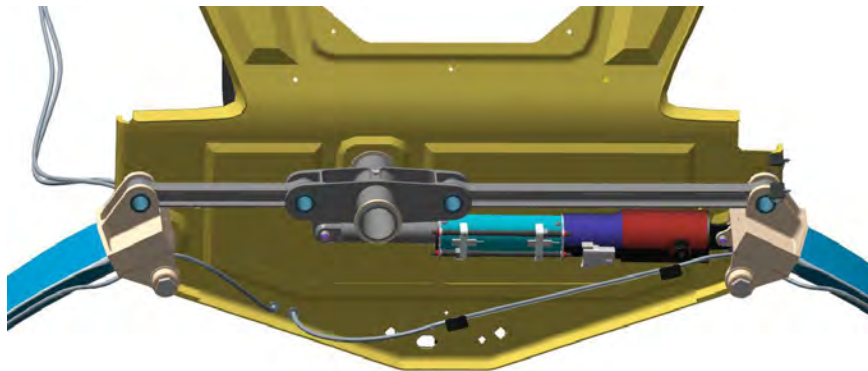
Smooth-On Sil-Poxy

**NOTE:**     *The two aft brake lines (Left and Right) that run between the brake calipers and the parking brake valve are nearly identical, differing only in their length and where they are attached and secured. Use the procedure below to replace either of them, paying attention to the differences where noted.*

## TASK INSTRUCTIONS:

1. Use a 7/16 wrench to hold the AN816-3D fitting on the aft port of the parking brake valve, then a 1/2 wrench to disconnect the B-nut of the aft brake line at the parking brake valve. Cap or plug the openings to minimize fluid loss.
2. Use a 14mm wrench to remove the banjo bolt and two copper washers at the MLG brake caliper.
3. Cut and remove all the cable ties holding the brake line to the structure.

4. The brake line end fitting cannot pass through the hole in the forward main bulkhead or through the guides on the aft face of the Main Landing Gear (MLG) leg, so use a pair of wire or hose cutters to cut the brake line just aft of the parking brake B-nut fitting.
5. Remove the brake line by guiding it through the bulkhead, MLG boot and MLG leg guides, pulling on the banjo end. The line is bonded with Sil-Poxy at the boot joint; work this interface being careful to not damage the boot.
6. If replacing the aft-left brake line, cut a length of hose to 114.0-inches. If replacing the aft-right brake line, cut a length of hose to 126.0-inches. Before cutting, wrap the cut location with masking tape, then cut through the tape. This will result in a neater cut of the stainless braid, making it easier to pass the hose through the MLG leg guides.
7. Terminate one end of the hose with a HYD-008P B-nut fitting. (See “General Brake Line Termination Procedure” on page 14-29.)
8. Starting near the appropriate brake caliper, thread the unterminated end of the brake line through the lower and upper MLG leg guides then through the clearance slot in the MLG boot and on into the MLG bay.
9. Continue routing the line under all the MLG components and through the appropriate side (LH/RH) MS35489-35 grommet in the forward main bulkhead Forward Main Bulkhead.



**FIGURE 14-7**  
FORWARD MAIN BULKHEAD

10. Connect the banjo fitting end of the brake line to the caliper, routing the line in a natural way up through the MLG leg guides. Do not put a twist in the line. Use a HYD-003P Banjo bolt and two HYD-005B copper washers as shown in Figure 14-8. Torque the Banjo bolt to 140 in-lb<sub>f</sub>.



**FIGURE 14-8**  
MAIN LANDING GEAR

11. Cut a 3-inch length of silicon tape and wrap it around the brake line at the location of the MLG trunnion cable tie mount. Use a TY24MX cable tie to secure the line to this mount. See Figure 14-9.



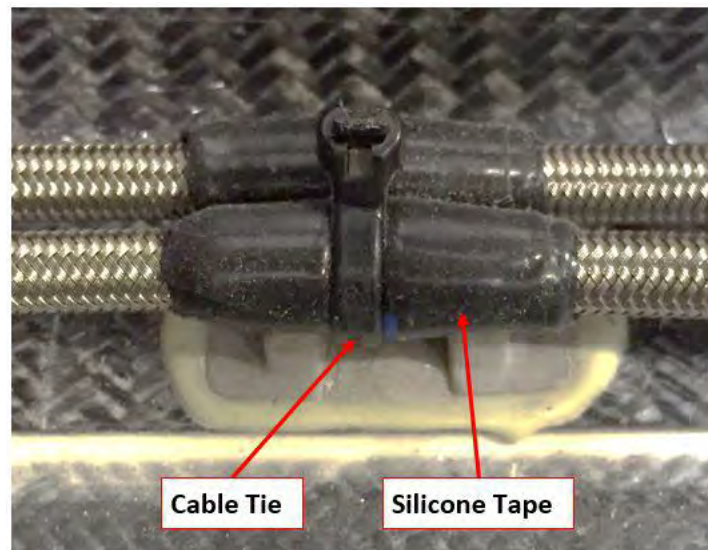
**FIGURE 14-9**  
MAIN LANDING GEAR TRUNNION

12. Seal the slot where the brake line passes through the MLG boot by injecting Sil-Poxy into the joint and completely around the line. Leave a small fillet of Sil-Poxy all around the joint to ensure a good water seal.
13. For the right hand brake line only: locate the two cable tie mounts on the aft bulkhead used to secure the line. Mark the location on the brake line that will secured to the mounts. Wrap a 3-inch length of silicone tape around the brake line at each mount location, then secure the line to the mounts using TY24MX cable tie at each of the two locations (see Figure 14-10).



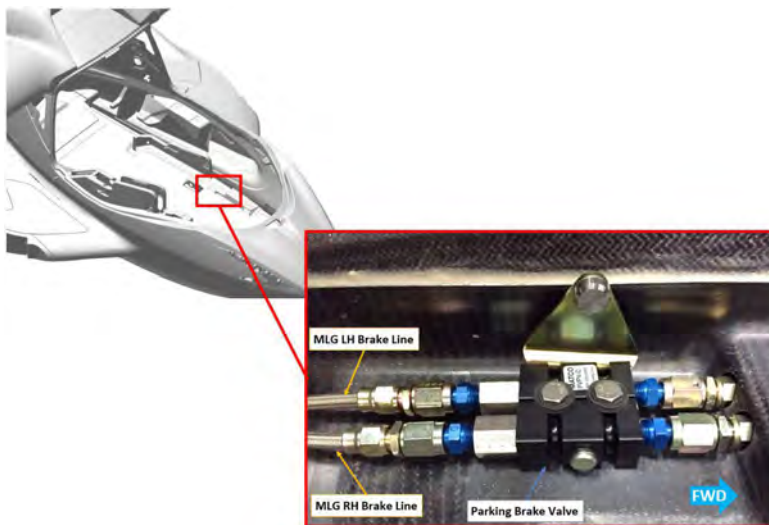
**FIGURE 14-10**  
BRAKE LINE REPLACEMENT

14. Route the brake line to the parking brake valve. Use the above method to wrap the brake line with silicone tape and attach with a cable tie at each mounting point on the structure. Figure 14-11 shows a typical mount.



**FIGURE 14-11**  
PARKING BRAKE VALVE

15. Trim excess length from the brake line if desired and terminate the parking brake valve end of the line with a HYD-008P B-nut fitting. (See "General Brake Line Termination Procedure" on page 14-29.)
16. Connect the brake line B-nut to the parking brake valve, then use a 7/16 wrench to hold the AN816-3D fitting on the forward port of the parking brake valve, and a 1/2 wrench to torque the B-nut to 30-40 in-lb<sub>f</sub> (see Figure 14-12).



**FIGURE 14-12**  
**BRAKE LINE REPLACEMENT**

#### VERIFICATION METHOD:

Bleed the brakes per the procedure in the Beringer manual. Check for correct operation and no leaks.

#### RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 14-18

"General Brake Line Termination Procedure" on page 14-29

### 14.5.1.2 General Brake Line Termination Procedure

Use the following procedure for preparing and cutting the brake line to length and adding banjo fittings.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

HDB01 Stainless Steel Braided Hose

HEA12 Olive (compression sleeve)

Appropriate Fitting (HYD-008P Straight B-nut, HEA01 Banjo, etc.)

### Aircraft System and Number

11 – Landing Gear

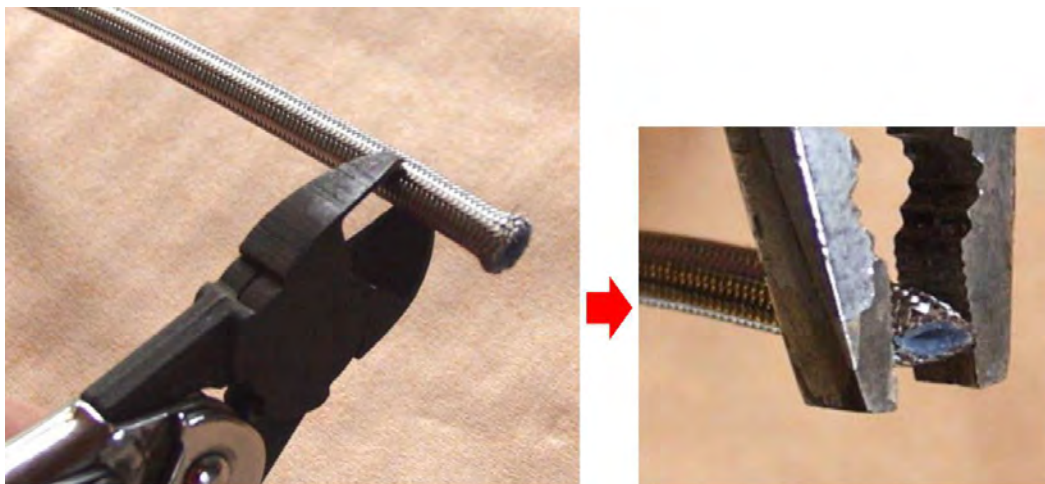
### Consumables

Tef-Gel®

---

### TASK INSTRUCTIONS:

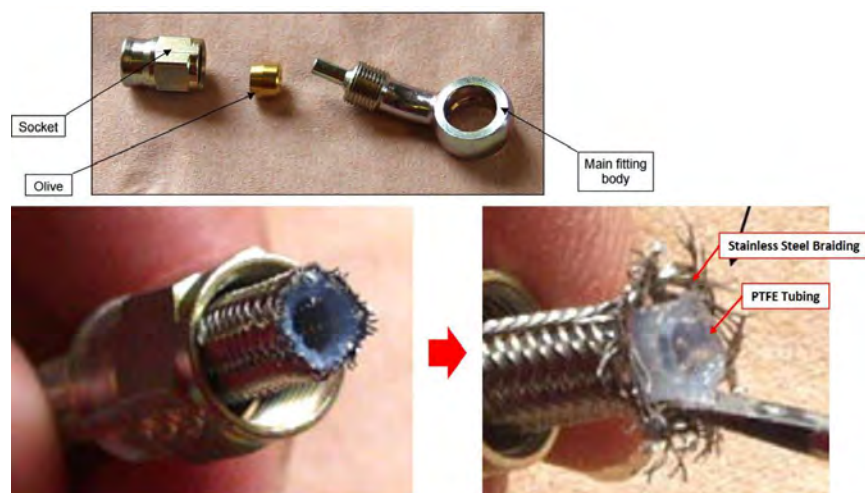
1. Cut hose to length with a pair of sharp hose or wire cutters.
2. Clean any debris from cut end and gently reshape back to circular section with a pair of pliers (see Figure 14-13).



**FIGURE 14-13**  
GENERAL BRAKE LINE TERMINATION

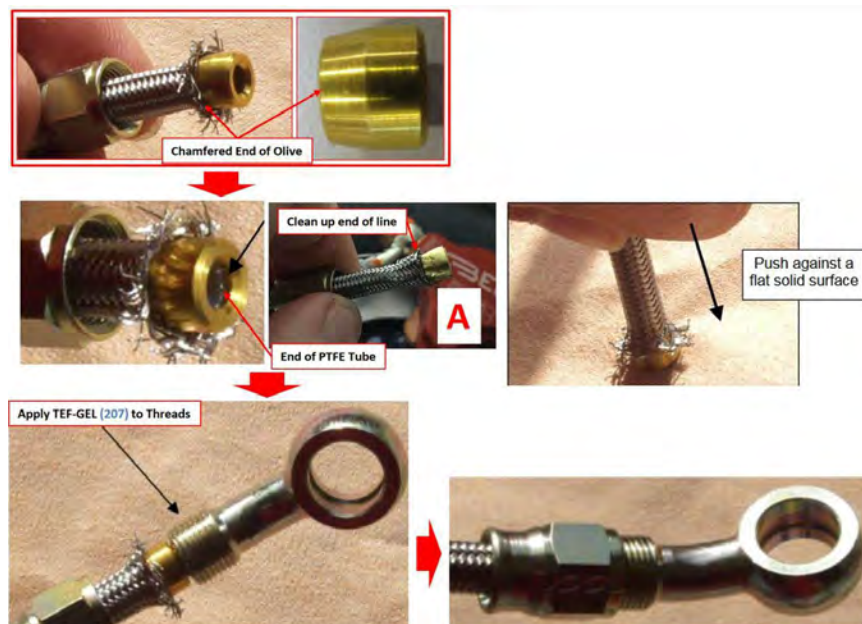
3. Disassemble hose end fitting into its component parts, socket, olive, and main body (see Figure 14-14 for example using a banjo fitting).





**FIGURE 14-14**  
GENERAL BRAKE LINE TERMINATION

4. Place the socket over the end of the hose, orienting it as shown, with the female threaded end towards the end of the hose.
5. Use a small slot-head screwdriver to flare out the stainless steel braid at the end of the hose, separating them from the hose's PTFE inner liner for a length of .2 inches minimum (see Figure 14-14).
6. Push the chamfered end of the olive onto the PTFE inner liner and under the stainless steel braid, making sure that all stainless strands are outside of the olive (see Figure 14-15).



**FIGURE 14-15**  
GENERAL BRAKE LINE TERMINATION

7. Grasp the hose and push the olive against a flat surface until the PTFE liner contacts the shoulder inside the olive.

8. Apply Tef-Gel<sup>®</sup> to the threads of the main body of the fitting.
9. Insert nipple end of the main body of the fitting into the brake hose.
10. Tighten the socket onto the fitting by hand while pushing the hose towards the fitting.
11. If using a banjo fitting, clamp the bango end in a vise, using wood or plastic jaw covers to prevent damage to the fitting. For B-nut fittings, use a 1/2 inch wrench to hold the fitting.
12. Use an 11mm wrench to torque the socket to 110 in-lb<sub>f</sub>, allowing the hose to spin to avoid kinking it.

#### VERIFICATION METHOD:

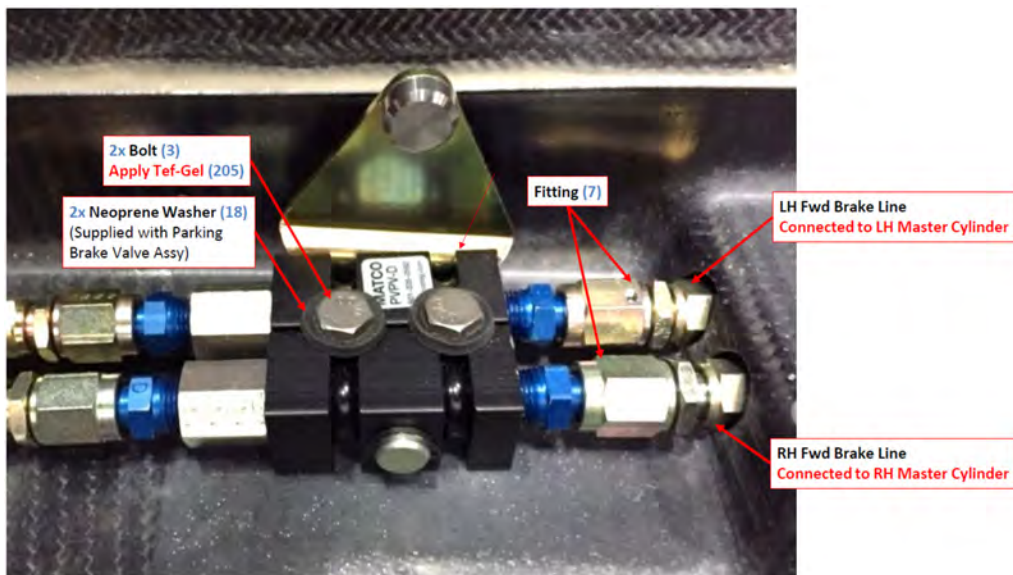
The procedure is complete when all steps are done.

#### RELATED INFORMATION:

- "Brake Line Replacement Procedure" on page 14-21
- "Rudder Pedal Connector Lines Replacement" on page 14-21
- "Forward Lines Replacement" on page 14-23
- "Aft Lines Replacement" on page 14-25
- "Parking Brake Valve Replacement Procedure" on page 14-32

### 14.5.1.3 Parking Brake Valve Replacement Procedure

Use the following procedure to replace the parking brake valve.



**FIGURE 14-16**  
PARKING BRAKE VALVE AND COMPONENTS



## RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 14-18

"General Brake Line Termination Procedure" on page 14-29

### 14.5.1.3.1 Parking Brake Valve Removal Procedure

Use the following to remove the parking brake valve.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Unless already performed, remove any interior panels needed to gain access to the parking brake valve.
  2. Remove bolts and neoprene washers from parking brake valve.
  3. Remove AFT brake lines from parking valve. Use a wrench to hold the fitting on the forward port of the parking valve, then a 1/2" wrench to disconnect the B-nut of the brake lines at the parking valve.
  4. Cap or plug the openings to minimize fluid loss.
- 

**VERIFICATION METHOD:**

Verify that the parking brake valve is fully removed.

### 14.5.1.3.2 Parking Brake Valve Assembly and Installation Procedure

Use the following procedure to assemble and install the parking brake valve.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

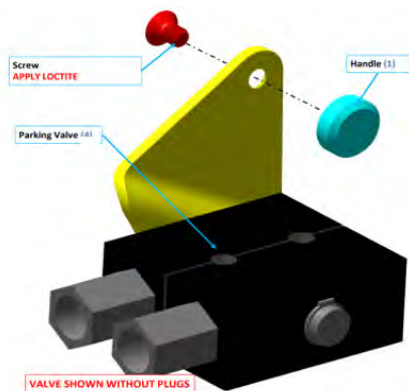
11 – Landing Gear

**Consumables**

Tef-Gel®

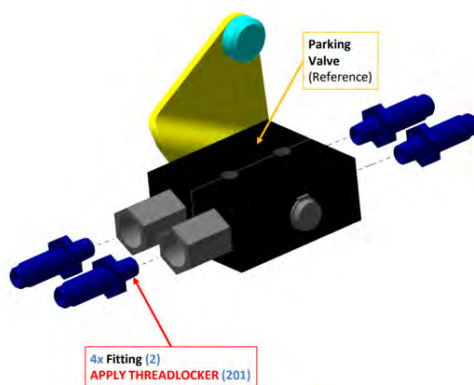
#### TASK INSTRUCTIONS:

1. Install parking brake handle on the parking valve using the screw indicated. Apply thread locker to leading screw threads.



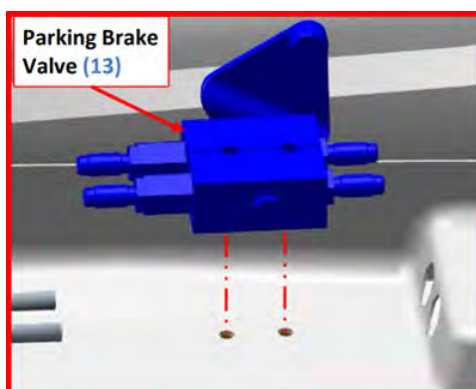
**FIGURE 14-17**  
INITIAL ASSEMBLY OF PARKING VALVE

2. Torque screw to 13 in-lb.
3. Remove the plugs from parking valve.
4. Apply a 360° bead of threadlocker to the leading threads of the NPT thread end of the fittings. Install fittings into valve until finger tight.



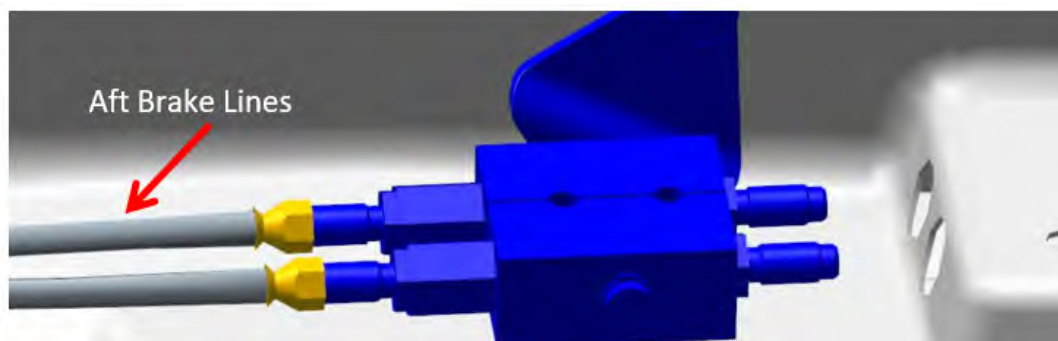
**FIGURE 14-18**  
FINAL ASSEMBLY OF PARKING VALVE

5. Wrench tighten 2-3 full turns from finger tight. DO NOT EXCEED 100 in-lb.
6. Place parking brake valve in its installation location as shown (but do not install bolts).



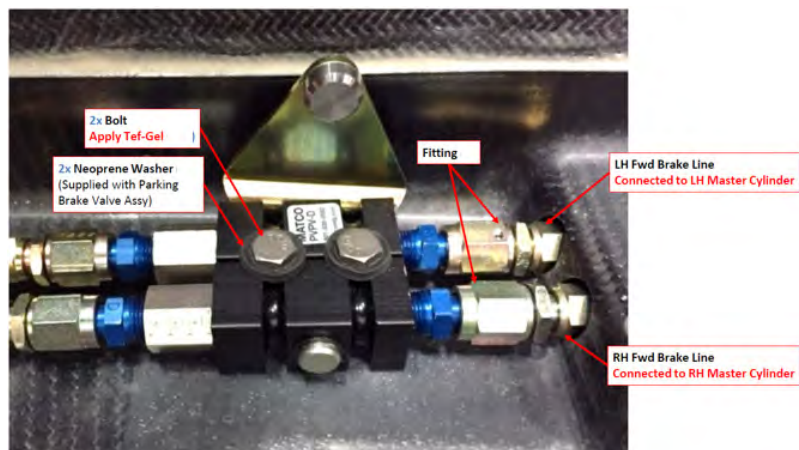
**FIGURE 14-19**  
ORIENTATING THE PARKING VALVE

7. Connect AFT brake lines to parking brake valve. Torque fittings to 90-132 in-lb. Check that hardware is secure.



**FIGURE 14-20**  
INSTALLATION OF BRAKE LINES ONTO PARKING VALVE

8. Connect brake line fittings to parking brake valve and lower adapters on brake master cylinders.



**FIGURE 14-21**  
COMPLETED VIEW OF PARKING VALVE

9. Torque 4x FWD brake line fittings (2x at parking brake, 2x at brake master cylinders) to 90-132 in-lb. Check that hardware is secure.
10. Install parking brake using Neoprene washers. Apply Tef-Gel<sup>®</sup> to bolt threads. Torque 2x bolts to 13-15 in-lb. Check that hardware is secure.
11. Bleed the brakes per the procedure in the Beringer Manual.

VERIFICATION METHOD:

Verify that the parking brake valve is fully assembled.

## 14.6 Main Landing Gear

### 14.6.1 Maintenance Instructions

#### 14.6.1.1 Main Landing Gear (MLG) Removal

Use the following procedure to remove the main landing gear (MLG) assembly.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

The procedure below removes both left and right MLG assemblies. If only removing one side, perform only those steps needed.

**CAUTION:** *Whenever standing, sitting, or kneeling inside the fuselage with floor panels removed, suitable padding must be employed so as to avoid damage to the bottom of the hull. Sandwich panels and other structure and systems can be easily damaged by concentrated applied loads.*

##### TASK INSTRUCTIONS:

1. Remove the seat backs and baggage floors. (See "Seat Back Removal" on page 3-50.)(See "Baggage Floor Removal" on page 3-41.)
2. Jack aircraft so that landing gear is clear of ground.
3. Remove the aft bulkhead baggage panel. (See "Baggage Sidewall Panel Removal" on page 3-43.)
4. Release the parking brake.

5. Use a 7/16 wrench to hold the aft union fittings at the parking brake valve, then use a 1/2 wrench to loosen the B-nuts, disconnecting the left and right brake lines from the aft side of the valve. Cap the line and valve openings to minimize brake fluid loss.
6. Use a tool such as a putty knife to separate and peel the bond between the flanges of the left and right MLG boot and the Seawings™ being careful to not damage the surfaces.
7. Remove all the cable ties that secure the left and right brake lines from the parking brake valve back to the gear.
8. The brake lines pass through grommets at the forward main bulkhead. Push these aft into the gear bay.
9. Supporting the weight of the left gear leg, remove the retaining ring and wrist pin securing the left MLG pushrod to the MLG bellcrank.
10. Use 15/16 wrenches to remove the two AN10C20A pivot bolts, nuts, and washers from the left
11. Withdraw the left MLG leg assembly from the aircraft, guiding the brake lines through the bulkhead.
12. Disconnect the MLG actuator from the aircraft electrical harness.
13. Use a 3/8 wrench to remove the AN3C27A bolt washer from the top of the MLG bellcrank.
14. Supporting the weight of the right gear leg, use 15/16 wrenches to remove the two AN10C20A pivot bolts, nuts, and washers from the right MLG trunnion.
15. Remove the retaining ring from the MLG bellcrank shaft, then remove the shaft.
16. Withdraw the right MLG leg, bellcrank, and actuator assemblies from the aircraft, guiding the brake line out through the bulkhead.
17. Proceed to the Beringer Wheel and Brake Maintenance Manual if changing the tire or doing further work on the wheel.

#### VERIFICATION METHOD:

The procedure is complete when the main landing gear has been removed.

#### RELATED INFORMATION:

- "Seat Back Removal" on page 3-50
- "Seat Back Installation" on page 3-51
- "Baggage Floor Removal" on page 3-41
- "Baggage Floor Installation" on page 3-42
- "Main Landing Gear (MLG) Boot Removal" on page 14-41
- "Main Landing Gear (MLG) Boot Installation" on page 14-42
- "Inspect Flap Rigging" on page 9-65

### 14.6.1.2 Main Landing Gear (MLG) Installation

The following procedure should be used to install the main landing gear (MLG).

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

Tef-Gel®

The procedure below installs both left and right MLG assemblies. If only installing one side, perform only those steps needed.

**CAUTION:** *Whenever standing, sitting, or kneeling inside the fuselage with floor panels removed, suitable padding must be employed so as to avoid damage to the bottom of the hull. Sandwich panels and other structure and systems can be easily damaged by concentrated applied loads.*

---

**TASK INSTRUCTIONS:**

1. Position the right MLG assembly under the right Seawings™.
2. Feed the brake line through the right hole in the forward main bulkhead.
3. Use two people, one inside the aircraft and one outside, to feed the right MLG subassembly through the opening in the bottom of the right Seawings™ and into position between the main bulkheads. This assembly should be complete with bellcrank, actuator, pushrod, trunnion, leg, and boot.
4. Ensure that the ICA007426 MLG trunnion pivot bushings are in good condition and install one in each of the sleeve bearings in the main bulkhead at the trunnion pivot.
5. Coat two AN10C20S bolts with Tef-Gel® and, supporting the weight of the right gear leg, install them with their nuts and washers, through the ICA007426 bushings and into the right MLG trunnion, securing it to the bulkhead pivot points. The bolt heads should face away from the trunnion. Use 15/16 wrenches to torque each fastener to 900±100 in-lb<sub>f</sub>.
6. Align the MLG bellcrank to the pivot bores in the main back bulkheads and slide the MLG bellcrank shaft into place from the back forward.
7. Install the SH200-SS retaining clip into the groove on the bellrank shaft.
8. Apply Tef-Gel® to the AN3C27A bolt and install through the bellcrank and shaft with a NAS1149C0332R washer under its head. Torque to 20 in-lb<sub>f</sub>.
9. Position the left MLG assembly under the left Seawings™.

10. Feed the brake line through the left hole in the forward main bulkhead.
11. Feed the left MLG subassembly through the opening in the bottom of the right Seawings™ and into position between the main bulkheads. This assembly should be complete with leg, boot, trunnion, and pushrod.
12. Ensure that the ICA007426 MLG trunnion pivot bushings are in good condition and install one in each of the sleeve bearings in the main bulkheads at the trunnion pivot.
13. Coat two AN10C20S bolts with Tef-Gel® and, supporting the weight of the left gear leg, install them with their nuts and washers, through the ICA007426 bushings and into the left MLG trunnion, securing it to the bulkhead pivot points. The bolt heads should face away from the trunnion. Use 15/16 wrenches to torque each fastener to  $900 \pm 100$  in-lb<sub>f</sub>.
14. Supporting the weight of the left gear leg, align the left MLG pushrod to the MLG bellcrank and install the wrist pin, sliding it in from the back forward.
15. Install the S73HW2-100-100 retaining ring into the groove on the wrist pin.
16. Connect the MLG actuator electrical connector to the aircraft harness.
17. Route the left and right brake lines forward to the parking brake valve. Reinstall any cable ties that were removed and install the MS35489-35 rubber grommets at the forward main bulkhead interface.
18. Remove any caps from the brake lines and parking valve then, using a 7/16 wrench to hold the aft union fittings at the valve and a 1/2 wrench to connect the left and right brake lines to the aft side of the valve, torque each B-nut to 30-40 in-lb<sub>f</sub>.
19. Check and adjust the MLG actuator stops using the rigging procedure. (See “Inspect Flap Rigging” on page 9-65.) The boots are not yet bonded, so ensure that they do not interfere with gear operation.
20. Once the landing gear is operating properly, bond the MLG boots in place. (See “Main Landing Gear (MLG) Boot Installation” on page 14-42.)
21. Install the seat backs and baggage floors. (See “Seat Back Installation” on page 3-51.)(See “Baggage Floor Installation” on page 3-42.)
22. Check the MLG bay for tools or anything else amiss, then install the aft bulkhead baggage panel. (See “Baggage Sidewall Panel Installation” on page 3-45.)
23. Lower the aircraft off of the jacks.

---

#### VERIFICATION METHOD:

The main landing gear actuator should fall within the range specified in the rigging procedure. (See “Inspect Flap Rigging” on page 9-65.)



## RELATED INFORMATION:

- "Seat Back Removal" on page 3-50
- "Seat Back Installation" on page 3-51
- "Baggage Floor Removal" on page 3-41
- "Baggage Floor Installation" on page 3-42
- "Main Landing Gear (MLG) Boot Removal" on page 14-41
- "Main Landing Gear (MLG) Boot Installation" on page 14-42
- "Inspect Flap Rigging" on page 9-65

### 14.6.1.3 Main Landing Gear (MLG) Boot Removal

Use this procedure to remove the MLG boot as part of the MLG boot replacement.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

*NOTE: During all boot replacement installation steps, do not actuate the brake system.*

## TASK INSTRUCTIONS:

1. Remove the MLG wheel and axle assemblies using the MLG Wheel and Axle Removal procedure. (See "Main Landing Gear (MLG) Wheel and Axle Removal" on page 14-45.)
2. Break the bonds between the leg and the boot and between the boot and the Seawings™. Slide the boot over the leg and caliper to remove.

## VERIFICATION METHOD:

Procedure is complete when the MLG boot has been completely removed.

## RELATED INFORMATION:

- "Re-Bond Main Landing Gear (MLG) Boot" on page 14-44
- "Main Landing Gear (MLG) Wheel and Axle Removal" on page 14-45
- "Main Landing Gear (MLG) Removal" on page 14-37
- "Main Landing Gear (MLG) Installation" on page 14-38

### 14.6.1.4 Main Landing Gear (MLG) Boot Installation

Use this procedure to install the MLG boot after it has been removed.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

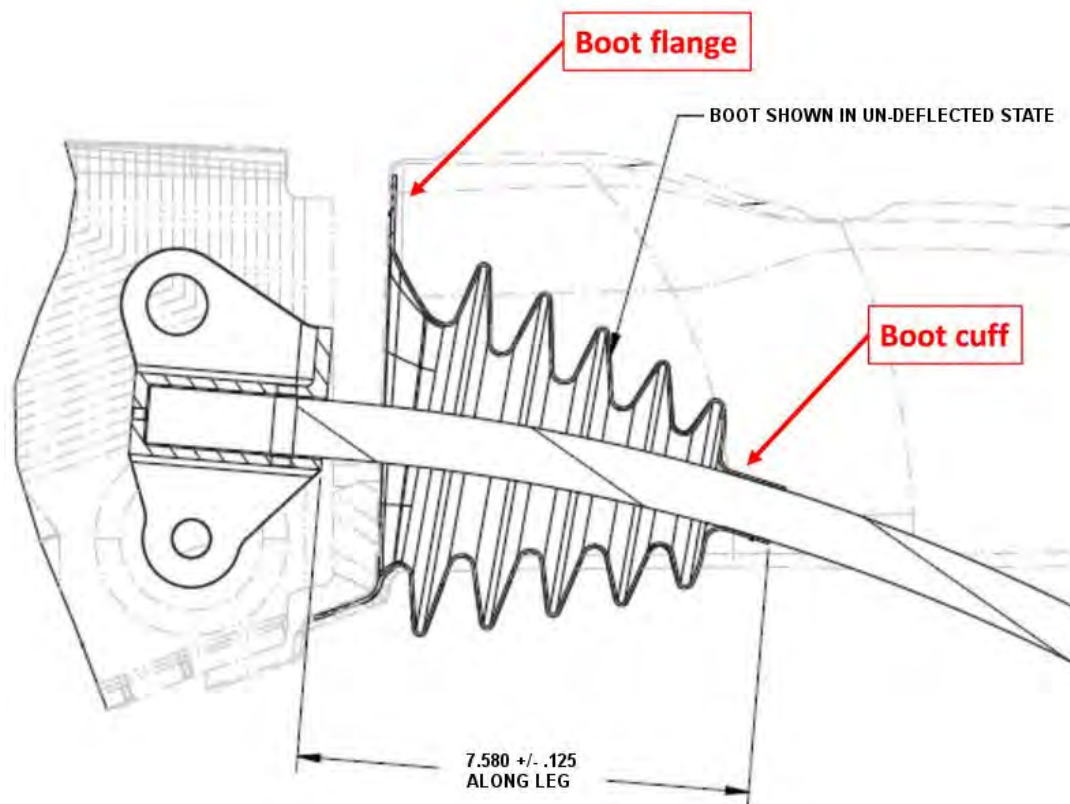
**Consumables**

Sil-Poxy<sup>®</sup> Silicone Adhesive

## TASK INSTRUCTIONS:

1. Remove any remaining boot adhesive from the Seawings™ and landing gear leg.
2. Clean the bonding surfaces of Seawings™, leg, and boot flanges with isopropyl alcohol and a clean cloth.
3. Retract the landing gear halfway up from the extended position. Slide the boot up until the boot's flange fits well against the mating flange on the Seawings™, with boot in a relaxed state. The

figure below shows the proper location of the boot flange and boot cuff. Take care to locate the boot cuff at the distance shown from the trunnion.



4. Bond the boot cuff to the landing gear leg by injecting or by lifting and troweling Sil-Poxy<sup>®</sup> adhesive into the joint. Be careful to get a good seal all around. Ensure that the boot cuff is located as shown above. Wipe off excess adhesive with a paper towel.

**NOTE:** *The working time of Sil-Poxy<sup>®</sup> is five minutes. Each bonding operation must be completed in this time or the strength of the joint may be reduced. The initial cure time is 15 minutes with full strength achieved in 24 hours at room temperature (73°F).*

5. Use adhesive tape to secure the boot cuff to the gear leg so that it does not shift and disturb the bond while the subsequent bond operations are performed. An alternate and safer approach is to let the boot cuff bond to the gear leg fully cure (24 hours) before the boot flange bond to the Seawings<sup>™</sup> is performed.
6. Apply Sil-Poxy<sup>®</sup> adhesive to the boot flange and press against Seawings<sup>™</sup>. Wipe off excess adhesive with a paper towel. The viscosity of the adhesive is adequate to hold the boot flange in place during the curing process.
7. Install the axle and wheel assemblies using the MLG Wheel and Axle procedure. (See "Main Landing Gear (MLG) Wheel and Axle Installation" on page 14-48.) Leave the aircraft on the jacks

until the verification checks are complete. Allow the boot cuff and boot flange joints to fully cure (24 hours) before conducting the verification checks.

#### VERIFICATION METHOD:

Retract and extend the landing gear to verify system function. Repeat until 10 up/down cycles have been completed, with a 30 second dwell between each up or down actuation. The verification check shall be considered complete only if the system actuates without fuse failure. If fuse failure occurs, contact ICON Owner Support for further instructions.

#### RELATED INFORMATION:

- "Re-Bond Main Landing Gear (MLG) Boot" on page 14-44
- "Main Landing Gear (MLG) Wheel and Axle Installation" on page 14-48
- "Main Landing Gear (MLG) Removal" on page 14-37
- "Main Landing Gear (MLG) Installation" on page 14-38

### 14.6.1.5 Re-Bond Main Landing Gear (MLG) Boot

Perform this procedure if there are any areas where the MLG boot has become disbonded, delaminated, or is lifting from the MLG leg or Seawings™.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

##### Parts Required

None

##### Aircraft System and Number

11 – Landing Gear

##### Consumables

Sil-Poxy®

#### TASK INSTRUCTIONS:

1. Inspect the boot for any damage such as holes, tears, or excessively worn spots. If damage is unacceptable, replace the boot using the MLG Boot Replacement Procedure. (See "Main

Landing Gear (MLG) Boot Removal” on page 14-41.) If the boot is good, proceed with the steps below.

2. Pull on the flange of the boot where it has become disbonded, testing the surrounding area for bond strength. The boot should have good adhesion to the substrate. If the disbonded area can easily expand, continue separating the boot from the substrate until the limits of area of low adhesion have been reached. If after this exercise, the entire boot has been separated, proceed to the steps of the Boot Replacement Procedure (See “Main Landing Gear (MLG) Boot Installation” on page 14-42.) that involve boot and substrate preparation and bonding.
3. Clean the area around the repair of any water, mud, or other foreign material.
4. With a putty knife, wood chisel, or similar tool, carefully remove excess boot adhesive from the surface of the boot and substrate in the disbonded area. Do not cut, scratch, or otherwise damage the surfaces. There is no need to completely remove all adhesive, but any loose or excessively thick material should be removed.
5. Clean the bonding area surfaces of boot and substrate with isopropyl alcohol and a clean cloth. A cotton swab or similar tool may be useful for getting into the edges.
6. Prop the disbonded area open and allow the alcohol to completely dry.
7. Bond the boot to the substrate by injecting or by lifting and troweling Sil-Poxy adhesive into the joint. Use care to ensure a good seal completely across the interface and into the edges.

**NOTE:** *The working time of Sil-Poxy is five minutes. Each bonding operation must be completed in this time or the strength of the joint may be reduced. Conform to the instructions and safety procedures of the adhesive manufacturer.*

8. Wipe off excess adhesive with a paper towel. Allow adhesive to cure for at least 24 hours at room temperature before returning aircraft to service.

#### VERIFICATION METHOD:

MLG boot is securely bonded to both landing gear leg and Seawings™ with no areas of delamination.

#### RELATED INFORMATION:

"Main Landing Gear Inspection" on page 14-8

"Main Landing Gear (MLG) Boot Removal" on page 14-41

"Main Landing Gear (MLG) Boot Installation" on page 14-42

### 14.6.1.6 Main Landing Gear (MLG) Wheel and Axle Removal

Use the following procedure to remove the MLG wheel and axle.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

*NOTE: During the following procedures, do not actuate the brake system.*

---

**TASK INSTRUCTIONS:**

1. Raise the aircraft on jacks. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 3-32.)
2. Remove the safety wire that secures the brake rotor to the MLG wheel.





**FIGURE 14-22**  
WHEEL/BRAKE ROTOR DETAIL.

3. Remove MLG wheel seal cap.
4. Remove cotter pin, MLG wheel nut, wheel, and spacer.



**FIGURE 14-23**  
WHEEL NUT DETAIL.

5. Remove brake rotor from caliper and store in a clean location.

6. Remove the four AN4C16A bolts that secure the MLG axle to the MLG leg. Remove the reinforcement plate from the MLG leg. Retain hardware for reinstallation.
7. Separate the axle from the leg. Remove the countersunk screws on the inboard side of the axle to disconnect the brake caliper from the axle. It is permissible for the caliper to dangle from the landing gear leg. Retain hardware for reinstallation.

**VERIFICATION METHOD:**

Task is complete when wheel and axle are fully removed from the leg.

**RELATED INFORMATION:**

"Main Landing Gear (MLG) Boot Removal" on page 14-41

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

### 14.6.1.7 Main Landing Gear (MLG) Wheel and Axle Installation

Use the following procedure to install the MLG wheel and axle.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

Cotter Pin, .312

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

Tef-Gel®

MOLYKOTE™

**TASK INSTRUCTIONS:**

1. Attach the brake caliper to the main landing gear axle using the retained countersunk screws. Coat the screws with a thin layer of Tef-Gel® on installation, torque them to 88 in-lb.



2. Reattach axle to the landing gear leg using the retained hardware and reinforcement plate. Orient plate so that the rounded edge faces inboard. Coat the bolts with a thin layer of Tef-Gel<sup>®</sup> on installation, torque to 60 in-lb.
3. Reinsert brake rotor into caliper with the printed side of the rotor facing inboard.
4. Coat the entire axle with a thin layer of MOLYKOTE<sup>™</sup> grease.
5. Slide spacer over the axle and reattach wheel. Ensure that the teeth on the brake rotor sit completely within the grooves of the wheel assembly. Apply MOLYKOTE<sup>™</sup> grease to the axle threads and tighten wheel nut to 216 in-lb per the Beringer Manual.



**FIGURE 14-24**  
WHEEL AXLE DETAIL.

6. Install a cotter pin through the axle and reinsert wheel seal cap.

7. Install safety wire in the groove in the wheel assembly to retain the brake rotor.
  8. Lower the aircraft off of the jacks once the verification steps are complete.
- 

**VERIFICATION METHOD:**

Spin wheel to verify that it is not contacting the brake assembly or any other components.

Actuate brakes to verify system function.

**RELATED INFORMATION:**

"Main Landing Gear (MLG) Boot Installation" on page 14-42

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

### 14.6.1.8 Main Landing Gear (MLG) Actuator Removal

Use the following task to remove the main landing gear (MLG) actuator.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Jack the aircraft until the landing gear is safely off the ground.
2. Remove the aft bulkhead baggage panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
3. Disconnect the MLG actuator connector at the aircraft harness.

4. Use 1/2 and 3/8 wrenches to remove the AN5 bolt, nut, and washer that attach the MLG actuator to the MLG bellcrank.
5. Use 1/2 and 3/8 wrenches to remove the AN5 bolt, nut, and washer that attach the MLG actuator to the right MLG trunnion.
6. Remove the actuator from the aircraft being careful to not lose the actuator attach bushings. There is a bushing in the motor-end of the actuator and another in the bellcrank.

**VERIFICATION METHOD:**

The task is complete when the actuator has been removed.

**RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

### 14.6.1.9 Main Landing Gear (MLG) Actuator Installation

Use the following task to install the main landing gear (MLG) actuator.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Install an ICA008138 bearing into the attachment bore at the motor-end of the actuator.
2. Install an ICA008139 bushing into the above bearing.

3. Install the motor-end of the actuator between the receiving ears on the MLG trunnion and install the AN5C11A bolt with head facing forward. The limit switch assembly on the actuator should face aft.
4. Install the NAS1149C0532R washer and MS21043-5 nut and using 1/2 and 3/8 wrenches, torque to 85 in-lb<sub>f</sub>.
5. Install or verify the installation of the ICA008138 bearing and ICA008139 bushing in the actuator ear on the MLG bellcrank.
6. Move the MLG leg until the holes in the fork-end of the actuator align with that of the ear of the MLG bellcrank.
7. Install an ANC512A bolt through the assembly, attaching the actuator to the bellcrank. The head should face aft.
8. Install the NAS1149C0532R washer and MS21043-5 nut and using 1/2 and 3/8 wrenches, torque to 85 in-lb<sub>f</sub>.
9. Connect the actuator electrical connector to the aircraft harness.
10. Perform the MLG actuator rigging procedure.
11. Install the aft bulkhead baggage panel. (See "Baggage Sidewall Panel Installation" on page 3-45.)
12. Lower the aircraft from the jacks.

#### VERIFICATION METHOD:

Perform the MLG actuator rigging procedure.

### 14.6.1.10 Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Up

Use the following task to adjust the main landing gear (MLG) rigging when the landing gear is up.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

ICA009750 (Wing Jack Point Adapter)

##### Parts Required

None

##### Aircraft System and Number

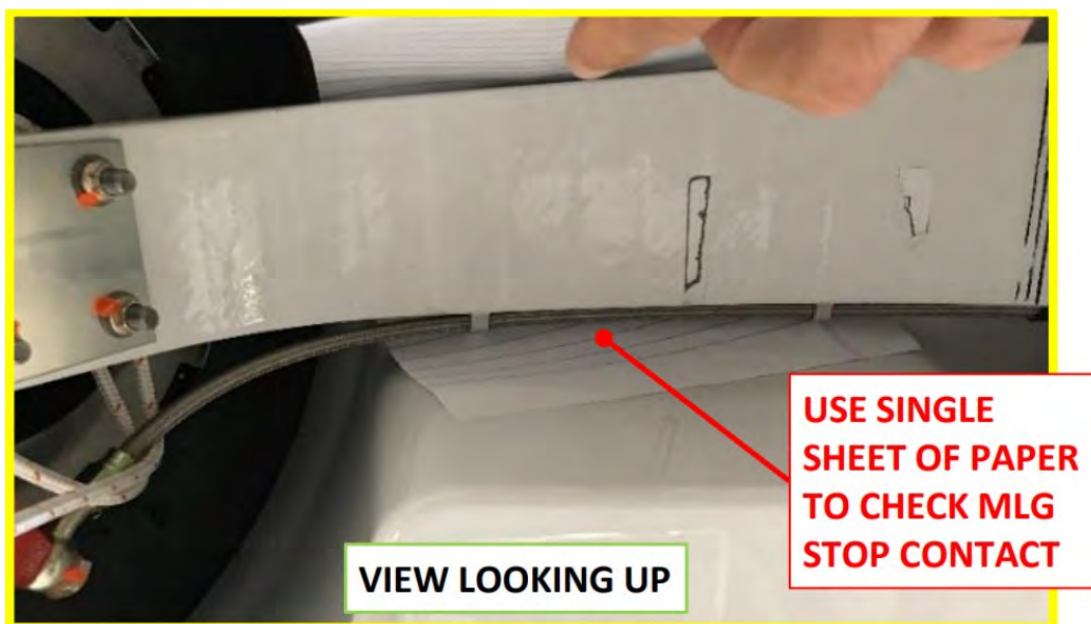
## 11 – Landing Gear

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Jack the aircraft up or weight the tail so that the nose gear is clear of the ground (use a safety block under the forward hull if weighting the tail).
2. Apply five lbs of weight to backside of each MLG axle. It is recommended to use ITL-12297.
3. Adjust the landing gear UP position by adjusting the limit switch furthest from the rod end until one leg contacts a bumper.
4. Adjust until a single sheet of paper slides with slight drag between MLG strut and stop. Both bumpers may touch if contact is made simultaneously. (See Figure 14-25.)



**FIGURE 14-25**  
PAPER CHECK BETWEEN MLG STRUT AND STOP

5. Remove weight.

**VERIFICATION METHOD:**

A single sheet of paper should slide with a slight drag between the MLG strut and stop.

### 14.6.1.11 Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down

Use the following procedure to rig the MLG with the gear DOWN. See Step 3 for rigging check instructions.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

Wing Jack Point Adapter – ICA009750

##### Parts Required

None

##### Aircraft System and Number

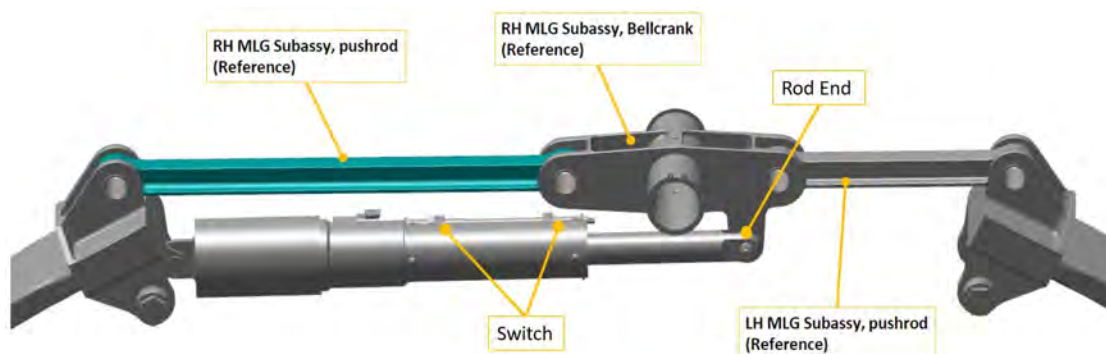
11 – Landing Gear

##### Consumables

None

#### TASK INSTRUCTIONS:

1. Jack the aircraft up or weight the tail so that the nose gear is clear of the ground (use a safety block under the forward hull if weighting the tail).
2. With landing gear down, zero a digital protractor along the longer of the two pushrods.



**FIGURE 14-26**  
MAIN LANDING GEAR INSTALLATION

3. Move the digital protractor to the Bellcrank surface and read measurement.
4. The measurement on the protractor shall read  $3.822 \pm .237^\circ$ .
5. To adjust the position of the actuator, loosen the jam nut on the actuator switch.
6. To adjust the landing gear DOWN position, adjust the limit switch closest to the rod end accordingly.
7. Torque jam nut to 36-40 in-lbs.

VERIFICATION METHOD:

1. The protractor's measurement should read  $3.822 \pm .237^\circ$ .

## 14.7 Nose Landing Gear

### 14.7.1 Inspection Instructions

#### 14.7.1.1 Nose Gear Inspection

Inspect the nose landing gear system.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Wing Jack Point Adapter – ICA009750

**Parts Required**

None

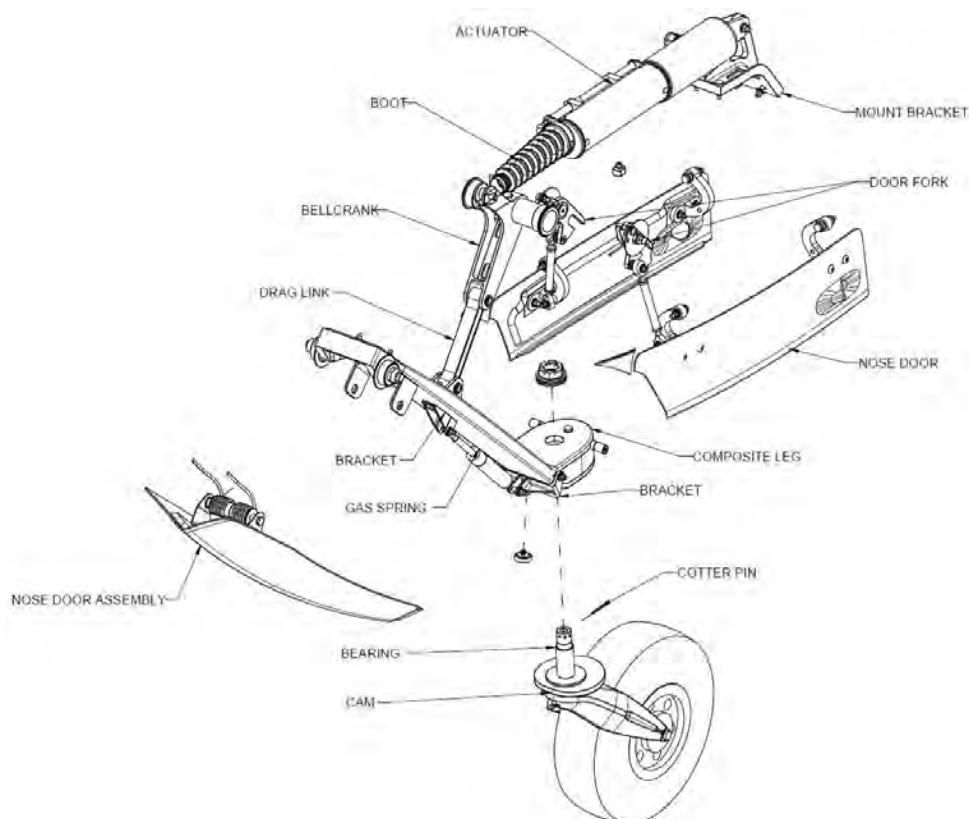
**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None





**FIGURE 14-27**  
NOSE LANDING GEAR ASSEMBLY DETAIL.

#### TASK INSTRUCTIONS:

1. Jack the aircraft using the built-in jack points. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 3-32.)
2. Check for attachment.
  - a. After the aircraft has been jacked, apply an alternating force to the nose landing gear and validating that there is not excessive play or travel in the system.
3. Verify that all attachment hardware is correctly installed, refer to the illustration for hardware location.
4. Evaluate the nose landing gear doors for smooth operation and excessive play.
  - a. With the landing gear in the extended position, first apply an alternating side load to both the left hand and right hand nose doors. There should be no extensive play, as the doors are locked in this position.
  - b. Reach inside the nose cavity and override the door forks (shown in illustration) by rotating them clockwise (left hand fork) and counter clockwise (right hand fork). This will override the locking mechanism and allow the user to evaluate the door operation for smoothness, as well as play in the mechanical linkages.

5. Inspect the nose door for attachment and rigidity.
  - a. Apply a side pressure to the nose landing gear door and examine the bond line between the door and its respective bonded bracket. There should be no gapping or delamination between the door and bracket.
6. Visually inspect the nose gear boot for wear and tear or poor seal.
7. Inspect nose landing gear for cracks or any other forms of significant wear.
8. Cycle the landing gear several times, verifying correct function of the following:
  - a. Nose gear doors close fully against the fuselage skins with no gaps or looseness.
  - b. There are uniform gaps between the edges of the doors and the fuselage joggle.
  - c. The door flanges rest against each other.
  - d. Instrument panel position lights indicate correctly.
  - e. Normal gear function with no blown fuses.

#### VERIFICATION METHOD:

Verify that each check is passed successfully.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Landing Gear" on page 3-14

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32

"Aft Nose Landing Gear (NLG) Door Mechanism Removal, Installation, and Rigging" on page 14-83

## 14.7.2 Maintenance Instructions

### 14.7.2.1 Nose Landing Gear (NLG) Wheel Removal

Use the following procedure to remove the nose landing gear wheel.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Jack the aircraft up or weight the tail so that the nose gear is clear of the ground.  
**CAUTION:** Use a safety block under the forward hull if weighting tail.
  2. Use a 7/16 wrench to remove the two AN4C11A bolts on either side of the NLG fork.
  3. Slide the wheel assembly out of the fork.
  4. Remove the ICA011894 spacer and AV-ICON-002 axle.
  5. Proceed to section "Nose Wheel Tire Leak" to add sealant to the Nose Wheel.
  6. Proceed to the Beringer Wheel and Brake Maintenance Manual if doing further work on the wheel.
- 

**VERIFICATION METHOD:**

The procedure is complete when the nose landing gear wheel has been removed.

**RELATED INFORMATION:**

"Nose Wheel Tire Leak" on page 14-80

### 14.7.2.2 Nose Landing Gear (NLG) Wheel Installation

Use the following procedure to install the nose landing gear (NLG) wheel.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

### **Aircraft System and Number**

11 – Landing Gear

### **Consumables**

LOCTITE® 243™

Start this procedure with a complete Beringer nose wheel and tire assembly (see Beringer Wheel and Brake Maintenance Manual).

---

#### **TASK INSTRUCTIONS:**

1. Slide the AV-ICON-002 axle into the wheel assembly.
  2. Slide the ICA011894 spacer onto the end of the axle.
  3. Position the wheel assembly into the NLG fork.
  4. Apply LOCTITE® 243™ to the threads of the two AN4C11A bolts and install them through each leg of the NLG fork and into the axle. Torque each to 44 in-lb<sub>f</sub>.
- 

#### **VERIFICATION METHOD:**

Check that the wheel spins freely and that tire pressure is correct (45 psi).

#### **RELATED INFORMATION:**

"Nose Wheel Tire Leak" on page 14-80

### **14.7.2.3 Nose Landing Gear (NLG) Leg Assembly Removal**

The following task should be used to remove the nose landing gear (NLG) leg assembly.

#### **TASK INFORMATION:**

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

## 11 – Landing Gear

### Consumables

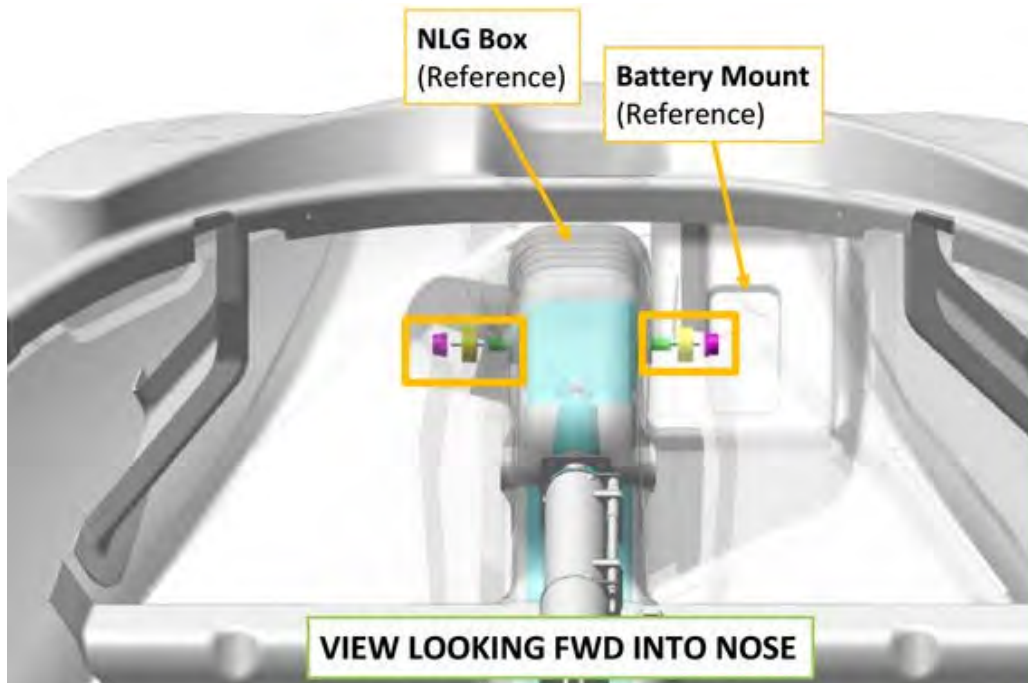
LOCTITE<sup>®</sup> 222<sup>™</sup>

---

#### TASK INSTRUCTIONS:

1. Remove left and right instrument panel top panel. (See “Right Instrument Panel Top Panel Removal” on page 8-17.)(See “Left Instrument Panel Top Panel Removal” on page 8-19.)
2. Remove the aircraft battery. (See “Battery Removal and Installation” on page 6-37.)
3. Jack the aircraft up or weight the tail so that the nose gear is clear of the ground (use a safety block under the forward hull if weighting the tail).
4. Use two #2 cross-head drivers to remove the screw and binding post that attach the forward NLG door (these are secured with LOCTITE<sup>®</sup> 222<sup>™</sup>).
5. Remove the forward door along with the long spacer, two torsion springs, and two spring mount bushings. The flanged bearings should remain pressed into the wraparound bracket on the NLG leg.
6. Remove the retaining ring and wrist pin from the NLG drag link where it meets the NLG leg bracket, supporting the NLG leg so that it does not over-extend.
7. Use 5/8 and 22/32 wrenches to remove the two AN7C14A bolts and MS21044C7 nuts that attach the NLG trunnion to the NLG box. For the aircraft right side, the nut is accessed by reaching through the battery box (see below).

**NOTE:** *There is a bushing in the bearing on each side of the box.*



8. Remove the NLG leg.

#### VERIFICATION METHOD:

The task is completed when the nose landing gear leg has been removed.

#### RELATED INFORMATION:

"Right Instrument Panel Top Panel Removal" on page 8-17

"Left Instrument Panel Top Panel Removal" on page 8-19

"Battery Removal and Installation" on page 6-37

### 14.7.2.4 Nose Landing Gear (NLG) Leg Assembly Installation

Use the following procedure to install the nose landing gear leg assembly.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

Tef-Gel®

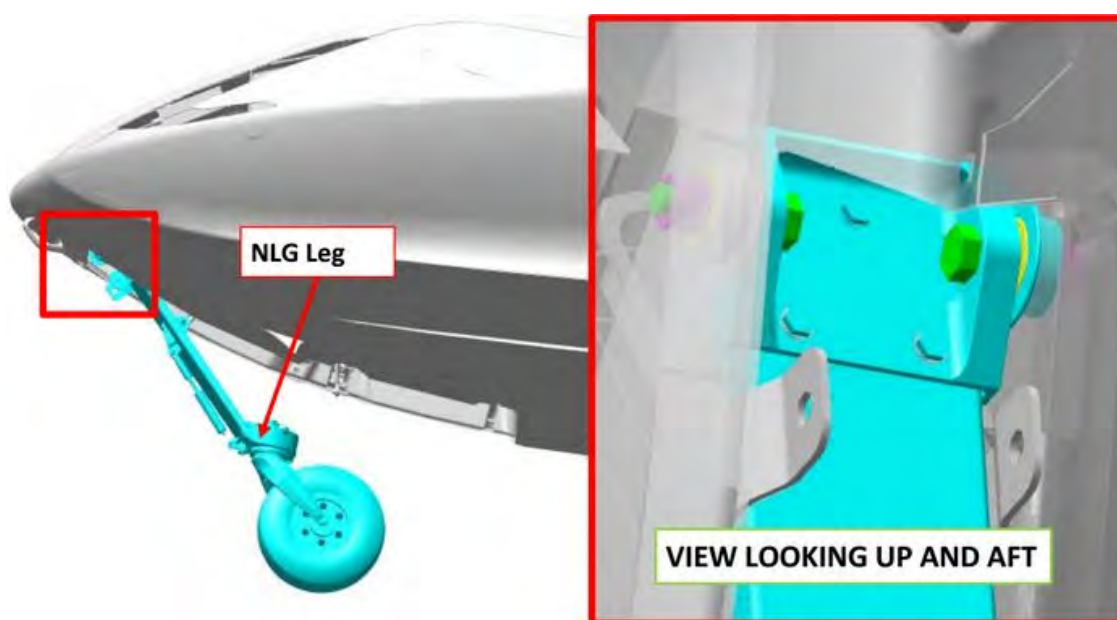
LOCTITE® 222™

Ensure that the NLG leg assembly is complete with leg, trunnion, wrap around bracket, drag link bracket, and wheel centering assembly installed. If the NLG fork steering bearing is not in place, install it before proceeding with the steps below.

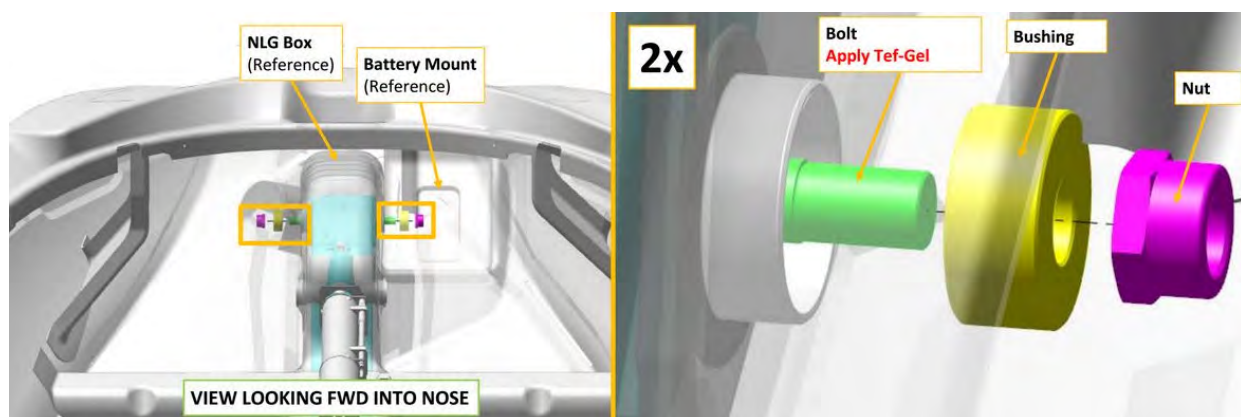
---

**TASK INSTRUCTIONS:**

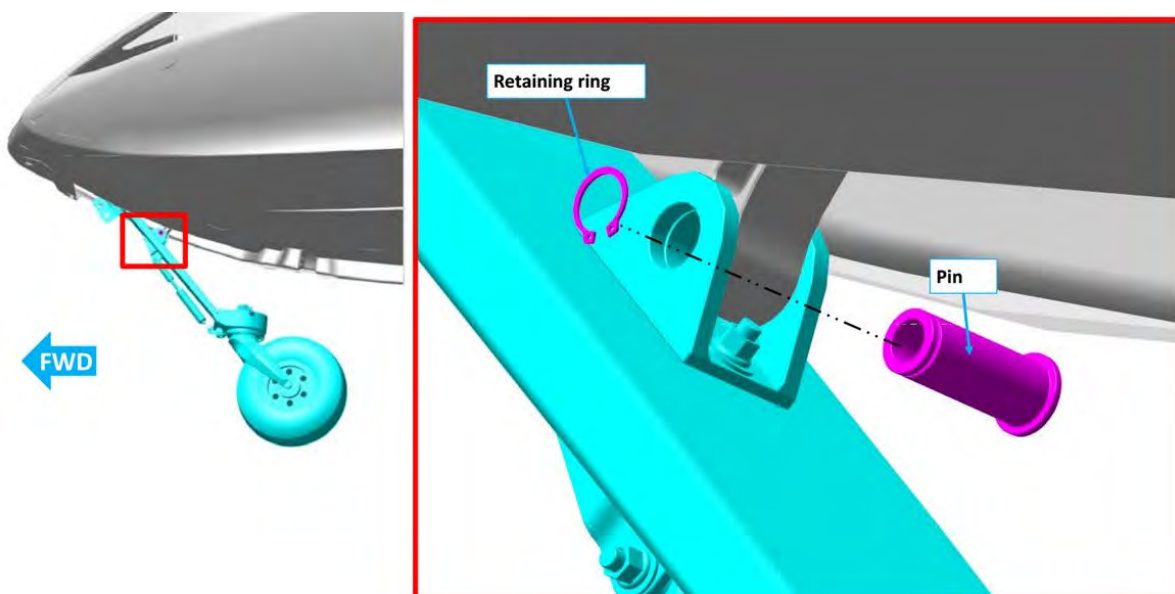
1. Locate the NLG leg into position in the NLG box in the aircraft.



2. Install the AN7C14A bolts through each ear of the NLG trunnion and into the pivot bearings in the NLG box. Use a helper to hold the leg assembly in place.
3. From the inside of the fuselage, install the ICA007417 bushings and MS21044C7 nuts onto the AN7 bolts, the bushings being positioned inside the flanged bearings in the NLG box. Apply Tef-Gel® to the bolt threads.



4. Torque the AN7 pivot bolts and nuts to 322 in-lb<sub>f</sub>.
5. Locate the NLG drag link into position in the bracket on the NLG leg and install the ICA007756 wrist pin.

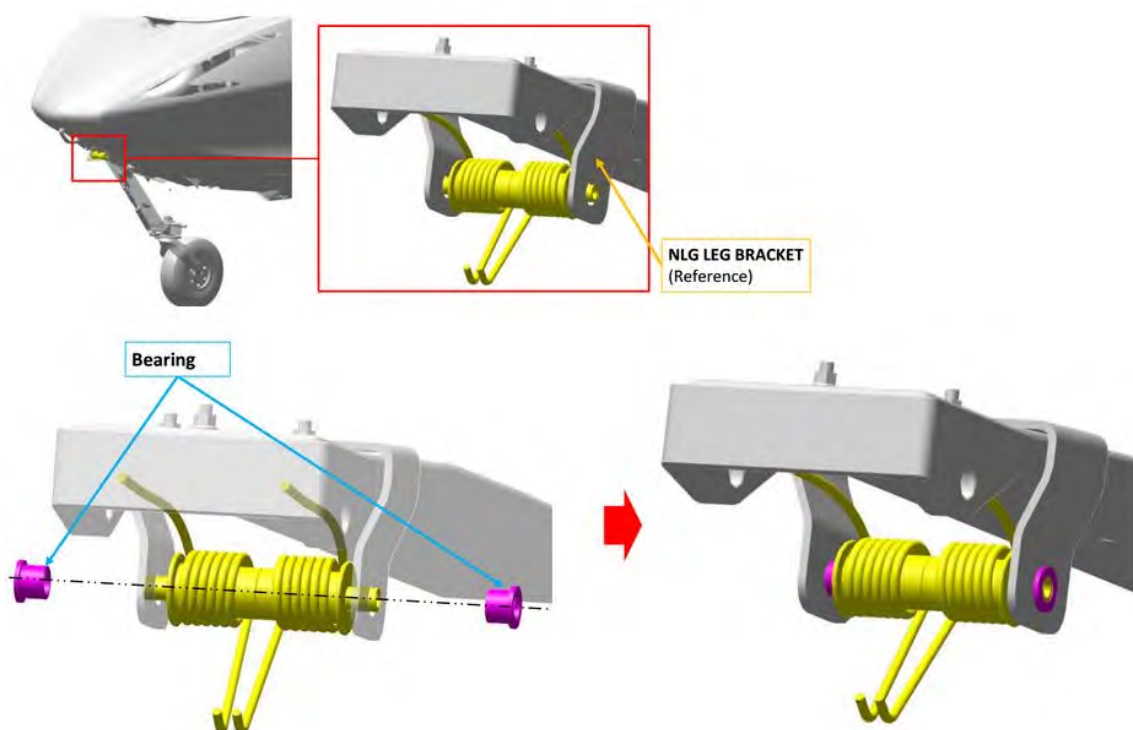


6. Install retaining ring S73HW2-100-043 into the groove in the wrist pin, securing it in place.
7. Assemble the forward NLG door torsion springs onto the ICA008817 mounts as shown.





8. Place springs and mounts into position as shown, then slide in the 4040RSS3.125MOD-12 spacer.



9. Apply LOCTITE<sup>®</sup> 222™ to the threads of the AN526C632-40 screw.
10. Locate the forward NLG door into position so that the pivot holes align, deflecting the springs in the process.
11. Slide the AN526 screw in place, along with Z4110-316SS binding post and its NAS11490332R washer. Tighten snugly.

12. Cycle the nose landing gear. Ensure that gear doors do not interfere with any other components when the nose landing gear is fully extended and retracted. Adjust as necessary.
13. Lower the aircraft from jacks or remove weight and foam blocks as appropriate.

**VERIFICATION METHOD:**

The procedure is complete when the nose landing gear leg assembly has been installed and the landing gear cycle checks have been completed successfully.

**RELATED INFORMATION:**

"Nose Landing Gear (NLG) Cam Follower Replacement" on page 14-66  
"Right Instrument Panel Top Panel Installation" on page 8-18  
"Left Instrument Panel Top Panel Installation" on page 8-21  
"Battery Removal and Installation" on page 6-37

### 14.7.2.5 Nose Landing Gear (NLG) Cam Follower Replacement

Use this procedure to replace the nose landing gear (NLG) cam follower.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

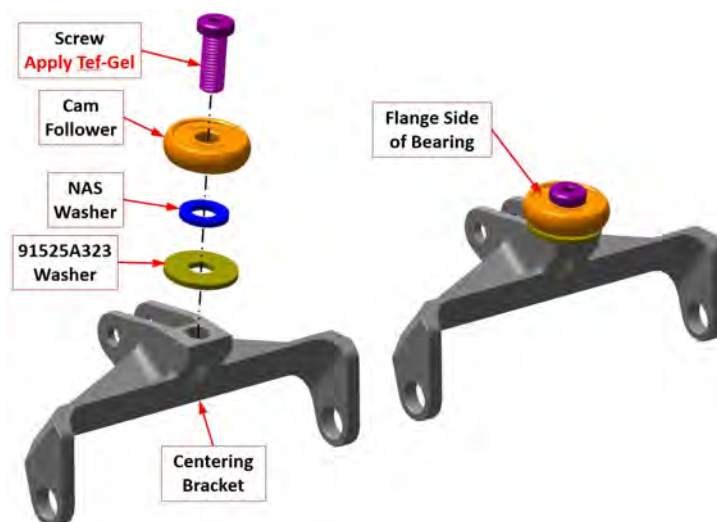
LOCTITE® 603™

Tef-Gel®

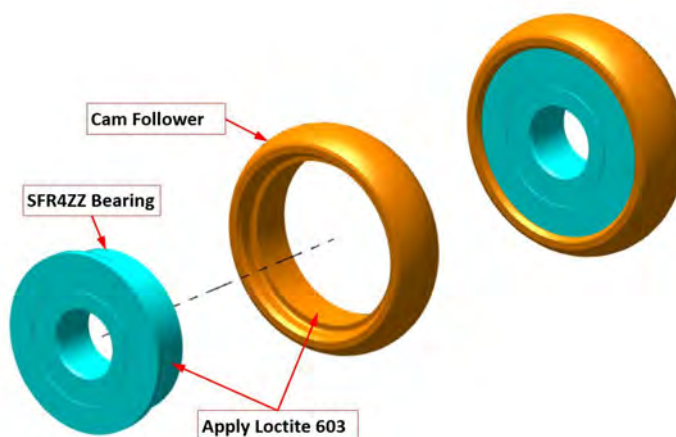
**TASK INSTRUCTIONS:**

1. Remove forward landing gear door assembly. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)

2. Orient the nose wheel 180° from the natural in-trail position.
3. Wrap safety wire from end to end around the 750-2-120 nose wheel centering gas strut to prevent it from extending.
4. Return wheel to the in-trail position, making sure cam follower is now free from contact with the cam.
5. Use a 1/8 hex wrench to remove the 93615A432 socket head screw and washers holding the cam follower to the ICA010386 centering bracket.



6. If needed, assemble a new cam follower by applying LOCTITE® 603 to the outer diameter of a SFR4ZZ bearing and pressing it into the bore of a ICA010387 cam follower. Allow cure time per the LOCTITE® instructions prior to handling.



7. Coat a 93615A432 socket head screw with Tef-Gel® and assemble the cam follower, NAS1149C0463R washer and 91525A323 washer to the centering bracket. Be careful to orient the cam follower so that screw head bears against the flange side of the SFR4ZZ bearing (larger outer diameter side). Torque the screw to 25 in-lb<sub>f</sub>.
8. Remove the safety wire installed in Step 3.

9. Perform the verification steps below and correct any deficiencies.
10. Install the nose landing gear forward door assembly. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)

**VERIFICATION METHOD:**

- 1) Lift the nose of the aircraft so that the nose tire is clear of the ground. Rotate the nose wheel 360° left and right and confirm smooth motion.
- 2) Rotate the nose wheel left and right and confirm that the wheel self-centers to the in-trail position. Lower the nose back onto the ground.

**RELATED INFORMATION:**

"Nose Landing Gear (NLG) Leg Assembly Installation" on page 14-62

### 14.7.2.6 Nose Landing Gear Steering Bearing Replacement Procedure

Use the following procedures to replace the nose landing gear steering bearing.

#### 14.7.2.6.1 Remove Nose Landing Gear Steering Bearing

This task is used to remove the nose landing gear steering bearing before it is replaced.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Nose Gear Bearing Installation/Removal Tool

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Chock the main wheels.
  2. Orient the nose wheel 180° from the natural in-trail position.
  3. Wrap safety wire around the nose wheel centering gas strut to prevent it from extending.
  4. Return wheel to center, make sure cam follower is not contacting the cam.
  5. With two people, elevate nose of aircraft. Place a foam block underneath the hull of the aircraft, just aft of the aft nose gear doors. The nose wheel should be off of the ground with enough room to slide the nose gear fork out of the nose gear leg. An alternate to this method is to lift the aircraft on jacks. (See "Empty Weight and CG Measurement While on Jackpoint Scales" on page 3-32.)
  6. Remove the cotter pin from the top of the nose gear steering pivot, then remove the castle nut with a 1-1/8 wrench.
  7. Remove the Belleville/flat washer stack, making note of its stack sequence for reference during re-installation.
  8. Remove the nose wheel fork assembly out of the bottom of the leg.
  9. Place ICON nose gear bearing installation/removal tool into position. Insert should be placed on the top of the leg with the cup on underneath side of gear leg, centered around on bearing. Place the all-thread inside the center of the tool. Spin the top nut down until the tool holds position snugly on gear leg. Start turning the nut on the bearing insert, while holding the nut on the cup stationary. Once enough pressure is applied the bearing should break free. Press bearing out through the gear leg.
  10. Remove nose gear bearing installation/removal tool.
  11. Discard the NLG bearing.
  12. Inspect NLG fork pivot shaft for signs of galling/wear.
- 

**VERIFICATION METHOD:**

After nose gear steering bearing is removed it is able to be cleaned and prepared for bonding. (See "Prepare Nose Gear and Nose Gear Steering Bearing for Bonding" on page 14-69.)

**RELATED INFORMATION:**

- "Prepare Nose Gear and Nose Gear Steering Bearing for Bonding" on page 14-69
- "Bond New Nose Landing Gear Steering Bearing" on page 14-71
- "Install New Nose Landing Gear Steering Bearing" on page 14-72

### 14.7.2.6.2 Prepare Nose Gear and Nose Gear Steering Bearing for Bonding

Use this task to prepare the nose gear and nose gear steering bearing for bonding after removal.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

None

**Specific Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Clean nose gear leg with soap and water and allow to dry.
  2. Wipe out inside of nose gear fork pivot bearing bonding area with isopropyl alcohol and a clean cloth or paper towel until all contaminants are removed.
  3. Lightly scuff nose gear fork pivot bearing bonding area using 80 grit aluminum oxide sandpaper, until no shiny areas are present. Remove as little material as possible while sanding so as to avoid needlessly increasing the bore diameter or getting it out of round.
  4. Clean bonding area of nose gear leg using isopropyl alcohol and a clean cloth. Always wipe the same direction with a new cloth each time. Clean until bonding area wipes clean, with nothing showing on cloth. This usually takes 3-4 rounds of wiping.
  5. Remove contaminants from the outside of the bearing by cleaning with isopropyl alcohol until cloth wipes clean.
- 

**VERIFICATION METHOD:**

Bearing is clean and free of contaminants.

## RELATED INFORMATION:

"Remove Nose Landing Gear Steering Bearing" on page 14-68

"Install New Nose Landing Gear Steering Bearing" on page 14-72

### 14.7.2.6.3 Bond New Nose Landing Gear Steering Bearing

Use these instructions to bond the new nose landing gear steering bearing after it is cleaned and prepped.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Specific Tools Required**

ICON nose gear bearing installation/removal tool

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

LOCTITE® EA 9394

## TASK INSTRUCTIONS:

1. Mask nose landing gear so no adhesive ends up on the paint.
2. Apply Miller Stephenson MS-122RB release agent to any surface of the ICON nose gear bearing install/removal tool that may get adhesive on it. The tool should never be allowed to touch any surface to be bonded.

**CAUTION:** *During the bonding process, never use gloves that have come in contact with release agents.*

3. Mix LOCTITE® EA 9394 per the manufacturer's instructions.
4. Using a clean gloved hand lightly wipe adhesive on the bonding area inside of the nose landing gear leg. Wipe away excess. Not much adhesive is required.
5. With clean gloves apply adhesive to the nose landing gear steering bearing. Adhesive should be evenly spread around the bearing. Not much adhesive is required.
6. Place ICON nose gear bearing installation/removal tool into the bearing. Take caution making sure no adhesive gets onto the inside diameter of the nose landing gear bearing. Place tool and bearing on top of the nose landing gear. Place the cup on the underneath side of nose landing

- gear leg and begin to press the nose landing gear into position. Bearing should end up flush on top and bottom of the nose landing gear leg.
7. Remove ICON nose landing gear bearing install/removal tool. Clean up adhesive that squeezed out during the installation. Excess uncured adhesive may be removed with a cloth and isopropyl alcohol. Clean up any adhesive that may have gotten on the inside of the bearing.
  8. Remove masking tape.
  9. Allow the adhesive to cure. LOCTITE® EA 9394 should be cured for 3 to 5 days at 77° F (25° C) to achieve full strength. An accelerated cure may be made by heating the leg in an oven at 150° F (66° C) for one hour.
  10. After cure, ream bore of bearing to diameter 0.7420/0.7412.

#### VERIFICATION METHOD:

Measure diameter of ream bore.

#### RELATED INFORMATION:

"Remove Nose Landing Gear Steering Bearing" on page 14-68

"Install New Nose Landing Gear Steering Bearing" on page 14-72

### 14.7.2.6.4 Install New Nose Landing Gear Steering Bearing

Use these instructions to install new nose landing gear steering bearing after removal, preparation, and bonding.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Specific Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

11 – Landing Gear

##### **Consumables**

None



---

**TASK INSTRUCTIONS:**

1. Install nose wheel assembly into gear leg.
  2. Install the Belleville/flat washer stack in the same orientation it was removed.
  3. Tighten castle nut finger tight.
  4. Orient the nose wheel 180° from the in-trail position and remove the safety wire from the self-centering gas strut.
  5. Tighten castle nut with a 1-1/8 wrench until the point where the nose wheel centering just ceases to return the wheel to the trail position when displaced.
  6. Loosen the castle nut by one flat.
  7. Check that nose wheel centering is functioning. The fork may need to be rotated about the steering axis a few times to break in the parts, allowing smooth operation.
  8. Install a new cotter pin once proper operation is achieved.
  9. Remove the foam block from under the hull or lower the aircraft off the jacks.
- 

**VERIFICATION METHOD:**

Verify that the nose landing gear bearing is firmly is secured and firmly on the ground.

**RELATED INFORMATION:**

"Remove Nose Landing Gear Steering Bearing" on page 14-68

"Prepare Nose Gear and Nose Gear Steering Bearing for Bonding" on page 14-69

"Bond New Nose Landing Gear Steering Bearing" on page 14-71

### 14.7.2.7 Replace Nose Landing Gear Actuator

Use the next two procedures to replace the nose landing gear actuator.

#### 14.7.2.7.1 Nose Landing Gear Actuator Replacement

Use the following task to replace the nose landing gear actuator.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

None

### Parts Required

None

### Aircraft System and Number

11 – Landing Gear

### Consumables

None

---

#### TASK INSTRUCTIONS:

1. Remove left, center, and right instrument panels tops to again access to the landing gear actuator.
  2. Lift the nose of the aircraft and support as required (by the keel).
  3. Disconnect the forward attachment bolt of the actuator and retain hardware.
  4. Loosen the clamp (30-45/9-W5) that connects the NLG Actuator Boot to the nose landing gear box. Slide the boot off the NLG box. Retain all hardware.
  5. Loosen the Mini Worm Drive Clamp that connects the NLG Actuator Boot the forward side of the NLG actuator. Retain all hardware.
  6. Disconnect the aft connection point of the actuator from bracket attached to the nose landing gear box. Retain all hardware.
  7. Disconnect the actuator connector from the FWD Fuselage Wire Harness.
  8. Remove the actuator from the aircraft by sliding it out of the nose landing gear box.
- 

#### VERIFICATION METHOD:

The procedure is complete when the actuator has been removed.

### 14.7.2.7.2 Nose Landing Gear Actuator Installation and Rigging

Use the following task to install and replace the nose landing gear actuator. For rigging only, proceed to step five.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

A&P

##### Task Specific Training Required

No

**Special Tools Required**

ITL001714 (Nose Landing Gear Rigging Tool)

**Parts Required**

ICA013071 (NLG Actuator)

**Aircraft System and Number**

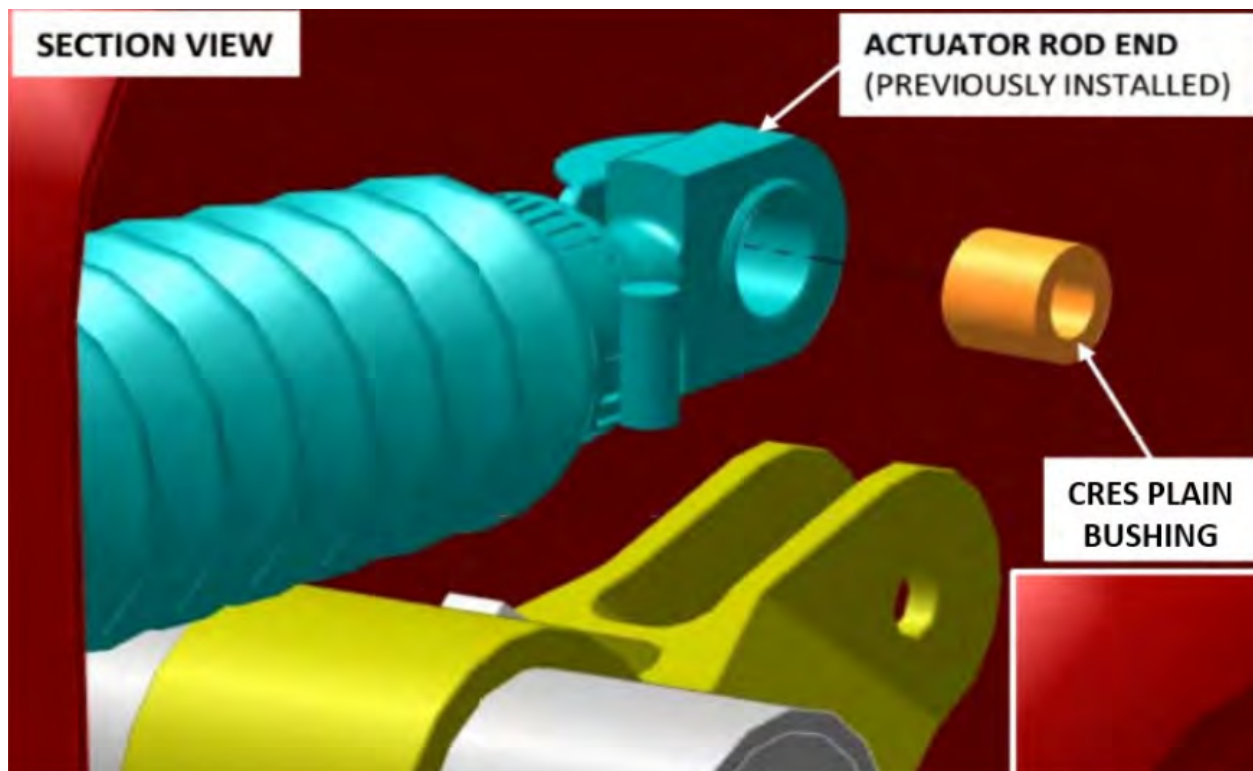
11 – Landing Gear

**Consumables**

Tef-Gel®

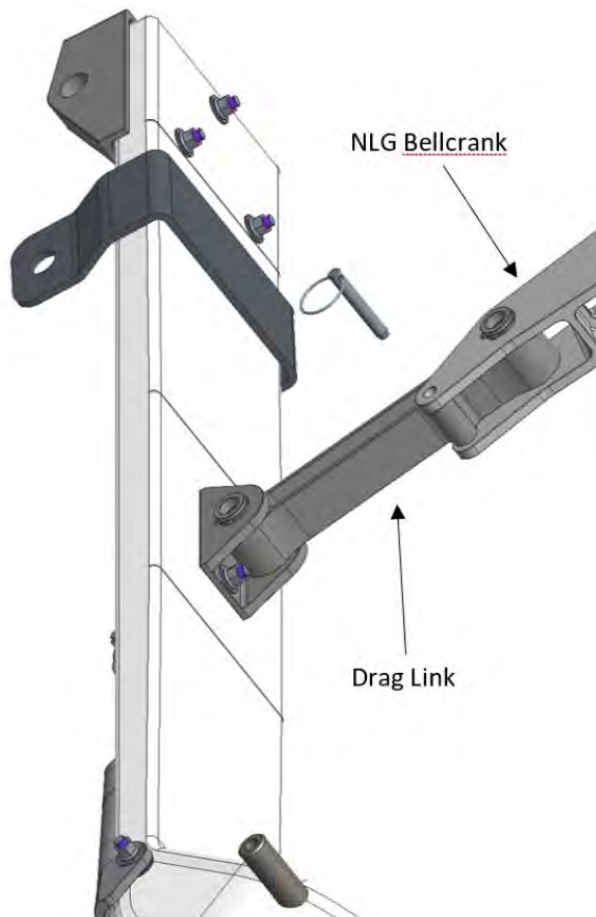
**TASK INSTRUCTIONS:**

1. Slide NLG Actuator into the NLG box and attached the aft end of the actuator to the NLG box bracket using the AN4C10A bolt, NAS1149C0432R washer, MS21032-4 nut, ICA008136 bushing as shown in the graphic below. Torque bolt to 48 in-lb<sub>f</sub>.
2. Slide NLG Actuator boot (119255) over the NLG actuator rod end and secure with large clamp (30-45/9-W5) and small clamp (3808) as shown in the graphic below. Torque clamps until there is a rise in torque then 1/4 turn additional. Allow approximately .125" of the rod end extension beyond the boot. Allow approximately .05" of boot to protrude beyond the clamp.
3. Insert CRES Plain Bushing and connect the rod end to the NLG bell crank using the bolt (AN4C10A) and washer (under bolt head) (NAS1149C0432R) as shown in the two graphics below. Apply Tef-Gel® to bushing and bolt threads and shank prior to assembly. Torque bolt to 54 in-lb<sub>f</sub>.



**FIGURE 14-28**  
ACTUATOR DETAILED VIEW

4. Electrically connect NLG actuator to the aircraft wiring harness by connecting to D9024P of the FWD Fuselage Wire Harness.
5. Rig the stops on the NLG actuator extended travel such that the Tooling Pin fits flat (with no gaps) against both the NLG Bell Crank and NLG Drag Link as graphically shown below.



**FIGURE 14-29**  
NLG TOOLING PIN

**CAUTION:** *Special care should be given to make sure this forward rig is set correctly.*

6. Rig the NLG Actuator retract travel such that force required to pull the NLG off the stop at the top of the NLG box is 3-4 lbs measured at the wheel axle.

#### VERIFICATION METHOD:

Jack up aircraft and swing both main and nose gear together 10 times. Perform return to service flight.

### 14.7.2.8 Nose Landing Gear (NLG) Rigging and Rigging Check with Landing Gear Up

Use the following procedure to rig the NLG with the gear UP. See Step 7 for rigging check instructions.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

ICA009750 (Wing Jack Point Adapter)

Rig Pin (Dia. .1875 + .0100-.0000")

**Parts Required**

None

**Aircraft System and Number**

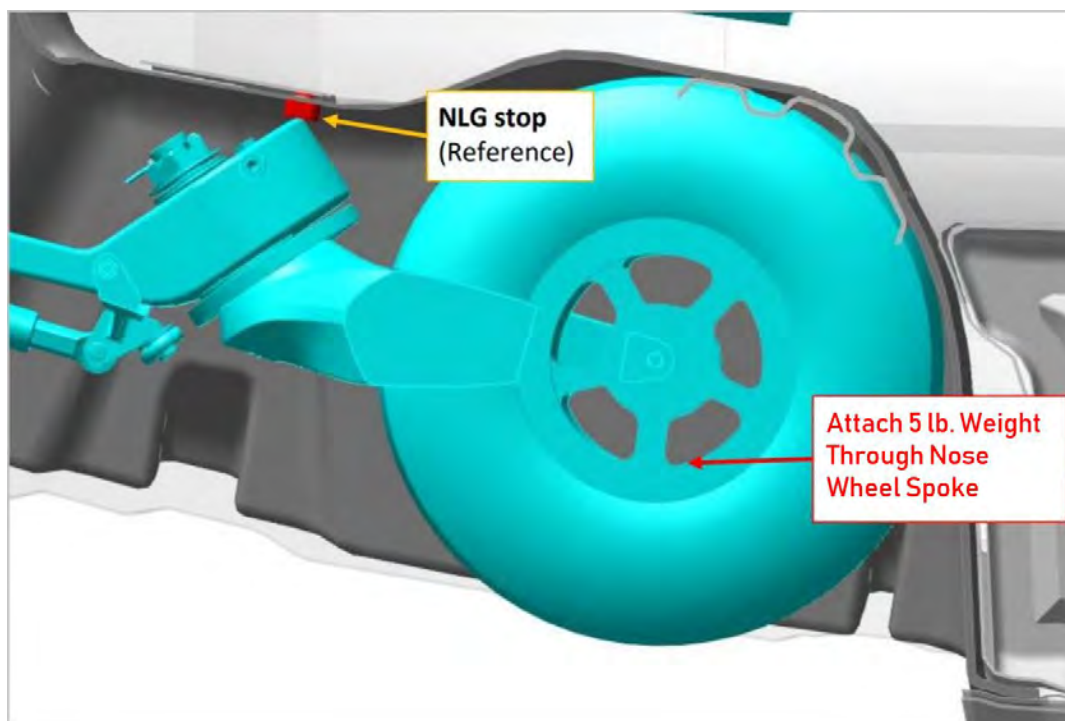
11 – Landing Gear

**Consumables**

None

#### TASK INSTRUCTIONS:

1. Jack the aircraft up or weight the tail so that the nose gear is clear of the ground (use a safety block under the forward hull if weighting the tail).
2. Using Test box, verify that when in full retract position, the NLG leg does NOT contact the NLG stop.
3. Use Test box to position the NLG such that it is approximately half way between fully extended and fully retracted.
4. Attach 5lb weight (ITL012297) to NLG wheel in the location shown.



**FIGURE 14-30**  
FIGURE OF ATTACHMENT OF WEIGHT

5. Using Test box, adjust the actuator full retract position until it just makes contact with the NLG stop.
6. Insert Rig Pin (.1875 + .0100-.0000") through the Rig Pin holes.
7. If adjustment is necessary, loosen jam nut of forward most Reed Switch saddle and rotate the thumb wheel to adjust the actuator such that the rig pin slides freely into position.
8. Torque Jam nut to 36-40 in-lbs and check that hardware is secure.

#### VERIFICATION METHOD:

Verify no fuses blown and landing gear light shows positive gear up indication.

### 14.7.2.9 Nose Landing Gear (NLG) Rigging and Rigging Check with Landing Gear Down

Use this procedure to rig the NLG with gear down. See Step 3 for rigging check instructions.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

ICA009750 (Wing Jack Point Adapter)

Rig Pin (Dia .1875 +.0100-.0000")

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

None

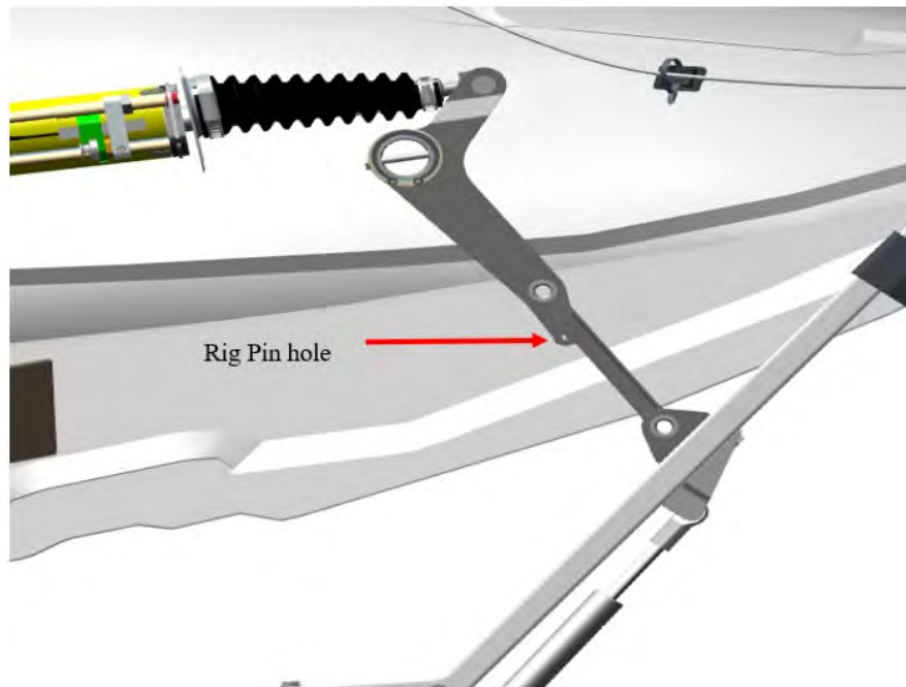
---

**TASK INSTRUCTIONS:**

1. Jack the aircraft up or weight the tail so that the nose gear is clear of the ground (use a safety block under the forward hull if weighting the tail).
2. Connect actuator to Test box and set voltage to 13V. Actuate NLG Actuator to the full extend position. The NLG Actuator will stop automatically when it reaches the full extend position.

*NOTE: Allow gear to extend under its own weight (no additional weight added).*

3. Insert Rig Pin through the holes identified in the image.



**FIGURE 14-31**  
FIGURE OF RIG PIN HOLE

4. If adjustment is necessary, loosen jam nut of forward most Reed Switch saddle and rotate the thumb wheel to adjust the actuator such that the rig pin slides freely into position.
5. Torque Jam nut to 36-40 in-lbs and check that hardware is secure.

#### VERIFICATION METHOD:

Verify no fuses blown and landing gear light shows positive gear down indication.

### 14.7.2.10 Nose Wheel Tire Leak

This procedure should be used to identify and repair a slow nose wheel leak with the application of sealant added through the valve core. Use the following procedure if it is suspected that the Nose Wheel Tire has a leak.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required



No

**Special Tools Required**

Valve Stem Remover – Any generic made for Schrader valve

Tire Sealant Injector (CS-AS0001)

**Parts Required**

None

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

Sealant, Stans No Tube (1 Quart) (ICA013792)

Powder-Free Nitrile/Latex Gloves (As Needed)

Permanent Marking Pen (Fine and Ultra Fine point) (As Needed)

Isopropyl Alcohol (TT-I-735A, or Equivalent)

Lint-free Cloth

*NOTE: Retain all removed components for re-installation. Slow leaks do not constitute tire damage. If tire is damaged, scrap and replace.*

---

**TASK INSTRUCTIONS:**

1. Remove Nose Wheel. (See “Nose Landing Gear (NLG) Wheel Removal” on page 14-58.)
  2. Release pressure in tire.
  3. Remove valve core.
  4. Clean using isopropyl alcohol and wipe clean with lint-free cloth.
  5. Shake bottle of sealant well. Before pouring sealant, turn the bottle upside down, with your finger tip over the spout and hold for 10 seconds.
  6. Fill tire with approximately 3 ounces of Stans No Tube. This can be done through the valve (inject using tire sealant injector).
  7. Install valve core and pressurize to 45 psi.
  8. Gently bounce the wheel 2-3 inches off the ground, with each bounce rotate the tire 3-4 inches. Rotate and bounce wheel at least two full revolutions.
  9. Allow tire to rest on each side (with sidewall parallel to ground) for approximately 1 minute.
  10. Check seal with soapy water. If leaks continue, repeat procedure.
  11. After leaks have been sealed, install Nose Wheel. (See “Nose Landing Gear (NLG) Wheel Installation” on page 14-59.)
- 

**VERIFICATION METHOD:**

Allow aircraft to sit for 24 hours. After 24 hours spray soapy water to verify no leaks.

**RELATED INFORMATION:**

"Nose Landing Gear (NLG) Wheel Removal" on page 14-58

"Nose Landing Gear (NLG) Wheel Installation" on page 14-59

## 14.8 Aft Nose Landing Gear Door

### 14.8.1 Maintenance Instructions

#### 14.8.1.1 Aft Nose Landing Gear (NLG) Door Mechanism Removal, Installation, and Rigging

Use these procedures to remove, install, and repair the mechanism for the aft NLG doors.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

See task procedures.

**Aircraft System and Number**

11 – Landing Gear

**Consumables**

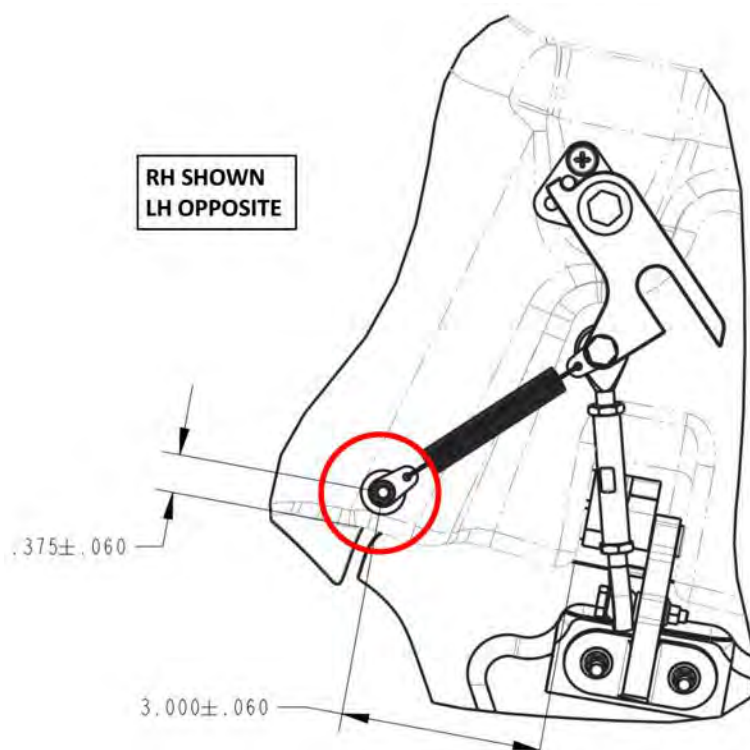
None

*NOTE: Carefully inspect each part and any underlying parts or structure for serviceability prior to installation.*

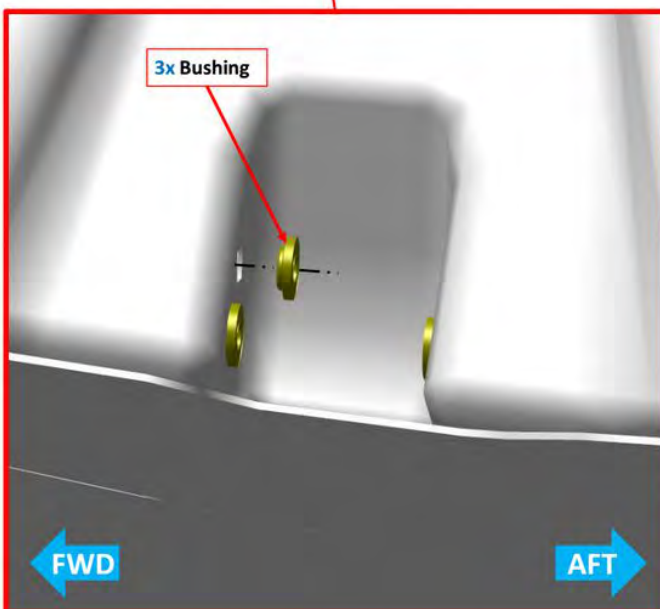
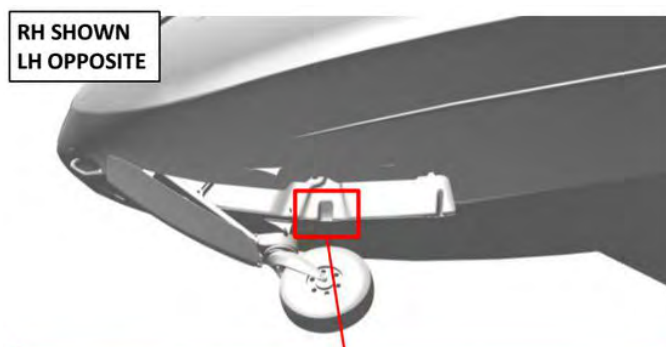
---

##### TASK INSTRUCTIONS:

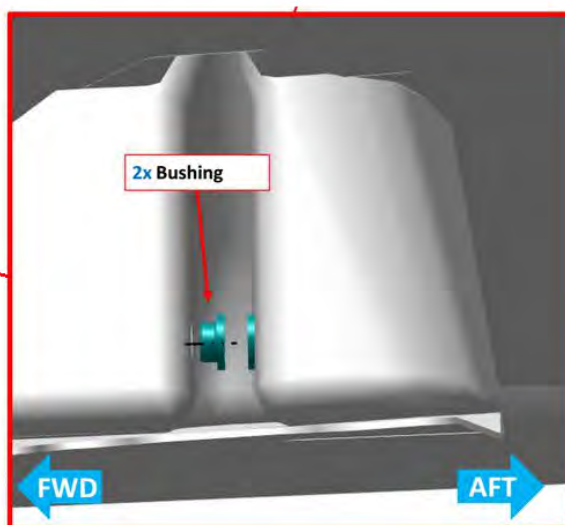
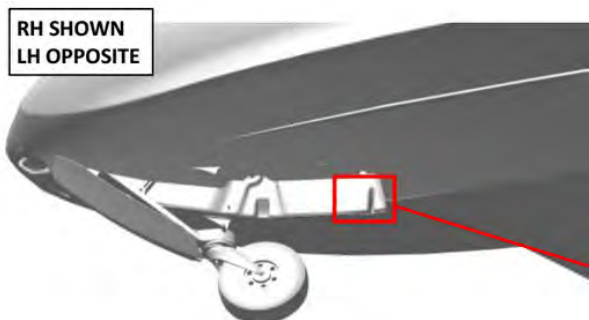
1. Use standard practices to remove and install the components of the Aft Nose Landing Gear Doors and mechanisms that need replacement or repair.
2. Verify Click Bond studs have been installed. The studs are bonded into the NLG box as shown. Repeat this step for both LH and RH sides.



3. Verify that the door bushings have been installed into the forward bellcrank pockets as shown. Repeat this step for both LH and RH sides.

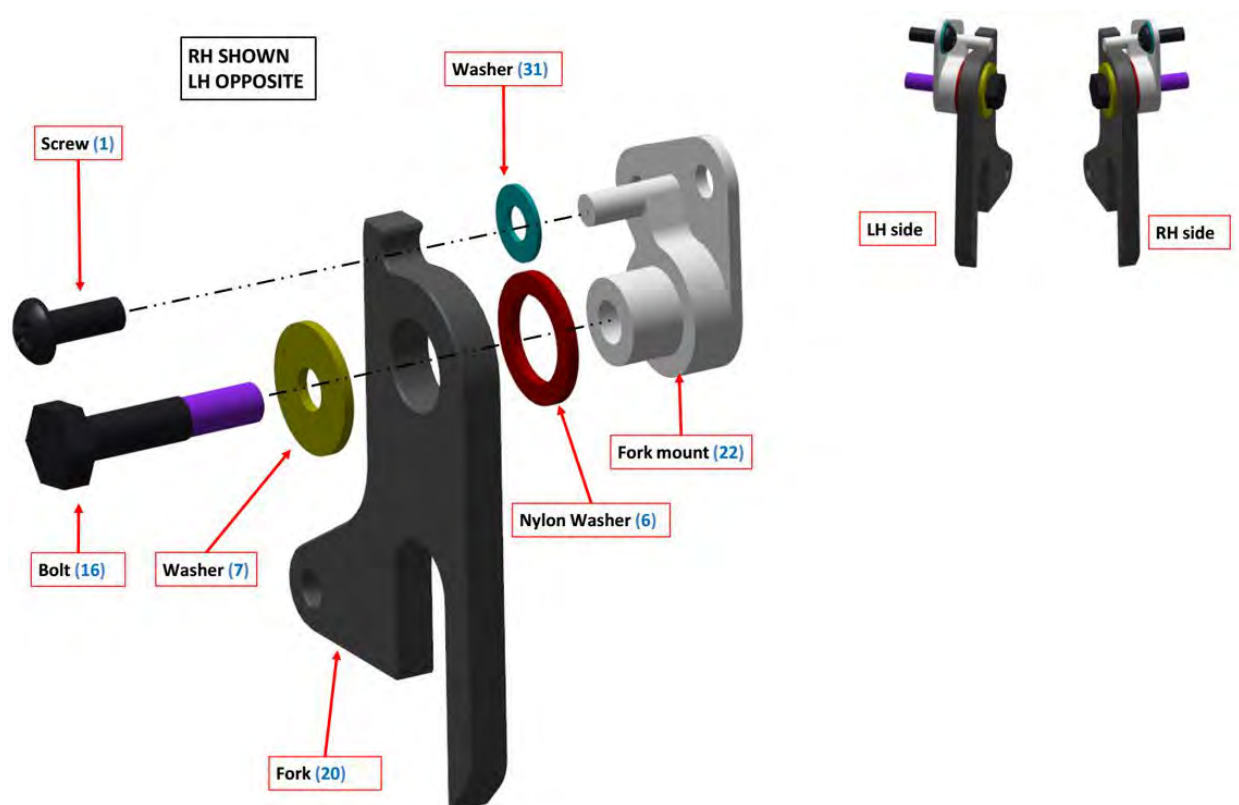


4. Verify that the door bushings have been installed into the aft bellcrank pockets as shown. Repeat this step for both LH and RH sides.



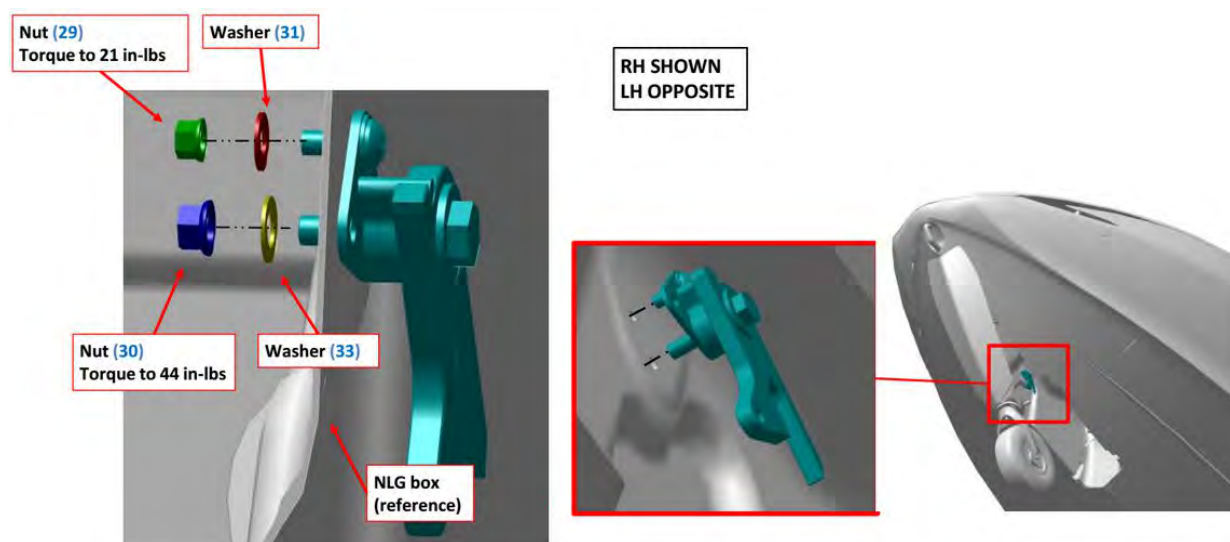
5. Prepare the door forks. Stack up door fork and fork mount with hardware as shown for the RH side. The LH side is a mirror image. Repeat for the LH side.

Qty	Item No	Part No
1	(1)	10F50MTT3
1	(6)	90295A492
1	(7)	91525A323
1	(16)	AN4C11A
1	(20)	ICA010039
1	(22)	ICA010049
1	(31)	NAS1149C0332R



6. Install the door forks. Install the RH stack-up of hardware from the previous step into the RH side of the NLG box as shown with the specified hardware. Torque to the specification identified. The LH side is a mirror image. Repeat for the LH side.

Qty	Item No	Part No
1	(29)	MS21043-3
1	(30)	MS21043-4
1	(31)	NAS1149C0332R
1	(33)	NAS1149C0432R



7. Prepare the door stops by installing one helicoil insert into the RH door stop. Repeat for the LH side.

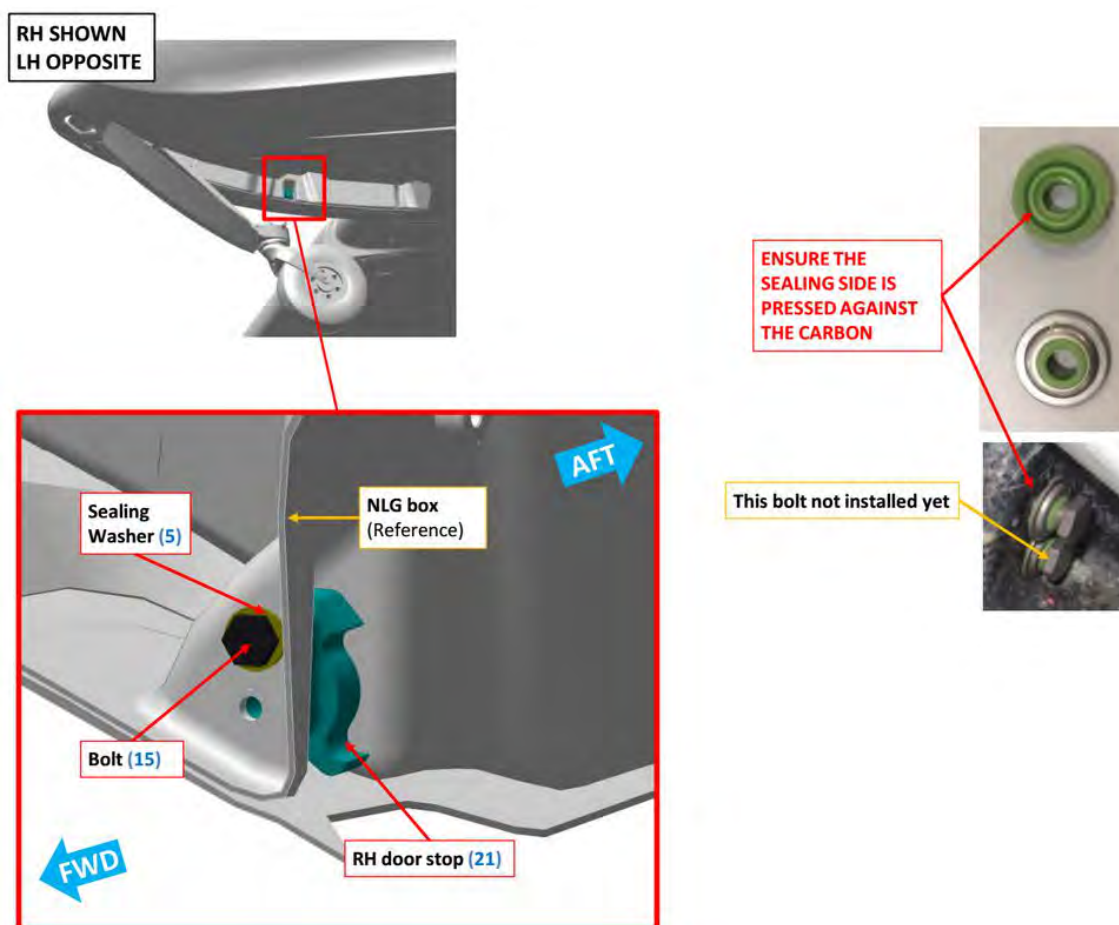
Qty	Item No	Part No
1	(3)	3591-3N285
1	(21)	ICA010044
1	(24)	ICA010082



8. Install the door stops from the previous step into the NLG box with the hardware shown. Temporarily leave the hardware loose allowing the door stop to swing freely. Repeat for the LH side.

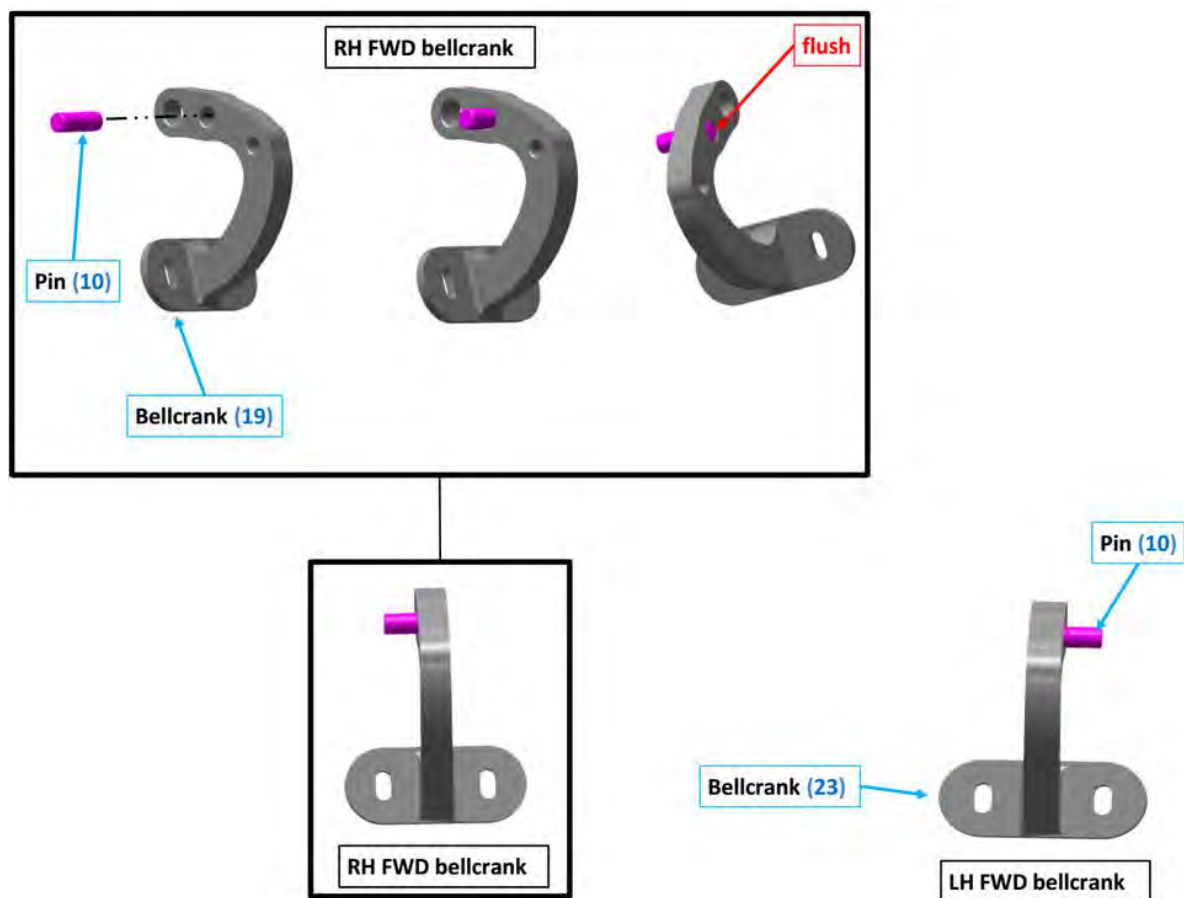
Qty	Item No	Part No
1	(5)	75101
1	(15)	AN3C4A





9. Prepare forward RH bellcrank by pressing pin into bellcrank so that the pin is flush with the aft face of the bellcrank. Prepare the forward LH bellcrank so that it is a mirror image of the forward RH bellcrank.

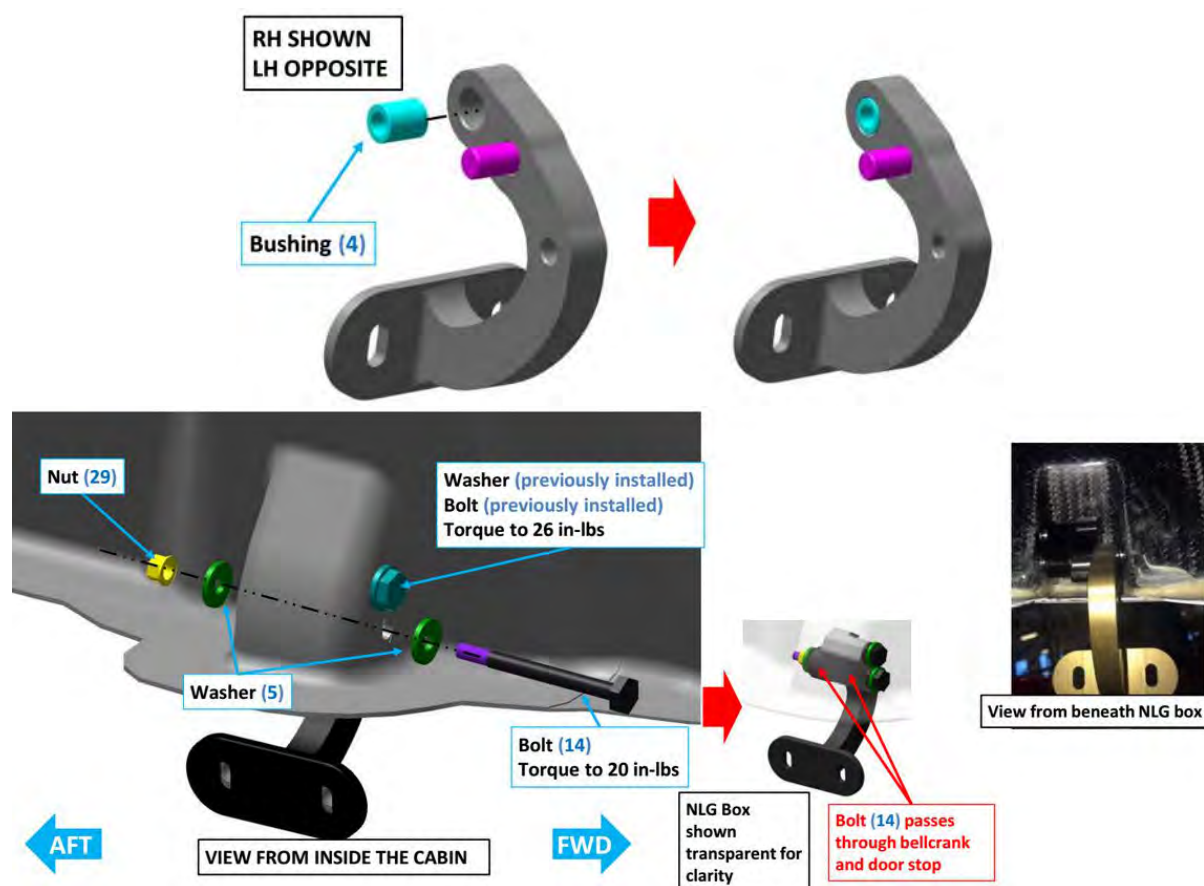
Qty	Item No	Part No
1	(10)	97395A485
1	(19)	ICA010035
1	(23)	ICA010059



10. Insert bushings into the RH and LH forward bellcranks from the previous step as shown. Install the forward bellcranks into the RH and LH bellcrank pockets as shown using the hardware listed. Torque all hardware as specified.

**NOTE:** Ensure that bolt (14) goes through both the door stop and through the bellcrank.

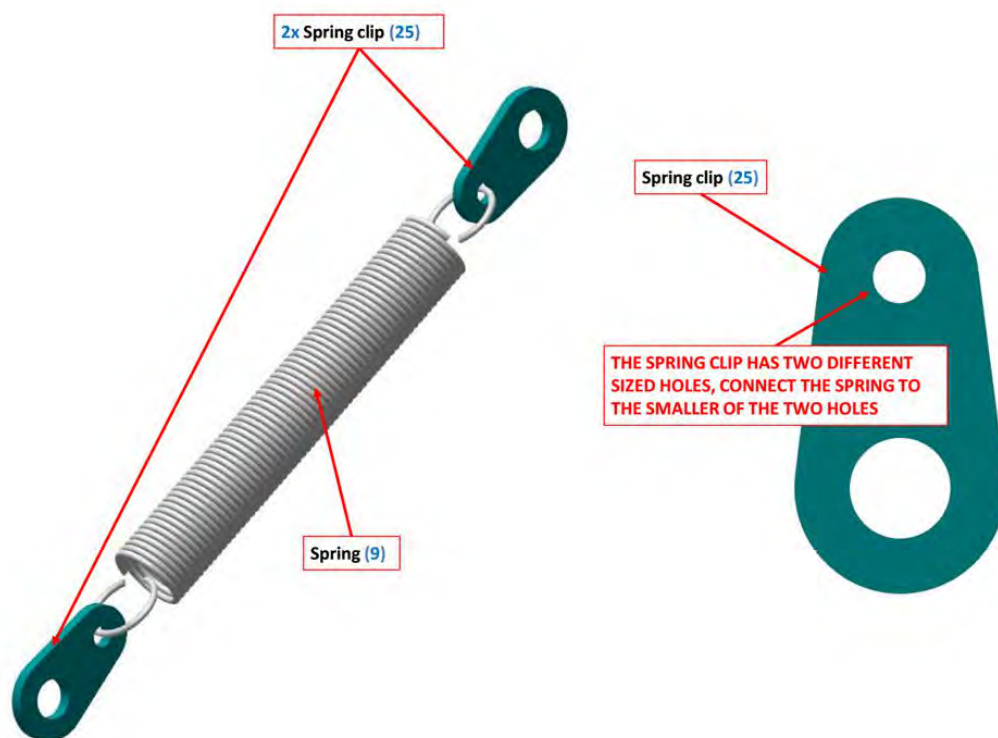
Qty	Item No	Part No
1	(4)	6362K112
1	(5)	75101
1	(14)	AN3C30A
1	(29)	MS21043-3



11. Prepare door springs by attaching two spring clips onto the spring. Prepare a total of two of these assemblies – one for the LH and one for the RH.

**NOTE:** Ensure the spring is connected to the smaller of the two holes on the spring clip.

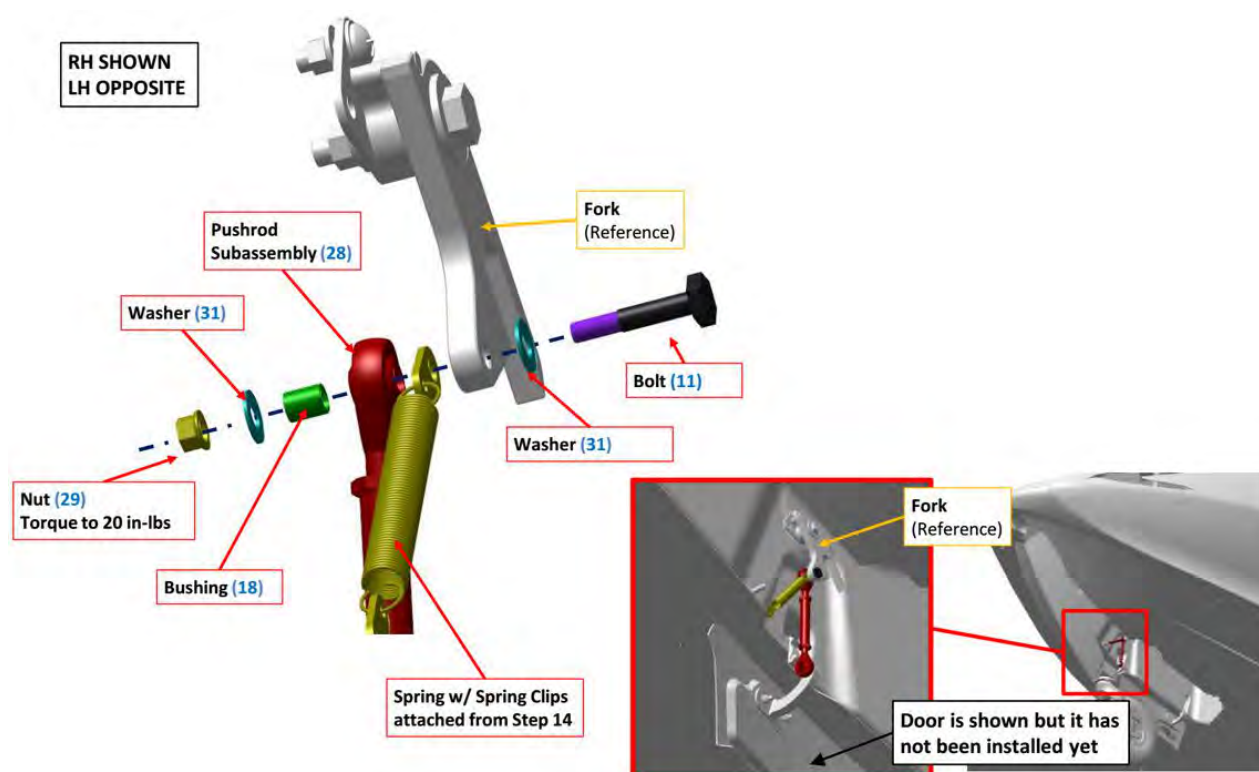
Qty	Item No	Part No
1	(9)	9654K196
2	(25)	ICA010385



12. Install the door springs and pushrod subassemblies to the door fork. Install one end of the spring/clip assembly from the previous step and the RH threaded rod end of the pushrod assembly onto the RH NLG fork using the hardware shown. Torque to the specified value. Repeat for the mirror-image LG side.

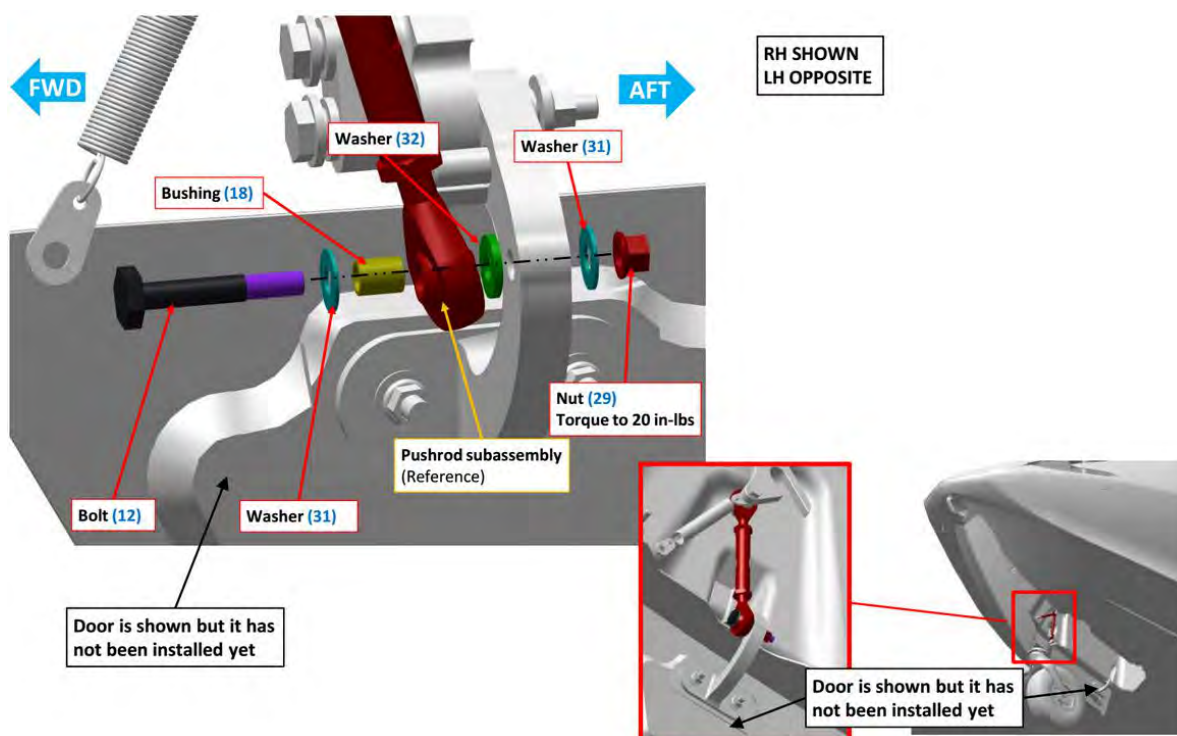
**NOTE:** Orient pushrod subassembly so that the RH threaded rod end is at the top and the LH threaded rod end is at the bottom.

Qty	Item No	Part No
1	(11)	AN3C10A
1	(18)	ICA008887
1	(28)	ME000270
1	(29)	MS21043-3
2	(31)	NAS1149C0332R



13. Install the pushrod subassembly to the forward bellcrank. Connect the opposite side of the pushrod subassembly to the RH forward bellcrank using the hardware shown. Torque to the specification listed. Repeat for the mirror-image LH side.

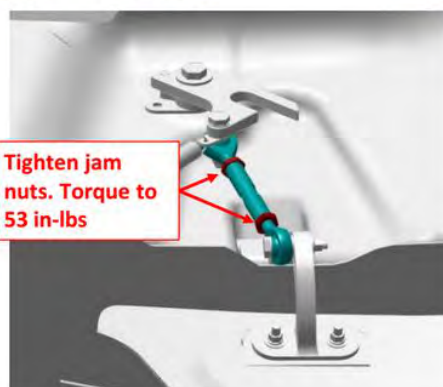
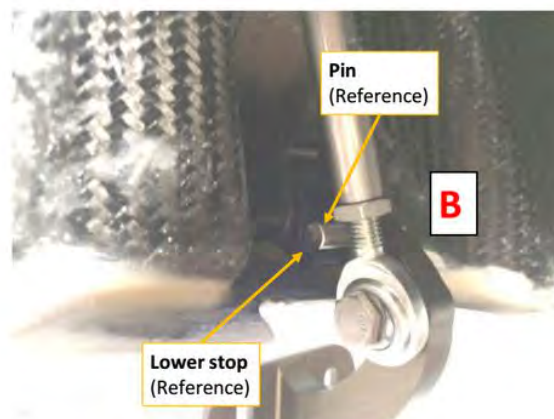
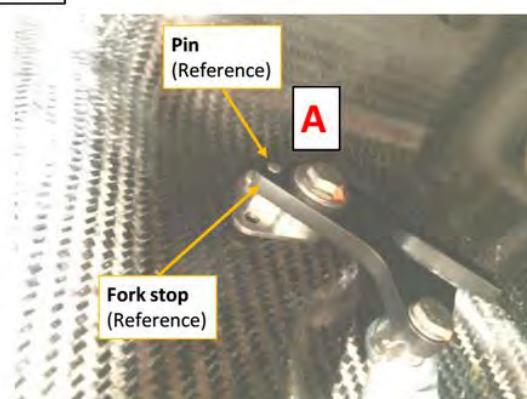
Qty	Item No	Part No
1	(12)	AN3C11A
1	(18)	ICA008887
1	(29)	MS21043-3
2	(31)	NAS1149C0332R
1	(32)	NAS1149C0363R



14. Set the pushrod length to the door lock position. Adjust the pushrod so that the fork stop hits the pin (see Point A in image) at the same time as the lower stop hits the pin (see Point B in the image). It may be necessary to keep pressure on the door in the open position so that the lower stop stays in contact with the pin while you adjust the pushrod. Confirm that the door locks in the open position. Torque the jam nuts to 53 in-lb<sub>f</sub>. Repeat this step for the mirror-image LH side.

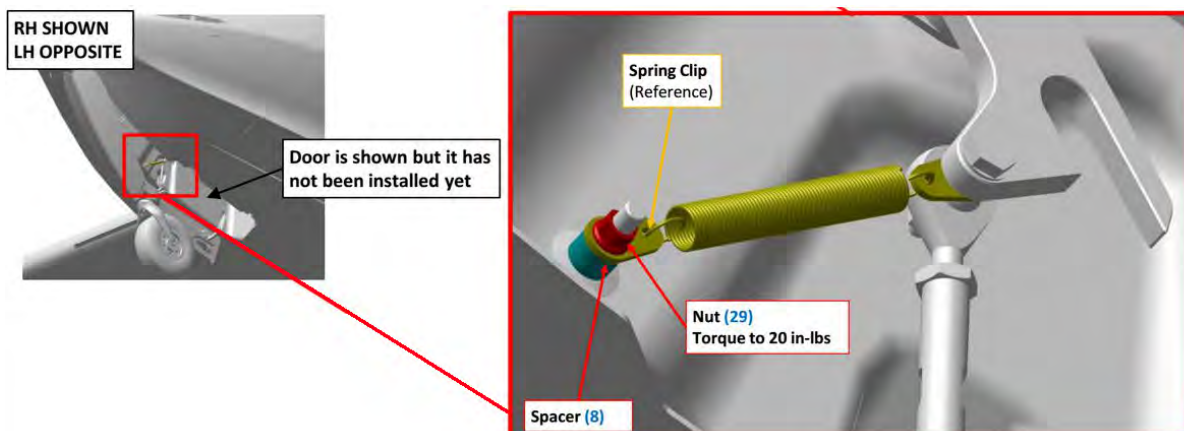


**RH SHOWN  
LH OPPOSITE**



15. Install door spring to stud. Ensure that the CB200 applied to the click-bond stud is fully cured. Connect the spring clip to the Click Bond stud and secure with the hardware shown. Torque to the specification show. Repeat for the mirror-image LH side.

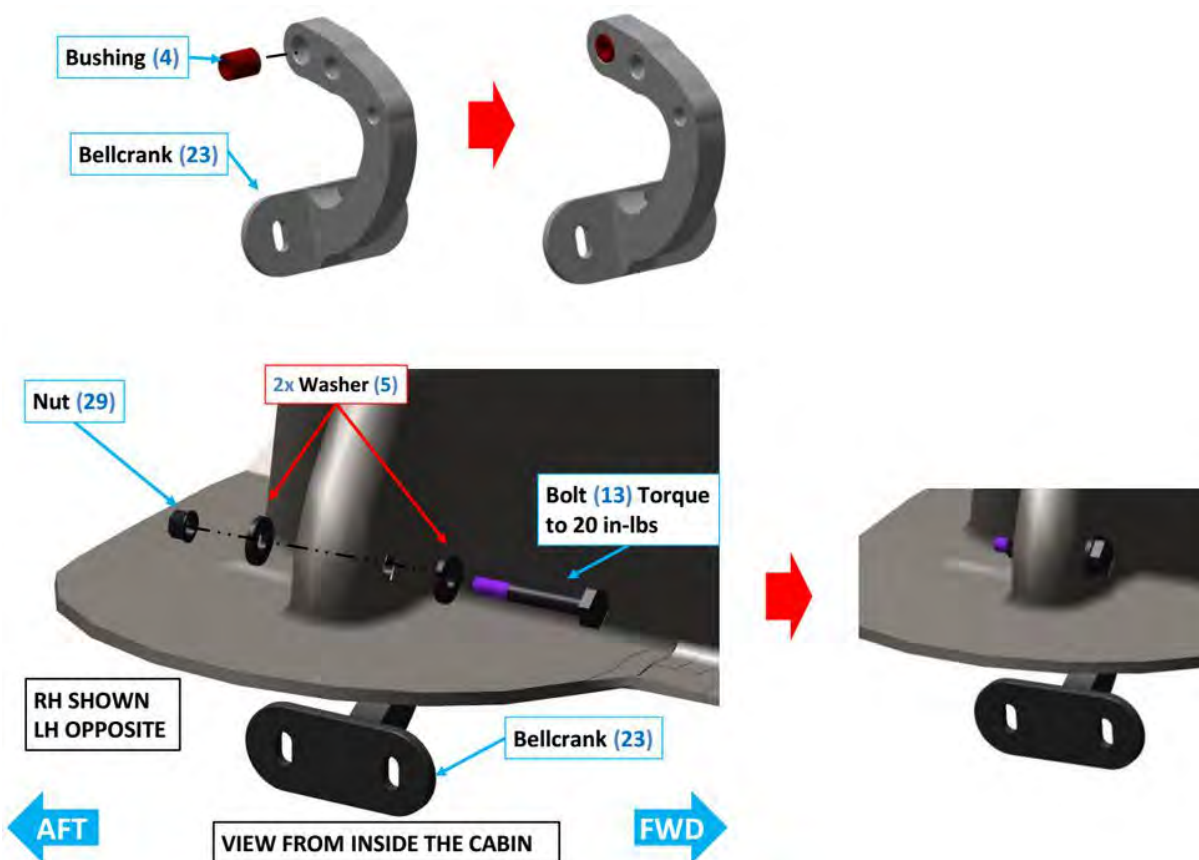
Qty	Item No	Part No
1	(8)	93013A605
1	(29)	MS21043-3



16. Insert bushings into the RH and LH aft bellcranks. Install the aft bellcranks into the RH and LH aft bellcrank pockets as shown using the hardware listed. Torque all hardware as specified.

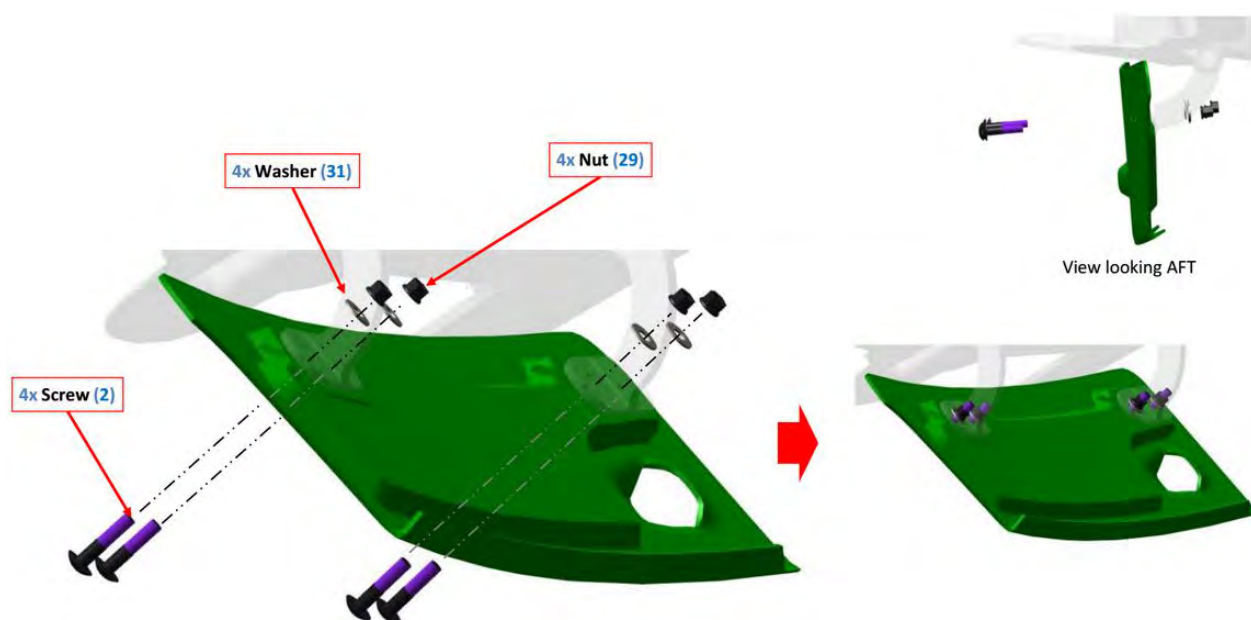
Qty	Item No	Part No
1	(4)	6362K112
1	(23)	ICA010059
2	(5)	75101
1	(13)	AN3C12A
1	(29)	MS21043-3
1	(19)	ICA010035





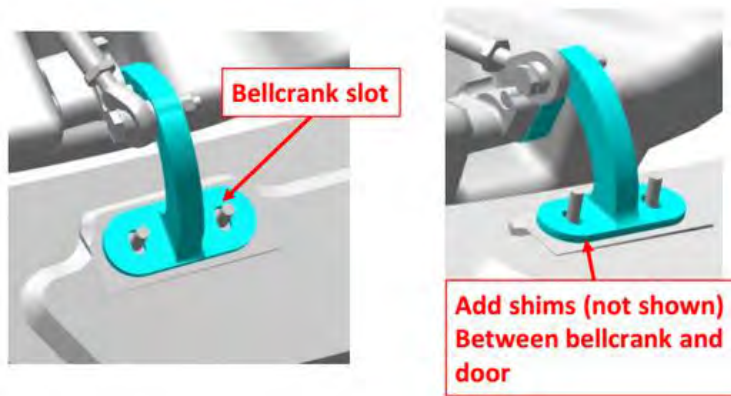
17. Install doors to the bellcranks by loosely installing the RH and LH doors to the bellcranks using the hardware shown.

Qty	Item No	Part No
4	(2)	10F87MTT3/50TL
1	(26)	ME000256
4	(29)	MS21043-3
4	(31)	NAS1149C0332R
1	(27)	ME000258



18. Fit the doors to the aircraft per the conditions in the nose landing gear inspection procedure. (See “Nose Gear Inspection” on page 14-56.) Make adjustments as necessary using the following adjustment options:
- Adjust the position of the door in the bellcrank slot.
  - Add shims between the bellcranks and the doors with a maximum of four shims installed per bellcrank.

Qty	Item No	Part No
A/N	(201)	ICA010389

**VERIFICATION METHOD:**

Inspect the Nose Landing Gear per the inspection procedure. (See "Nose Gear Inspection" on page 14-56.)

**RELATED INFORMATION:**

"Nose Gear Inspection" on page 14-56



# Chapter 15

## PLACARDS AND MARKINGS

Placards and Markings Description .....	15-3
Placards and Markings General Maintenance .....	15-4
Interior .....	15-4
Fuel Shutoff .....	15-4
Max Amperage for USB and 12V Accessory Port .....	15-4
Maneuvering Speed .....	15-4
Baggage Area .....	15-5
Secure Loose Objects .....	15-5
Parking Brake .....	15-5
Window Removal Procedure .....	15-5
Window Installation Procedure .....	15-6
Wind Deflector Alignment and Instructions .....	15-6
Window Out Warning .....	15-6
Keep Hands Clear .....	15-6
Open Canopy .....	15-6
Passenger Warnings and Kinds of Operation .....	15-7
Registration Numbers .....	15-7
Fuselage Station .....	15-7
Do Not Jump Start .....	15-8
Fuses .....	15-8
ELT Remote Switch .....	15-8
Parachute Handle .....	15-9
Parachute Activation Instructions .....	15-9
Exterior .....	15-9
Canopy Handle .....	15-9
Danger Explosive .....	15-9
Ballistic Parachute Passenger Warning .....	15-10
Parachute Egress .....	15-10
Wing Release .....	15-11
Wing Lock .....	15-11
Tire Pressure .....	15-11
Keep Static Port Clear .....	15-12
Aircraft Data Plate .....	15-12

Registration Numbers .....	15-12
Light Sport .....	15-12
Oil Type .....	15-13
No Step Wing .....	15-13
Horizontal Stabilizer Tip Locks .....	15-13
Keep AOA Port Clear .....	15-13
Fueling Information .....	15-14
Propeller Warnings .....	15-14

## 15.1 Placards and Markings Description

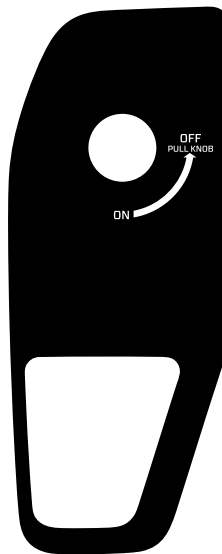
Those placards and markings, internal and external, required for general and emergency information, operating instructions, ground servicing instructions and inspections, cautions, warnings, airworthiness certificate location (and holder), company logos and model identification graphics; interior component paint, finishes and surface coverings; the exterior paint color scheme, associated graphics and N-numbers and the Seawing non-slip step area surface finish.

## 15.2 Placards and Markings General Maintenance

### 15.2.1 Interior

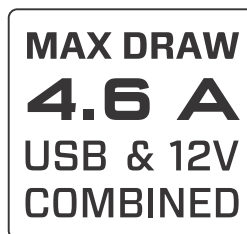
#### 15.2.1.1 Fuel Shutoff

Located on the overhead console.



#### 15.2.1.2 Max Amperage for USB and 12V Accessory Port

Located inside of arm rest in center console.



#### 15.2.1.3 Maneuvering Speed

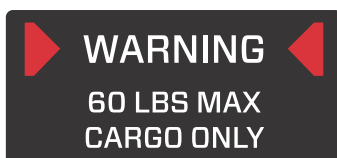
Located on the left side above the ignition and master switch.



MANEUVERING SPEED  
 $V_0 = 76$  KIAS

#### 15.2.1.4 Baggage Area

Located in the baggage compartment aft of the occupant seats.



#### 15.2.1.5 Secure Loose Objects

Located on the window jamb beneath the removable windows (only visible when window is removed). There are two per aircraft – one on the right side and one on the left side.



#### 15.2.1.6 Parking Brake

Located next to the parking brake.



#### 15.2.1.7 Window Removal Procedure

Located on the removable window. There are two per aircraft – one on the right side and one on the left side.



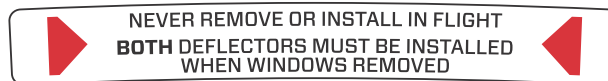
### 15.2.1.8 Window Installation Procedure

Located on the window jamb beneath the removable windows (only visible when window is removed). There are two per aircraft – one on the right side and one on the left side.



### 15.2.1.9 Wind Deflector Alignment and Instructions

Located on the wind deflector. There are two per aircraft – one on the right side and one on the left side (when installed).



### 15.2.1.10 Window Out Warning

Located on inboard face of left hand wind deflector.



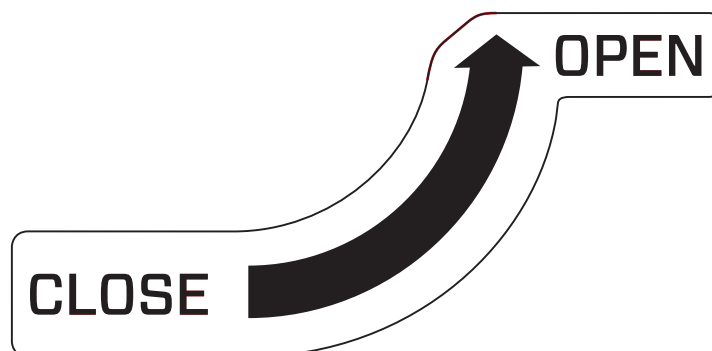
### 15.2.1.11 Keep Hands Clear

Located on the canopy jamb. There are two per aircraft – one on the right side and one on the left side.



### 15.2.1.12 Open Canopy

Located above the occupant seats under the canopy latch handle.



### 15.2.1.13 Passenger Warnings and Kinds of Operation

Located near the front of the overhead canopy.



### 15.2.1.14 Registration Numbers

Located on center console of cockpit.



**NOTE:** Registration numbers are for illustration only. Your aircraft registration number will be different.

### 15.2.1.15 Fuselage Station

Located in cockpit above the baggage compartment on the forward face of the wing spar and beneath the headliner panel.

**FORWARD FACE OF  
SPAR = FS 154.75**

### 15.2.1.16 Do Not Jump Start

Located under battery charging terminals on right, inside surface of fuselage near passenger rudder pedals.

**BATTERY CHARGING TERMINALS  
DO NOT JUMP START**

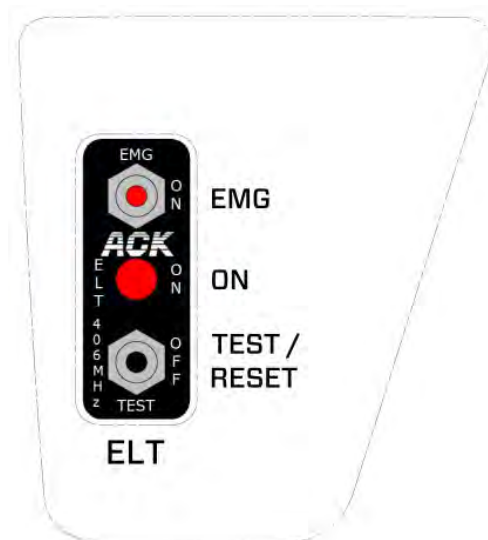
### 15.2.1.17 Fuses

Located on overhead console.



### 15.2.1.18 ELT Remote Switch

Located on overhead console on ELT remote control.



### 15.2.1.19 Parachute Handle

Located on the parachute handle.

PARACHUTE

### 15.2.1.20 Parachute Activation Instructions

Located on the overhead console just in front of the parachute activation handle.

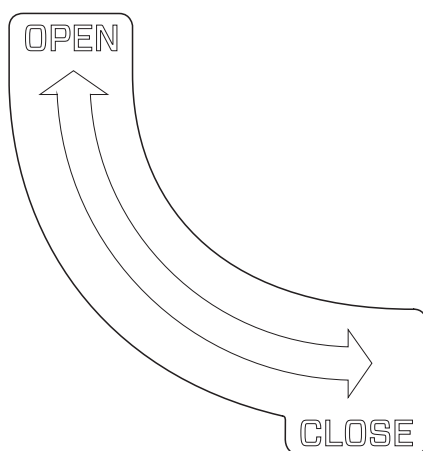
#### PARACHUTE DEPLOYMENT

1. SAFETY PIN - REMOVE BEFORE FLIGHT
2. PARACHUTE **HANDLE** - FIRM **PULL**
3. IGNITION KEY - OFF

## 15.2.2 Exterior

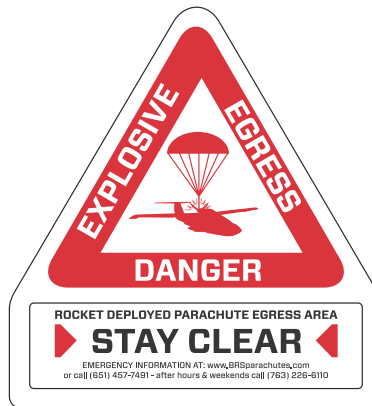
### 15.2.2.1 Canopy Handle

Located on the center of the canopy; top side, next to the canopy release lever.



### 15.2.2.2 Danger Explosive

Located on the parachute egress panel adjacent to the engine on the root of the right wing.



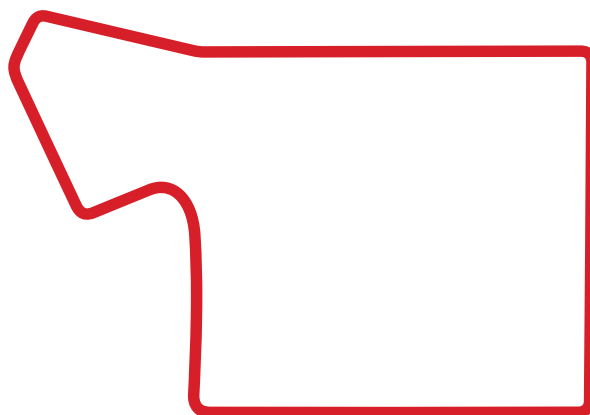
### 15.2.2.3 Ballistic Parachute Passenger Warning

Located near each entrance to the cockpit.



### 15.2.2.4 Parachute Egress

Located around the perimeter of the parachute installation adjacent to the engine on the root of the right wing.



### 15.2.2.5 Wing Release

Located on both wing tips near the trailing edge on top and bottom surfaces (total of four locations).



### 15.2.2.6 Wing Lock

Located on bottom, center wing near wing fold joint forward of the locking handle. There are two per aircraft – one on the right side and one on the left side.



### 15.2.2.7 Tire Pressure

Located on main and nose landing gear legs.



### 15.2.2.8 Keep Static Port Clear

Located on both sides of the vertical tail.



### 15.2.2.9 Aircraft Data Plate

Located on the left rear of the empennage below the vertical tail.



**NOTE:** Serial number is for illustration only. Your aircraft serial number will be different.

### 15.2.2.10 Registration Numbers

Located on the left and right sides of the empennage.

**N715BA**

**NOTE:** Registration numbers are for illustration only. Your aircraft registration number will be different.

### 15.2.2.11 Light Sport

Located on right and left sides of aircraft nose.

**LIGHT SPORT**

**NOTE:** Color shown for reference only.



### 15.2.2.12 Oil Type

Located on the inside of the oil door of the engine cowling.

**RECOMMENDED ENGINE OIL**  
AeroShell Plus 4 | SAE 10 W-40  
SEE OWNER'S MANUAL FOR DETAILS

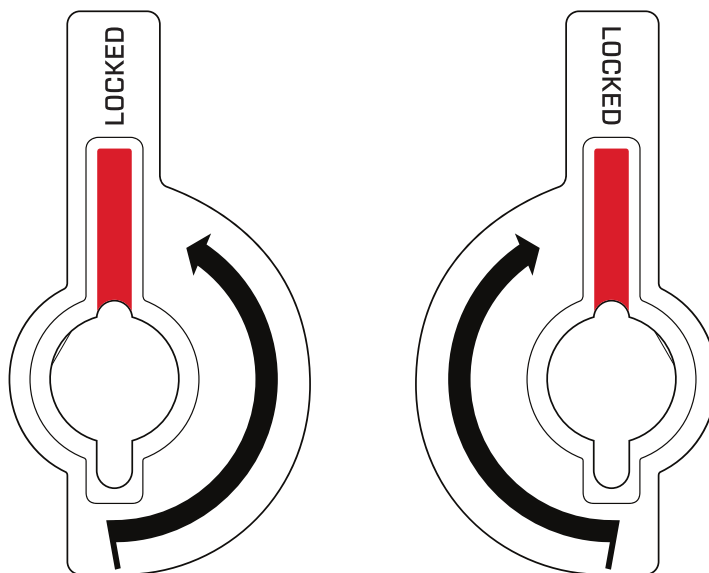
### 15.2.2.13 No Step Wing

Located on the upper center wing, left and right side toward the leading edge.



### 15.2.2.14 Horizontal Stabilizer Tip Locks

Located on the underside of the horizontal tail tips, left and right sides.





### 15.2.2.15 Keep AOA Port Clear

Located next to the AOA ports on the left wing, top and bottom leading edge.

KEEP AOA  
PORT CLEAR 

### 15.2.2.16 Fueling Information

Located behind the canopy on the pilot side near the fuel filler cap.

 GROUND TO BOW RING   
91 OCTANE AUTOGAS OR 100LL AVGAS  
20 GAL USABLE | 10% ETHANOL MAX

### 15.2.2.17 Propeller Warnings

Located on either side of the propeller on the flap fence and on the trailing edges of the Seawings™ below the propeller.

Left Hand Side

DANGER  
PROPELLER

Right Hand Side

DANGER  
PROPELLER

On Right Hand, Top, Trailing Edge of Seawings™ Below Propeller



On Left Hand, Top, Trailing Edge of Seawings™ Below Propeller





# Chapter 16

## PROPULSION

Engine .....	16-4
Engine Description .....	16-4
Diagram/Schematic .....	16-5
Troubleshooting .....	16-7
Engine Test Run .....	16-7
ECU Troubleshooting .....	16-9
Engine General Maintenance .....	16-13
Remove Engine Cowlings .....	16-13
Install Engine Cowlings .....	16-16
Engine Removal .....	16-19
Install Engine .....	16-21
General Engine Line Maintenance .....	16-26
Engine Mount Removal .....	16-27
Engine Mount Installation .....	16-29
Inspect Engine Mount .....	16-30
Inspect Throttle Control for Proper Travel and Security .....	16-32
Grease Coil Pack Connections .....	16-39
Engine Air Filter .....	16-43
Inspection Instructions .....	16-43
Air Filter Cleanliness Inspection .....	16-43
Air Filter Security Inspection .....	16-44
Maintenance Instructions .....	16-46
Clean Engine Air Filter .....	16-46
Replace Engine Air Filter .....	16-48
Exhaust System .....	16-49
Exhaust System Diagram/Schematic .....	16-49
Maintenance Instructions .....	16-49
Remove Exhaust System .....	16-49
Install Exhaust System .....	16-51
Cooling System .....	16-54
Inspection Instructions .....	16-54
Cooling System Inspection .....	16-54
Oil Cooler and Radiator Condition Inspection .....	16-55

Maintenance Instructions .....	16-57
Engine Coolant Replacement .....	16-57
Coolant Overflow Bottle Removal .....	16-61
Coolant Overflow Bottle Installation .....	16-62
Coolant Radiator Removal .....	16-67
Coolant Radiator Installation .....	16-68
Oil System .....	16-69
Oil System Description .....	16-69
Oil System Diagram/Schematic .....	16-70
Maintenance Instructions .....	16-72
Remove Oil Tank .....	16-72
Install Oil Tank .....	16-76
Engine Oil Check and Replenish .....	16-77
A5 Specific Oil Change Procedures .....	16-78
Oil Cooler and Thermostat Removal .....	16-79
Oil Cooler and Thermostat Installation .....	16-80
Fuse Box .....	16-83
Fuse Box Description .....	16-83
Fuse Box Diagram/Schematic .....	16-83
Inspection Instructions .....	16-84
Inspect Regulator Wires .....	16-84
Maintenance Instructions .....	16-86
Remove Fuse Box and Regulators .....	16-86
Install Fuse Box and Regulators .....	16-89
Propeller .....	16-92
Description .....	16-92
Diagram/Schematic .....	16-92
Troubleshooting .....	16-93
Propeller Assembly .....	16-93
Propeller General Maintenance .....	16-94
Propeller Inspection .....	16-94
Balance Propeller .....	16-95
Propeller Removal From Engine .....	16-102
Propeller Installation Onto Engine .....	16-103
Propeller – Minor Blade or Hub Repair .....	16-104
Spinner Dome .....	16-105
Inspection Instructions .....	16-105
Remove Spinner Dome .....	16-105

Install Spinner Dome .....16-106

## 16.1 Engine

### 16.1.1 Engine Description

The A5 is powered by the Rotax 912 iS Sport (912iS 2) fuel injected 4-cylinder engine, rated at 100 hp (73.5 kW) at 5,800 RPM. The 912 iS Sport (912 iS 2) is based on the proven 912 ULS engine with significant upgrades to improve performance and reliability. It is equipped with an electric starter, dual-redundant ignition system, and a fully digital Engine Control Unit (ECU) that automatically adjusts fuel/air mixture throughout flight to maintain optimal performance, efficiency and low emissions, thereby reducing fuel consumption and overall operating costs. The ECU also obviates the need for a carburetor and associated cumbersome mixture controls in the cockpit, making operation of the engine fully automatic for the pilot and eliminating the threat of carburetor icing. The 912 iS Sport (912 iS 2) is both liquid- (cylinder heads) and air- (cylinders) cooled with a dry sump forced lubrication system and separate oil tank. It can run on either Aviation Gasoline (AVGAS), motor gasoline (MOGAS), or a combination of both.

Commanded throttle position is sensed and transmitted to the ECU as a pilot request for specific power output. This signal is then combined with environmental inputs to provide the commanded response. The interface is simple and seamless for the pilot, automating the process of adjusting fuel/air mixture and ensuring optimal performance. Move the throttle and the engine does the rest.

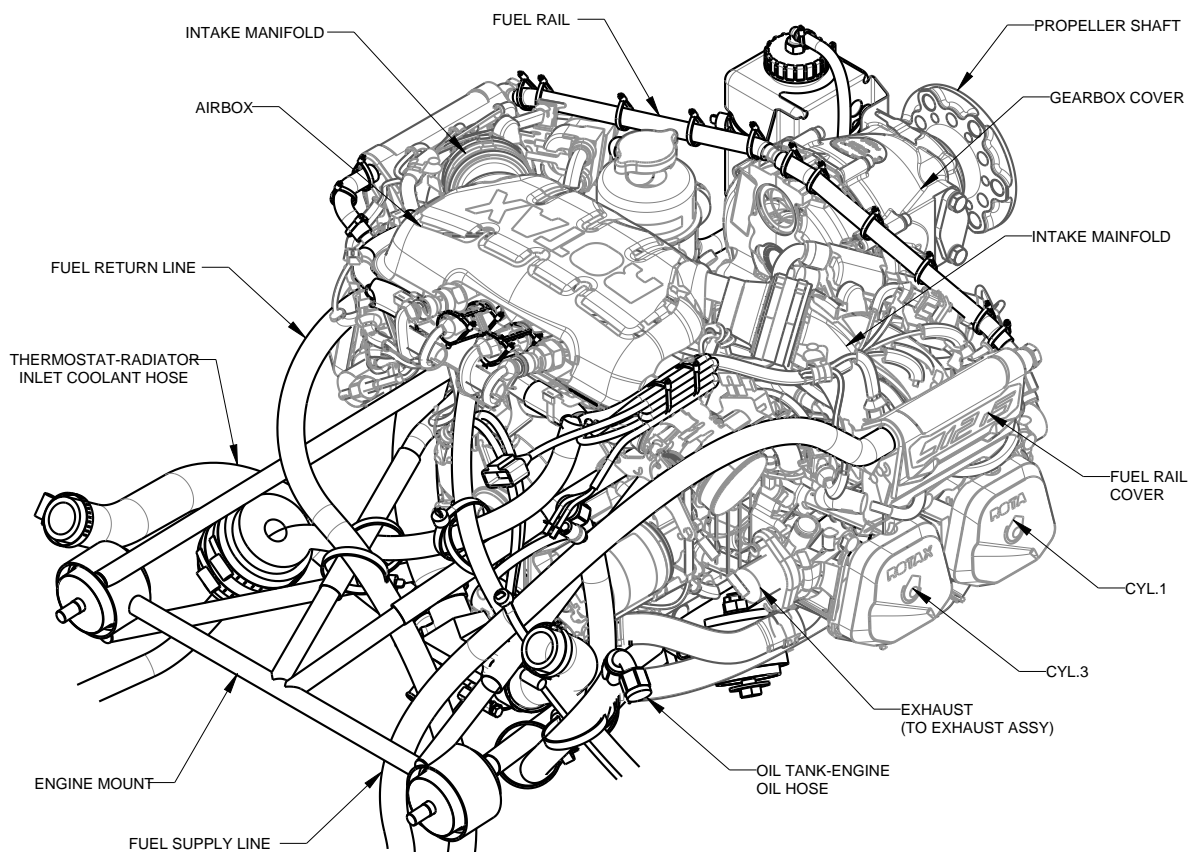
Engine power is displayed as RPM on the tachometer gauge on the right lower flight instrument cluster. Fuel flow is directly proportional to this RPM, although actual power output and useful thrust delivered is a function of both RPM and aircraft density altitude. Normal operating range is from 1,400 to 5,500 RPM with a redline of 5,800 RPM for no longer than 5 minutes.

The engine has 2 internal alternators, Alternator A: 14.2V/16A and Alternator B: 14.2V/30A. During engine start, the engine components are powered by the battery. Once the engine starts, alternator B runs the engine components until RPM threshold is reached (2400 RPM for 3 seconds). Once the threshold is reached, alternator A takes over the engine components, and alternator B powers the aircraft systems and charges the battery. If either alternator fails, the battery becomes the only power source for aircraft systems. If both alternators fail, the battery becomes the only power source for aircraft systems and engine components.

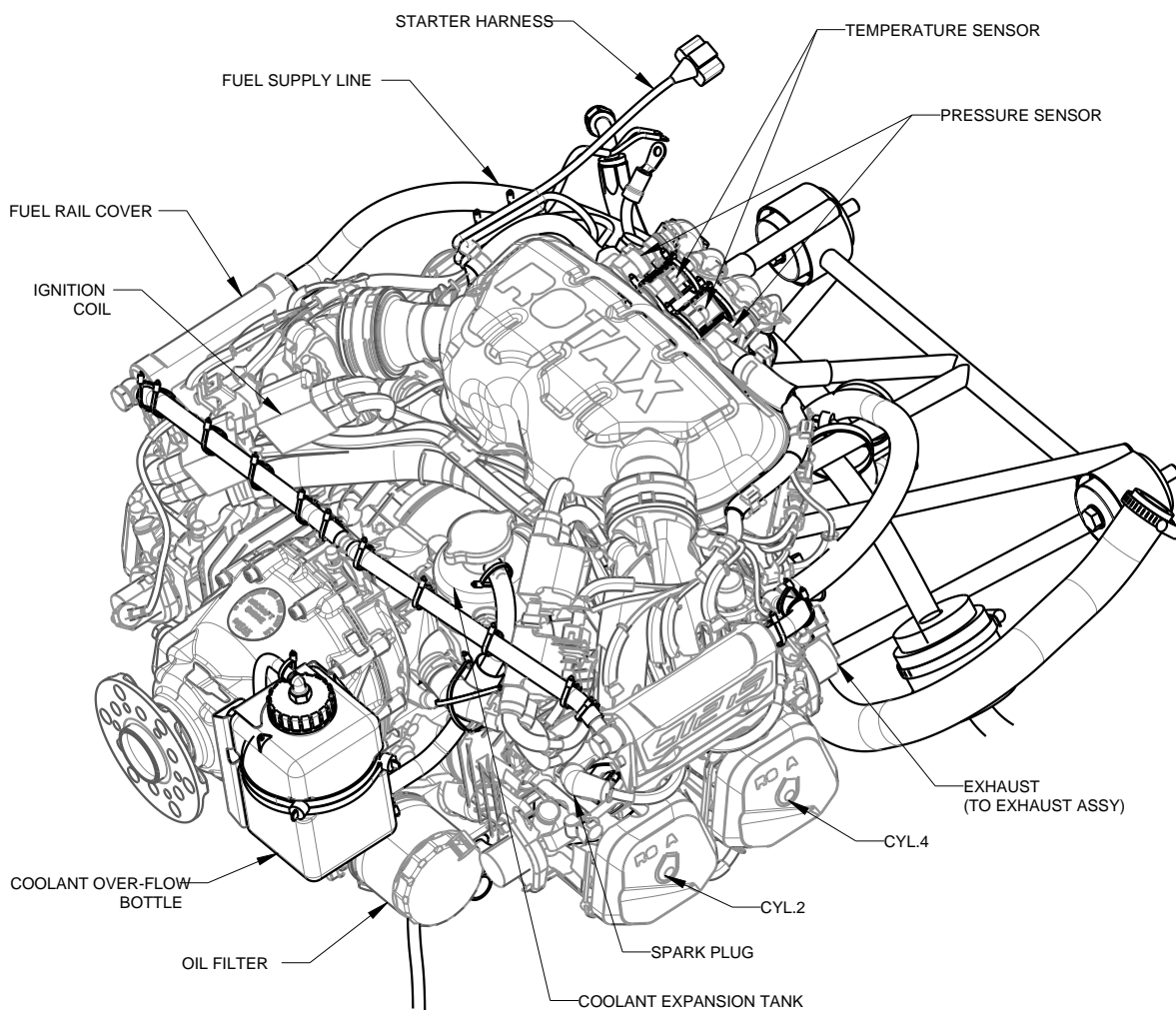
This section provides common maintenance tasks and information related to the engine. Tasks not provided here are not permitted and require the prior approval of ICON Aircraft and must be performed by current, Rotax and ICON-approved individuals or repair facilities.



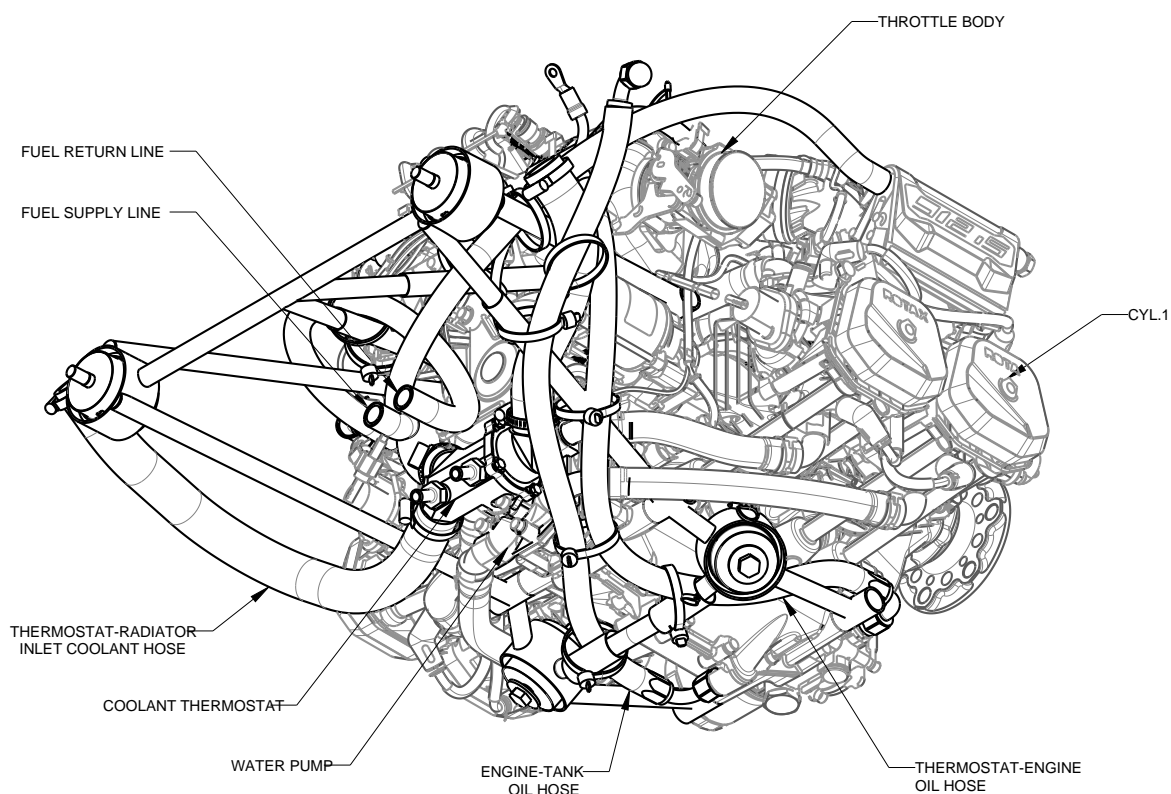
## 16.1.2 Diagram/Schematic



**FIGURE 16-1**  
VIEW LOOKING DOWN, AFT, RHS (OIL TANK NOT SHOWN)



**FIGURE 16-2**  
VIEW LOOKING DOWN, FWD, LHS (OIL TANK NOT SHOWN)



**FIGURE 16-3**  
VIEW LOOKING UP, FWD, RHS (ENGINE HARNESS NOT SHOWN)

## 16.1.3 Troubleshooting

### 16.1.3.1 Engine Test Run

Instructions to perform a test run on the Rotax 912 iS Sport (912 i S 2) engine.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

##### Special Tools Required

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Engine start according to latest Operations Manual.
2. After engine start, observe oil pressure. Oil pressure must be built up within 10 seconds. If not, immediately shut down engine.
3. Let engine run for approximately 2 min at 2,000 RPM. Then first use the throttle lever to bring the engine to approximately 2,500 RPM for 5 seconds to allow the generator to switch from lane B to lane A, until the oil temperature reaches 50°C (122°F).
4. Check temperatures and oil pressure: At a steady oil temperature above 50°C (122°F) and oil pressure above 2 bar (200 kPa) engine speed may be increased.
5. Ignition check as per the current Operations Manual.
6. Conduct a short full throttle run and check that the engine reaches the max. full power speed. Consult the Pilot's Operating Handbook for maximum speed.
7. After full-load run, conduct a short cooling run with engine stabilized at idle for 2 min to prevent formation of vapor lock in cylinder heads. This is necessary to prevent steam locks in the cooling and fuel system after shut-down.
8. Shut engine down.

**NOTE:** *Shut engine down to reduce likelihood of unintended start by someone else.*

**NOTE:** *On switching off the engine, switch ignition off and withdraw the ignition key.*

9. Inspect oil pump rotary seal on the water pump for leakage. For further information on ensuring filter secure, see the Rotax 912 iS Sport (912 iS 2) Maintenance Manual for Line Maintenance 12.3.1 section 12-20-00.

**NOTE:** *Due to the design of the rotary seal, the manufacturer tolerates a certain amount of leakage. If the leakage is in excess of the limit, the rotary seal must be renewed.*

**Tolerated leakage:**

For this check the engine must be operated until all temperatures have stabilized for a period of 5 minutes. At that point shut down engine and ensure the ignition is switched off and engine secured against unintentional operation. Coolant must not drip through leakage bore, located at the base of the ignition housing, for a period of 1 minute after the engine has been stopped. In case this leakage test can not be passed, the rotary seal must be renewed.

10. Replenish engine oil and coolant as required once engine has cooled down.

**NOTE:** *If the oil filter has been replaced, re-tighten by hand after the test run on a cold engine. Screw on the oil filter until oil filter gasket is*

*seated solidly. Mark 270°-check mark an oil pump housing to control tightening of oil filter.*

#### VERIFICATION METHOD:

Inspect the engine for oil, fuel, or coolant leaks and repair as necessary.

#### RELATED INFORMATION:

"Approved Engine Coolant Grades and Capacity" on page 2-29

"Install Engine" on page 16-21

"Install Exhaust System" on page 16-51

"Grease Coil Pack Connections" on page 16-39

"Install Fuse Box and Regulators" on page 16-89

"Install Fine Fuel Filter" on page 10-33

### 16.1.3.2 ECU Troubleshooting

Use the following table for ECU error message diagnostics.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

Yes – Current, Rotax-approved mechanic or repair facility

##### **Special Tools Required**

See Rotax 912 iS Sport (912 iS 2) Line Maintenance Manual

##### **Parts Required**

See Rotax 912 iS Sport (912 iS 2) Line Maintenance Manual

##### **Aircraft System and Number**

13 – Propulsion

##### **Consumables**

None

**Table 16-1:** ECU Error Message Troubleshooting

Error Message	Additional Symptom	Possible Cause	Remedy
"Ignition X (cyl X and X) Nominal Current not Reached" + "ETPU"	Rough engine running	Fuse box/ECU connection loose.	Reseat the ECU connectors, and X1 (D9104P), X2 (D9106P), X3(D9069P) connector on fuse box. See "Remove Fuse Box and Regulators" step 3.
		Coil pack	Grease Coil Pack Connections. Adjust Coil pack spade connector crimp and apply DC4. See "Grease Coil Pack Connections" on page 16-39.
		Fuse box/ECU/ignition cable connection	Reseat the ECU connectors, and the X1(D9104P), X2(D9106P), X3(D9069P) connectors at the fuse box and the connectors from the engine harness to the jumper, visually inspect for corrosion or any type of poor connection such as a push pin or receptacle. Pay particular attention to how the connector seats, these connectors are very easily cross threaded and the connector has a final detent that is very difficult to screw past while tightening in the tight area where the fuse box is located. If issue persists, replace engine harness to fuse box jumpers (X1 and X2) P/N ICA009357 (QTY 2). Adjust the connector crimp from the spade connector where it attaches to the wire on each coil. If issue not fixed, replace the engine harness completely.
		Engine ignition system	Inspect engine ignition system, such as spark plugs, ignition wires/boots, fuel injectors, and replace parts as necessary. See "Rotax 912 iS Sport (912 iS 2) Line Maintenance Manual.

Error Message	Additional Symptom	Possible Cause	Remedy
EGT (Exhaust Gas Temperature Sensor) Cylinder X	“ENGINE” / “LAND AIRCRAFT + ENGINE” Light	EGT failure	Locate and replace failed EGT. See “Remove Exhaust System” on page 16-49. See “Install Exhaust System” on page 16-51.
Throttle Position		Malfunctioned Manifold Air Pressure Sensor (MAPS)	Check for connection and signs of corrosion, clean, and reinstall. See “Rotax 912 iS Sport (912 iS 2) Heavy Maintenance Manual”.
		Throttle Position Sensor issue	Check throttle cable connection to the engine throttle valve. See “Rotax 912 iS Sport (912 iS 2) Line Maintenance Manual”. Check and adjust throttle rigging. See “Inspect Throttle Control for Proper Travel and Security” on page 16-32.
Engine Ambient Pressure		Defective connection sensor connection	Check the wiring and connections of the APTS sensor. Remove the APTS sensor and inspect for debris or oily residue. If problem persists, replace APTS sensor as necessary.
Engine Ambient Temperature			
Engine Ambient Pressure (Advanced BIT Engine On)		Malfunctioned Manifold Air Pressure Sensor (MAPS)	Check for connection and signs of corrosion, clean, and reinstall. Replace if necessary. See “Rotax 912 iS Sport (912 iS 2) Heavy Maintenance Manual.
Engine Ambient Temperature (Advanced BIT Engine On)		Clogged air filter	Replace air filter. See “Replace Engine Air Filter” on page 16-48.

Error Message	Additional Symptom	Possible Cause	Remedy
Injector Cyl X	"ENGINE"/"LAND AIRCRAFT + ENGINE" Light	Injector X	Check fuse box for blown fuse related to the injectors. Check injectors connection and wiring connecting to the injectors for signs of wear and chafing. If chafing is found but no strands are severed, F4 tape around the harness and secure it such that the chafing doesn't occur again. If strands in the conductor are severed open the harness and splice the damaged area using an environmentally sealed butt splice. Replace corresponding injector if necessary. See "Rotax 912 iS Sport (912 iS 2) Heavy Maintenance Manual".
		Fuse box/ECU connection loose/Low ECU bus voltage.	Reseat the ECU connectors. Check corresponding injector connection on fuse box. See "Rotax 912 iS Sport (912 iS 2) Heavy Maintenance Manual".
Consecutive "Test While Gen B Commanded"		Quick start technique results in Land Aircraft/Engine light.	Shut off engine. Follow standard engine startup procedure. See POH section 4.4 "ENGINE START".
Consecutive "Test While Not Commanding Gen" + "Test while Gen B Commanded"		Too fast lane check during engine run-up results in Land Aircraft/Engine light.	Shut off engine. Follow standard engine run-up procedure. See POH section 4.7 "ENGINE RUN-UP".
"ETPU" + Alternating "Test while Gen B Commanded"/"CAN Status Test"	Flashing ALTERNATOR light	DAC software.	Check and upstate DAC software version as necessary. See "Verify DAC Software Version" on page 13-67.



## 16.1.4 Engine General Maintenance

### 16.1.4.1 Remove Engine Cowlings

Use the following instructions to remove top engine cowl, fan shrouds, and exhaust fairings.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

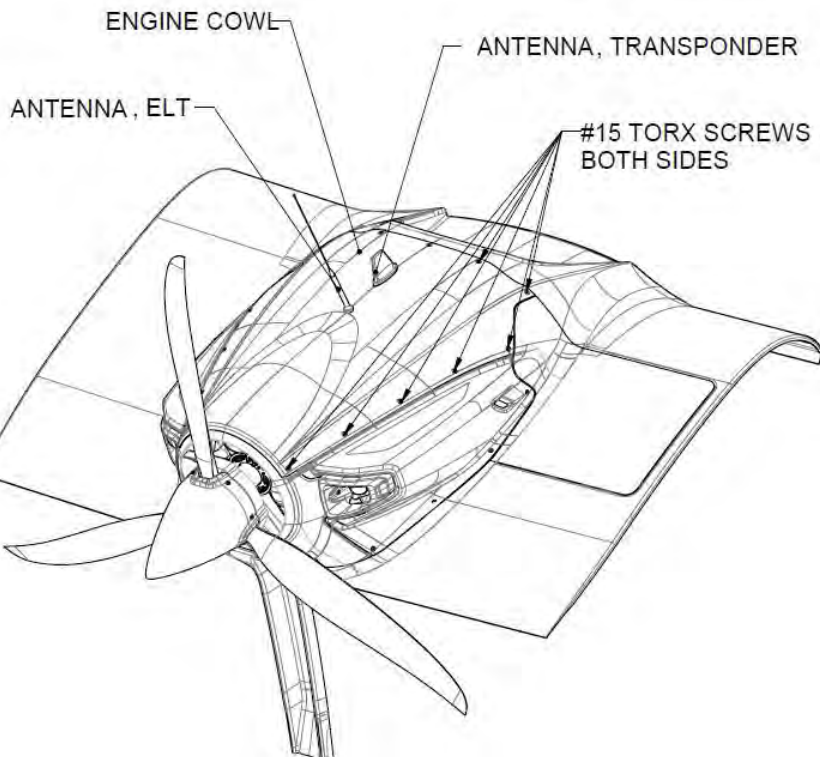
**CAUTION:** *The ELT antenna and the transponder antenna are attached to the top engine cowl.*

---

#### TASK INSTRUCTIONS:

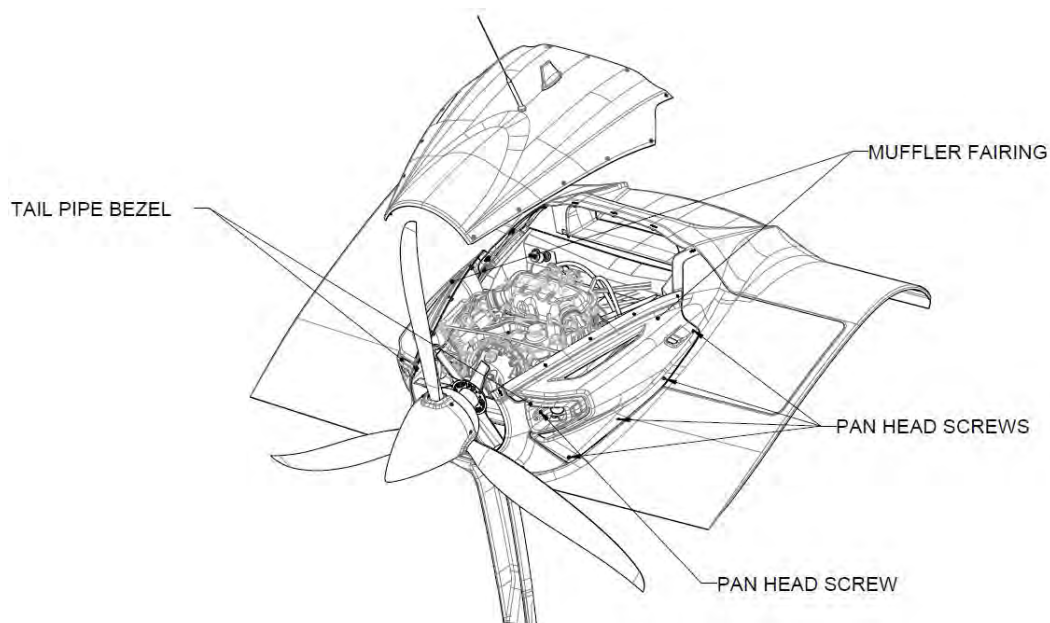
1. Release 16 1/4-turn fasteners from top engine cowl using a #15 Torx driver. (See Figure 16-4.)

*NOTE: The fasteners stay attached to the top engine cowl.*



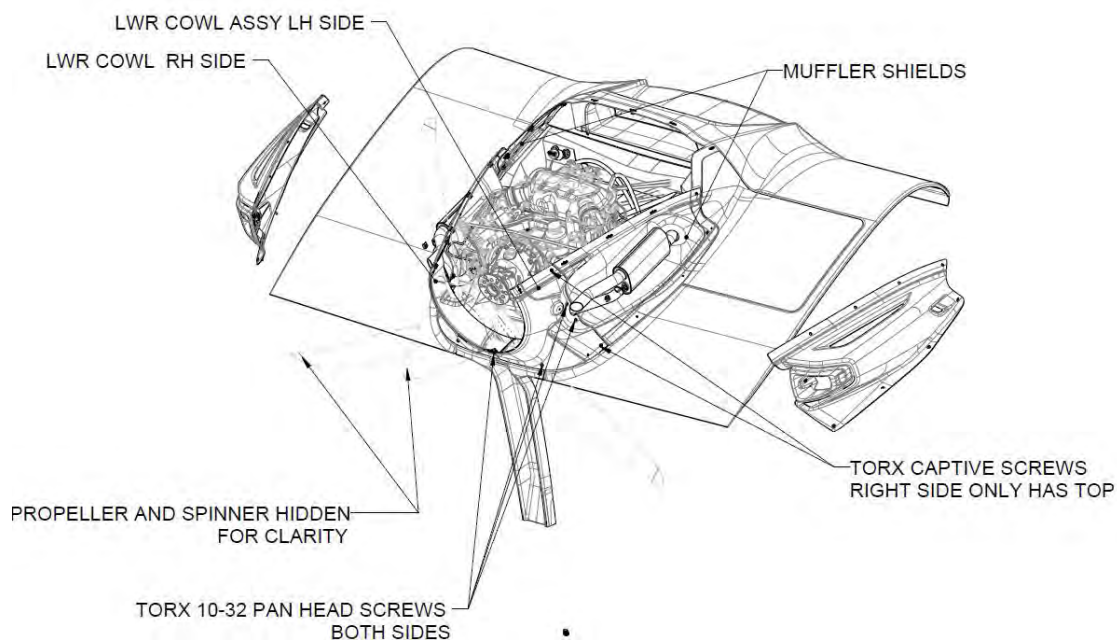
**FIGURE 16-4**  
REMOVING TOP ENGINE COWL

2. Lift the cowl upward.
3. Disconnect the ELT and transponder antennas from the electrical harness by disconnecting the coax connectors from the inside of the cowl. Remove cowl completely.
4. Remove the LHS and RHS muffler fairing with the tail pipe bezel by removing nine Torx button head screws using a #20 Torx driver. (See Figure 16-5.)



**FIGURE 16-5**  
REMOVING EXHAUST FAIRINGS

5. Remove the LHS and RHS fan shroud by removing countersunk screws using a #15 Torx driver. There is one screw on the RHS and two on the LHS.



**FIGURE 16-6**  
REMOVING FAN SHROUD ASSEMBLY

6. Use a #20 Torx driver to remove the seven button head screws beginning with the RH fan shroud. Remove fan shroud assembly.

To remove the muffler shields, follow Remove Exhaust System. (See "Remove Exhaust System" on page 16-49.)

#### VERIFICATION METHOD:

Check the engine cowls and exhaust fairings removed for any damage.

#### RELATED INFORMATION:

- "Inspect Engine Mount" on page 16-30
- "Oil Cooler and Radiator Condition Inspection" on page 16-55
- "Inspect Throttle Control for Proper Travel and Security" on page 16-32
- "General Engine Line Maintenance" on page 16-26
- "Install Engine" on page 16-21
- "Engine Removal" on page 16-19
- "Oil Cooler and Thermostat Removal" on page 16-79
- "Oil Cooler and Thermostat Installation" on page 16-80
- "Coolant Overflow Bottle Removal" on page 16-61
- "Coolant Overflow Bottle Installation" on page 16-62
- "Engine Coolant Replacement" on page 16-57
- "Grease Coil Pack Connections" on page 16-39
- "Inspect, Repair, and Secure Wiring Harness with Signs of Chafing" on page 6-34
- "Balance Propeller" on page 16-95
- "ELT Transponder and Transmitter Antenna Assembly" on page 13-55
- "Remove Exhaust System" on page 16-49

### 16.1.4.2 Install Engine Cowlings

Use the following instructions to install top engine cowl, fan shrouds, and exhaust fairings.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

**Aircraft System and Number**

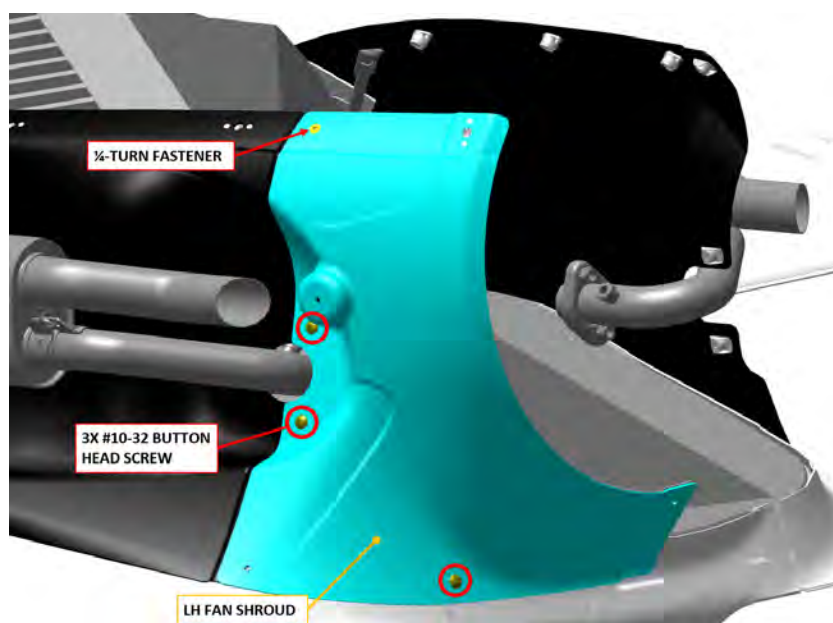
13 – Propulsion

**Consumables**

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®

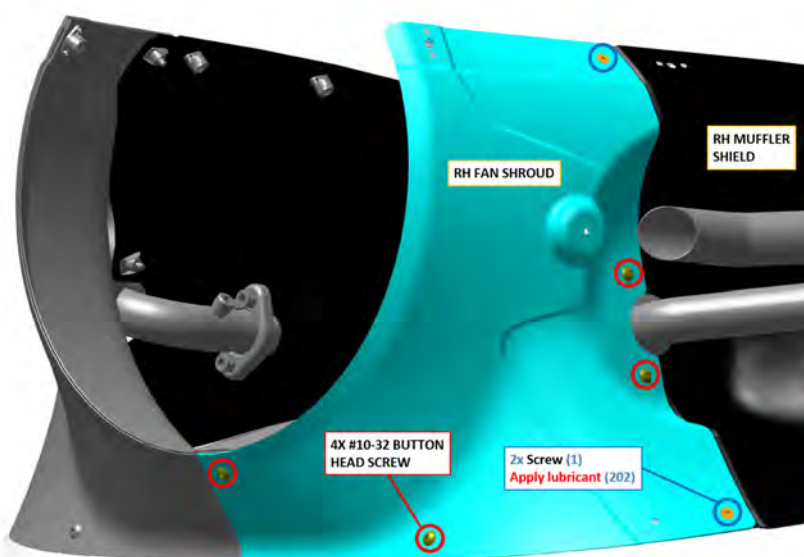
**TASK INSTRUCTIONS:**

1. Install LH fan shroud. (See Figure 16-7.)
  - a. Apply LUBRICANT and install one countersunk screw with a #15 Torx driver.
  - b. Apply LUBRICANT and install three #10-32 button head screws with #20 Torx driver.
  - c. Torque to 26 in-lb.



**FIGURE 16-7**  
LH FAN SHROUD INSTALLATION

2. Install RH fan shroud. (See Figure 16-8.)
  - a. Apply LUBRICANT and install two countersunk screws with a #15 Torx driver.
  - b. Apply LUBRICANT and install four #10-32 button head screws with #20 driver.
  - c. Torque to 26 in-lb.



**FIGURE 16-8**  
RH FAN SHROUD INSTALLATION

3. Install the LH and RH muffler fairing with nine button head screws using a #20 Torx driver. Apply LUBRICANT and torque to 26 in-lb.
4. Position the top engine cowl over the engine and connect the ELT and transponder coax connectors.
5. Use a #15 Torx driver to secure the top engine cowl with 16 1/4-turn fasteners.

**VERIFICATION METHOD:**

The task is complete when all engine cowlings and exhaust fairings have been installed.

## RELATED INFORMATION:

- "Inspect Engine Mount" on page 16-30
- "Oil Cooler and Radiator Condition Inspection" on page 16-55
- "Inspect Throttle Control for Proper Travel and Security" on page 16-32
- "General Engine Line Maintenance" on page 16-26
- "Install Engine" on page 16-21
- "Engine Removal" on page 16-19
- "Coolant Overflow Bottle Removal" on page 16-61
- "Coolant Overflow Bottle Installation" on page 16-62
- "Engine Coolant Replacement" on page 16-57
- "Balance Propeller" on page 16-95
- "ELT Transponder and Transmitter Antenna Assembly" on page 13-55

### 16.1.4.3 Engine Removal

This task should be used to safely remove the Rotax 912iS from the aircraft.

## TASK INFORMATION:

**Type of Maintenance**

Heavy

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Specific Tools Required**

ITL-902 Engine Hoist End Effector

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

## TASK INSTRUCTIONS:

1. Disconnect all electrical connections to ship's battery ground terminal.
2. Remove entire cowling. (See "Remove Engine Cowlings" on page 16-13.)  

*NOTE: If desired, take photos to ensure proper routing of systems on engine re-installation.*
3. Disconnect signal and ground wires at starter solenoid.
4. Disconnect APTS sensor connector (near induction air filter).

5. Use an 11/16 wrench to disconnect the -6 fuel supply and return lines at fuel rails and cap exposed ports.
6. Remove band claps at both ends of the induction air duct, remove duct and install a dust cap over throttle valve and air filter openings.
7. Burp engine oil. (See "Engine Oil Check and Replenish" on page 16-77.)
8. Drain engine oil. (See "Engine Oil Check and Replenish" on page 16-77.)
9. Remove the six AN5C20A bolts and MS21043-5 nuts that attach the prop shaft extension to engine prop shaft flange, then remove propeller, extension and fan as an assembly from aircraft.
10. Remove the two hoses at the lower side of the oil thermostat, using a 13/16 wrench to hold the union fitting in the thermostat and a 7/8 wrench to turn the B-nuts. Remove the upper hose (going to the oil tank) first, followed by the lower hose (going to the oil pump). Cap all openings.
11. Disconnect throttle cable from engine throttle valve.
12. Using a 7/8 wrench on the B-nut, remove the oil hose at the "IN" port of the oil tank and a cap the openings.
13. Drain coolant. (See "Engine Coolant Replacement" on page 16-57.)
14. Remove the band clamps and disconnect the two coolant hoses from right and left side of radiator, and two coolant hoses at forward lower center of firewall bulkhead.
15. Remove the hose clamps and insulating tape wrap at the three firewall cable pass-throughs.
16. Disconnect the grounding wire on the forward face of the alternator cover.
17. Remove the aft bulkhead baggage panel.
18. Disconnect the three ECU connectors on ECU.
19. Unplug the fuel pump connectors in between the main bulkheads located near lower center of aft bulkhead.
20. Disconnect the regulator connectors, one on each side of fuse box.
21. Disconnect the three cannon plugs on top of fuse box.
22. Disconnect the engine harness from studs on both sides of fuse box and label them.
23. Install the ITL-902 Engine Hoist End Effector on the on the engine per the tool's instructions.  
**CAUTION:** *Do not use the fuel line assembly to lift the engine.*
24. Support the weight of the engine using a properly rated engine hoist connected to the ITL-902.
25. Remove the forward engine mount to airframe bolts and label them.
26. Remove the aft engine mount to airframe bolts, nuts, and washers and label them.
27. Pull the engine electrical harnesses through the firewall pass-throughs until they are clear of the firewall.
28. Lift the engine up and clear of the airframe ensuring that nothing remains connected or snags.
29. Remove the four sets of 94150-40 rubber engine mount isolators and label them.



30. Set the engine into a Rotax 912 iS shipping pallet or other suitable surface and remove the hoist tool.
31. Bag and label all loose parts and cover and protect the engine.

**VERIFICATION METHOD:**

Verify security of engine (Rotax 912 iS) on shipping pallet. check that disconnected electrical cables are properly isolated and check that disconnected fluid connections are secured and not leaking.

**RELATED INFORMATION:**

- "Install Engine" on page 16-21
- "Engine Oil Check and Replenish" on page 16-77
- "Remove Engine Cowlings" on page 16-13
- "A5 Specific Oil Change Procedures" on page 16-78
- "Engine Coolant Replacement" on page 16-57
- "Engine Mount Removal" on page 16-27
- "Install Engine Cowlings" on page 16-16
- "Remove Oil Tank" on page 16-72
- "Install Oil Tank" on page 16-76

#### 16.1.4.4 Install Engine

Use the following procedure to install the Rotax 912iS into the aircraft.

**TASK INFORMATION:****Type of Maintenance**

Heavy

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

ITL-902 (ENGINE HOIST END EFFECTOR)

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

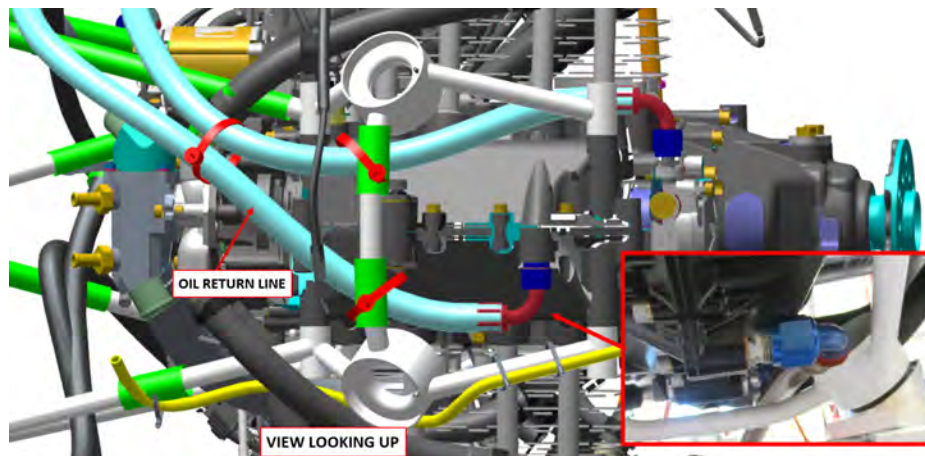
**Consumables**

- ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®
- DEX-COOL 50-50 (COOLANT, ENGINE)

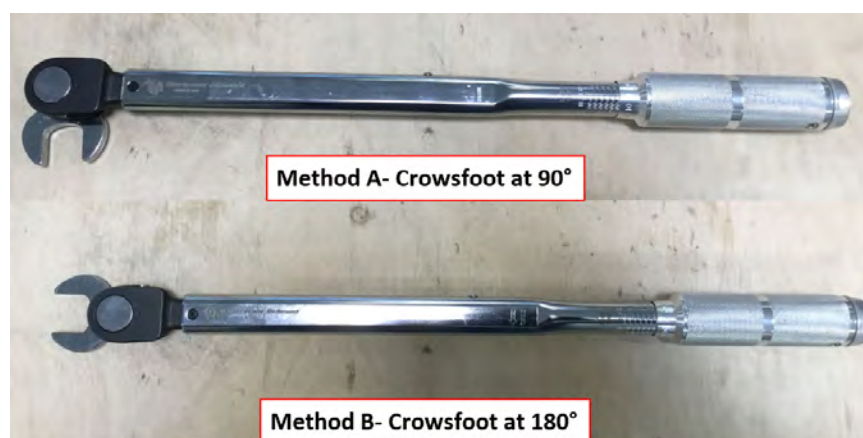
ICA012983 OR 4CMPD150G TUBE (GREASE, DIELECTRIC, DC4)

#### TASK INSTRUCTIONS:

1. Verify the orientation on the oil return line fitting at the engine prior to installation. (See Figure 16-9.) The fitting should be roughly parallel with the engine oil pan.  
*NOTE: The orientation will be checked again with the engine installed.*
2. Verify the torque value on the oil return line fitting. Torque oil return line fitting to 300-350 in-lb if using Method A or 290-330 in-lb if using Method B. (See Figure 16-10.)



**FIGURE 16-9**  
OIL RETURN LINE FITTING LOCATION



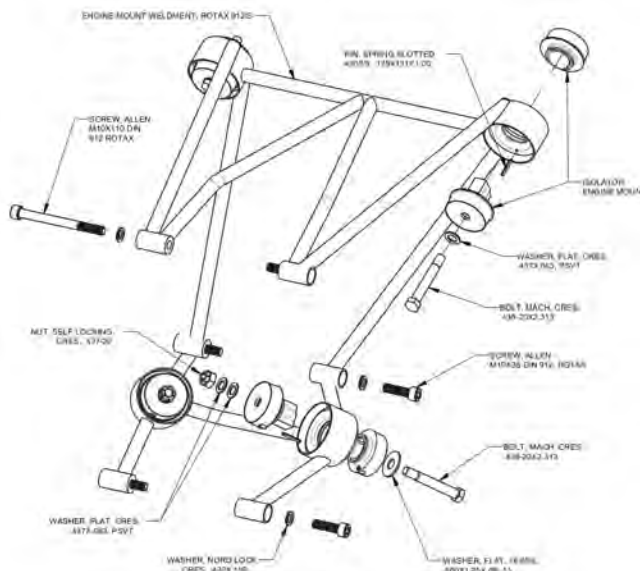
**FIGURE 16-10**  
METHOD A VS. METHOD B (TOP) 7/8" 12-POINT CROWS FOOT WRENCH (BOTTOM)



3. Clear the engine bay and firewall area of tools and debris and inspect the area to ensure that the engine may be installed.
4. Inspect and clean the threads of engine mount bolts and coat their shank and threads with LUBRICANT.
5. Clean the nutplates in the main wing spar (forward engine mount bolt locations) and apply LUBRICANT to their threads.
6. Install the ITL-902 Engine Hoist End Effector on the engine per the tool's instructions.

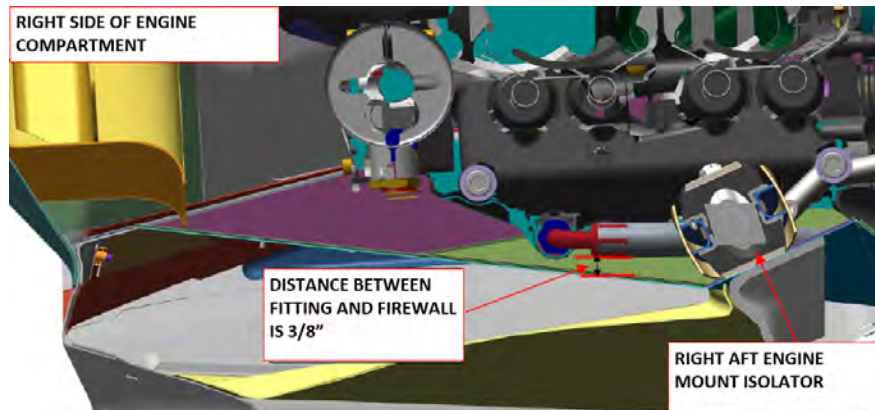
**NOTE:** Do not use the fuel line assembly to lift the engine.

7. Lift the engine using a properly rated engine hoist and position the engine over the engine bay.
8. Install the four sets of 94150-40 engine mount isolators, being careful that the roll pins in the mount weldment engage the alignment holes in the isolators. If isolators fit loosely, use tape to temporarily hold them in place.
9. While lowering the engine into position, guide the engine harnesses along the correct path through and around the engine mount and then through the appropriate firewall pass-throughs.
10. Align the engine mount with the mounting holes in the firewall and remove any tape from isolators.
11. Loosely attach the engine at the aft two mounting points. (See Figure 16-11.) Install each bolt up from inside the fuselage with one washer under the head and with a self-locking nut with two washers under it. Do not tighten these fasteners yet.
12. Install the two forward engine mount bolts with one washer under each head. Do not tighten these fasteners yet.

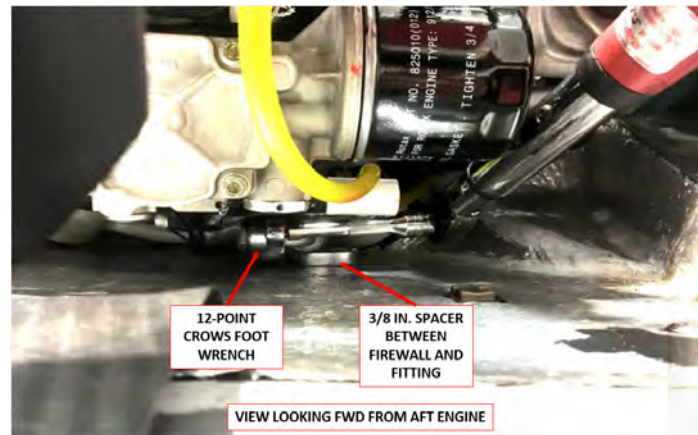


**FIGURE 16-11**  
RETURN LINE FITTING AND FIREWALL CLEARANCE

13. Ensure that there is a clearance of approximately 3/8" between the firewall and engine oil return fitting using a 3/8" spacer. (See Figure 16-12.) If the clearance is less, lightly loosen the fitting and use a 7/8" 12-point crows foot wrench to torque the fitting. (See Figure 16-13.)
14. Remove the spacer.



**FIGURE 16-12**  
RETURN LINE FITTING AND FIREWALL CLEARANCE



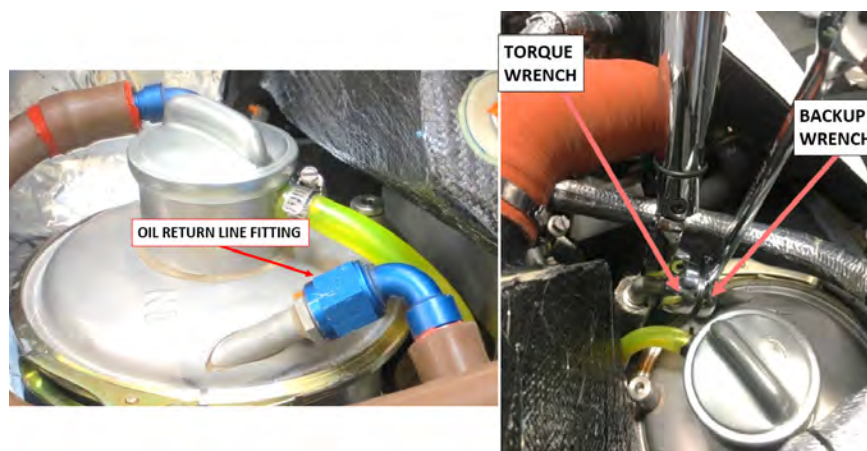
**FIGURE 16-13**  
ENGINE OIL RETURN LINE FITTING TORQUEING EXAMPLE

15. Torque the FWD and then AFT engine mount bolts to 330-350 in-lb.
16. Remove the engine hoist and ITL-902 tool.
17. Connect the engine harness to the ground studs on both sides of fuse box. Torque the M4 nuts to 8-11 in-lb.
18. Connect the three cannon plugs on top of fuse box.
19. Connect the regulator connectors, one on each side of fuse box.
20. Connect the fuel pump connectors in between the main bulkheads located near lower center of aft bulkhead.
21. Connect the HIC A and HIC B connectors near ECU.
22. Connect the three ECU connectors on ECU.
23. Install the aft bulkhead baggage panel.
24. Connect the grounding wire on the alternator. Torque fastener to 88 in-lb.
25. Apply INSULATING TAPE around the wiring at each firewall opening. This tape must lie between the wiring bundle and the firewall flange to seal and prevent chafing. Apply an outer wrap of

insulating tape around the outside of the firewall flange and outside of inner tape wrap. Secure the outer tape with hose clamps until a compression seal is achieved.

26. Remove any plugs and connect the two coolant hoses from right and left side of radiator, and two coolant hoses at forward lower center of firewall bulkhead and install and tighten their band clamps.
27. Fill the cooling system with COOLANT per the latest Rotax 912iS Maintenance Manual.
28. Connect the throttle cable to the engine throttle valve. Check and adjust throttle rigging. (See "Inspect Throttle Control for Proper Travel and Security" on page 16-32.)
29. Remove any plugs and install oil feed hoses at thermostat. Torque B nuts to 150-250 in-lb.
30. Remove plugs and install oil return hose at "IN" port of oil tank. (See Figure 16-14.) Torque B nut to 300-350 in-lb if using Method A or 290-330 in-lb if using Method B. (See Figure 16-10.)

**CAUTION:** Ensure a back-up wrench is used on the oil tank fitting while torqueing. Damage to oil tank may occur if it's not used.



**FIGURE 16-14**  
ENGINE OIL TANK RETURN HOSE FITTING TORQUEING AND 7/8" 12-POINT CROWS  
FOOT SPECIAL TOOL

31. Install the propeller, extension and fan as an assembly onto the engine propeller flange with the eight AN5C20A bolts and MS21043-5 nuts. Torque bolts in standard opposing sequence (1-4-2-5-3-6), first torqueing all bolts to 110 in-lb, then 170 in-lb and finally, 230 in-lb. Recheck torque of all bolts at 230 in-lb.
32. Fill the engine with correct quantity and type of oil. (See "Engine Oil Check and Replenish" on page 16-77.)
33. Purge the engine oil system per the latest Rotax 912iS Maintenance Manual.
34. Remove any protective covering from throttle valve and install the induction air duct and install and tighten its band clamps.
35. Remove any plugs and connect the -6 fuel supply and return lines at fuel rails. Torque fuel line B-nuts (4 locations) to 99-117 in-lb.
36. Connect the APTS sensor connector (near induction air filter).
37. Connect the signal and ground wires at started solenoid. Torque M6 nuts to 36 in-lb.
38. Install the exhaust system and exhaust shields. (See "Install Exhaust System" on page 16-51.)

39. Install engine cowlings and fan shroud. (See "Install Engine Cowlings" on page 16-16.)
  40. Connect all ground cabling to the aircraft's battery ground terminal.
- 

**VERIFICATION METHOD:**

Complete the engine test run. (See "Engine Test Run" on page 16-7.)

**RELATED INFORMATION:**

- "Engine Removal" on page 16-19
- "Remove Engine Cowlings" on page 16-13
- "Engine Oil Check and Replenish" on page 16-77
- "Inspect Throttle Control for Proper Travel and Security" on page 16-32
- "Engine Test Run" on page 16-7
- "Engine Mount Installation" on page 16-29
- "Install Engine Cowlings" on page 16-16

### 16.1.4.5 General Engine Line Maintenance

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

Yes – Current, Rotax-approved mechanic or repair facility

**Special Tools Required**

See Rotax 912 iS Sport (912 iS 2) Line Maintenance Manual

**Parts Required**

See Rotax 912 iS Sport (912 iS 2) Line Maintenance Manual

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. All line maintenance tasks for the engine must be performed in accordance with the current Rotax 912 iS Sport (912 iS 2) Line Maintenance Manual.

Some line maintenance tasks may require the removal of the engine cowling to gain access, e.g. remove and change spark plugs.

---

**VERIFICATION METHOD:**

See Rotax 912iS Line Maintenance Manual for verification methods.

**RELATED INFORMATION:**

- "Interval Maintenance – Operational Hours" on page 3-4
- "Interval Maintenance – Calendar Intervals" on page 3-5
- "Remove Engine Cowlings" on page 16-13
- "Install Engine Cowlings" on page 16-16
- "Remove Oil Tank" on page 16-72
- "Install Oil Tank" on page 16-76

### 16.1.4.6 Engine Mount Removal

Use the following procedure to remove the engine mount.

**TASK INFORMATION:****Type of Maintenance**

Heavy

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

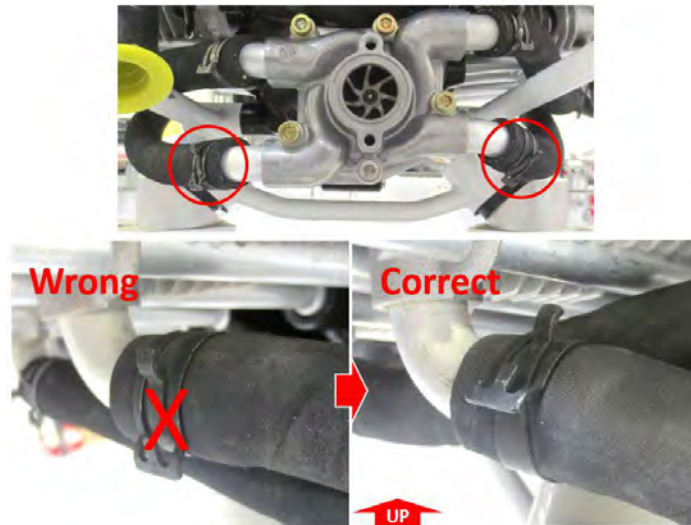
**Consumables**

None



**TASK INSTRUCTIONS:**

1. Remove the engine. (See “Engine Removal” on page 16-19.)
2. Disconnect the two coolant hoses where they attach to the lower water pump fittings as shown in the upper image of Figure 16-15.



**FIGURE 16-15**  
THERMOSTAT SHOWN REMOVED FOR CLARITY.

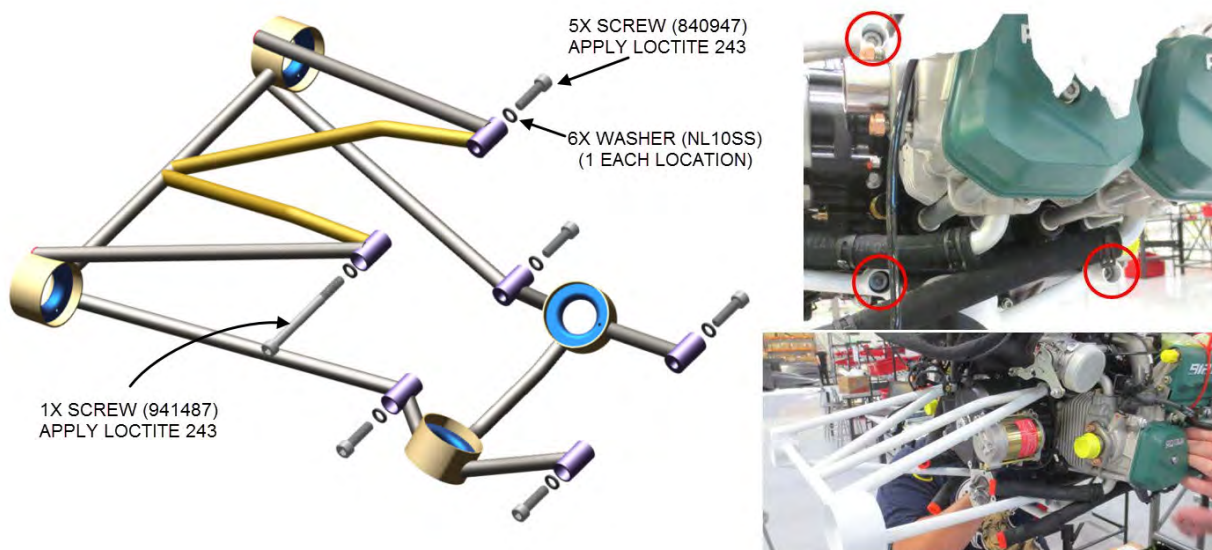
3. Loosen the hose clamp and remove thermostat-radiator coolant hose where it attaches to the lower-right fitting at the thermostat (Figure 16-16).



**FIGURE 16-16**  
LOWER-RIGHT FITTING AT THE THERMOSTAT

4. Remove the six M10 screws that attach the ICA007128 engine mount to the engine case (see Figure 16-17).





**FIGURE 16-17**  
ENGINE MOUNT TO THE ENGINE CASE

5. Retain the associated washers and spacers and remove the engine mount from the engine.

#### VERIFICATION METHOD:

The procedure is complete when the steps have been finished.

#### RELATED INFORMATION:

"Engine Removal" on page 16-19

### 16.1.4.7 Engine Mount Installation

Use the following procedure to install the engine mount.

#### TASK INFORMATION:

##### **Type of Maintenance**

Heavy

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

LOCTITE® 243™

**TASK INSTRUCTIONS:**

1. Install the engine mount as shown in Figure 16-17. The single long screw is a 941487. The five short screws are 840947. The washers are Nord-Lock NL10SS. Apply LOCTITE® 243™ to the screw threads on installation and torque each of the six screws to 30 ft-lb<sub>f</sub>.

*NOTE: If spacers were removed and saved during the engine mount removal, discard and do not reinstall.*

2. Install the thermostat-radiator coolant hose where it attaches to the lower-right fitting at the thermostat (Figure 16-16).
3. Connect the two coolant hoses where they attach to the lower water pump fittings as shown in the upper image of Figure 16-15. Rotate the hose clamps on the hoses so the tabs are on top as shown in the lower graphic in Figure 16-15 (this prevents tabs contacting the firewall during engine installation).

**VERIFICATION METHOD:**

The procedure is complete when all the steps have been finished and the engine can be installed. (See "Install Engine" on page 16-21.)

**RELATED INFORMATION:**

"Install Engine" on page 16-21

**16.1.4.8 Inspect Engine Mount**

Use the following to inspect the engine mount. This inspection requires the removal of the exhaust headers and mufflers along with the entire cowling.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

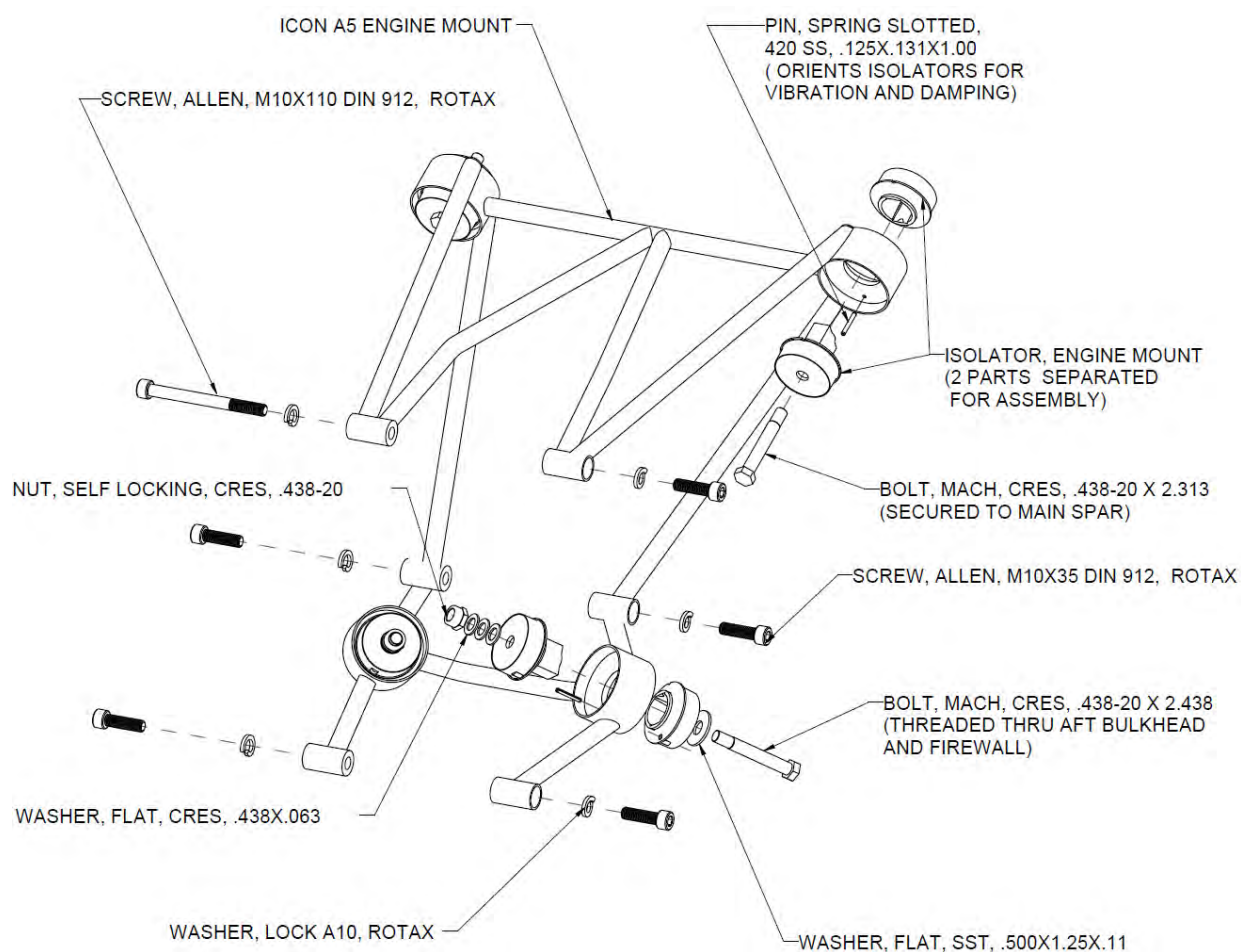
13 – Propulsion

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove engine cowl, muffler, exhaust headers, and exhaust shields. (See “Remove Engine Cowlings” on page 16-13.)
2. Visually inspect the engine mount and all its inclusive hardware for any failure, malfunction, excessive wear, or other anomalies. Figure 16-18 shows the engine mount with all its inclusive hardware.



**FIGURE 16-18**  
ENGINE MOUNT EXPLODED VIEW

3. Check ALL weld joints for cracks. Use a mirror and flashlight as required.
4. Check that hardware is secure. If necessary re-torque fasteners. See Figure 16-19.
  - a. Torque engine-mount-to-engine-block M10 screws to 355 in-lb (30 ft-lb).
  - b. Torque engine-mount-to-airframe bolts to 330-350 in-lb.



**FIGURE 16-19**  
ENGINE MOUNT (RR, LH VIEW) WITH SCREW LOCATIONS CIRCLED IN BLUE

5. Reverse engine cowl instructions to install cowl, muffler, exhaust headers, and exhaust shields. (See "Remove Engine Cowlings" on page 16-13.)

#### VERIFICATION METHOD:

Completion of the instructions above verify that the engine mount is acceptable.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Operational Inspection" on page 3-25  
 "Remove Engine Cowlings" on page 16-13  
 "Install Engine Cowlings" on page 16-16  
 "Remove Oil Tank" on page 16-72  
 "Install Oil Tank" on page 16-76

### 16.1.4.9 Inspect Throttle Control for Proper Travel and Security

Use the following to inspect throttle control for proper travel and security. Perform the inspection with a second person.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Second person

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

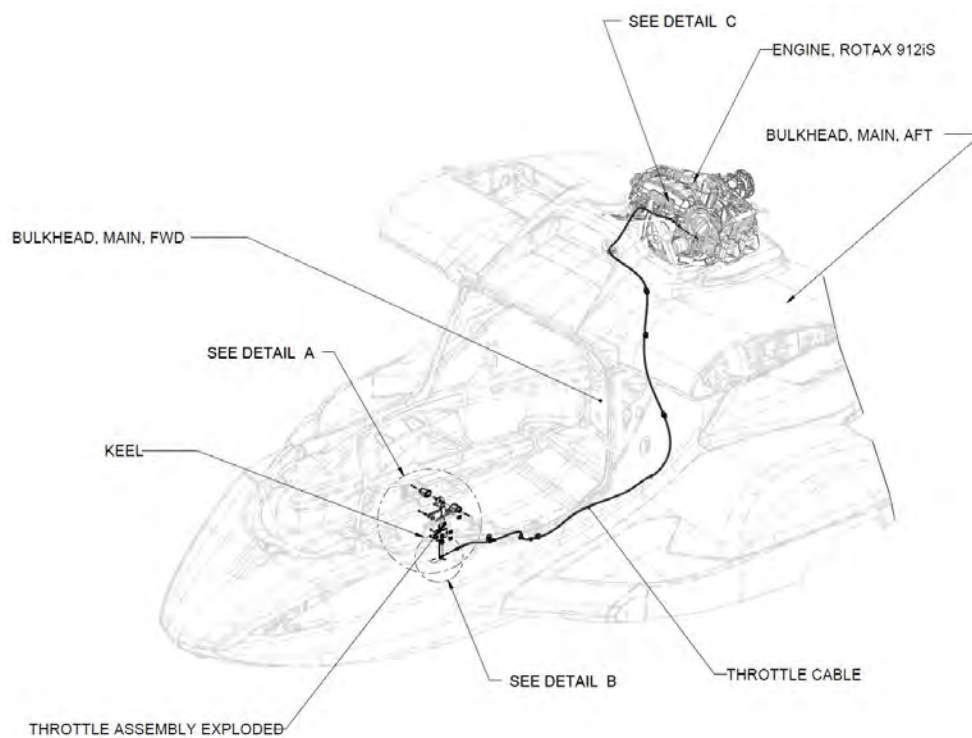
**Consumables**

None

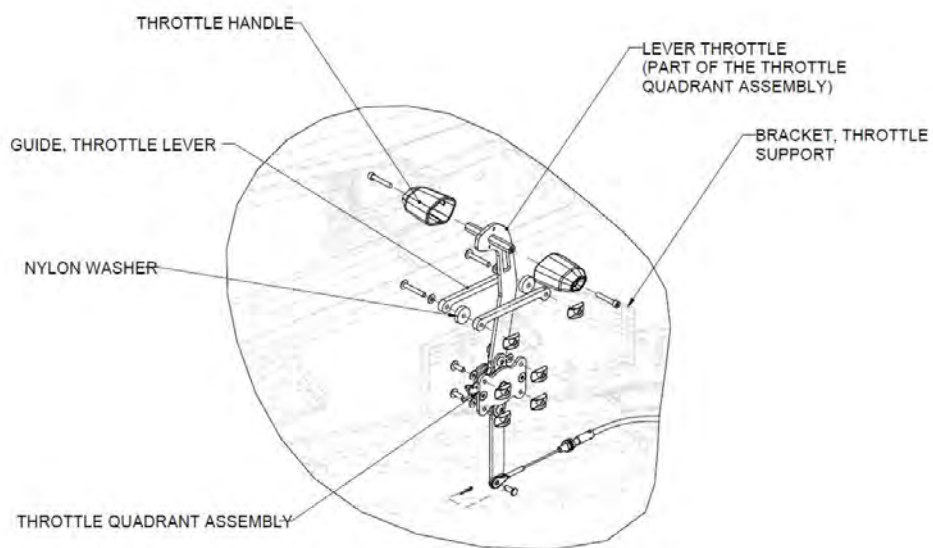
---

**TASK INSTRUCTIONS:**

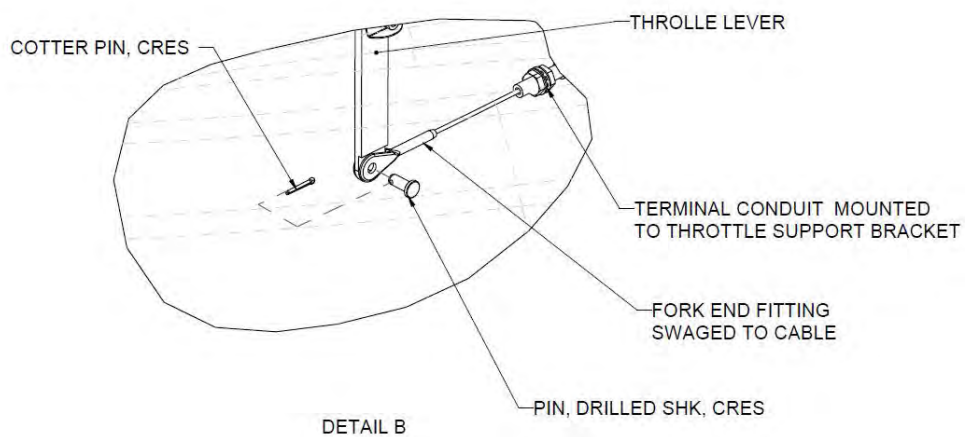
1. Remove engine cowling. (See “Remove Engine Cowlings” on page 16-13.) It is necessary to access the engine throttle lever inside the cockpit and the cable lever on the engine. (See Figure 16-20.)

**FIGURE 16-20**

## THROTTLE ASSEMBLY

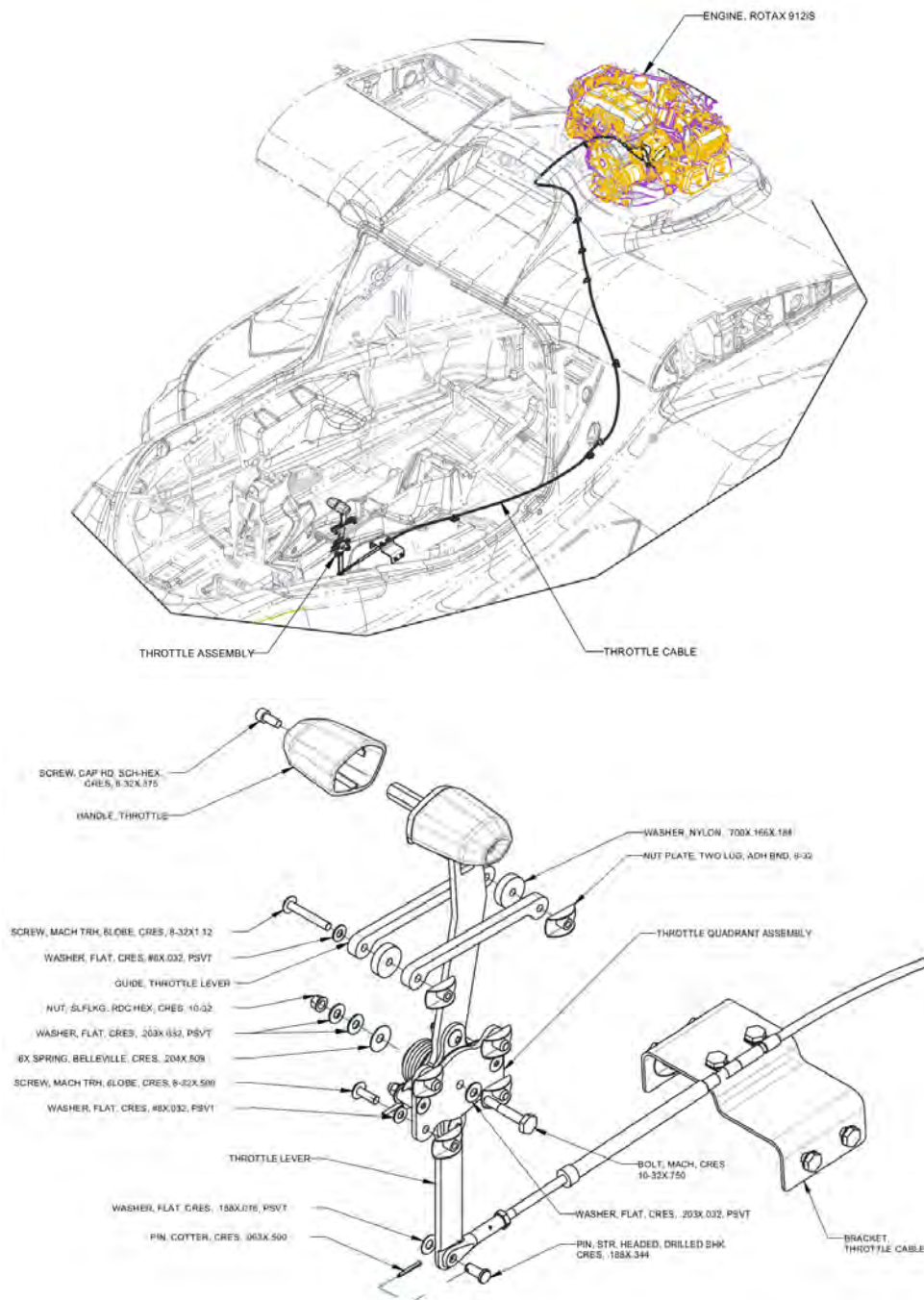


DETAIL A



DETAIL B





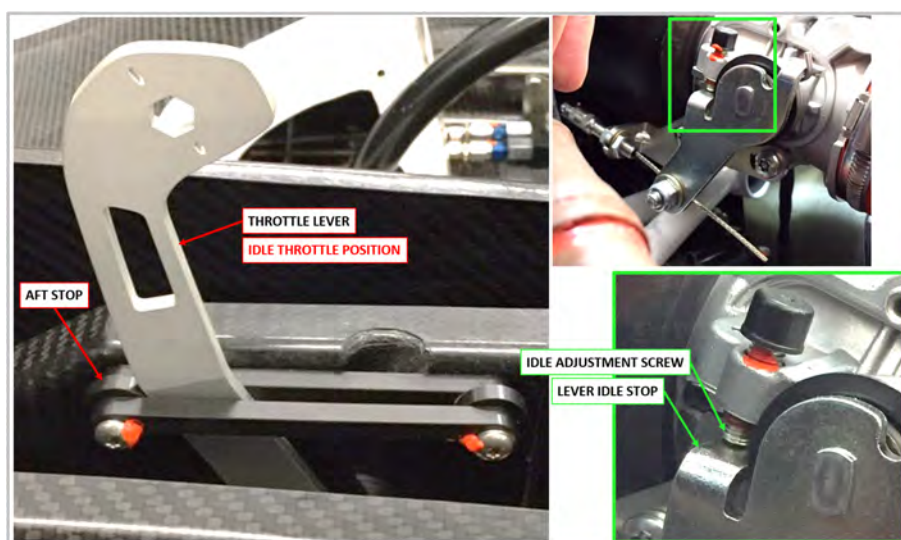
**FIGURE 16-21**  
THROTTLE ASSEMBLY—EXPLODED VIEW.

**NOTE:** ASN 49 and below use a different **THROTTLE CABLE BRACKET** than shown.

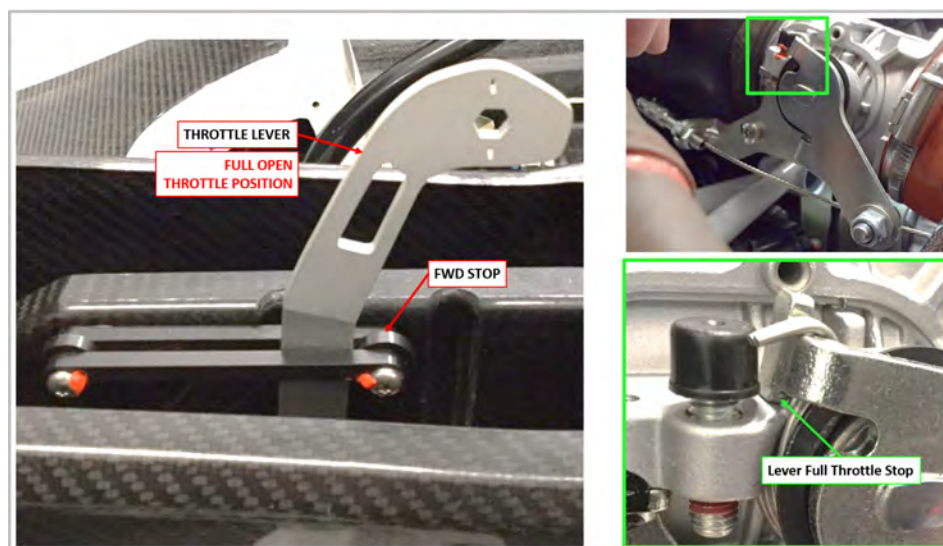
2. Remove throttle bezel. (See “Throttle Handle and Bezel Removal” on page 8-10.)
3. Have a helper in the cockpit move the throttle forward and backward to confirm if the cable is clear and free to move.



4. Check that the throttle cable is secured and connected appropriately to throttle lever. (See Figure 16-21. See Figure 16-24.)
5. Clear and remove any obstructions that would prevent cable from moving.
6. Check in the idle position that the throttle lever has at least 0.50 inches of clearance to full travel.
  - In cockpit, retract throttle handle to contact AFT stop (idle position). At engine, ensure lever idle stop contacts idle adjustment screw at the same time or just before the throttle handle contacts the aft stop. (See Figure 16-22.)



**FIGURE 16-22**  
IDLE POSITION ADJUSTMENT

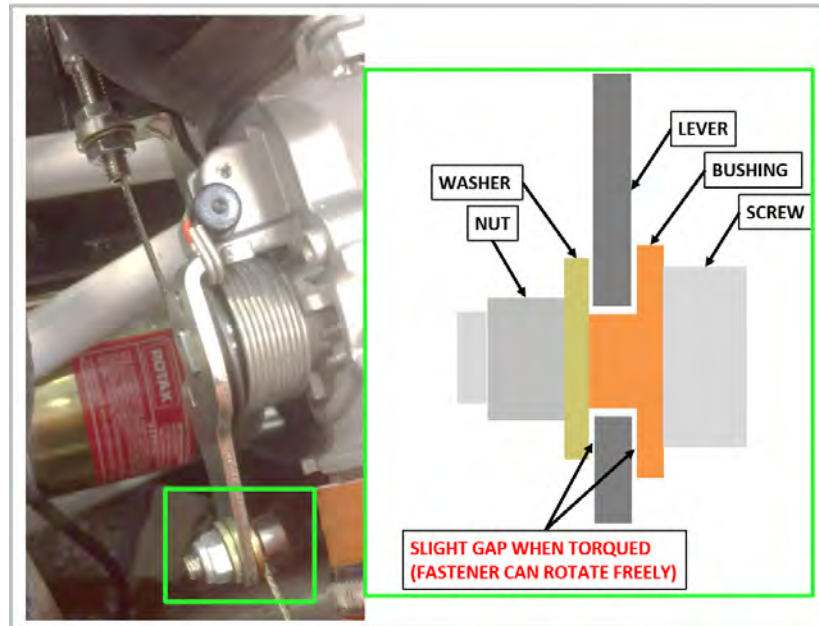


**FIGURE 16-23**  
FULL THROTTLE POSITION ADJUSTMENT

7. Check in the full throttle position that the throttle lever has at least .050 inches clearance.
  - In cockpit, move throttle handle to full throttle position (FWD stop). At engine, ensure the lever full throttle stop contacts the throttle body before the throttle handle contracts the FWD stop. (See Figure 16-23.)

**NOTE:** *The throttle lever on the engine is spring loaded to the full open position.*

8. Adjust position of cable in cable fixation fastener as required. (See Figure 16-24.)



**FIGURE 16-24**  
THROTTLE CABLE FIXATION FASTENER

9. When cable adjustment is complete, torque cable fixation fastener to  $35 \pm 5$  in-lb. Check that hardware is secure.

**CAUTION:** *Ensure not to damage the bushing by over torquing cable fixation screw.*

10. Inspect for any loose bolts. (See Figure 16-21.)
11. Replace throttle bezel. (See “Throttle Handle and Bezel Removal” on page 8-10.)
12. Replace engine cowl. (See “Remove Engine Cowlings” on page 16-13.)

#### VERIFICATION METHOD:

Verify that all checks listed above are within acceptable limits. If full travel not able to be obtained, contact ICON owner support.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

"Remove Engine Cowlings" on page 16-13

"Install Engine" on page 16-21

"Install Engine Cowlings" on page 16-16

### 16.1.4.10 Grease Coil Pack Connections

These instructions should be used to reapply dielectric grease to the primary side of the ignition coil packs.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

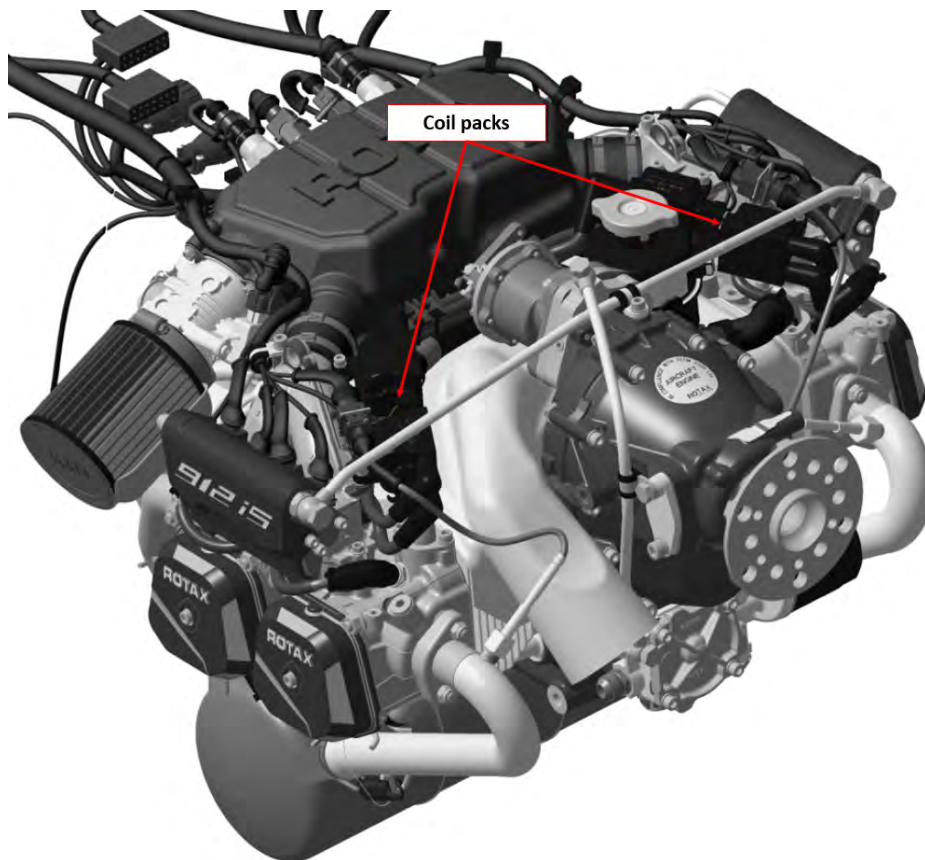
03 – Electrical System

**Consumables**

ICA012983 or 4CMPD150G TUBE (GREASE, DIELECTRIC, DC4)

TT-I-735A or equivalent (ISOPROPYL ALCOHOL)

The engine contains a total of four ignition coil packs located near the intake manifold at the top of the engine as shown in Figure 16-25.



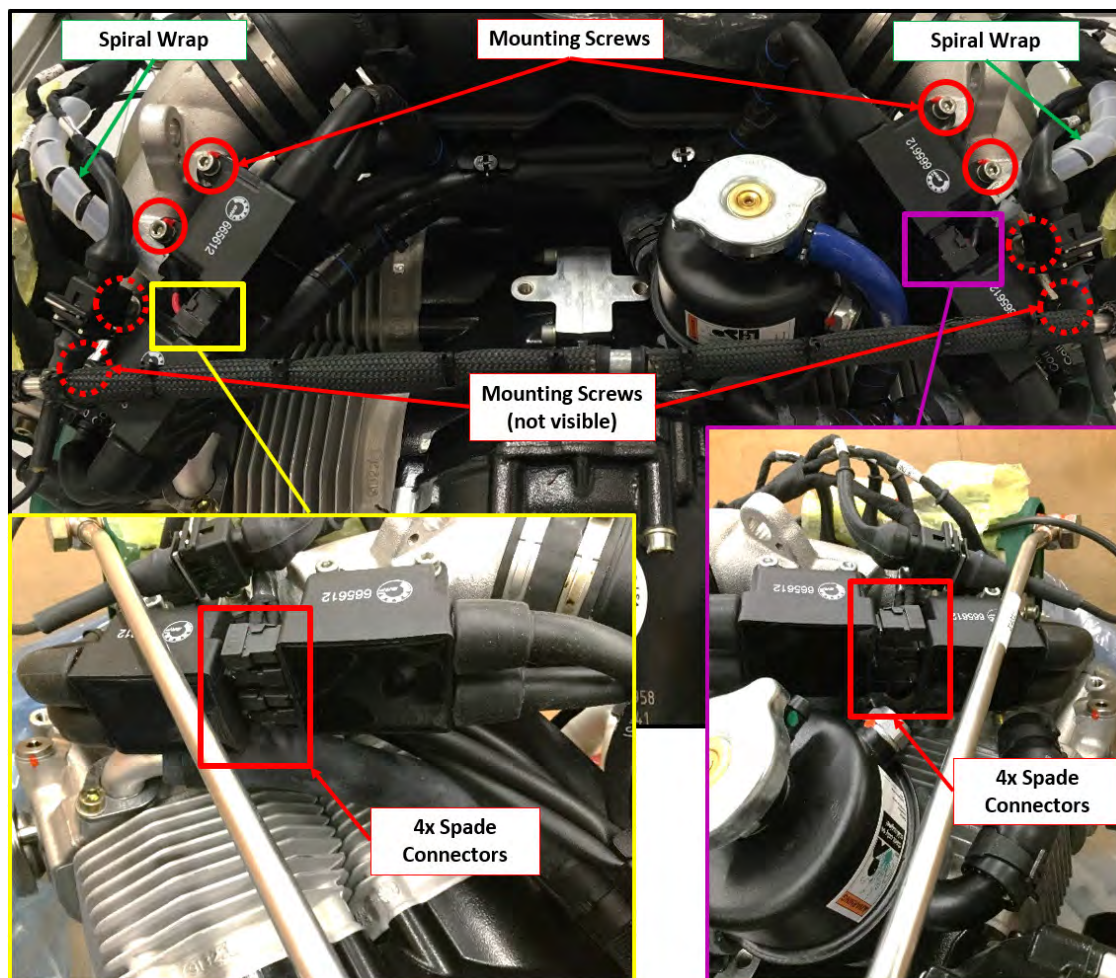
**FIGURE 16-25**  
ROTAX 912IS SHOWN WITH IGNITION COIL PACKS IDENTIFIED.

---

**TASK INSTRUCTIONS:**

1. Turn master switch OFF. Remove ignition key.
2. Remove engine cowl. (See "Remove Engine Cowlings" on page 16-13.)
3. Remove two M5 Allen mounting screws on each engine ignition coil pack as shown in Figure 16-26.

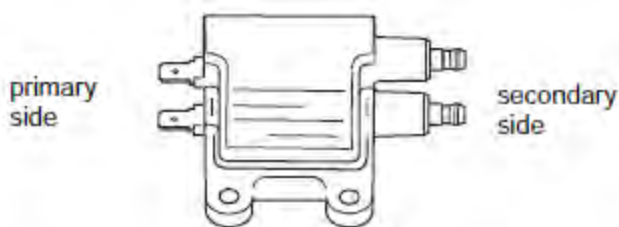




**FIGURE 16-26**  
TOP VIEW OF ROTAX 912IS

4. Remove all four engine ignition coil packs enough to gain access to the primary side of the coil pack (Figure 16-27). Remove spiral wrap as necessary.

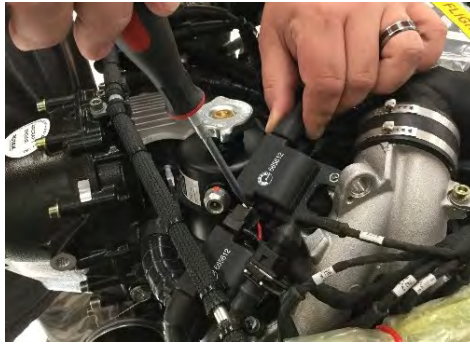
**NOTE:** *The secondary side may not need to be disconnected to perform this operation.*



**FIGURE 16-27**  
ENGINE IGNITION COIL PACK.

5. Use a flat head screwdriver to push the connectors out of the coil pack terminals (Figure 16-28).

**CAUTION:** *Take extreme caution not to damage the connectors.*

**FIGURE 16-28**

FLAT HEAD SCREWDRIVER POSITIONED INTO THE CONNECTORS FOR REMOVAL.

6. Clean the electrical connections on the primary side (spades on coil pack) using ISOPROPYL ALCOHOL. Let it dry.

*NOTE: Use sanding paper if necessary to clean the connections.*

7. Apply bead of GREASE, DIELECTRIC on the four spade connectors to seal and lubricate as necessary.
8. Reconnect the connectors to the respective coil pack terminals and tighten the connections if loose.
9. Replace the M5 Allen screws and torque to 53 in-lb.
10. Replace spiral wrap as required.
11. Reverse engine cowl instructions to install cowl. (See "Remove Engine Cowlings" on page 16-13.)

#### VERIFICATION METHOD:

Complete the engine test run. (See "Engine Test Run" on page 16-7.)

## RELATED INFORMATION:

"Remove Engine Cowlings" on page 16-13

"Engine Test Run" on page 16-7

## 16.1.5 Engine Air Filter

### 16.1.5.1 Inspection Instructions

#### 16.1.5.1.1 Air Filter Cleanliness Inspection

The following should be used to inspect and evaluate the cleanliness of the air filter.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

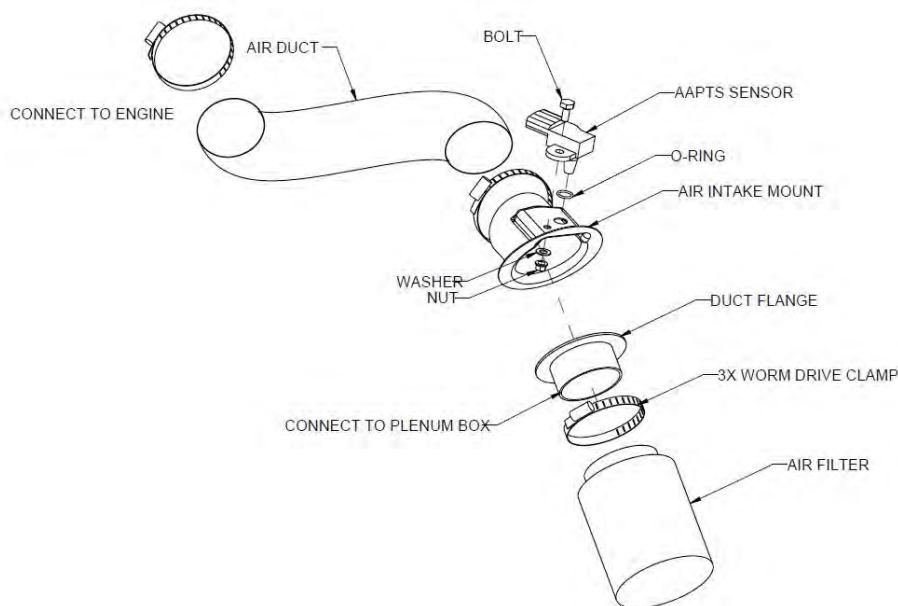
**Consumables**

None

## TASK INSTRUCTIONS:

1. Perform a visual inspection to check all gaskets, clamps, and seams for damage and/or deterioration.
2. Check for cracks in the air box, particularly at the seams and corners. Such defects could cause leakage around the filter.

3. Check the outside of the medium for broken wires, rips or tears.
4. Evaluate the air filter for cleanliness.



#### VERIFICATION METHOD:

If an element shows signs of wear and tear for the described items, the air filter must be replaced. See Related Information.

In the event that the filter needs cleaning, see Related Information on cleaning the filter.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

"Clean Engine Air Filter" on page 16-46

"Replace Engine Air Filter" on page 16-48

### 16.1.5.1.2 Air Filter Security Inspection

The following should be used to evaluate the air filter for security of connection.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot



**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Apply a side load to the exterior surface of the air filter.

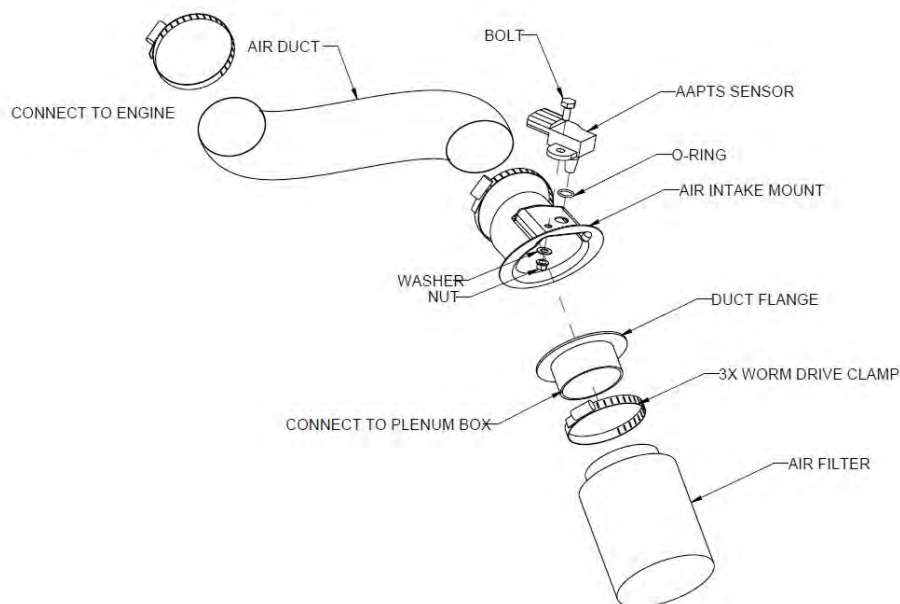
During this operation, the filter should not show any gapping at the connection points and should stay securely fastened.

2. Apply a rotational force to the exterior surface of the air filter.

The filter should stay securely fastened during this operation.

**VERIFICATION METHOD:**

If rotation or gapping occurs, the filter attachment clamps should be tightened.



## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

## 16.1.5.2 Maintenance Instructions

### 16.1.5.2.1 Clean Engine Air Filter

Cleaning instructions for the K&N engine air filter.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

K&N Air Filter Cleaning Kit 99-5000 or 99-5050

**Parts Required**

None

**Aircraft System and Number**

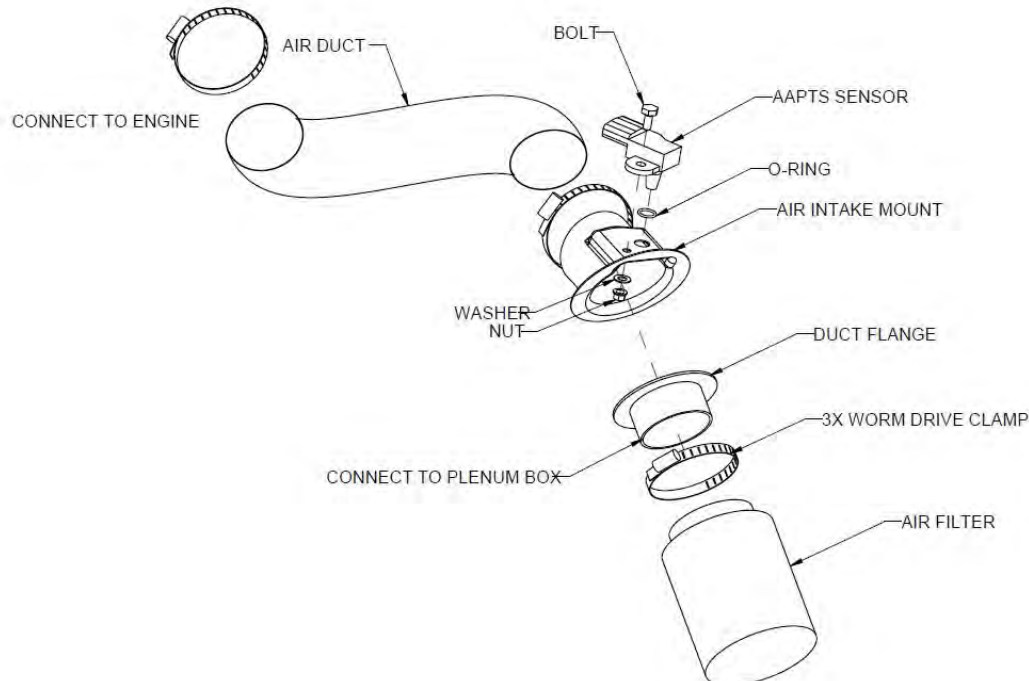
13 – Propulsion

**Consumables**

None

K&N air filters are washable and reusable. They are easily cleaned and oiled using a K&N Air Filter Cleaning Kit. The filter can be cleaned as many as 100 times and still perform up to specification.

The air filter is located in the intake duct on the front of the engine cowling just above the canopy.



**FIGURE 16-29**  
AIR FILTER AND ENGINE INTAKE INSTALLATION DETAIL.

---

**TASK INSTRUCTIONS:**

1. To reach the air filter, stand on the pilot side Seawings™ platform.
  2. Use screw driver to loosen air filter worm drive clamp.
  3. Remove filter and clamp from intake duct flange.
  4. Clean and oil using K&N Recharger Kit per K&N Air Filter Cleaning Instructions.
  5. Return air filter and clamp to intake duct flange.
  6. Tighten worm drive clamp onto intake duct flange.
- 

**VERIFICATION METHOD:**

Run engine after re-installation of air filter and verify normal performance.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

"Replace Engine Air Filter" on page 16-48

"Air Filter Cleanliness Inspection" on page 16-43

### 16.1.5.2.2 Replace Engine Air Filter

Replace the K&N air filter.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

Air Filter – K&N RU-0800

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

## TASK INSTRUCTIONS:

1. Follow instructions for cleaning the air filter except replace with a new part.

## VERIFICATION METHOD:

Run engine after re-installation of air filter and verify normal performance.

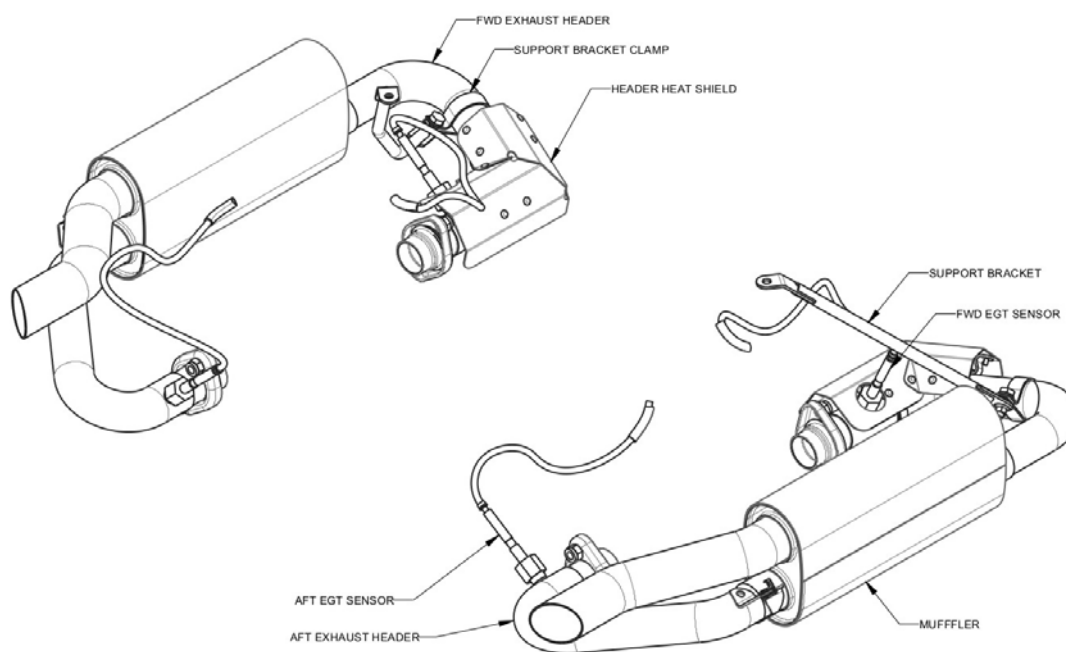
## RELATED INFORMATION:

"Clean Engine Air Filter" on page 16-46

"Air Filter Cleanliness Inspection" on page 16-43

## 16.1.6 Exhaust System

### 16.1.6.1 Exhaust System Diagram/Schematic



**FIGURE 16-30**  
EXHAUST SYSTEM – ISOMETRIC VIEW

### 16.1.6.2 Maintenance Instructions

#### 16.1.6.2.1 Remove Exhaust System

Use the following procedure to remove one side of the exhaust system. Repeat the procedure to remove both sides of the exhaust system.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

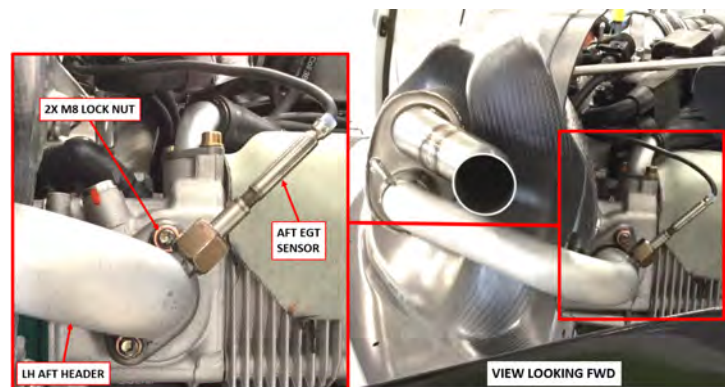
13 – Propulsion

**Consumables**

None

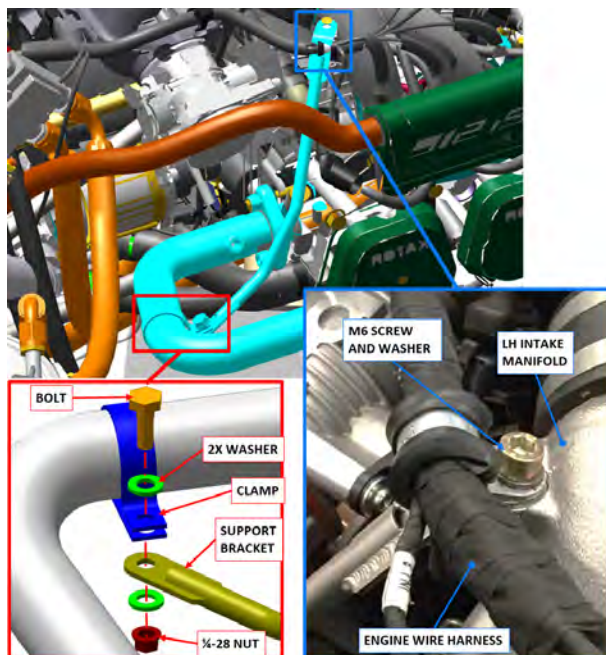
**TASK INSTRUCTIONS:**

1. Remove muffler fairings, tail pipe bezel, lower cowl, and engine cowl. (See “Remove Engine Cowlings” on page 16-13.)
2. Remove AFT EGT sensors with a 17mm wrench. (See Figure 16-30.)
3. Remove the two M8 nuts securing AFT header to the engine with a 12 mm wrench. Anti-seize should be present on slip joint into cylinder and slip joint at FWD Muffler. (See Figure 16-31.)



**FIGURE 16-31**  
AFT EXHAUST HEADER AND EGT SENSOR

4. Remove AFT muffler/header pipe sub-assembly by sliding them aft. Use torch on the slip joint to aid in removal as necessary.
5. Plug the exposed exhaust ports on the engine.
6. Remove #15 Torx countersunk screw to remove muffler shields (inner cowl).
7. Remove FWD EGT sensor with a 17 mm wrench.
8. Remove 2x clamps holding FWD header heat shield in place.
9. Remove bracket from the engine and FWD header using a 7/16" socket, 5/16" socket and 5 mm hex key. Install the M6 screw, washer, and wire harness clamp. (See Figure 16-32.)



**FIGURE 16-32**  
EXHAUST SUPPORT BRACKET (LH SHOWN).

10. Remove the two M8 nuts securing FWD header to the engine with a 12 mm wrench. Remove the FWD headers.
11. Plug the exposed exhaust ports on the engine.
12. If the exhaust is to be reused, disassemble muffler from its associated aft header by removing the safety wire from the anti-rotation tabs and sliding them apart. Clean the slip joint interfaces.
13. Repeat steps 2-12 for the LH/RH exhaust.

**VERIFICATION METHOD:**

Follow up with Exhaust System Installation. (See "Install Exhaust System" on page 16-51.)

**RELATED INFORMATION:**

"Install Exhaust System" on page 16-51

"Remove Engine Cowlings" on page 16-13

### 16.1.6.2.2 Install Exhaust System

Use the following procedure to install one side of the exhaust system. Repeat the procedure to install both sides of the exhaust system.

**TASK INFORMATION:**

**Type of Maintenance**

Line

### Level of Certification

LSA-RM

### Task Specific Training Required

No

### Special Tools Required

None

### Parts Required

ICA013354 (CLAMP, WORM DRIVE, NORMA TORRO, .35X1.19-1.75, SPRING INSERT

### Aircraft System and Number

13 – Propulsion

### Consumables

LOCTITE® 243 (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE MED STR, BLUE)

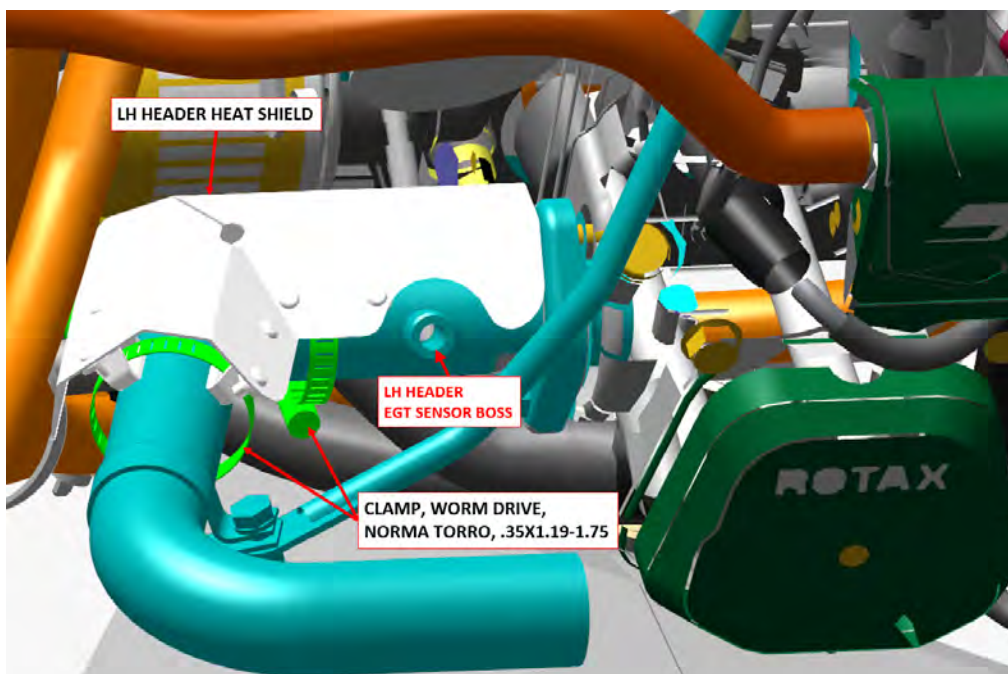
ICA012067 (LUBRICANT, ANTI-SEIZE, NICKEL GRADE)

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®

### TASK INSTRUCTIONS:

1. Remove all dust plugs from the four exhaust ports on the engine (if installed).
2. Apply LUBRICANT, ANTI-SEIZE around the perimeter and up to 2 inches from the end of the FWD header.
3. Install FWD header onto the engine exhaust port studs using two new M8 copper lock nuts, leaving nuts slightly loose to allow for later adjustment.  
  
*NOTE: The M8 lock nuts are for single use.*
4. Disconnect the engine wire harness from the FWD intake manifolds by removing the M6 screw and washer. Save for later step.
5. Attach support bracket to header using the noted clamp and hardware.
6. Attach other end of support bracket and engine wire harness to intake manifold using M6 screw and washer (previously removed). Apply THREADLOCKER. Position wire harness clamp with flat side down on top of exhaust bracket as shown in Figure 16-32.  
  
*NOTE: The left and right bracket tubes are different.*
7. Tighten the M8 copper nuts attaching FWD header to engine incrementally until header is fully seated. Torque both header nuts to 133 in-lb.
8. Torque the 1/4-28 nut at the support bracket clamp at headers to 30-40 in-lb. (See “Exhaust Support Bracket (LH Shown).” on page 16-51.)
9. Torque the M6 screw to 90 in-lb.
10. Install header heat shield onto FWD header using 2x CLAMP. Align cutout in heat shield with EGT sensor boss on FWD header. Orient CLAMP such that the spring insert rests on both heat shield supports.
11. Torque 2x CLAMP incrementally up to 27-31 in-lb to prevent deflection of heat shield.





**FIGURE 16-33**  
HEADER HEAT SHIELD INSTALLATION

12. Clean and apply LUBRICANT, ANTI-SEIZE to threads of EGT sensor nut.
13. Attach EGT sensor to FWD header boss and torque to 19 ft-lb (228 in-lb) with a 17 mm wrench.
14. Install muffler shield (inner cowl), and secure with #15 Torx countersunk screw below FWD header. Apply LUBRICANT, GENERAL PURPOSE and torque screws to 26 in-lb.
15. If the mufflers are not already assembled to the aft headers as a sub-assembly, perform the following steps:
  - a. Clean the slip joint interfaces of muffler and aft header.
  - b. Apply a thin coat of LUBRICANT, ANTI-SEIZE to the slip joint interfaces.
  - c. Install AFT headers into the associated muffler. The anti-rotation tabs should overlap so that the tab on the muffler lies outboard of the tab on the header.

*NOTE: The mufflers and headers are not left/right interchangeable.*

  - d. Secure aft header to muffler using MS20995C41 safety wire.
  - e. Wrap safety wire through the overlapping hole and over the top of the tabs three times, pulling it tight.
  - f. Then, wrap the wire through the overlapping hole and then through the aft hole in the header tab three times, pulling it tight.
  - g. Twist the ends of the wire together per standard practice and bend free end over to avoid a poke hazard.
16. Clean pipe and apply a thin coat of LUBRICANT, ANTI-SEIZE to the last 2 inches of FWD and AFT headers.
17. Install the muffler sub-assembly by sliding it forward onto the FWD header and onto the engine exhaust port studs.

18. Install new M8 copper lock nuts in two places on each header and tighten them incrementally until header is fully seated, then torque to 133 in-lb.
19. Clean and apply LUBRICANT, ANTI-SEIZE to threads of EGT sensor nut.
20. Attach EGT sensors to AFT header boss and torque to 19 ft-lb (228 in-lb) with a 17 mm wrench.
21. Repeat Steps 2-20 for LH/RH exhaust.
22. Install muffler fairings, tail pipe bezel, lower cowl, and engine cowl. (See "Install Engine Cowlings" on page 16-16.)

#### VERIFICATION METHOD:

After installation perform an engine test run in accordance with Engine Test Run paying particular attention to exhaust leaks.

#### RELATED INFORMATION:

"Remove Exhaust System" on page 16-49

"Engine Test Run" on page 16-7

## 16.1.7 Cooling System

### 16.1.7.1 Inspection Instructions

#### 16.1.7.1.1 Cooling System Inspection

Perform the maintenance inspections on the cooling system.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

##### Special Tools Required

Densimeter or

Glycol Tester

##### Parts Required

None

##### Aircraft System and Number

## 13 – Propulsion

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Open the radiator cap on the expansion tank. The expansion tank is located inside the engine cowl.

**WARNING:** *The engine must be completely cool before opening the radiator cap. Do not open the radiator cap when the engine is hot as you may be severely scalded by pressurized, hot coolant.*

2. Check the coolant level. The coolant level must be filled up to the top.
3. Inspect coolant with densimeter or glycol tester. Strongly discolored or thickened coolant must be replaced.
4. Use only a 50:50 mixture of antifreeze and distilled water in accordance with the approved engine coolant grades (See "Approved Engine Coolant Grades and Capacity" on page 2-29.) and replenish as necessary with coolant.
5. Tighten the radiator cap.

**NOTE:** *The radiator cap must be tightened until the stop lug is contacted.*

**VERIFICATION METHOD:**

An engine test run is necessary to verify system is working properly with no leaks. Verify a proper amount of coolant in the coolant overflow bottle after a full engine run cycle. (See "Approved Engine Coolant Grades and Capacity" on page 2-29.)

**RELATED INFORMATION:**

"Approved Engine Coolant Grades and Capacity" on page 2-29

**16.1.7.1.2 Oil Cooler and Radiator Condition Inspection**

The following should be used for inspecting the oil cooler and radiator for leaks and condition. The engine cowl needs to be removed for this inspection. See Related Information.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

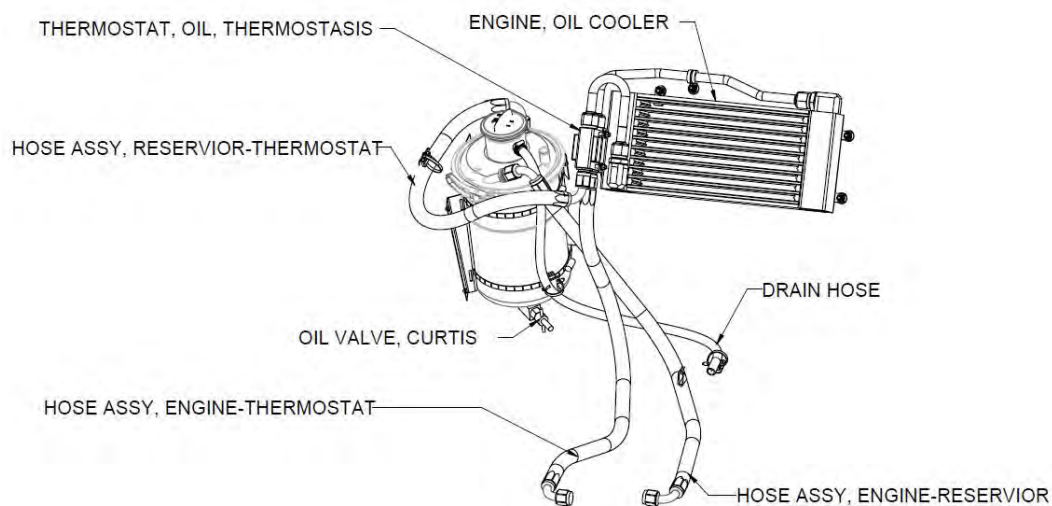
None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

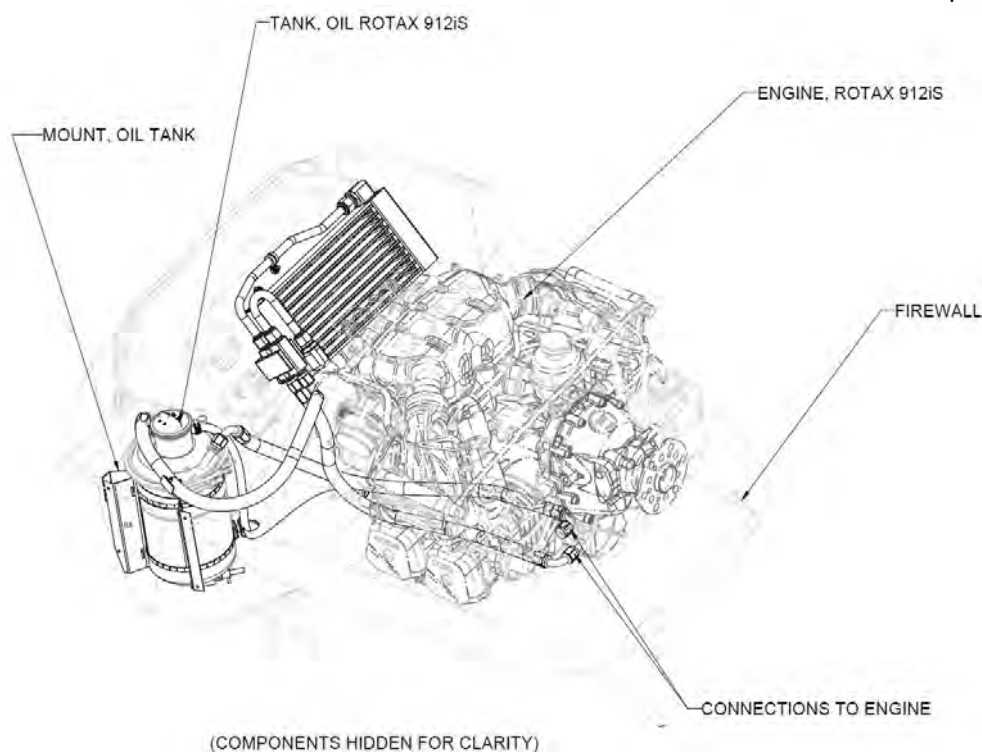


**FIGURE 16-34**  
OIL SYSTEM INSTALLATION WITH HOSES AND HARDWARE SHOWN.

**TASK INSTRUCTIONS:**

1. Remove engine cowlings. (See "Remove Engine Cowlings" on page 16-13.)
2. Visually inspect oil cooler and radiator for leaks and condition of hoses.

Use illustrations as a reference for the oil cooler installation with some of its main components.



### 3. Replace engine cowl.

#### VERIFICATION METHOD:

Acceptable condition of hoses/tubes and leak-free installation provide verification of completion.

#### RELATED INFORMATION:

- "Condition and 100-Hour Inspection – Operational Inspection" on page 3-25
- "Remove Engine Cowlings" on page 16-13
- "Install Engine Cowlings" on page 16-16

## 16.1.7.2 Maintenance Instructions

### 16.1.7.2.1 Engine Coolant Replacement

This procedure covers draining coolant from the engine and radiator, overflow bottle, and ECS system. Perform all three or only the ones that are required for the specific maintenance situation.

#### TASK INFORMATION:

##### Type of Maintenance

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

LOCTITE® 243™

**CAUTION:** *Never open the radiator cap when the cooling system is hot. Doing so could result in the escape of hot coolant and result in scalding. Always allow engine to cool to ambient temperature before start of any work on the cooling system. Cover the radiator cap with a rag and open slowly even when sure it is cool.*

**NOTE:** *Only use specified coolant. (See “Approved Engine Oils and Capacity” on page 2-27.)*

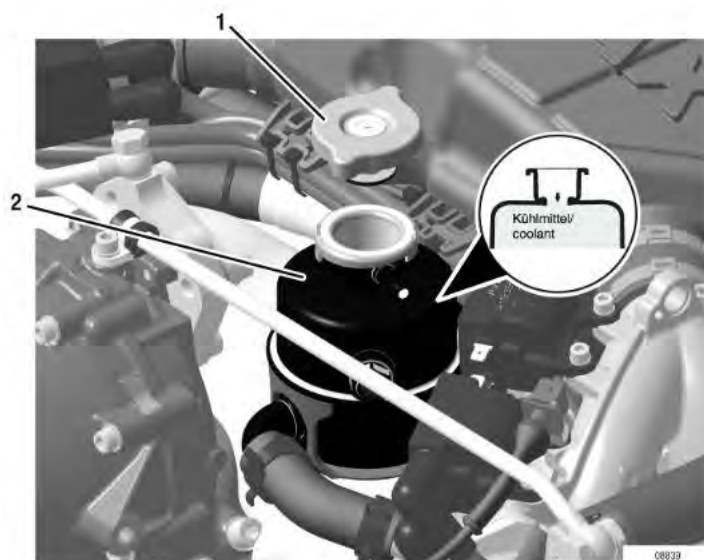
---

**TASK INSTRUCTIONS:**

1. Remove the top cowl.
2. Place a bucket under the engine bay drain hole on the right side of the fuselage just aft of the Seawings™. A shaped piece of aluminum adhesive tape placed under the drain hole may help direct the flow into the bucket.

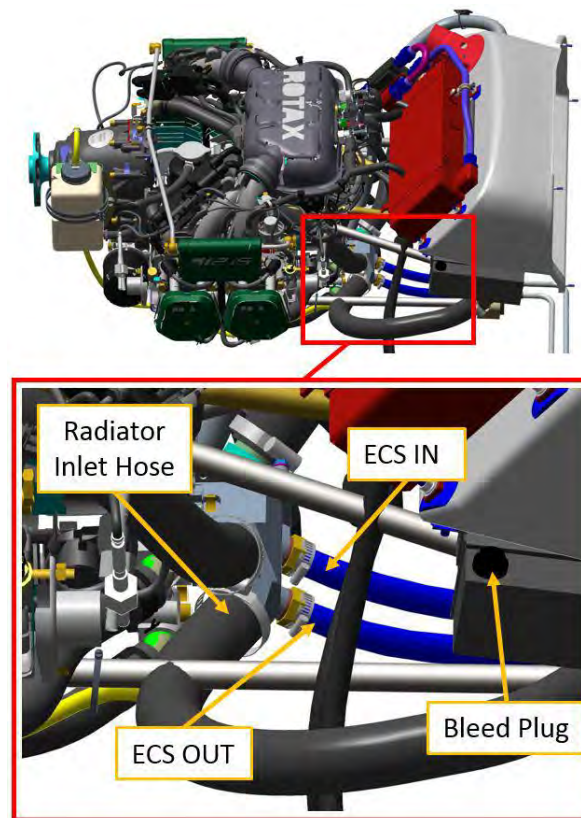
**CAUTION:** *Never open the radiator cap when the cooling system is hot. Doing so could result in the escape of hot coolant and result in scalding. Always allow engine to cool to ambient temperature before start of any work on the cooling system. Cover the radiator cap with a rag and open slowly even when sure it is cool.*

3. Open the radiator cap (1) on the expansion tank (2), shown in Figure 16-35.



**FIGURE 16-35**  
ENGINE COOLANT REPLACEMENT

4. Drain the coolant from the engine and radiator as follows:
  - a. Locate the radiator hose that connects the coolant thermostat to the radiator inlet (see Figure 16-36). Loosen the radiator hose clamp at the thermostat and pull the hose off the thermostat housing.
  - b. Drain the coolant into the engine bay; the firewall will catch the coolant and direct it out the fuselage drain hole.
  - c. After draining is complete, reinstall the radiator hose on the thermostat housing and tighten its hose clamp.



**FIGURE 16-36**  
ENGINE COOLANT REPLACEMENT

5. Drain the coolant from the overflow bottle as follows:
  - a. Cut the cable tie and disconnect the black silicone hose from the bottom nipple on the overflow bottle. Catch the coolant in a suitable container as it drains from the bottle and hose.
  - b. Reattach the black silicone hose to the nipple on the bottom of the overflow bottle and secure using a TY24MX cable tie.
6. Drain the coolant from the ECS system as follows:
  - a. Locate the two ECS hoses where they attach to the forward face of the thermostat.(See Figure 16-36)
  - b. Loosen the hose clamps and pull both hoses off the thermostat.
  - c. Turn on the master switch and turn the heater knob so that the heater valve opens.
  - d. Apply air pressure-not to exceed 12 psi-to the end of the ECS IN hose. Continue until coolant has been blown from the heater lines and core.
  - e. Reinstall both hoses and tighten the hose clamps.
  - f. Turn off the heater control and master switch.
7. Remove the bleed plug on the top-right-aft corner of the radiator with a 3/16 hex wrench (see Figure 16-36).
8. Fill coolant at the expansion tank until coolant with no bubbles flows from the radiator bleed port.



9. Replace the radiator bleed plug by applying LOCTITE® 243™ to its threads. Torque it by threading in finger tight, then rotating an additional 3/4-1 turn.
10. Fill the expansion tank until the cooling system is full (see Figure 16-35), then install the radiator cap.

*NOTE: The radiator cap must be tightened until the stop lug is contacted.*

11. Fill the overflow bottle half full.
12. Use a garden hose adjusted to a gentle flow rate to rinse spilled coolant form inside the engine bay, continuing until clear water emerges from the fuselage drain.
13. Run the engine for about five minutes or until the coolant temperature starts to rise.
14. Shutdown the engine and allow it to cool.
15. Verify that there are no coolant leaks, looking specifically at the hose connections that were disturbed.
16. Check the coolant level and replenish as needed.
17. Install the top cowl.

*NOTE: Used coolant is a hazardous waste and should be disposed of in a responsible manner.*

#### VERIFICATION METHOD:

Procedure is complete when steps are complete.

#### RELATED INFORMATION:

"Approved Engine Oils and Capacity" on page 2-27

"Remove Engine Cowlings" on page 16-13

"Engine Removal" on page 16-19

"Install Engine Cowlings" on page 16-16

### 16.1.7.2.2 Coolant Overflow Bottle Removal

Use the following procedure to remove the coolant overflow bottle.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove the engine top cowlings. (See "Remove Engine Cowlings" on page 16-13.)
2. Cut the cable tie and disconnect the black silicone hose from the bottom nipple on the overflow bottle. Catch the coolant in a suitable container as it drains from the bottle and hose.
3. Remove the cap from the overflow bottle, cut the two cable ties securing the bottle to the mount bracket and remove the bottle.
4. Carefully inspect the ICA011500 overflow bottle bracket for cracks, paying special attention to the inside corners of cutouts where stress is highest. If damage is found, remove the bracket by removing the two M8 and on M10 screws that attach it to the gearbox.
5. Inspect the yellow Tygon and black silicon hoses that attach to the bottle. If the hoses are stiff, cracked or otherwise damaged, remove them by cutting the securing cable ties and hose clamps.

**VERIFICATION METHOD:**

Procedure is complete steps have been finished. If coolant overflow bottle needs replaced see installation procedure. (See "Coolant Overflow Bottle Installation" on page 16-62.)

**RELATED INFORMATION:**

"Remove Engine Cowlings" on page 16-13

"Install Engine Cowlings" on page 16-16

**16.1.7.2.3 Coolant Overflow Bottle Installation**

Use the following procedure to install the coolant overflow bottle.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

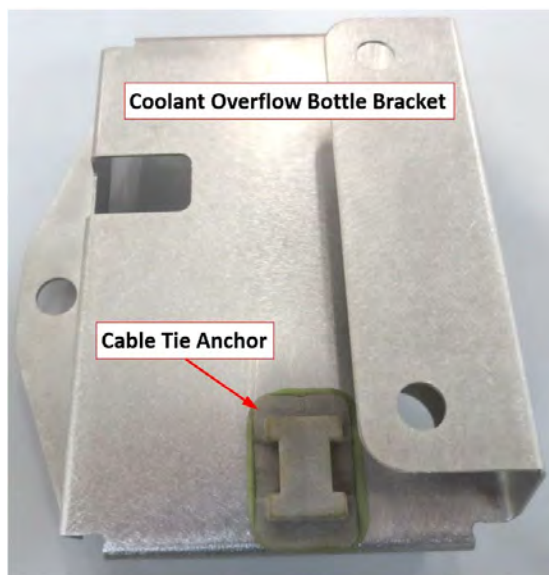
LOCTITE® 603

LOCTITE® 243™

---

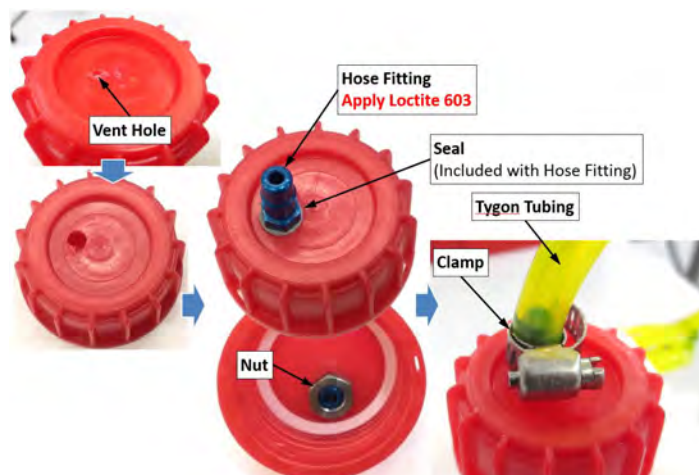
**TASK INSTRUCTIONS:**

1. If installing a new coolant overflow bottle bracket, prepare it as follows:
  - a. A CB9120V5 cable tie anchor will be bonded to the bracket in the location shown in Figure 16-37.
  - b. Lightly abrade the bonding area of the bracket and clean with isopropyl alcohol.
  - c. Bond the anchor to the bracket with Click Bond CB200 adhesive as shown. Allow to cure for 2 hours.



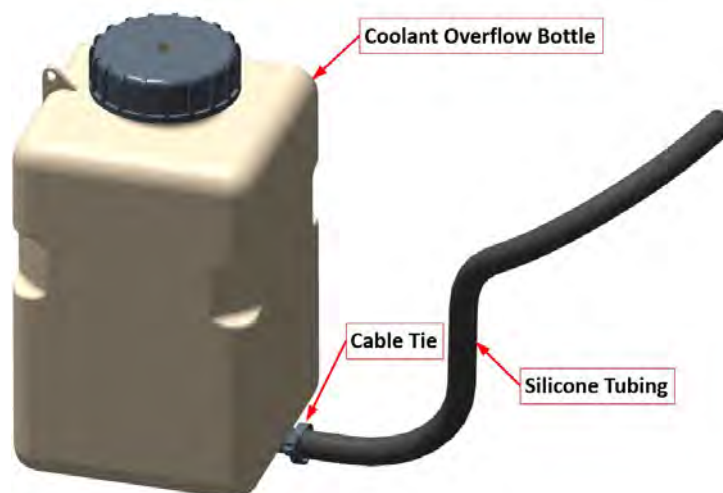
**FIGURE 16-37**  
COOLANT OVERFLOW BOTTLE

2. If installing a new 922327 coolant overflow bottle, prepare it as follows:
  - a. Unscrew the cap from the bottle and drill the existing vent hole out to 6mm (.236 in) diameter.
  - b. Apply LOCTITE® 603 to the threads of a 5058K34 hose fitting. Insert the hose fitting with its seal into the vent hole as shown in Figure 16-38.
  - c. Secure the hose fitting using an AN316C49 nut torqued to 44 in-lb<sub>f</sub>
  - d. Reinstall cap on bottle.



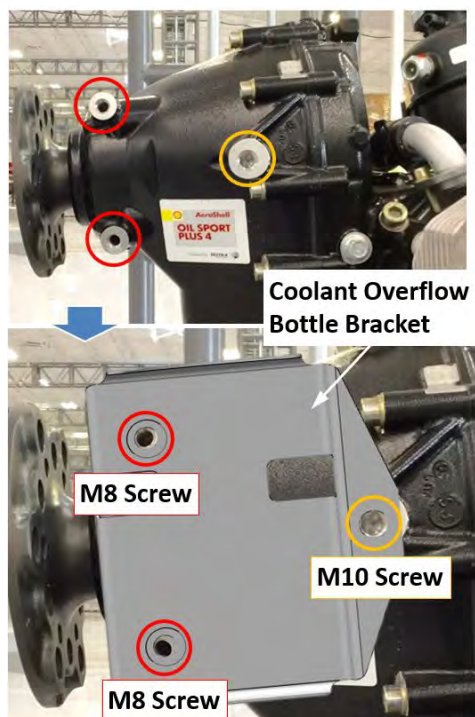
**FIGURE 16-38**  
COOLANT OVERFLOW BOTTLE

3. If installing new hoses, prepare them as follows:
  - a. Cut a 10-inch length of 51135K21 silicone tubing and attach it to the bottom nipple of the bottle. Secure with a TY24MX cable tie as shown in Figure 16-39.
  - b. Cut a 42-inch length of 552K25 Tygon tubing and install tubing on the bottle cap hose fitting using a 3804 hose clamp.



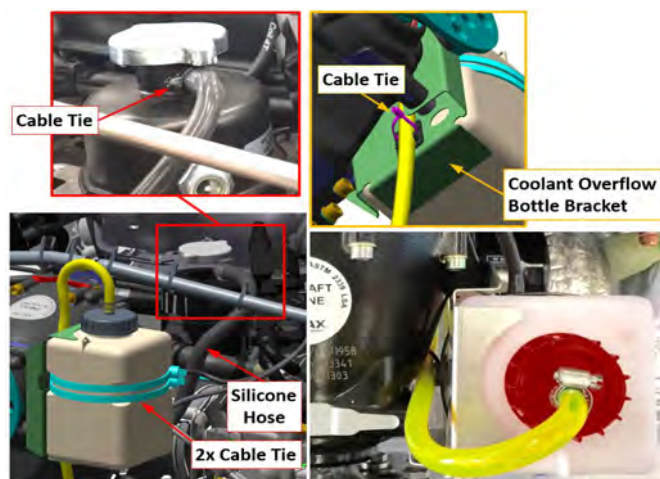
**FIGURE 16-39**  
COOLANT OVERFLOW BOTTLE

4. Install the coolant overflow bottle bracket on the engine as shown in Figure 16-40. using the noted hardware. Apply LOCTITE<sup>®</sup> 243™ to the screw threads.

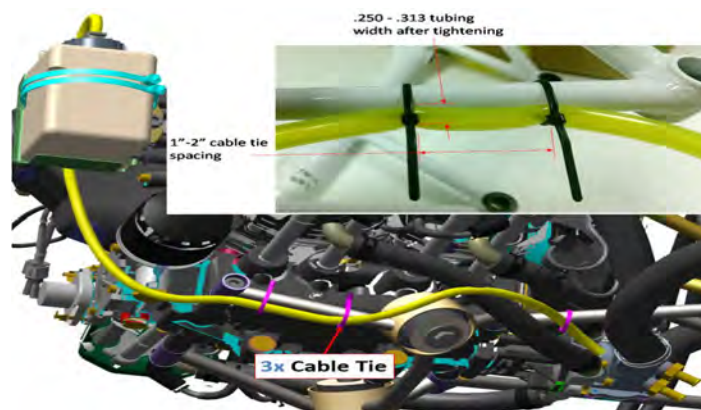


**FIGURE 16-40**  
COOLANT OVERFLOW BOTTLE

5. Torque the two M8 bolts to 17.7 ft-lb<sub>f</sub> (212 in-lb<sub>f</sub>). Torque the M10 bolt to 25.8 ft-lb<sub>f</sub> (310 in-lb<sub>f</sub>).
6. Install the coolant overflow bottle on the bracket using two TY29MX cable ties as shown in Figure 16-41. Orient the bottle with black silicone hose facing forward (away from propeller flange).
7. If installing new hoses, route and secure them as follows (see Figure 16-41):
  - a. Attach the black silicone hose to the nipple on the expansion tank and secure using a Ty24MX cable tie.
  - b. Route the yellow Tygon hose down through the bracket and secure to the bracket's anchor using a TY24MX cable tie. Ensure that the cable tie does not pinch hose.
  - c. Secure the Tygon tubing to the engine mount as shown in shown in Figure 16-42 using three TY23MX cable ties. The cable ties should be spaced 1-2 inches apart and tightened until tubing width measures .250-.313 as shown. Before tightening the cable ties, ensure that the tubing does not have enough slack to contact any rotating hardware such as the cooling fan or prop flange.
  - d. Direct the free end of the Tygon hose to the bottom of the firewall near the low point drain.



**FIGURE 16-41**  
COOLANT OVERFLOW BOTTLE



**FIGURE 16-42**  
COOLANT OVERFLOW BOTTLE

8. Fill the overflow bottle to the mid-range level with new coolant. (See “Approved Engine Coolant Grades and Capacity” on page 2-29.)
9. Install the engine top cowlings. (See “Remove Engine Cowlings” on page 16-13.)

#### VERIFICATION METHOD:

Procedure is complete when steps are finished.

## RELATED INFORMATION:

"Remove Engine Cowlings" on page 16-13

"Install Engine Cowlings" on page 16-16

### 16.1.7.2.4 Coolant Radiator Removal

Use the following procedure to remove the coolant radiator.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

## TASK INSTRUCTIONS:

1. Remove the ICN1002 induction air hose by loosening its hose clamps and flexing it off the throttle valve and plenum box fitting.
2. Disconnect the connector from the APTS sensor.
3. Disconnect the one ground and two power wires from the starter solenoid.
4. Remove the two hoses at the bottom of the oil thermostat, using a 13/16 wrench to hold the union fitting in the thermostat and a 7/8 wrench to turn the B-nut.
5. Drain the coolant (See "Engine Coolant Replacement" on page 16-57.), being sure to reinstall the hose and tighten the hose clamp used in the procedure.
6. Remove the two coolant hoses at the radiator by loosening their hose clamps and pulling the hoses off the radiator.
7. Use a 3/8 wrench to remove the four AN3C5A bolts and NAS1149C0332R washers that attach the ICA011701 plenum box to the airframe.
8. Remove the plenum box and place on a clean work surface. Use caution so as to avoid bending the cooling fins on radiator and oil cooler.

9. Use a 1/4 wrench to remove the four MS21043-3 nuts and NAS11490332R washers that attach the radiator to the plenum box.
10. Remove the radiator.

**VERIFICATION METHOD:**

The procedure is complete when you can remove the radiator.

**RELATED INFORMATION:**

"Engine Oil Check and Replenish" on page 16-77

**16.1.7.2.5 Coolant Radiator Installation**

Use the following procedure to install the coolant radiator.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

Tef-Gel®

**TASK INSTRUCTIONS:**

1. Ensure that the bulb seal on the plenum box is in good condition, then attach the ICA011877 radiator to the ICA011701 plenum box with four MS21043-3 nuts and NAS1149C0332R washers. Torque each nut to 20 in-lb<sub>f</sub>.
2. Place the plenum box assembly into position on the airframe.
3. Coat four AN3C5A bolts with Tef-Gel® and, with a NAS1149C0332R washer under each bolt head, install the bolts in the four attach locations. Torque to 26 in-lb<sub>f</sub>.



4. Remove any plugs from the radiator connections, then connect the two coolant hoses to the radiator and tighten their hose clamps.
5. Connect the two hoses at the lower side of the oil thermostat, using a 13/16 wrench to hold the union fitting in the thermostat and a 7/8 wrench to turn the B-nut. The forward hose runs aft to the oil pump. The aft hose connects to the top of the oil tank. Torque the B-nuts to  $200 \pm 50$  in-lb<sub>f</sub>.
6. Connect the one ground and two power wires to the starter solenoid.
7. Install the ICN1002 induction air hose by flexing it onto the throttle valve and plenum fitting. Tighten its hose clamps.
8. Replenish and bleed the cooling system. (See "Engine Oil Check and Replenish" on page 16-77.)
9. Purge the oil system per the procedure in the Rotax 912iS Installation Manual.

#### VERIFICATION METHOD:

The procedure is complete when the coolant radiator is installed and the oil system can be purged per the procedure in the Rotax 912iS Installation Manual.

#### RELATED INFORMATION:

"Engine Oil Check and Replenish" on page 16-77

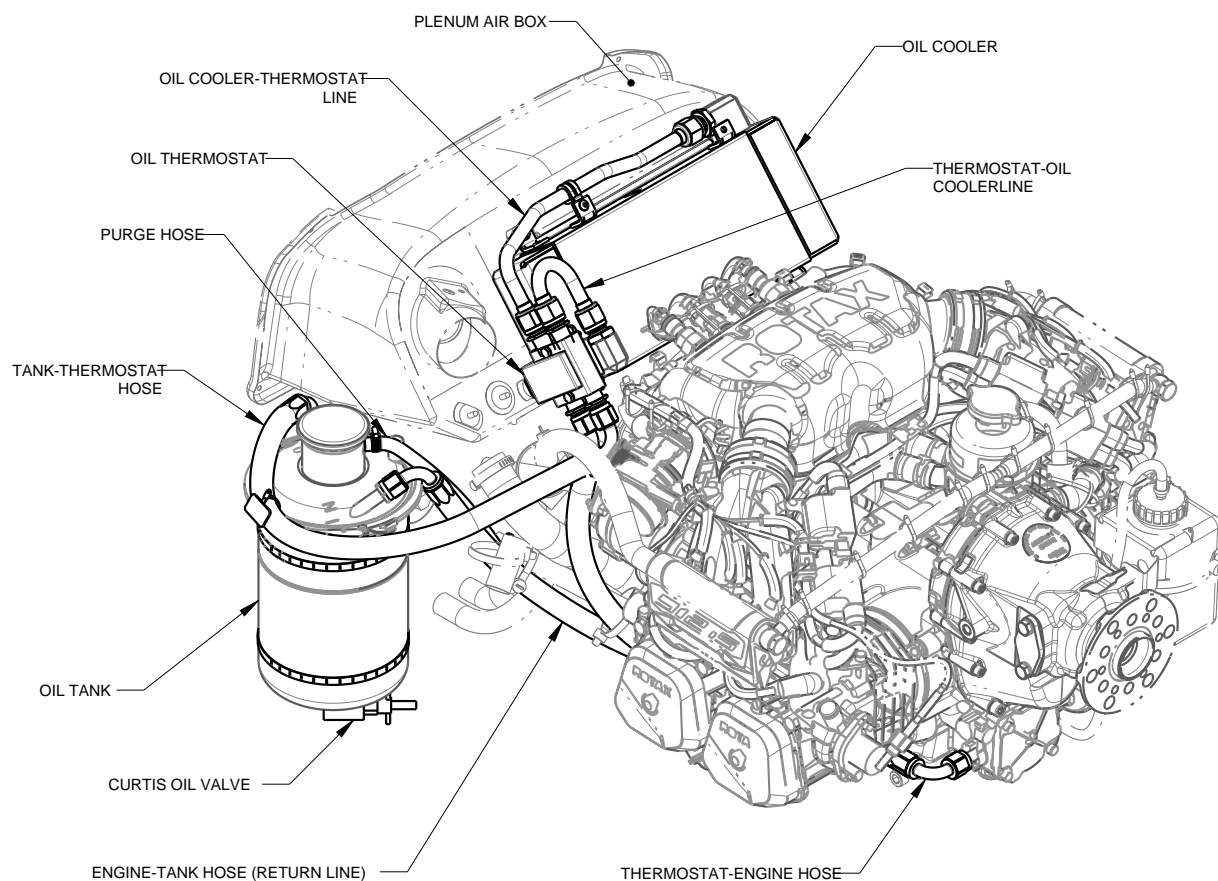
## 16.1.8 Oil System

### 16.1.8.1 Oil System Description

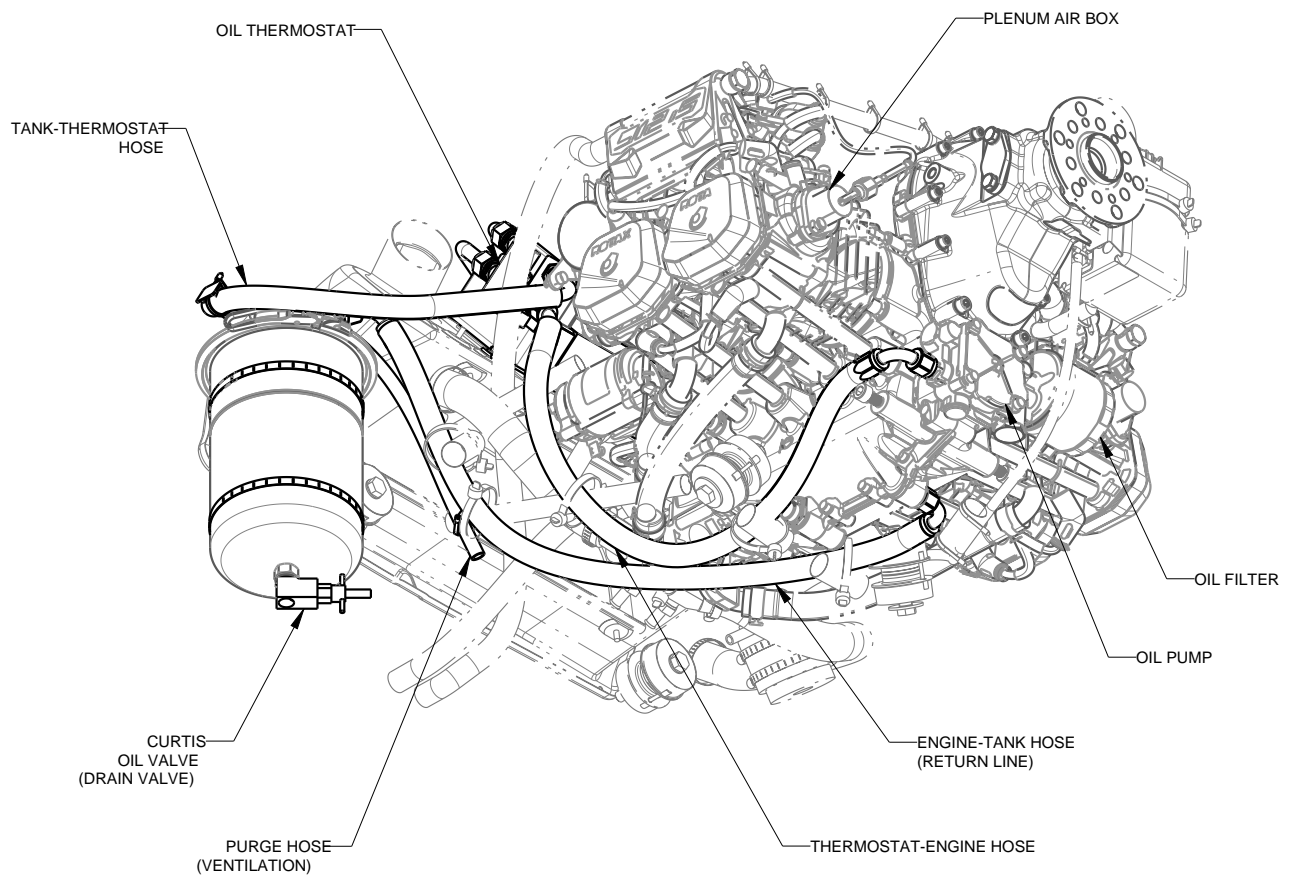
The oil system in the A5 is a dry sump forced lubrication system that ensures proper lubrication of dynamic engine components. Starting at the Rotax oil tank, oil travels to the oil thermostat and then to the oil cooler. From the oil cooler, the oil is sucked to the bottom of the engine by the oil pump. The oil is then filtered and sent throughout the engine. The oil return line sends the oil back from the bottom of the crankcase to the oil tank – specifically, against the oil tank wall in a swirling motion to prevent air from mixing with the oil. The oil dipstick is located beneath the oil tank cap. The purge hose at the top of the oil tank is used for ventilation and is routed in a continuous decline. The Curtis valve is used to drain the oil. See "Oil System Diagram/Schematic" on page 16-70.

**CAUTION:** Allow the engine to cool down before working on the oil system.

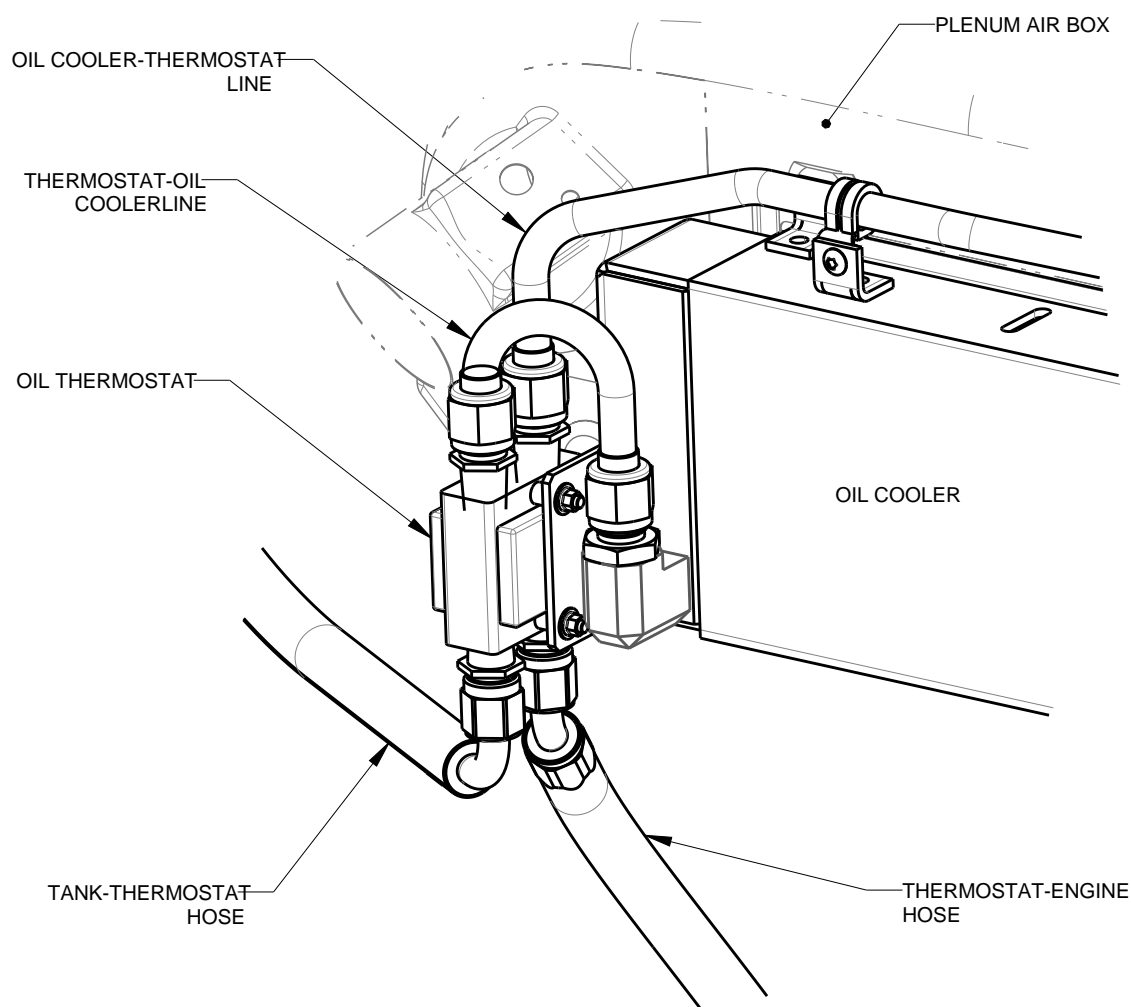
### 16.1.8.2 Oil System Diagram/Schematic



**FIGURE 16-43**  
OIL SYSTEM COMPONENTS – TOP, FWD, LHS VIEW



**FIGURE 16-44**  
OIL SYSTEM COMPONENTS – BOTTOM, FWD, LHS VIEW



**FIGURE 16-45**  
OIL THERMOSTAT CONNECTIONS

### 16.1.8.3 Maintenance Instructions

#### 16.1.8.3.1 Remove Oil Tank

Use the following instructions to remove the oil tank.

##### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

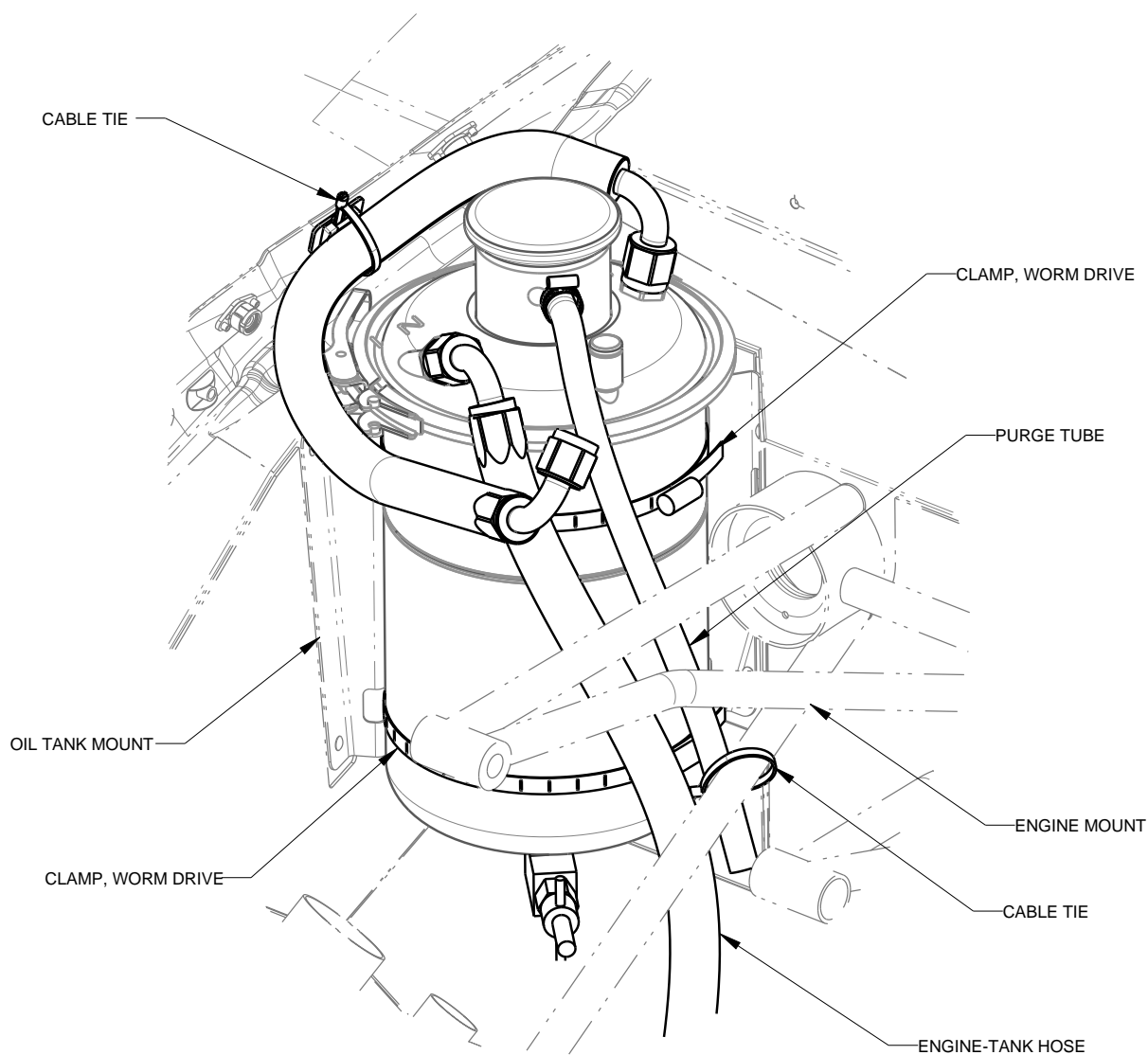
**Consumables**

None

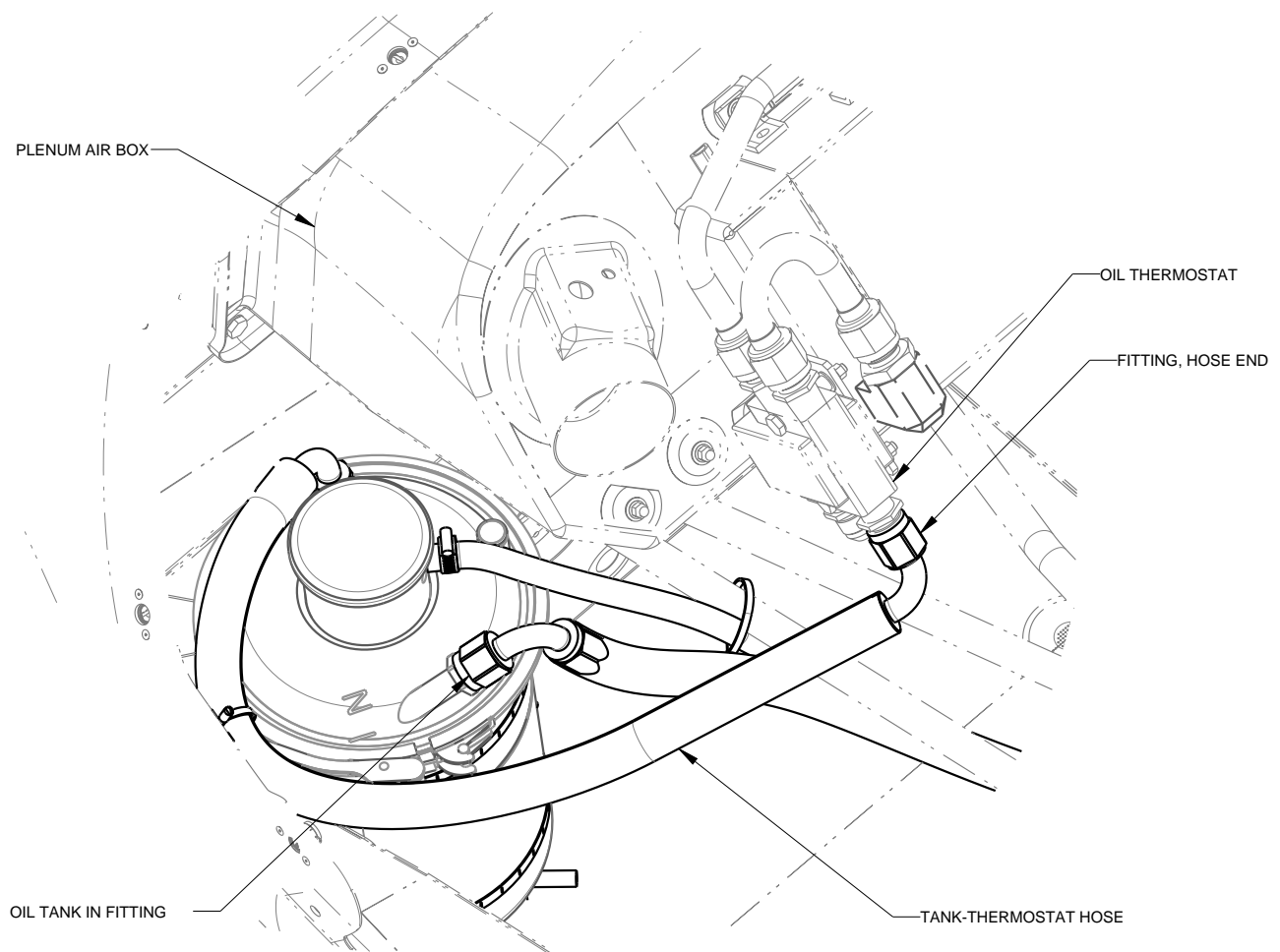
---

**TASK INSTRUCTIONS:**

1. Remove top engine cowl. (See “Remove Engine Cowlings” on page 16-13.)
2. Burp engine. (See “Engine Oil Check and Replenish” on page 16-77.)
3. Drain engine oil. (See “A5 Specific Oil Change Procedures” on page 16-78.)
4. Use a 3/4 wrench to hold tank IN fitting while using a 7/8 wrench to loosen IN line fitting. Remove the oil return (engine-tank) hose from the oil tank. Cap openings. (See Figure 16-47.)
5. Use a 13/16 wrench to hold the union fitting in the thermostat and a 7/8 wrench to turn the B-nut to remove the tank-thermostat hose shown in Figure 16-47.
6. Cut the cable tie securing the reservoir-thermostat hose shown in Figure 16-46.
7. Cut the cable tie securing the purge hose to the engine mount. Make note of position for re-installation.
8. Remove two worm drive clamps securing the oil tank to the oil tank mount.
9. Pull the oil tank out of the engine bay.



**FIGURE 16-46**  
OIL TANK INSTALLATION. SOME COMPONENTS NOT SHOWN FOR CLARITY.



**FIGURE 16-47**  
OIL TANK INSTALLATION. SOME COMPONENTS NOT SHOWN FOR CLARITY.

**VERIFICATION METHOD:**

The task is complete when the oil tank has been removed.

## RELATED INFORMATION:

- "Inspect Engine Mount" on page 16-30
- "General Engine Line Maintenance" on page 16-26
- "Engine Removal" on page 16-19
- "Install Oil Tank" on page 16-76

**16.1.8.3.2 Install Oil Tank**

Use the following instructions to install the oil tank.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

- TY24MX (CABLE-TIE, NYLON 6-6, 30LB)
- J1508F-88 (CLAMP, WORM DRIVE, .50X5.50)

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

## TASK INSTRUCTIONS:

1. Secure the oil tank to the oil tank mount in the orientation shown in Figure 16-47 using 2X CLAMP, WORM DRIVE. Torque to 25-30 in-lbs.

**NOTE:** *The oil tank must maintain a minimum clearance of .25 inches from the firewall.*

2. Remove any plugs and install oil hose at thermostat. Torque to 150-250 in-lbs.
3. Remove plugs and install oil return hose at "IN" port of oil tank. (See Figure 16-14.) Torque B nut to 300-350 in-lbs if using Method A or to 290-330 in-lbs if using Method B. (See Figure 16-10.)

**CAUTION:** *Ensure a back-up wrench is used on the oil tank fitting while torqueing. Damage to oil tank may occur if it's not used.*

4. Secure reservoir-thermostat hose to the cable tie mount using a CABLE-TIE.
5. Secure purge hose to the engine mount using a CABLE-TIE. (See Figure 16-14.)



6. Fill the engine with correct quantity and type of oil. (See "Engine Oil Check and Replenish" on page 16-77.)
7. Purge the engine oil system per the latest Rotax 912iS Maintenance Manual.
8. Install top engine cowl. (See "Install Engine Cowlings" on page 16-16.)

**VERIFICATION METHOD:**

Complete the engine test run. (See "Engine Test Run" on page 16-7.)

**RELATED INFORMATION:**

- "Inspect Engine Mount" on page 16-30
- "General Engine Line Maintenance" on page 16-26
- "Engine Removal" on page 16-19
- "Remove Oil Tank" on page 16-72

### 16.1.8.3.3 Engine Oil Check and Replenish

Check and replenish the engine lubrication system

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

Oil for replenishing oil system. Oil used must comply with approved engine oils and capacity.

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

See A5-specific directions regarding checking and changing the oil. (See "A5 Specific Oil Change Procedures" on page 16-78.)

**TASK INSTRUCTIONS:**

1. Open oil tank access door on the engine cowling and remove the oil tank cap.

2. Slowly turn the propeller counter-clockwise (behind prop facing forward, if standing behind the aircraft, several times by hand to pump all the oil from engine to the oil tank.
3. This process is completed when air flows back to the oil tank. This air flow can be perceived as a murmur (gurgling) when the oil tank cover of the oil tank is removed.
4. Pull out the oil dipstick.
5. The oil level in the oil tank should be between the two marks (max/min) on the oil dipstick, but must never fall below the min mark.
6. Replenish oil as required.

For longer flights replenish oil to the max mark to provide more oil reserve. During standard engine operation, the oil level should be mid-way between the max and min marks. At higher oil level (over servicing), oil will escape via the venting passage.

The difference between the max and the min marks is approximately 0.5 quarts (0.47 l).

**WARNING:** Oil changes are necessary more frequently when using AVGAS vs MOGAS. See Related Information.

7. Check oil-level marks on the oil dipstick.
8. Fit the oil dipstick and tighten the oil tank cover by hand.

#### VERIFICATION METHOD:

Use the oil tank dipstick to verify the desired oil level.

#### RELATED INFORMATION:

"A5 Specific Oil Change Procedures" on page 16-78  
 "Approved Engine Oils and Capacity" on page 2-27  
 "Install Engine" on page 16-21  
 "Engine Removal" on page 16-19  
 "Coolant Radiator Removal" on page 16-67  
 "Coolant Radiator Installation" on page 16-68

### 16.1.8.3.4 A5 Specific Oil Change Procedures

There are unique oil change procedures for the A5. These steps are used to drain the oil.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

Owner/Pilot

##### Task Specific Training Required

No

**Specific Tools Required**

3/8" Drain Hose

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Connect a 3/8"x10' drain hose to the drain valve located below the oil servicing tube and the other end to a bucket or oil receptacle.
  2. Lower the airplane tail.
  3. Place a block under the nose wheel to maintain a nose height attitude with airplane tail not touching ground.
  4. Open valve and refer to the Rotax 912 iS Sport (912 iS 2) Maintenance Manual for complete oil change directions.
- 

**VERIFICATION METHOD:**

This task has been completed when oil is changed.

**RELATED INFORMATION:**

"Engine Oil Check and Replenish" on page 16-77

"Engine Removal" on page 16-19

**16.1.8.3.5 Oil Cooler and Thermostat Removal**

Use the following procedure to remove the oil cooler.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Remove the engine top cowlings. (See "Remove Engine Cowlings" on page 16-13.)
2. Remove the two hoses at the lower side of the oil thermostat, using a 13/16 wrench to hold the union fitting in the thermostat and a 7/8 wrench to turn the B-nut. Remove the upper hose (going to the oil tank) first, followed by the lower hose (going to the oil pump).
3. Use a 1/4 wrench to remove the nuts and washers from the four oil cooler mounting studs.
4. Remove the oil cooler assembly from the aircraft.
5. Remove both the aluminum oil lines connecting oil cooler to thermostat using a 1 inch wrench to hold the union on the cooler, a 13/16 to hold the union on the thermostat and a 7/8 wrench to turn the B-nuts. The oil cooler outlet line is attached to the oil cooler with a P-clamp, 10-32 screw, nut and washer; remove these as well.
6. Using a 3/8 and 1/4 wrenches, remove the two bolts, spacers, nuts and washers that attach the thermostat to the oil cooler and remove the thermostat.
7. Use a 13/16 wrench to remove the four AN816-8D fittings from the thermostat, if needed.
8. Use a 1 inch wrench to remove the two AN815-8D unions and O-rings from the oil cooler.
9. Remove the screws, nuts and washers holding the restrictor plate and remove the plate.
10. Plug the openings in the oil cooler if it is to be reused.

**VERIFICATION METHOD:**

The procedure is complete when the oil cooler and thermostat have been removed.

**RELATED INFORMATION:**

"Remove Engine Cowlings" on page 16-13

**16.1.8.3.6 Oil Cooler and Thermostat Installation**

The following procedure is used to install the oil cooler and thermostat.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

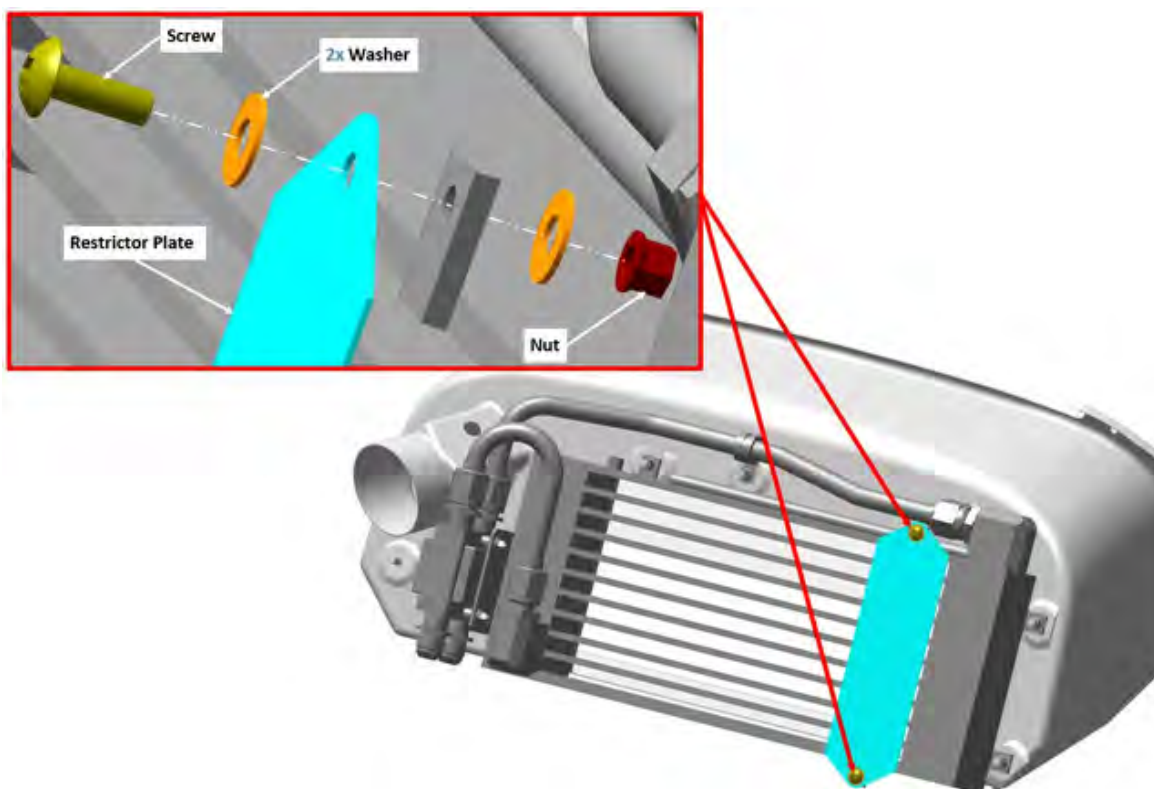
Parker O-lube

LOCTITE® 243™

---

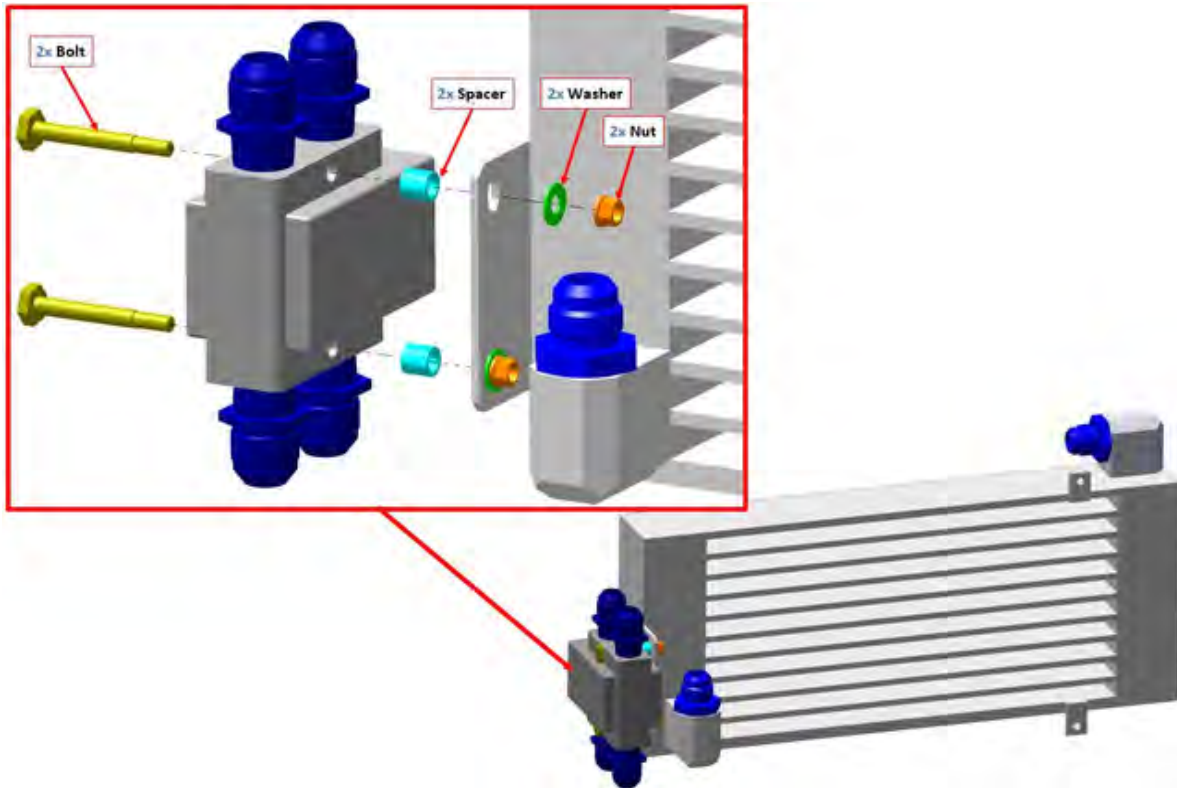
**TASK INSTRUCTIONS:**

1. Install the restrictor plate as shown. Torque fasteners to 13 in-lb<sub>f</sub>.



2. Lubricate two 9752K118 (.644 ID x .087 w, #908) Viton™ o-rings with Parker O-lube.
3. Install one o-ring on each of the two AN815-8D union fittings and thread a fitting into the oil cooler inlet and outlet so that the o-rings seal against the cooler. Torque each to 200±50 in-lb<sub>f</sub>.

4. If the P6-H-190 thermostat does not have the four AN816-8D fittings installed, install them by applying LOCTITE® 243™ to the first two threads, then torquing to finger tight then 1.5-2.5 turns additional.
5. Install the thermostat onto the oil cooler as shown. Use 3/8 and 1/4 wrenches to torque the two fasteners to 20 in-lb<sub>f</sub>.



6. Install the two aluminum oil lines between oil cooler and thermostat using a 1 inch wrench to hold the union on the cooler, a 13/16 to hold the union on the thermostat and a 7/8 wrench to turn the B-nuts. Torque the B-nuts to 200±50 in-lb<sub>f</sub>.
7. Install the P-clamp that attaches the oil cooler outlet line to the oil cooler using the 10-32 screw, nut and washer and torquing to 20 in-lb<sub>f</sub>.
8. Ensure the bulb seal on the plenum box is in good condition, then attach the oil cooler assembly to the plenum box with four MS21043-3 nuts and NAS1149C033 2R washers. Torque each nut to 20 in-lb<sub>f</sub>.
9. Connect the two hoses at the lower-aft side of the oil thermostat, using a 13/16 wrench to hold the union fitting in the thermostat and a 7/8 wrench to turn the B-nut. The lower hose runs aft to the oil pump and should be installed first. The upper hose connects to the top of the oil tank and should be installed second. Torque the B-nuts to 200±50 in-lb<sub>f</sub>.
10. Purge the oil system per the procedure in the Rotax 912iS Installation Manual.

11. Run the engine and check for good oil pressure and no leaks. Replenish the oil level as required.
12. Install the engine top cowlings. (See "Remove Engine Cowlings" on page 16-13.)

#### VERIFICATION METHOD:

The procedure is complete when the oil cooler and thermostat have been installed and the engine check shows good oil pressure and no leaks.

#### RELATED INFORMATION:

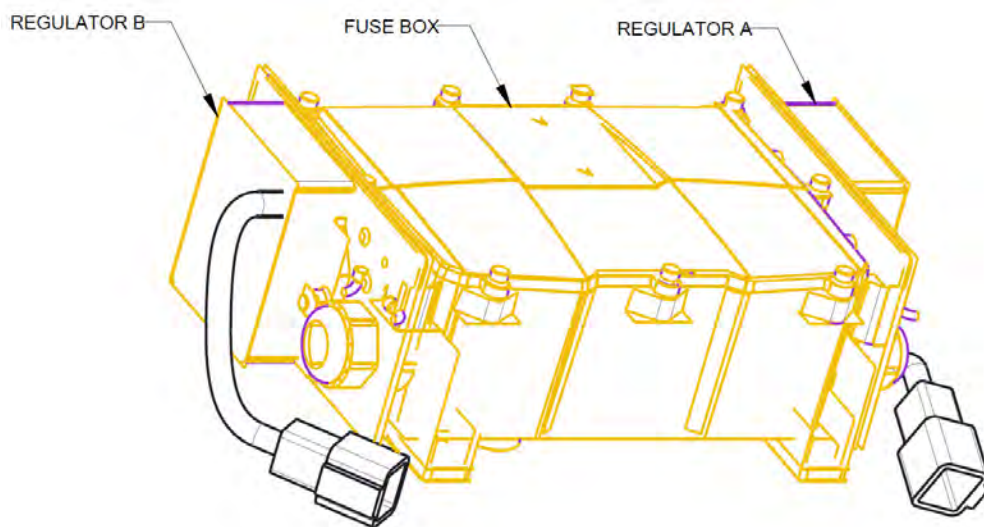
"Remove Engine Cowlings" on page 16-13

### 16.1.9 Fuse Box

#### 16.1.9.1 Fuse Box Description

The fuse box contains a fuse panel for the engine and two rectifier regulators on either side.

#### 16.1.9.2 Fuse Box Diagram/Schematic



**FIGURE 16-48**  
FUSE BOX

### 16.1.9.3 Inspection Instructions

#### 16.1.9.3.1 Inspect Regulator Wires

Use the following procedure to inspect both Regulator A and B wires near the Regulator connectors.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

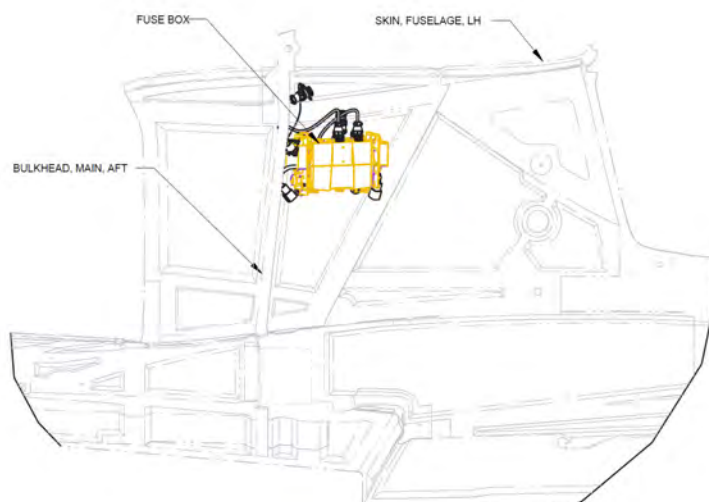
None

---

##### TASK INSTRUCTIONS:

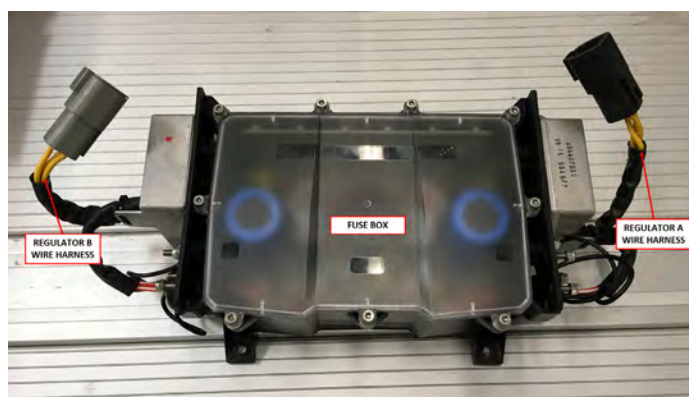
1. Remove the AFT bulkhead baggage panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 3-34.)
2. Locate the fuse box in front of the AFT bulkhead, LH as shown in Figure 16-49.





**FIGURE 16-49**  
LEFT VIEW OF FUSELAGE, FUSE BOX AND AFT BULKHEAD

3. Inspect the Regulator A and B wires near the connectors (Figure 16-50). Replace the Regulator if any signs of discoloration (browning) are apparent. (See “Remove Fuse Box and Regulators” on page 16-86.)



**FIGURE 16-50**  
FUSE BOX, REGULATOR A AND REGULATOR B

#### VERIFICATION METHOD:

The task is completed when both regulator wires installed do not show signs of discoloration.

## RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Remove Fuse Box and Regulators" on page 16-86

## 16.1.9.4 Maintenance Instructions

### 16.1.9.4.1 Remove Fuse Box and Regulators

Use the following procedure to remove the fuse box and the two regulators.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

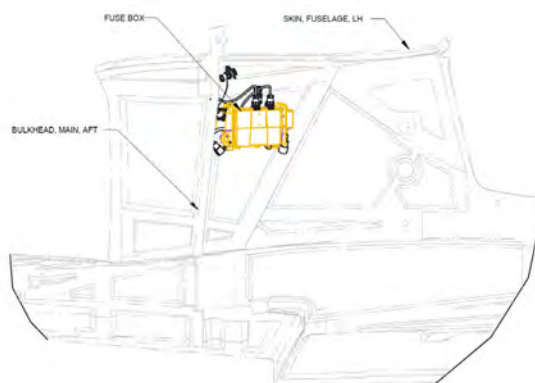
13 – Propulsion

**Consumables**

None

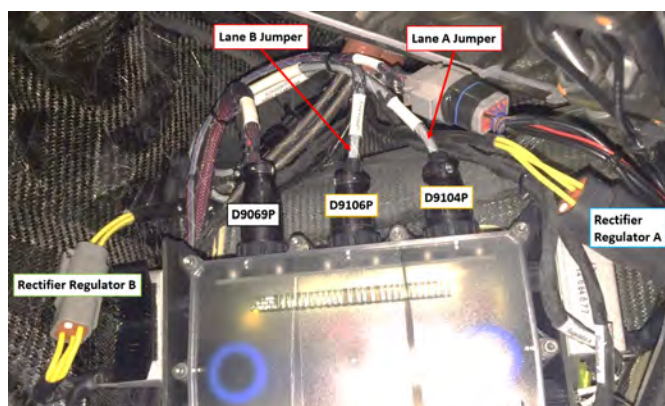
## TASK INSTRUCTIONS:

1. Remove the AFT bulkhead baggage panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)
2. Locate the fuse box forward of the AFT bulkhead, LH. See Figure 16-51.

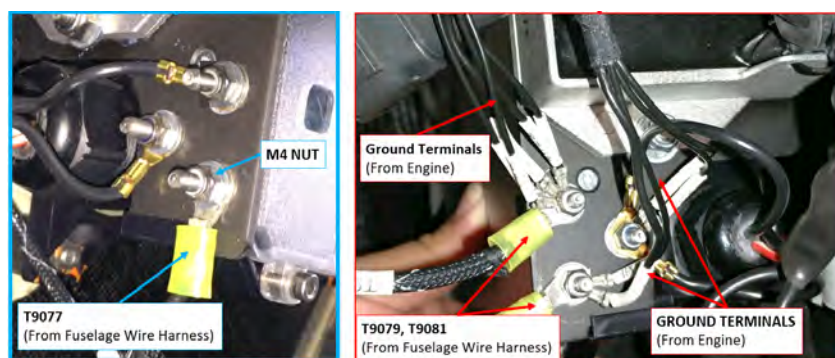


**FIGURE 16-51**  
LEFT VIEW OF FUSELAGE, FUSE BOX, AND AFT BULKHEAD

3. Disconnect the three connectors as shown in Figure 16-52. Retain O-rings.
  - Connector D9069P from fuselage wire harness
  - Connector D9106P from engine LANE B extension wire harness
  - Connector D9104P from engine LANE A extension wire harness

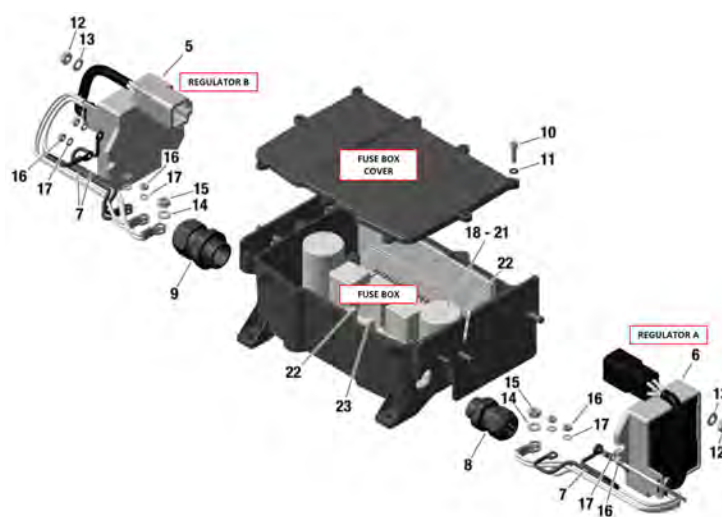


**FIGURE 16-52**  
FUSE BOX AND CONNECTORS

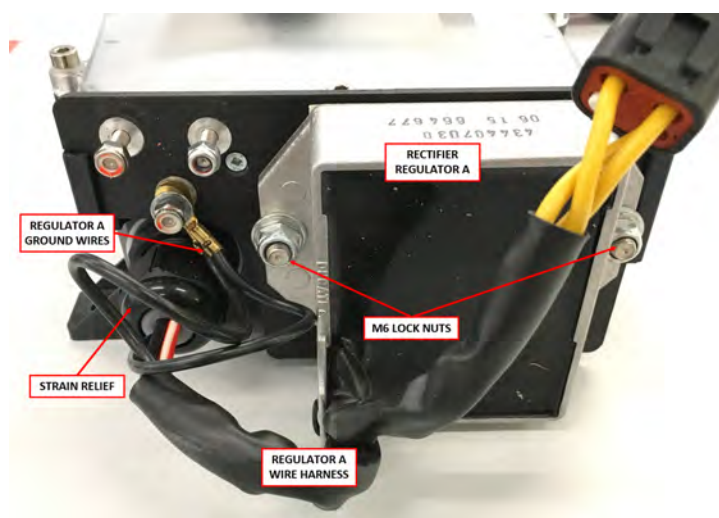


**FIGURE 16-53**  
REGULATOR B SIDE GROUND TERMINALS (LEFT). REGULATOR A SIDE GROUND TERMINALS (RIGHT).

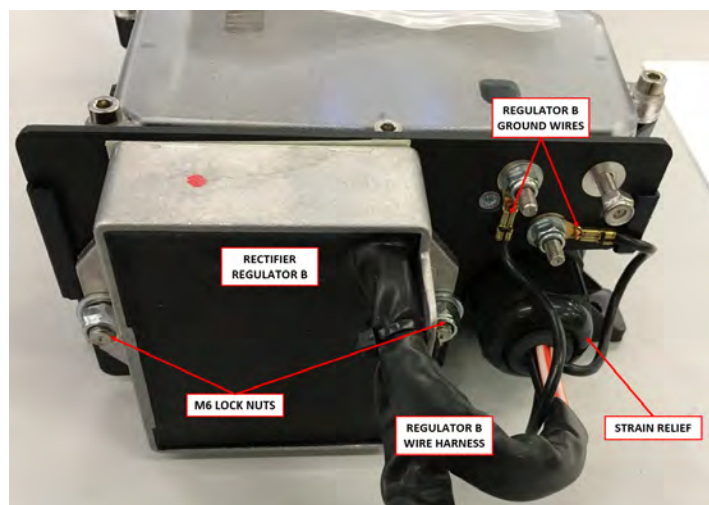
4. Disconnect Regulator A (black) and Regulator B (gray) connectors.
5. Remove the ring terminals from the ground studs on both sides of the fuse box.
  - Terminals T9077, T9079, and T9081 from fuselage wire harness
  - All ring terminals from ROTAX wire harness
6. Remove four 8-32 x 0.375 screws and washers to remove fuse box. Retain hardware for re-installation.
7. Remove the ground terminals from the ground studs. Retain hardware for re-installation. Fuse box components are labeled by number. See Figure 16-54.
  - For Regulator A, Remove one M4 lock nut (16) and washer (17) to remove two black ground wires (7) on one ground stud. See Figure 16-55.
  - For Regulator B, remove two black ground wires (7). See Figure 16-56.



**FIGURE 16-54**  
FUSE BOX EXPLODED VIEW



**FIGURE 16-55**  
REGULATOR A SIDE OF FUSE BOX



**FIGURE 16-56**  
REGULATOR B SIDE OF FUSE BOX

8. Remove two M6 lock nuts (12) and washers (13) to remove the regulator from the fuse box.
9. Remove nine M4x16 Allen screws (10) and plastic washers (11) to remove the fuse box cover.
10. Loosen the strain relief (8,9).
11. Remove the ring terminals inside the fuse box. Remove a M5 lock nut (15), M4 lock nuts (16), and washers (14,17).
12. Feed the regulator wiring out of the strain relief.
13. If required, repeat Steps 7-12 to remove the second regulator.

**VERIFICATION METHOD:**

The task is completed when the fuse box and regulators have been removed.

**RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34  
"Inspect Regulator Wires" on page 16-84

#### 16.1.9.4.2 Install Fuse Box and Regulators

Use the following task to install the fuse box and both regulators.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

664678 (ROTAX REGULATOR A)

664679 (ROTAX REGULATOR B)

LOCTITE 222 (THREADLOCKER, ACRYLIC, REMOVABLE LOW STRENGTH)

**Aircraft System and Number**

13 – Propulsion

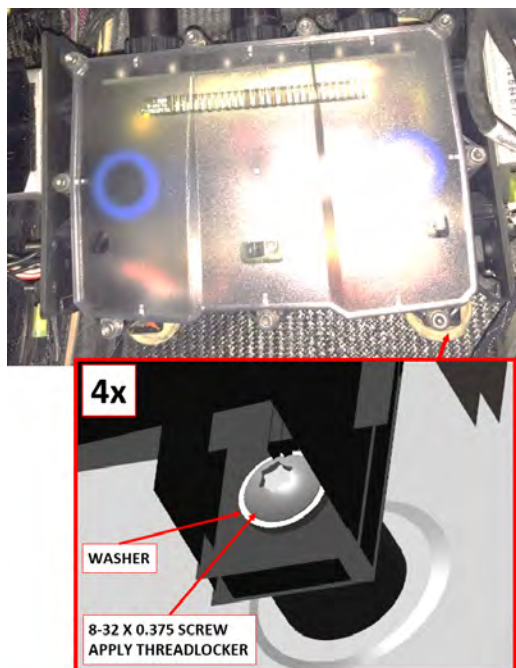
**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Feed the regulator wiring through the strain relief. Use part #8 for Regulator A (6) and #9 for Regulator B (5). See Figure 16-54.
2. Secure the terminals with M5 lock nut (15), M4 lock nuts (16), and washers (14,17). See Figure 16-54.
3. Hand tighten the strain relief.
4. Secure the fuse box cover with nine M4x16 Allen screws (10) and plastic washers (11).
5. Secure the ground terminals to the ground studs.
  - For Regulator A, use one M4 lock nuts (16) and washer (17) to secure two black ground wires (7) on one ground stud.
  - For Regulator B, use two M4 lock nuts (16) and two washers (17) to temporarily secure two black ground wires (7) on separate ground studs. Additional wires will be added in subsequent steps.
6. Secure the regulator to the fuse box with two M6 lock nuts (12) and washers (13).
7. Repeat Step 1-6 if replacing more than one regulator.
8. Secure the fuse box to the fuselage with four 8-32 x 0.375 screws and washers previously removed. Apply THREADLOCKER to screw threads. Torque to 7-9 in-lb. See Figure 16-57.



**FIGURE 16-57**  
CLOSE-UP VIEW OF FUSE BOX MOUNTING SCREWS

9. Ensure O-rings are installed and connect the three cannon connectors. See Figure 16-52.
  - Connector D9069P from fuselage wire harness
  - Connector D9106P from engine LANE B extension wire harness
  - Connector D9104P from engine LANE A extension wire harness
10. Secure the ring terminals to the ground studs with M4 nuts and washers. Do not install more than five rings on any single ground stud. See Figure 16-53.
  - Terminals T9077, T9079, and T9081 from fuselage wire harness
  - All ring terminals from ROTAX wire harness
11. Connect Regulator A (black) and Regulator B (gray) connectors.
12. Install the AFT bulkhead baggage panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 3-34.)

**VERIFICATION METHOD:**

Complete the engine test run. (See "Engine Test Run" on page 16-7.)

**RELATED INFORMATION:**

"Engine Test Run" on page 16-7

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

## 16.2 Propeller

### 16.2.1 Description

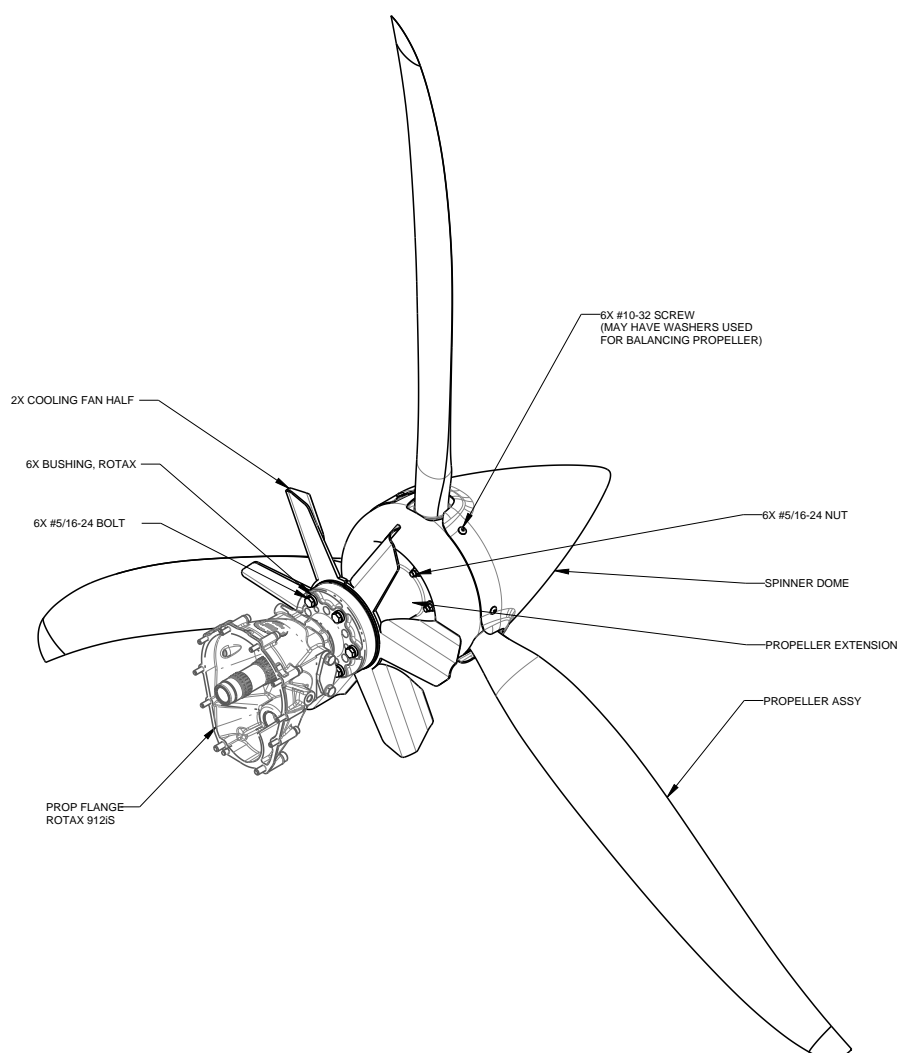
The A5 uses a Sensenich, 3-blade propeller. The blade construction is hollow carbon fiber and fiber-glass with UV protection. The blade leading edges are equipped with metal erosion shields. The two piece hub is made from anodized aluminum.

*NOTE: Though the propeller is ground adjustable, ICON does not permit propeller pitch adjustments.*

For additional details on the propeller, see Sensenich Propellers document 3B0R5.

### 16.2.2 Diagram/Schematic





**FIGURE 16-58**  
PROPELLER INSTALLATION – VIEW LOOKING AFT, LHS

## 16.2.3 Troubleshooting

### 16.2.3.1 Propeller Assembly

Instructions for assembling the Sensenich propeller prior to installation onto the Rotax engine.

#### TASK INFORMATION:

##### Type of Maintenance

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Calibrated Torque Wrench

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Assemble propeller per 'PROPELLER ASSEMBLY' task in the latest revision of Sensenich Propellers document 3B0R5.

Please contact ICON Aircraft for proper propeller pitch setting before completion of this step.

---

**VERIFICATION METHOD:**

Verify proper torquing of clamping fasteners and proper pitch setting.

**RELATED INFORMATION:**

"Propeller Installation Onto Engine" on page 16-103

"Propeller – Minor Blade or Hub Repair" on page 16-104

## **16.2.4 Propeller General Maintenance**

### **16.2.4.1 Propeller Inspection**

Instructions for the inspection of the Sensenich propeller.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Calibrated Torque Wrench

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

**TASK INSTRUCTIONS:**

1. Inspect propeller per 'ANNUAL INSPECTION' task in the latest revision of Sensenich Propellers document 3B0R5.

**VERIFICATION METHOD:**

Verify that the propeller is acceptable to each check specified and check off on the condition inspection listing.

**RELATED INFORMATION:**

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

**16.2.4.2 Balance Propeller**

Use the following procedure to balance the propeller.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Propeller Balance System (such as ProBalancer Sport or DynaVibe GX3)

**Parts Required**

10F75MTT3-50TL (SCREW, MACH TH, 6LOBE, CRES, 10-32X.750X.500)

10F87M773/50TL (SCREW, MACH TH, 6LOBE, CRES, 10-32X.875)

NAS1149C0316R (WASHER, FLAT, CRES, .188X.016, PSVT)  
NAS1149C0332R (WASHER, FLAT, CRES, .203X.032, PSVT)  
NAS1149C0363R (WASHER, FLAT, CRES, .188X.063, PSVT)  
NASM970C3 (WASHER, FENDER, CRES, .203X.875X.063)  
98370A027 (WASHER, FLAT, 18-8SS, .203X.500X.080-.099)

**Aircraft System and Number**

13 – Propulsion

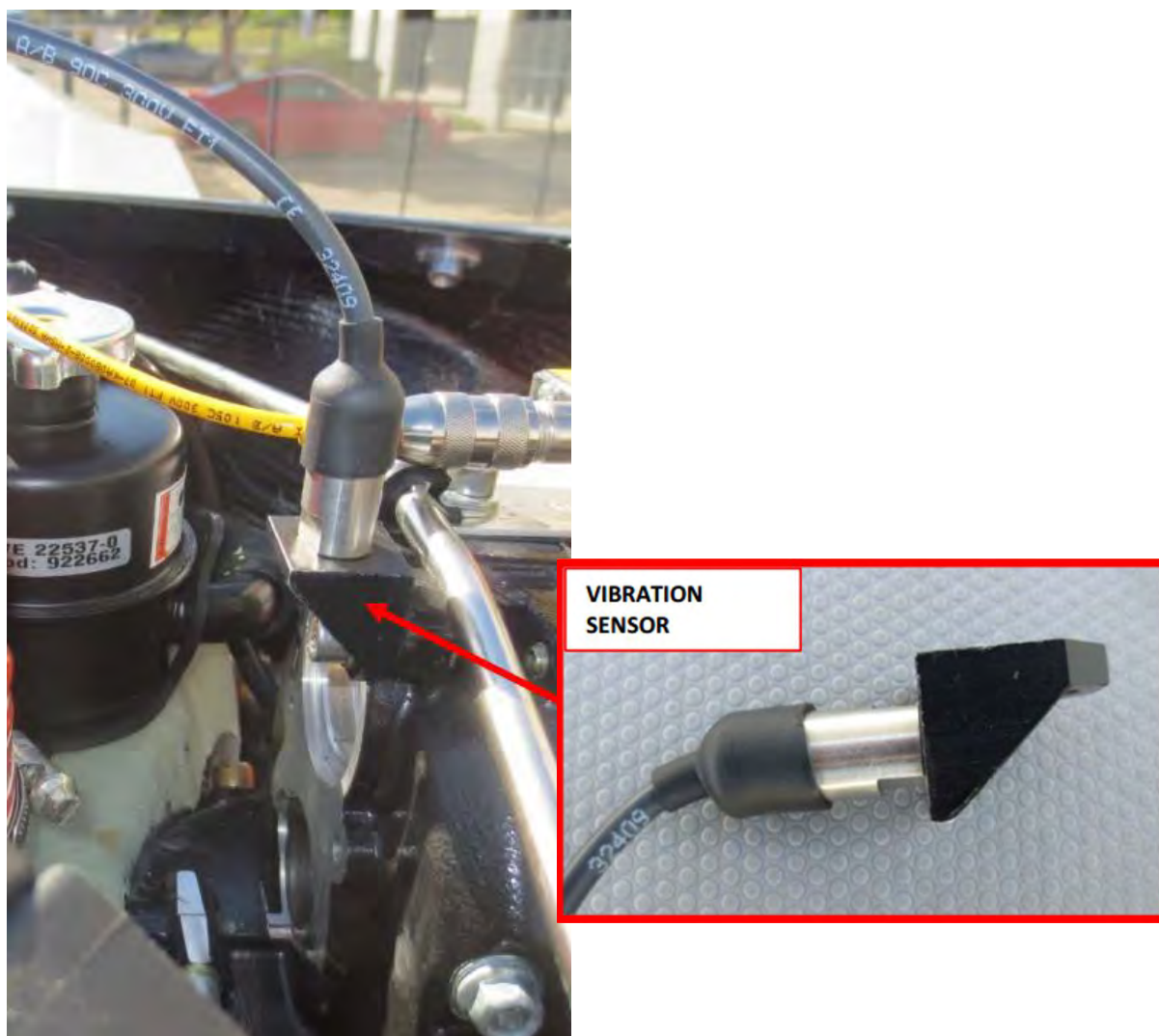
**Consumables**

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®  
SpeedTape (or equivalent aluminum pressure-sensitive tape)  
3M 7610 (TAPE, REFLECTIVE, 3M SCOTCHLITE)

---

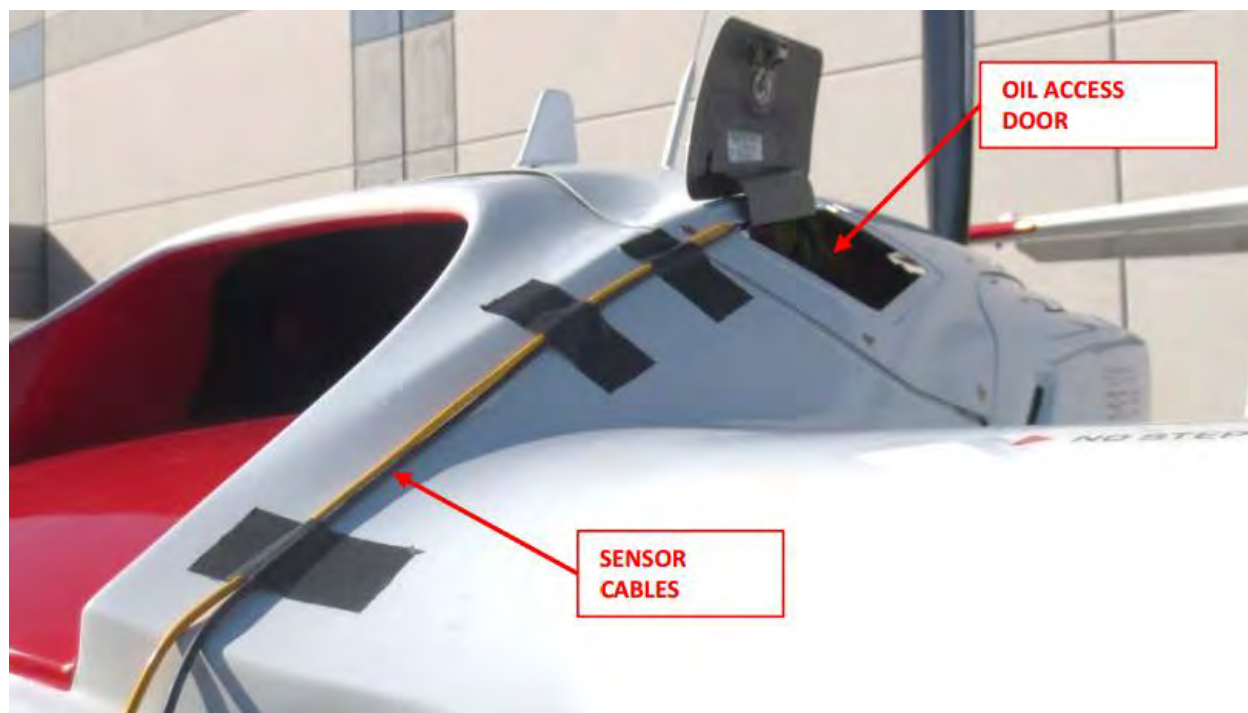
**TASK INSTRUCTIONS:**

1. Ensure spinner dome has been installed. (See “Install Spinner Dome” on page 16-106.)
2. Remove the top engine cowl only. (See “Remove Engine Cowlings” on page 16-13.)
3. Install accelerometer (vibration sensor) onto the gearbox per Propeller Balance System manual. Ensure sensor is secured tightly and oriented vertically. See Figure 16-59 as an installation example.

**FIGURE 16-59**

ACCELEROMETER INSTALLATION EXAMPLE USING AN EXISTING FUEL RAIL SCREW (A PROBALANCER SPORT ACCELEROMETER SHOWN)

4. Route accelerometer wire through the oil access door in the engine cowl, reinstall the top engine cowl, and connect antennas. (See Figure 16-60 and “Install Engine Cowlings” on page 16-16.)

**FIGURE 16-60**

ACCELEROMETER WIRE ROUTED THROUGH THE OIL ACCESS DOOR

5. Secure the optical tachometer from the Propeller Balance System to the top of the engine cowl with tape about 9 to 12 inches from the propeller. (See Figure 16-61.)

**FIGURE 16-61**

PHOTO TACHOMETER LOCATION

6. Run the optical tachometer and accelerometer wire together to the front of the aircraft. Secure with SpeedTape. (See Figure 16-60.)
7. Connect both sensors to the Propeller Balancer System unit.
8. Place TAPE, REFLECTIVE on one of the propeller blades on the FWD face of the blade. The tape must be in the line of sight of the photo tachometer. This blade is now identified as Blade 1. (See Figure 16-62.)

**CAUTION:** Turn propeller only counterclockwise looking FWD.

**NOTE:** Use a ruler to ensure the reflective tape is within the line of sight of the sensor.



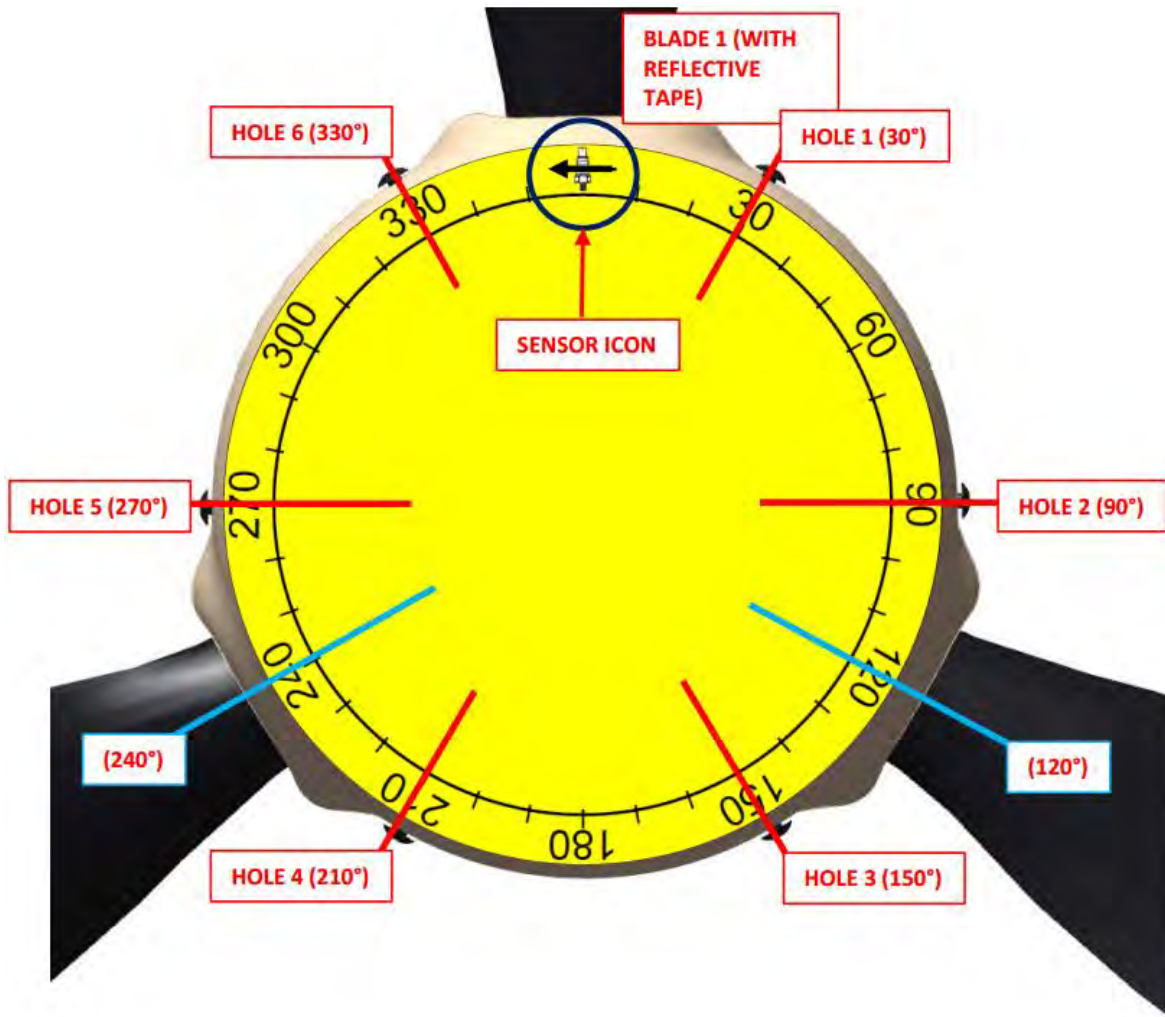
**FIGURE 16-62**  
EXAMPLE OF REFLECTIVE TAPE PLACEMENT

9. Perform propeller balance using selected Propeller Balance System and its manual. After the system runs the test, it will output a vibration magnitude in inches per second (IPS) and suggest locations for adding weight.

**NOTE:** Engine speed should be 5000-5100 RPM during balancing.



10. Rotate the propeller until the reflective tape is aligned with the photo tachometer.
11. AFT looking forward, raise the propeller protractor centered over the spinner. Align the sensor icon with the vibration sensor.
12. Use the protractor and Figure 16-63 to select one of the six holes that best matches the suggested location for installing washers.



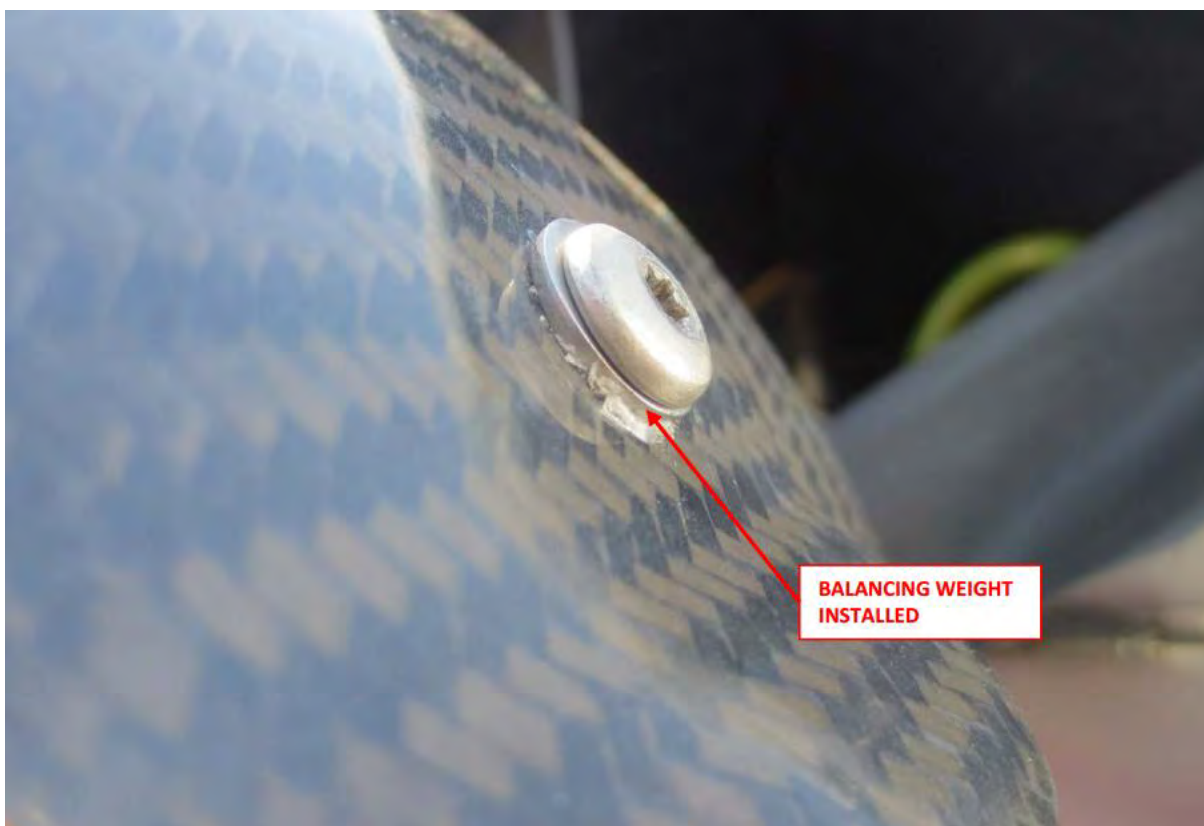
**FIGURE 16-63**

EXAMPLE OF PROPELLER PROTRACTOR ALIGNMENT AFT LOOKING FWD

13. Install a combination of washers listed in this task to achieve the suggested weight calculated by the system. No more than three washers should be added to any one location. Apply LUBRICANT to spinner dome screws and torque to 26 in-lbs with a T20 Torx driver. (See Figure 16-64.)

**NOTE:** *The original screws may be replaced with longer screws, but the additional weight must be accounted for. Ensure there are at least two threads protruding out of the nut plate.*



**FIGURE 16-64****BALANCING WEIGHT (WASHER) INSTALLED ON SPINNER DOME**

14. Repeat Steps 9 through 13 until the vibration magnitude is less than 0.08 IPS.
15. Remove all sensors, wires, and test equipment from the aircraft. Remove the top engine cowl.
16. Reinstall any screws that may have been used to mount the accelerometer.
17. Reinstall the engine cowl and connect antennas. (See "Install Engine Cowlings" on page 16-16.)

**VERIFICATION METHOD:**

Ensure the spinner dome screws are torqued to spec and the vibration magnitude is less than 0.08 IPS.

## RELATED INFORMATION:

- "Remove Spinner Dome" on page 16-105
- "Install Spinner Dome" on page 16-106
- "Remove Engine Cowlings" on page 16-13
- "Install Engine Cowlings" on page 16-16

### 16.2.4.3 Propeller Removal From Engine

Instructions for removing the Sensenich propeller onto the Rotax engine.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

## TASK INSTRUCTIONS:

1. Remove propeller per 'PROPELLER REMOVAL' task in the latest revision of Sensenich Propellers document 3B0R5.

## VERIFICATION METHOD:

Visually verify propeller is not mounted to engine.

## RELATED INFORMATION:

"Propeller – Minor Blade or Hub Repair" on page 16-104

### 16.2.4.4 Propeller Installation Onto Engine

Instructions for installing the Sensenich propeller onto the Rotax engine.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Calibrated Torque Wrench

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

## TASK INSTRUCTIONS:

1. Complete propeller assembly. (See "Propeller Assembly" on page 16-93.)
2. Install propeller per 'PROPELLER INSTALLATION ON ENGINE' task in the latest revision of Sensenich Propellers document 3B0R5.

## VERIFICATION METHOD:

Verify fastener torque and verify propeller tracking is within 3/16 inch.

## RELATED INFORMATION:

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

"Propeller Assembly" on page 16-93

"Propeller – Minor Blade or Hub Repair" on page 16-104

### 16.2.4.5 Propeller – Minor Blade or Hub Repair

Instructions for minor repairs to Sensenich propeller blades and hubs.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

A&P

**Task Specific Training Required**

No

**Special Tools Required**

Calibrated Torque Wrench

**Parts Required**

See Task Instructions

**Aircraft System and Number**

13 – Propulsion

**Consumables**

None

## TASK INSTRUCTIONS:

1. Remove propeller assembly from engine. (See "Propeller Removal From Engine" on page 16-102.)
2. Perform repair in accordance with the latest revision of Sensenich Propellers document 3B0R5.  
Verify that damage is within acceptable limits before performing repair.
  - a. Blade repairs are to be made in accordance with 'MINOR BLADE REPAIRS' procedure.
  - b. Hub repairs are to be made in accordance with 'MINOR HUB REPAIRS' procedure.
3. Reinstall propeller assembly onto the engine. (See "Propeller Installation Onto Engine" on page 16-103.)

## VERIFICATION METHOD:

Visually examine that damage and repair and within the limits specified in the Sensenich document.

## RELATED INFORMATION:

"Propeller Removal From Engine" on page 16-102

"Propeller Assembly" on page 16-93

"Propeller Installation Onto Engine" on page 16-103

## 16.2.5 Spinner Dome

### 16.2.5.1 Inspection Instructions

#### 16.2.5.1.1 Remove Spinner Dome

Use the following procedure to remove an existing spinner dome.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

13 – Propulsion

**Consumables**

Tef-Gel®

## TASK INSTRUCTIONS:

1. Mark the spinner dome orientation to the bulkhead so it can be reinstalled at the same orientation.
2. Remove the six Torx fasteners with a T20 Torx driver. Document the specific fastener and washer for each mounting hole during removal.

**NOTE:** *Each aircraft has a unique set of six Torx fasteners and washer stacks. The fasteners and washer stacks must be reinstalled in the starting condition to maintain proper propeller balance.*

3. Slide the spinner dome off in the aft direction.

#### VERIFICATION METHOD:

This task is complete when the spinner dome has been removed.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

"Balance Propeller" on page 16-95

### 16.2.5.1.2 Install Spinner Dome

Use the following task to reinstall the spinner dome.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

13 – Propulsion

##### **Consumables**

Tef-Gel®

#### TASK INSTRUCTIONS:

1. Slide dome onto backplate and line up orientation marks made during removal.
2. Install the six Torx fasteners with Tef-Gel® and washer stacks in their original unique configuration. Tighten Torx fasteners into locking nut plates and torque to 26 in/lbs with a T20 Torx driver.

*NOTE: Each aircraft has a unique set of six Torx fasteners and washer stacks. The fasteners and washer stacks must be reinstalled in the starting condition to maintain proper propeller balance.*

3. Remove all orientation marks.
- 

VERIFICATION METHOD:

The task is complete when the spinner dome has been reinstalled.

RELATED INFORMATION:

"Condition and 100-Hour Inspection – Engine and Propeller" on page 3-21

"Balance Propeller" on page 16-95





# Chapter 17

## WING

Wing Description .....	17-2
Troubleshooting .....	17-3
Water in Wing Tips .....	17-3
Wing Skins Delaminate/Voids .....	17-4
Exterior/Interior Wing Control Surfaces .....	17-5
Wing Bonded Joints, Cracks, or Delaminations .....	17-6
Wing General Maintenance .....	17-8
General Wing Inspection .....	17-8
Remove Left Wing .....	17-9
Install Left Wing .....	17-12
Remove Right Wing .....	17-13
Install Right Wing .....	17-14
Wing Hang Pin Replacement .....	17-15
Wing Trailing Edge Light Fence Replacement .....	17-16
Flaps .....	17-19
Maintenance Instructions .....	17-19
Flap Surface Removal .....	17-19
Flap Surface Installation .....	17-20
Flap Hinge Repair Procedure .....	17-22
Wing Lock .....	17-24
Maintenance Instructions .....	17-24
Wing Lock Switch Mounting Plate Removal .....	17-24
Wing Lock Switch Mounting Plate Installation .....	17-26
Wing Lock Handle Removal .....	17-28
Wing Lock Handle Installation .....	17-30
Wing Lock Mounting Plate Component Replacement .....	17-33
Wing Lock Catch Adjustment .....	17-36

## 17.1 Wing Description

Outer wing structural units, associated components and members which support the aircraft in flight. Includes: spars, skins, ribs, flap and aileron structures and counterbalances, control surface hinges; integral or mounted aircraft/wing hand-holds, tie downs and mooring cleats, mid, forward, and aft wing pins, and the landing gear position verification mirror.

## 17.2 Troubleshooting

### 17.2.1 Water in Wing Tips

In the inadvertent submersion of the wing tip in water, there is a possibility that water has passed through the tip light seals and collected in the hollow wing tip where it cannot naturally drain out. If submersion occurs or if water is suspected in the wing tip, follow the procedure below to drain the water.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Unlock the wing and pull it outward.
  2. Rotate the wing 90° leading edge down and hold the tip high. Water can then drain out of the tip and into the main part of the wing.
  3. Rotate the wing back in the opposite direction from step two (to avoid twisting in the light wiring and/or AOA or fuel drain tubing).
  4. Re-lock the wing into flying position.
- 

#### VERIFICATION METHOD:

Water removed from the tip is now free to drain from holes at the wing root.

## 17.2.2 Wing Skins Delaminate/Voids

Use the following steps in conjunction with tap tests to inspect wing skins for voids.

### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

See Manual Tap Test

**Parts Required**

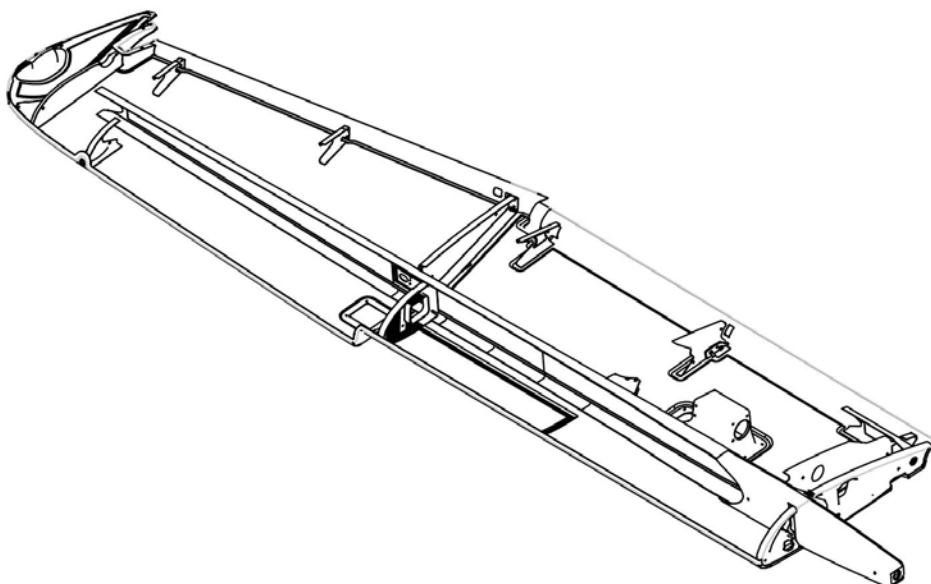
None

**Aircraft System and Number**

14 – Wing

**Consumables**

None



**FIGURE 17-1**  
INTERNAL STRUCTURAL LAYOUT OF WING

**TASK INSTRUCTIONS:**

1. Conduct a tap test on right hand wing skins in the vicinity of upper and lower bond lines for the main spar. (See "Manual Tap Test" on page 3-55.)
2. Conduct a tap test on right hand wing skins in the vicinity of upper and lower bond lines for the aft spar.
3. Conduct a tap test on right hand wing skins in the vicinity of upper and lower lines for all internal ribs.
4. Conduct a tap test on left hand wing skins in the vicinity of upper and lower bond lines for the main spar.
5. Conduct a tap test on left hand wing skins in the vicinity of upper and lower bond lines for the aft spar.
6. Conduct a tap test on left hand wing skins in the vicinity of upper and lower bond lines for all internal ribs.

**VERIFICATION METHOD:**

Confirm results are within acceptable limits.

**RELATED INFORMATION:**

"Manual Tap Test" on page 3-55

### 17.2.3 Exterior/Interior Wing Control Surfaces

The following can be used for the general inspection of the exterior and interior wing control systems.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Ensure rigging is complete on flaps. (See "Inspect Flap Rigging" on page 9-65.)
  2. Ensure rigging is complete on ailerons. (See "Inspect Roll Rigging" on page 9-17.)
  3. Ensure all threaded fittings and attachments for flight controls have at least 3 full threads visible.
  4. Verify all threaded fasteners for flight controls are secure.
  5. Check flight control surfaces for axial and radial hinge play.
- 

#### VERIFICATION METHOD:

Ensure each step above is completed to verify wing control surfaces.

#### RELATED INFORMATION:

"Inspect Roll Rigging" on page 9-17

"Inspect Flap Rigging" on page 9-65

### 17.2.4 Wing Bonded Joints, Cracks, or Delaminations

The following is to be used for inspecting the wing bonded joints, cracks, or delaminations.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

Borescope

##### **Parts Required**

None

##### **Aircraft System and Number**

14 – Wing

##### **Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Remove all wing access panels (4).
  2. Fold wings to expose wing fold tube.
  3. Do a visual inspection through the wing fold ribs and access panels.
  4. Using a borescope, flashlight, and viewing mirror as appropriate, visually inspect all accessible bond lines for cracks or damage.
- 

**VERIFICATION METHOD:**

Any cracks found should be investigation further. Do not fly the airplane and contact ICON for further instructions.

## 17.3 Wing General Maintenance

### 17.3.1 General Wing Inspection

The following should be used to inspect the left and right wings of the A5.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Inspect position light attached, lens condition and seal integrity.
2. Fold wings and verify the function of the wing fold sockets and release buttons.
3. Inspect fuel vent for obstruction and condition.
4. Visually inspect all metallic fittings in wing fold interface for corrosion and damage.
5. Visually inspect all metallic hinges for corrosion and damage.
6. Visually inspect placards for damage, peeling, fading and legibility.
7. Check bond integrity of vortex generators on wing skin. Ensure all 17 pair per wing are installed.
8. Count the wing vortex generators to confirm all are present. There should be 34 pair (17 pair per side).



9. Check bond integrity of stall strips on leading edge of wing skin. Ensure 1 is installed per wing.
  10. Check bond integrity of flap root fences and paint condition in the vicinity of lower surface of center wing skin.
- 

**VERIFICATION METHOD:**

Completing the steps above with everything checking as acceptable accomplishes the general wing inspection.

### 17.3.2 Remove Left Wing

Instructions for taking the left wing off of the airplane.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

A second person and a ladder are needed to hold the wing.

**Parts Required**

None

**Aircraft System and Number**

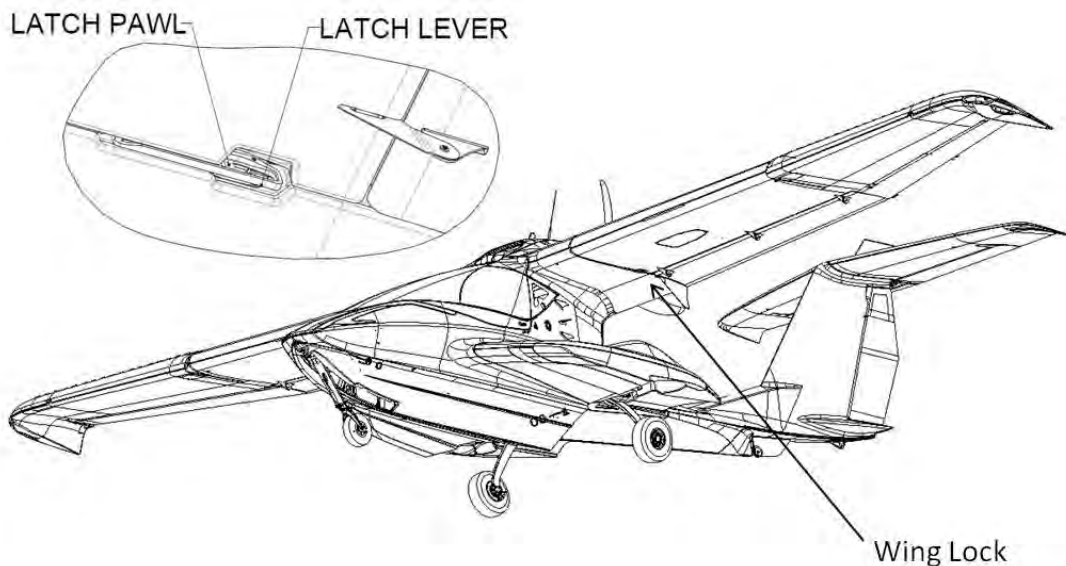
14 – Wing

**Consumables**

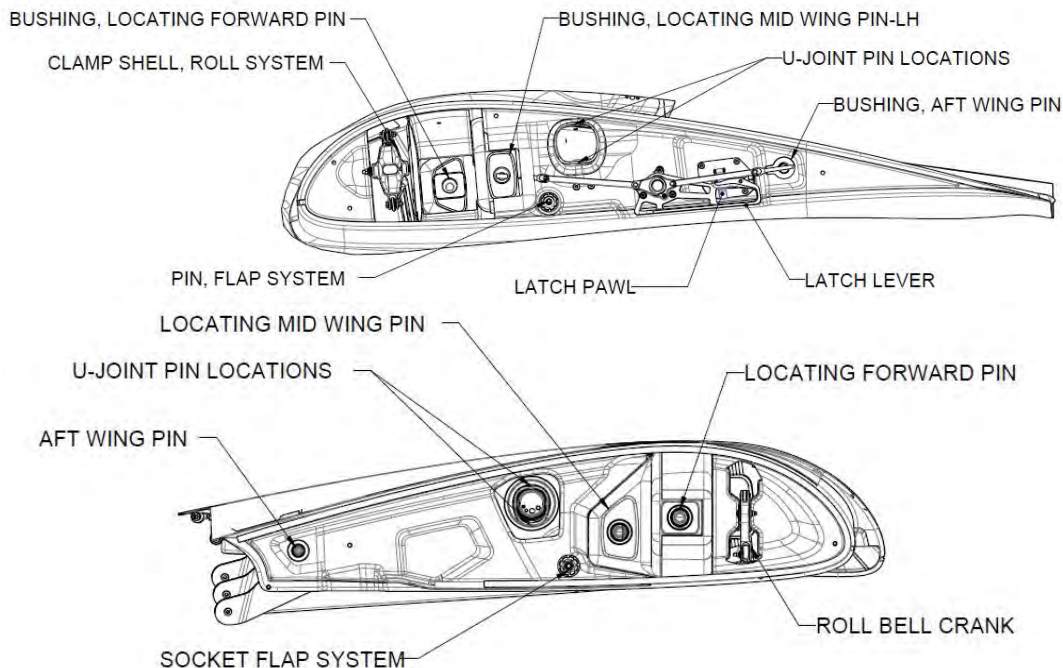
None

## TASK INSTRUCTIONS:

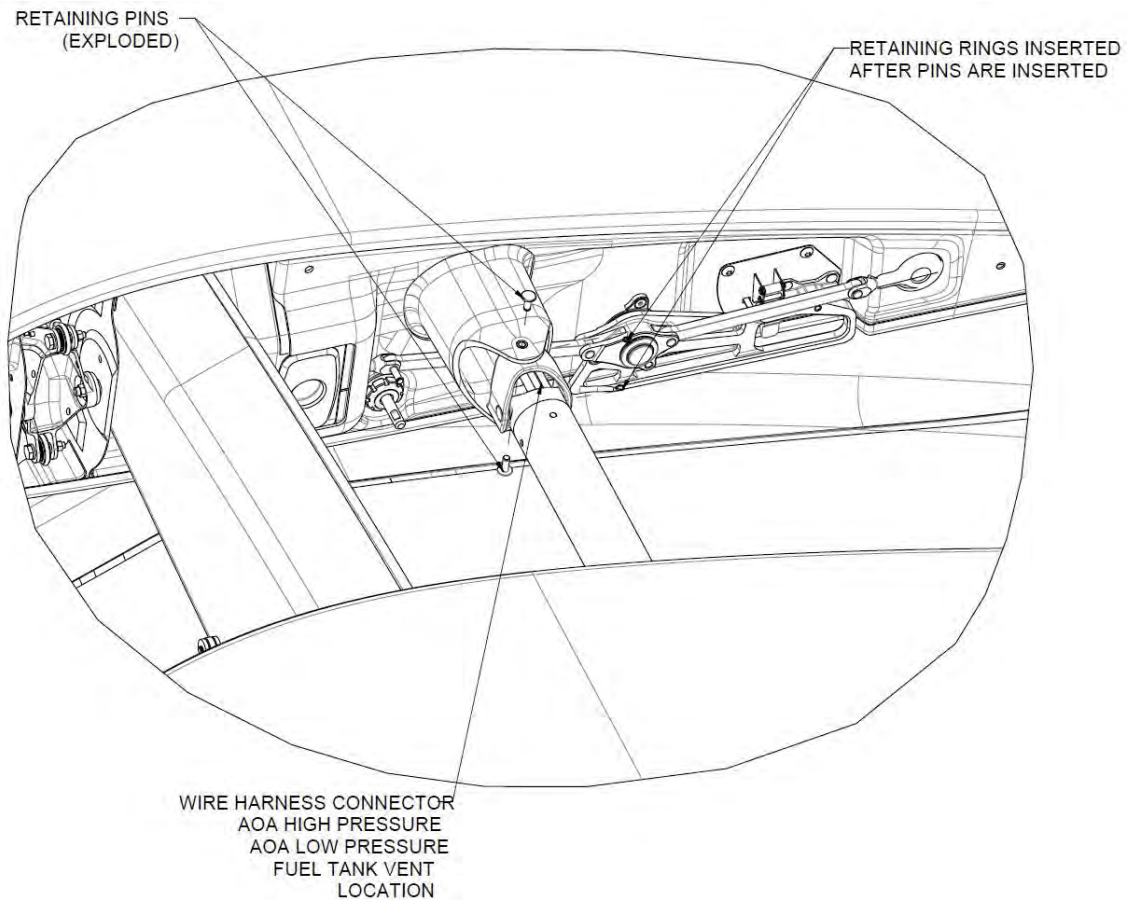
1. Unlock the wing locking mechanism by pressing the latch pawl on the wing lock switch, then simultaneously pull the wing handle lock down all the way to unlock both locking pins.



2. Pull the wing outward about a foot and rest securely on a ladder. Note the interlocking pins, the flap system interconnect piston, and the ailerons interlocking clam shell system.

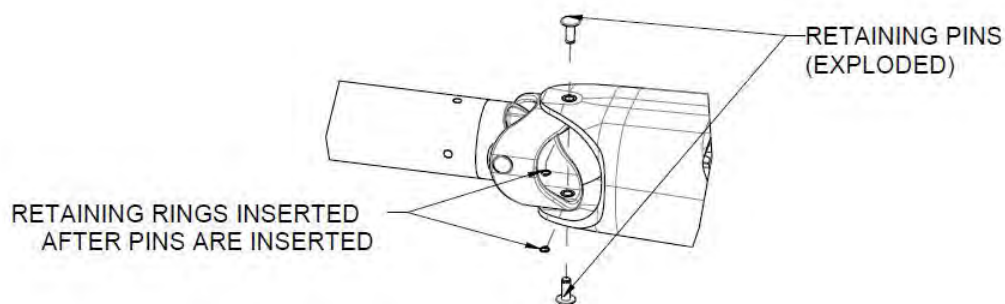


3. Locate the avionics tubes, electrical harness for lights, and fuel vent tube inside the hinge.



4. Disconnect the electrical connector from the protruding pigtail.
5. Disconnect the AOA high pressure tube and low pressure tube on one side of the push-on tube connectors.
6. Disconnect the fuel vent tube on one side of the push-on tube connector.

7. Located in the rotating hinge U-joint connector are the U-joint pins. Remove the retaining rings and remove the U-joint pins.



8. With the assistance of a second person, remove the entire wing assembly off the fuselage.

#### VERIFICATION METHOD:

When wing is successfully removed from the airplane, this task is complete.

### 17.3.3 Install Left Wing

Instructions for installing the left wing onto the airplane.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

A second person and a ladder are needed to hold the wing.

##### Parts Required

2X – wing U-joint retaining ring – P/N 98410A110

##### Aircraft System and Number

14 – Wing

##### Consumables

None

---

TASK INSTRUCTIONS:

1. Unlock wing locking mechanism by pressing latch pawl on the wing lock switch, and then simultaneously pull the wing handle lock down all the way to unlock both locking pins.
2. Lift the wing in place and align the rotating hinge U-joint connector to the U-joint pins mounting holes. Verify the face of the U-joint that is further from the wing fold tube (larger gap) is oriented down. If this is not in the proper orientation, the wing will not seat into center wing.
3. Install upper and lower U-joint pins with clips on inside diameter of U-joint.
4. Slide the wing inward and leave about a foot separation, and rest the wing tip securely on a ladder.
5. Secure U-joint with retaining rings.

**CAUTION:** Utilize new retaining rings every time reassembly takes place.

6. Locate the avionics tubes, electrical harness for lights, and the fuel vent tube inside the hinge.
7. Connect the electrical connector from the protruding pigtail.
8. Connect the AOA tubes high pressure tube and low pressure tube on one side of the push-on tube connectors.

**CAUTION:** Be sure to connect the high pressure tube and low pressure in appropriate connectors for the avionics to function properly.

9. Connect the fuel vent tube on one side of the push-on tube connector.
  10. Align the mid-wing pin to the mid-wing pin bushing.
  11. Slide the wing inward ensuring the aileron roll bell crank and the roll clamshell align. Also ensure flap pin and flap pin socket aligns.
  12. Slide until flush.
  13. Rotate latch lever upward and listen for the snap sound of the latch pawl. Pull gently downward to ensure lever is securely locked.
- 

## VERIFICATION METHOD:

Carefully inspect wing fold joint to ensure proper latching and security.

**17.3.4 Remove Right Wing**

Instructions for taking the right wing off of the airplane.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

A second person and a ladder are needed to hold the wing.

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

None

See the instructions for removal of the left wing for helpful illustrations. The left wing has more systems (AOA, fuel tank vent) passing through the universal joint hinge.

**TASK INSTRUCTIONS:**

1. Unlock the wing locking mechanism by pressing the latch pawl on the wing lock switch, the simultaneously pull the wing handle lock down all the way to unlock both locking pins.
2. Pull the wing outward about a foot and rest securely on a ladder.
3. Locate the rotating pins in the rotating hinge joint and then remove the locking clips and pins.
4. Located inside the U-joint hinge is the electrical harness. Disconnect the electrical connector from the protruding pigtail.
5. With the second person, remove the entire wing assembly from the fuselage.

**VERIFICATION METHOD:**

When wing is successfully removed from the airplane, this task is complete.

**17.3.5 Install Right Wing**

Instructions for installing the right wing onto the airplane.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

A second person and a ladder are needed to hold the wing.

**Parts Required**

2X – wing U-joint retaining ring – P/N 98410A110

**Aircraft System and Number**

14 – Wing

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Unlock wing locking mechanism by pressing latch pawl on the wing lock switch, and then simultaneously pull the wing handle lock down all the way to unlock both locking pins.
  2. Lift the wing in place and align the rotating hinge U-joint connector to the U-joint pins mounting holes. Verify the face of the U-joint that is further from the wing fold tube (larger gap) is oriented down. If this is not in the proper orientation, the wing will not seat into center wing.
  3. Install upper and lower U-joint pins with clips on inside diameter of U-joint.
  4. Slide the wing inward and leave about a foot separation, and rest the wing tip securely on a ladder.
  5. Secure U-joint with retaining rings.  
**CAUTION:** Utilize new retaining rings every time reassembly takes place.
  6. Locate the electrical harness for lights.
  7. Connect the electrical connector from the protruding pigtail.
  8. Align the mid-wing pin to the mid-wing pin bushing.
  9. Slide the wing inward ensuring the aileron roll bell crank and the roll clamshell align. Also ensure flap pin and flap pin socket aligns.
  10. Slide until flush.
  11. Rotate latch lever upward and listen for the snap sound of the latch pawl. Pull gently downward to ensure lever is securely locked.
- 

**VERIFICATION METHOD:**

Carefully inspect wing fold joint to ensure proper latching and security.

### 17.3.6 Wing Hang Pin Replacement

Use the following procedure to replace the wing hang pin.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

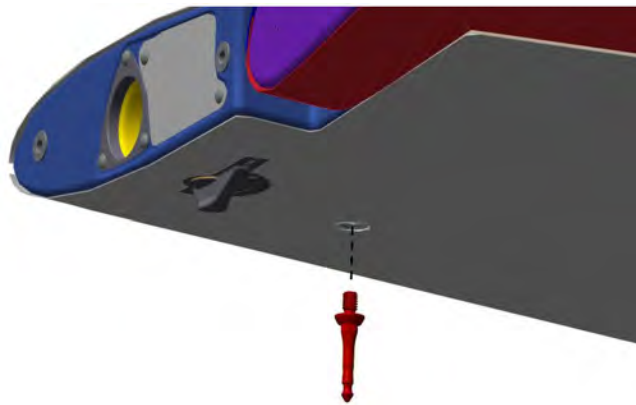
**Consumables**

LOCTITE® 243™

---

**TASK INSTRUCTIONS:**

1. Use a 5/16 wrench to remove the ICA010126 wing hang pin from its receptacle in the horizontal tail, turning it like a bolt.
2. Apply LOCTITE® 243™ to the threads of the replacement pin and thread it into the receptacle in the horizontal tail. Torque to 105 in-lb<sub>f</sub>.

**VERIFICATION METHOD:**

The procedure is finished when all the steps have been completed.

### 17.3.7 Wing Trailing Edge Light Fence Replacement

Use the following procedure to replace the trailing edge light fence.

**TASK INFORMATION:****Type of Maintenance**



Line

### Level of Certification

LSA-RM

### Task Specific Training Required

No

### Special Tools Required

None

### Parts Required

None

### Aircraft System and Number

14 – Wing

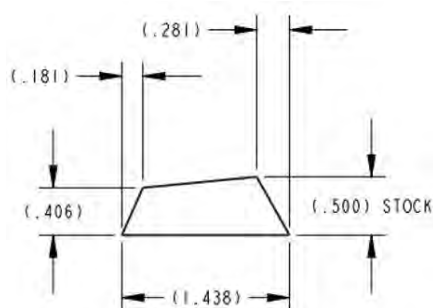
### Consumables

None

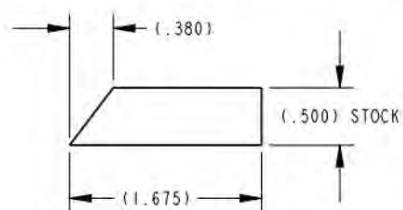
**NOTE:** Throughout this procedure, apply the methods of the general VHB tape procedure (See Related Information).

### TASK INSTRUCTIONS:

1. Remove the fence and adhesive tape residue from the trailing edge light.
2. Trim 70006436714 black VHB tape to the appropriate flat pattern. The LH patterns are shown, use mirror image for RH patterns.

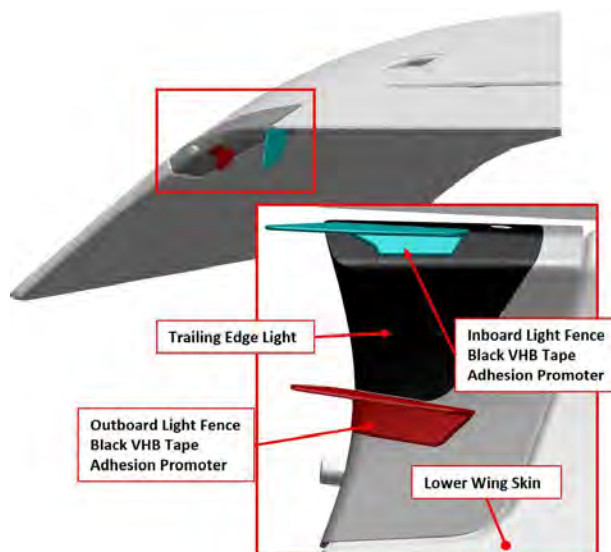


TAPE FLAT PATTERN - INBOARD



TAPE FLAT PATTERN - OUTBOARD

3. Apply VHB tape in the channel of the fence so that tape lies entirely inside of channel.
4. Install the fence.

**VERIFICATION METHOD:**

The procedure is complete when the trailing edge light fence is installed.

**RELATED INFORMATION:**

"Use of VHB Tape for Installations and Repairs" on page 4-12

## 17.4 Flaps

### 17.4.1 Maintenance Instructions

#### 17.4.1.1 Flap Surface Removal

Use the following procedure to remove the flap surface from the wing.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

None

*NOTE: There are two styles of flap hinge pin. One style retains the pin with snap rings and the other style uses cotter pins. Remove the flap pins by removing snap rings (XSC-113) or cotter pins (MS24665-151) as needed.*

*NOTE: Avoid operating the flap system with flaps removed. The free end of the actuation pushrods could snag and cause damage.*

---

##### TASK INSTRUCTIONS:

1. Extend the flaps to 30°.
2. Support the flap with a cradle from below or with a helper.
3. Remove the AN4C13A bolt, MS21043-4 nut, and two NAS1149C0432R washers that attach the flap pushrod to the flap surface of the affected flap.

4. Remove the hinge pins and 95630A460PTFE washers from all three hinges of the affected flap.
  5. Remove the flap from the wing.
- 

**VERIFICATION METHOD:**

The procedure is complete when the flap has been removed from the wing.

**RELATED INFORMATION:**

"Flap Hinge Repair Procedure" on page 17-22

### 17.4.1.2 Flap Surface Installation

Use the following procedure to install the flap surface on the wing.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

None

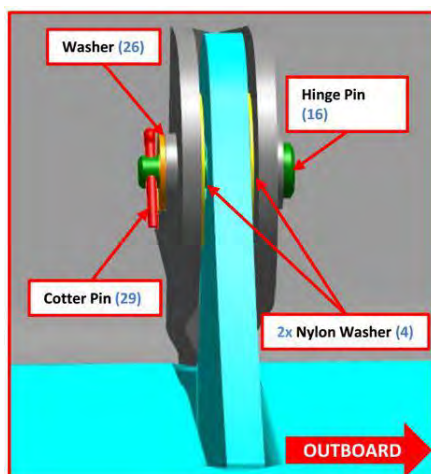
*NOTE: On new installations, the version of hinge pin that is retained with a cotter pin should be used.*

---

**TASK INSTRUCTIONS:**

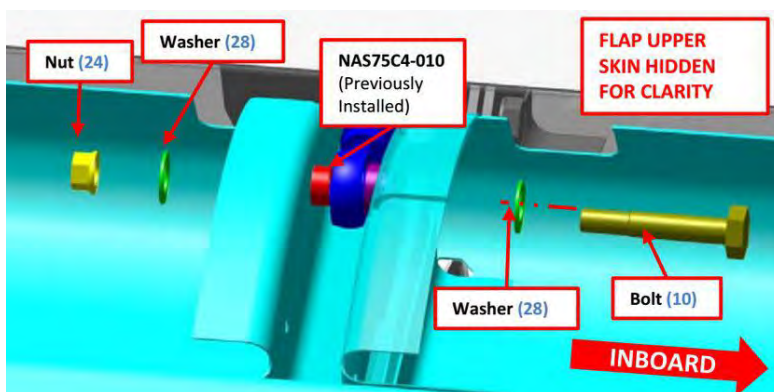
1. Verify that the flaps are still commanded to the 30° position.
2. Support the flap with a cradle from below or with a helper.
3. Align the hinges flap to wing and install the washers and pins at each of the three hinge locations per flap as shown in Figure 17-2. To minimize the gap between hinge elements, use 95630A460PTFE washers as needed but with a minimum of one on each side of the flap hinge

tang. Typically, there will be two PTFE washers used in each gap at the center hinge (center hinge is shown in Figure 17-2). An NAS1149C0332R washer should be used under each cotter pin.



**FIGURE 17-2**  
FLAP SURFACE

4. Install the AN4C13A bolt, MS21043-4 nut and two NAS1149C0432R washers that attach the flap pushrod to the flap surface of the affected flap (see Figure 17-3).



**FIGURE 17-3**  
FLAP SURFACE

#### VERIFICATION METHOD:

Verify correct flap operation and rigging. (See “Inspect Flap Rigging” on page 9-65.)

## RELATED INFORMATION:

"Inspect Flap Rigging" on page 9-65

"Flap Hinge Repair Procedure" on page 17-22

### 17.4.1.3 Flap Hinge Repair Procedure

If excess free play is identified upon inspection of the flap hinges, perform the following procedure.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

LOCTITE® EA 9394

## TASK INSTRUCTIONS:

1. There are two styles of flap hinge pin. One style retains the pin with snap rings and the other style uses cotter pins. Remove affected flap pins by removing snap rings (XSC-113) or cotter pins as needed.
2. Remove and inspect pins by measuring the minimum pin diameter with a micrometer or caliper. If they are less than .0175", are loose or appear worn, replace.

3. Measure the inner diameter of the flap hinge and wing hinge bushings, using a gage pin or caliper. If they are greater than .0195" replace as necessary using the following steps:
    - a. Extend the flaps to 30°.
    - b. Remove the AN4C13A bolt, MS21043-4 nut and two NAS1149C0432R washers that attach the flap pushrod to the flap surface of the affected flap.
    - c. Remove the hinge pins and 95630A460 PTFE washers from all three hinges of the affected flap.
    - d. Remove the flap from the wing. (See "Flap Surface Removal" on page 17-19.)
    - e. Press out the damaged bushing(s).
    - f. Prepare the new bushings by first soaking in isopropyl alcohol, then lightly scuffing bonding surfaces with 80 grip aluminum oxide paper.
    - g. Mix a suitable quantity of LOCTITE® EA 9394 epoxy adhesive per manufacturer's instructions.
    - h. Apply a coat of adhesive to both mating surface and press the new bushing into place.
    - i. Wipe off any excess adhesive.
    - j. Allow the adhesive to cure.
    - k. Reinstall the flap. (See "Flap Surface Installation" on page 17-20.)
  4. Reinstall flap pins using new snap rings or cotter pins.
- 

#### VERIFICATION METHOD:

Record results and check that wear is within these limits.

- Maximum system free play = .020" radially
- Minimum flap pin diameter = .175"
- Maximum flap bushing diameter (wing hinges and flap hinges) = .195"

Inspect the flap system for proper function. (See "Inspect Flap Rigging" on page 9-65.)

#### RELATED INFORMATION:

"Inspect Flap Rigging" on page 9-65

"Flap Surface Removal" on page 17-19

"Flap Surface Installation" on page 17-20

## 17.5 Wing Lock

### 17.5.1 Maintenance Instructions

#### 17.5.1.1 Wing Lock Switch Mounting Plate Removal

Use the following procedure to remove the wing lock switch mounting plate.

##### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

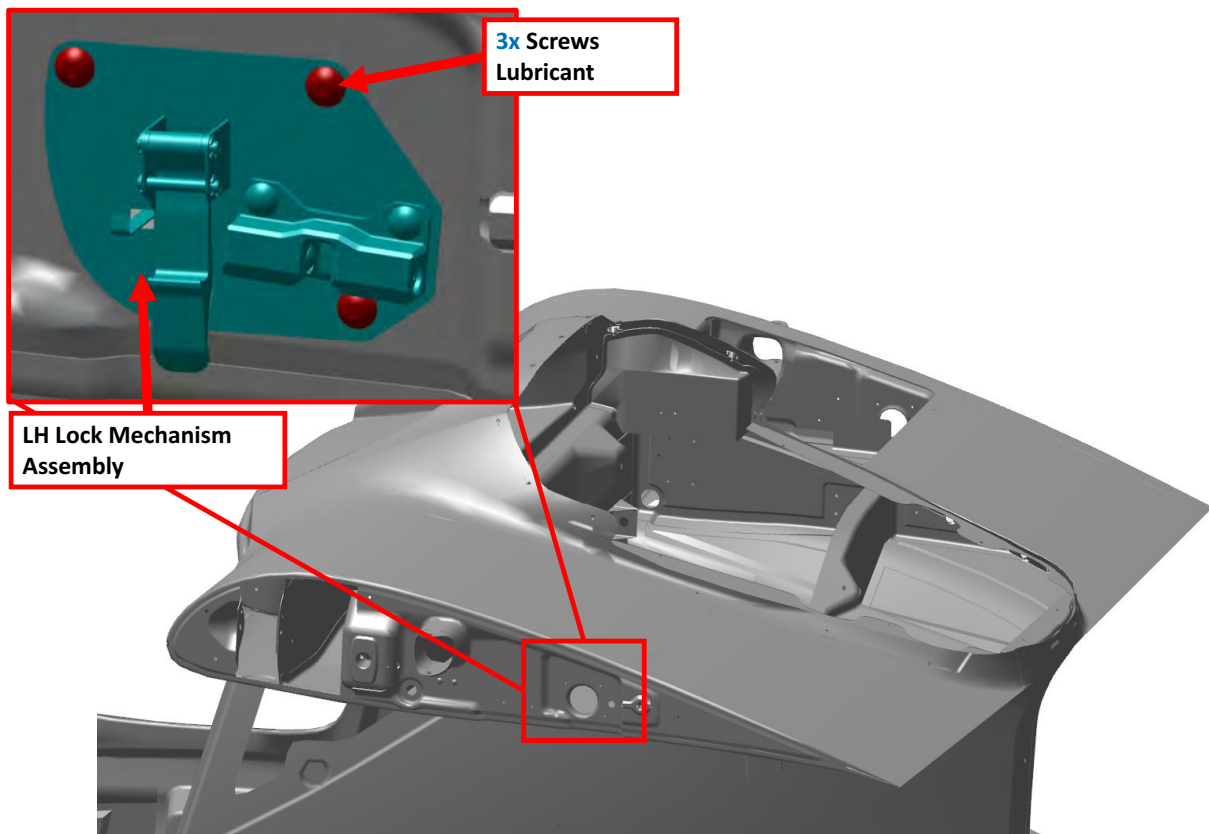
None

---

##### TASK INSTRUCTIONS:

1. Remove the wing lock handle using the procedure. (See “Wing Lock Handle Removal” on page 17-28.)





**FIGURE 17-4**  
REMOVE WING LOCK SWITCH PLATE

2. Use a T15 Torx drive to remove the three 8-32 truss-head screws attaching the wing lock switch plate assembly to the fuselage BL38 Rib. See Figure 17-4.
3. Pull the plate assembly out of the BL38 Rib and disconnect it from the aircraft electrical harness

**VERIFICATION METHOD:**

The procedure is complete when the wing lock switch mounting plate has been removed.

## RELATED INFORMATION:

"Wing Lock Handle Removal" on page 17-28

"Wing Lock Mounting Plate Component Replacement" on page 17-33

### 17.5.1.2 Wing Lock Switch Mounting Plate Installation

Use the following procedure to install the wing lock switch mounting plate.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

ICA008395 (PIN, WING LOCK SWITCH)  
 ICA008397 (PIN, ACTUATION, WING LOCK SWITCH)  
 ICA008701 (CATCH, WING LOCK HANDLE)  
 ICA009633 (SWITCH, LIMIT, WING LOCK LEVER, LH)  
 ICA009635 (SWITCH, LIMIT, WING LOCK PAWL, LH)  
 ICA010840 (EXTENDED LATCH PAWL, WING LOCK SWITCH)  
 ICA013017 (MOUNTING PLATE, WING LOCK SWITCH)  
 ICA013018 (LATCH MOUNT, WING LOCK SWITCH)  
 ICA013020 (SENSOR MOUNT, WING LOCK SWITCH, LH)  
 6C37MTT3 (SCREW, MACH TRH, 6LOBE, CRES, 6-32X.375)  
 92949A118 (SCREW, BUTTON SHCS, SS, 4-40X1.250)  
 9435K520 (SPRING, COMPRESSION, CRES, .300X.875X2.61LB/IN)  
 95630A234 (WASHER, FLAT, PTFE, #4X.030)  
 98019A309 (WASHER, FLAT, SS, #4X.250X.020-.030)  
 98408A116 (RETAINING RING, SIDE-MOUNT EXT, CRES, .125X.020)  
 98408A120 (RETAINING RING, SIDE-MOUNT EXT, CRES, .250X.029)  
 MS21043-04 (NUT, SLFLKG, RDC HEX, CRES, 4-40)  
 MS21043-06 (NUT, SLFLKG, RDC HEX, CRES, 6-32)

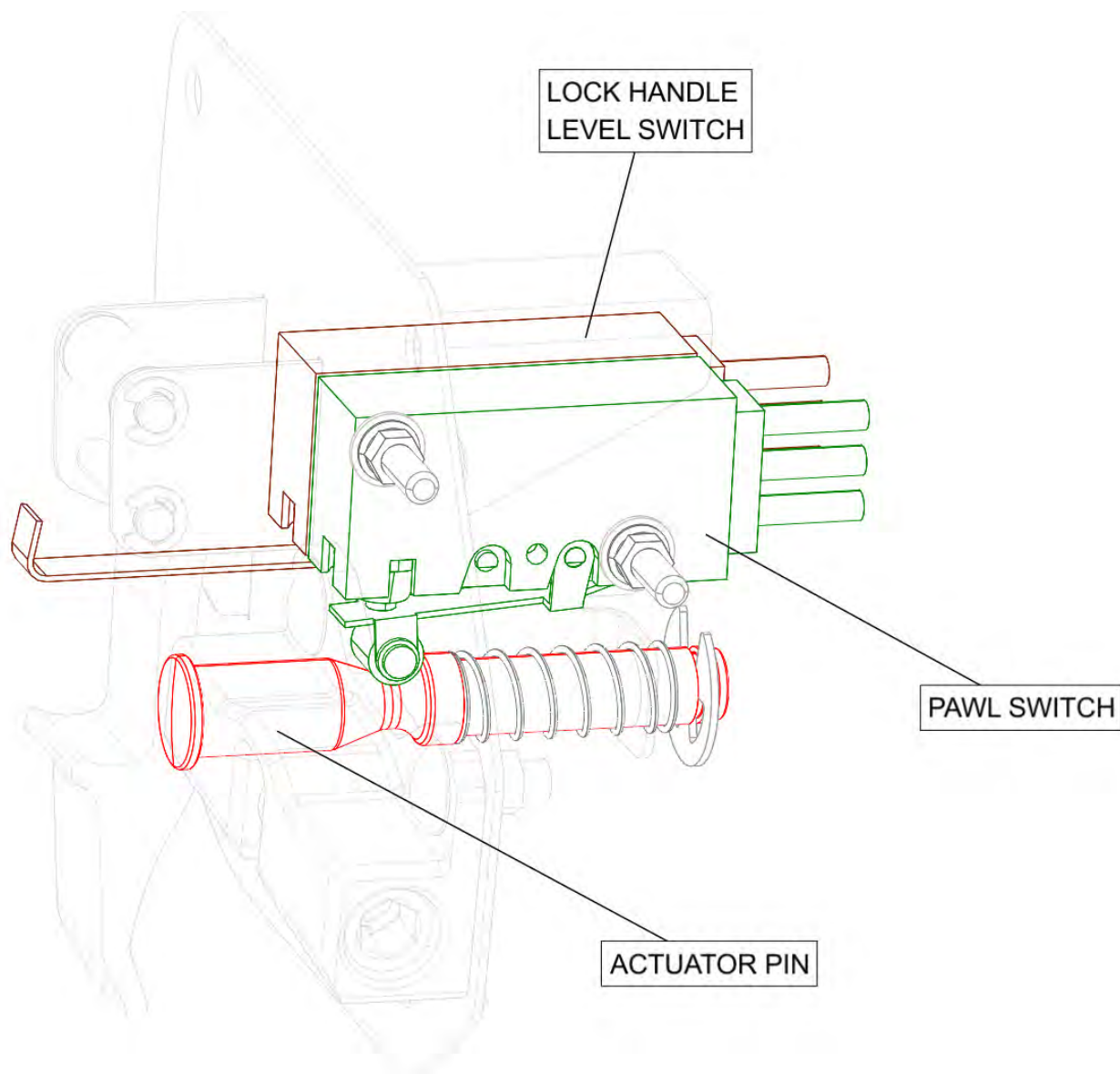
**Aircraft System and Number**

14 – Wing

**Consumables**

76475A52 (TAPE, PTFE, .500X.0115)

ICA012078 (LUBRICANT, GENERAL PURPOSE)



**FIGURE 17-5**  
LH WING LOCK SWITCH MECHANISM (RH OPPOSITE)

**TASK INSTRUCTIONS:**

1. The position of the locking pawl is sensed by a micro switch that rides on an hourglass-shaped pin pushed by the pawl. Push this pin in against its spring and verify that it moves freely. As the pin is pushed, two clicks from the switch should be heard as the switch roller follows the shape of the pin. See Figure 17-5.
2. The other micro switch senses the position of the lock handle. Gently deflect it, verify free motion and an audible click.

3. Further inspect the wing lock switch mounting plate assembly and replace any unserviceable parts. Be certain that the structure of the plate is not bent or damaged.
4. Connect the two micro switch connectors to the aircraft electrical harness.
  - a. LH lock mechanism: D9021P connects to D9021I. D9022P connects to D9022I.
  - b. RH lock mechanism: D9065P connects to D9065I. D9066P connects to D9066I.
5. Align the mounting holes and install the mounting plate assembly on the fuselage BL38 Rib with three 8-32 8C50MTT3 truss-head screws, torquing them each to 13 in-lb with a T15 Torx driver.
6. Install the wing fold lock handle. (See "Wing Lock Handle Installation" on page 17-30.)

RELATED INFORMATION:

"Wing Lock Handle Installation" on page 17-30

"Wing Lock Mounting Plate Component Replacement" on page 17-33

### 17.5.1.3 Wing Lock Handle Removal

Use the following procedure to remove the wing lock handle.

TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

None

TASK INSTRUCTIONS:

1. Fold wing. (See "Wing Fold Procedure" on page 18-3.)
2. Unlatch the wing from the horizontal tail and pull it fully aft. Support it in this position by hanging the wing tip with straps from an engine hoist or other suitable arrangement.

3. Use a T15 Torx drive to remove the three 8-32 flush-head screws that attach the wing lock handle mounting boss to the fuselage BL38 Rib.
4. Remove the wing lock handle and attached components from the fuselage BL38 Rib by rotating the handle far enough to withdraw the wing lock cross pins from the pin sockets.
5. Proceed with the following further disassembly steps as necessary:
  - a. There are two link rods attached to the lock handle with a total of four ICA008144 pivot pins and 98410A110 retaining rings. Remove each of these, making note of the pin orientation.
  - b. Remove the ICA011333 retaining ring from the shaft of the mounting boss (see Figure 17-6)
  - c. Remove the spacer, wave spring, and plastic washer from the shaft.
  - d. Slide the mounting boss out of the handle.
  - e. Press the wing lock bushing out of the handle if necessary, making note of its orientation.
  - f. Use a slot-head screwdriver to remove the spring detent from the handle.



**FIGURE 17-6**  
WING LOCK HANDLE

**VERIFICATION METHOD:**

The procedure is complete when the wing lock handle has been removed.

## RELATED INFORMATION:

"Wing Lock Switch Mounting Plate Removal" on page 17-24

"Wing Lock Mounting Plate Component Replacement" on page 17-33

### 17.5.1.4 Wing Lock Handle Installation

Use the following procedure to install the wing lock handle.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

14 – Wing

**Consumables**

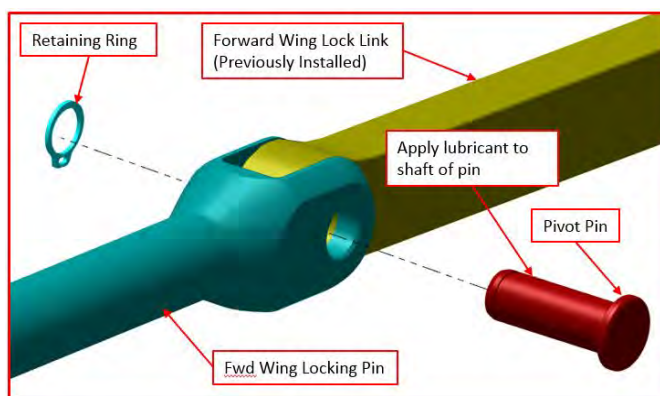
LOCTITE® 222™

MOLYKOTE™

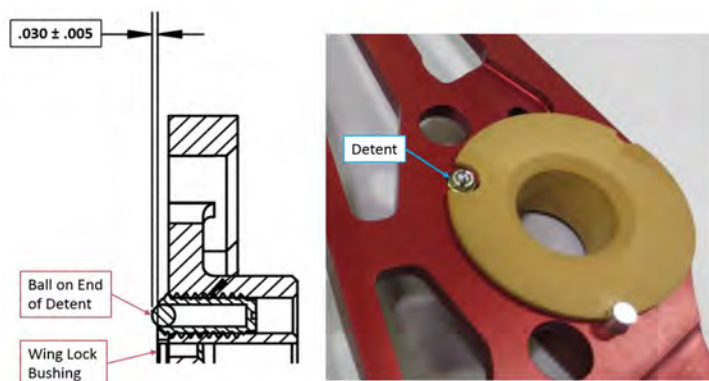
## TASK INSTRUCTIONS:

1. Clean and inspect all parts and replace those that are not serviceable or if their condition is questionable. It is recommended that all retaining rings be replaced with new ones.

2. If the lock handle components were disassembled, proceed with the below steps as necessary:
  - a. Apply LOCTITE® 222™ to the threads of a new 3408A112 spring detent then, using a slot-head screwdriver, thread it into the handle to a depth of .030-.005 inches (Figure 17-8).
  - b. Install the ICA008149 wing lock bushing into the handle, aligning the notches in the bushing to the holes in the handle.
  - c. Insert the ICA011209(RH)/ICA022210(LH) wing lock mounting boss into the ICA008149 wing lock bushing.
  - d. Verify that the 90145A488 dowel pin, wing lock bushing, and wing lock mounting boss are installed in the ICA007497(RH)/ICA007500(LH) wing lock handle as shown in Figure 17-9. The detent ball should run in the groove in the mounting boss.
  - e. Place a 98090A365 plastic shim on the mounting boss shaft, followed by a 9714K999 wave spring and ICA008147 spacer as shown in Figure 17-10. Orient the spacer with its beveled side facing away from the handle as shown.
  - f. Install an ICA011333 retaining ring into the groove in the wing lock mounting boss to hold the above parts in place (Figure 17-6).
  - g. Attach the ICA008143 and ICA008148 link rods to the handle and locking pins. Coat each ICA008144 pivot pin with MOLYKOTE™ on assembly. See Figure 17-7 for a typical installation. Verify correct pin orientation; the retaining rings are installed on the same side as the wing lock bushing flange and mounting boss flange. Also, note that the longer the two links and the longer the two locking pins connect and face aircraft forward, and the shorter the two, face aircraft rearward.



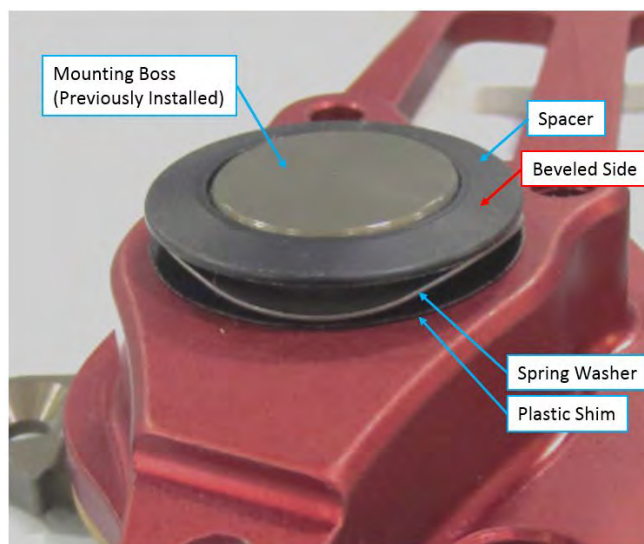
**FIGURE 17-7**  
WING LOCK HANDLE INSTALLATION



**FIGURE 17-8**  
WING LOCK HANDLE



**FIGURE 17-9**  
WING LOCK HANDLE



**FIGURE 17-10**  
WING LOCK HANDLE



3. Apply a thin coat of MOLYKOTE™ to the forward and aft wing locking pins.
4. Install the handle assembly to the fuselage BL38 Rib:
  - a. Insert the forward locking pin into the wing forward wing pin bushing.
  - b. Insert the aft locking pin into the wing aft wing pin bushing.
  - c. Align the handle's mounting boss to the holes in the BL38 Rib.
  - d. Coat three 8C62MTF3/100 flush-head attach screws with Tef-Gel® and using a T15 Torx driver, torque each to 13 in-lb<sub>f</sub>.
5. Operate the wing lock handle and verify correct function. The initial handle pull out force from the up and locked position should be about 7 lb<sub>f</sub>. If not, then the wing lock catch may need to be adjusted. (See "Wing Lock Catch Adjustment" on page 17-36.)
6. Remove the support from the wing tip and hang the wing on the horizontal tail.
7. Perform three wing fold operations taking the wing from the folded to extended position and back. Ensure the wing lock handle assembly operates freely with detents in appropriate positions. Visually confirm the mechanism locks with each fold operation. Verify the "SECURE WING/TAIL" annunciator in the cabin is functioning correctly with each fold operation.

#### VERIFICATION METHOD:

Operate the wing lock handle and verify correct function. The initial handle pull out force from the up and locked position should be about 7 lb<sub>f</sub>. If not, then the wing lock catch may need to be adjusted. (See "Wing Lock Handle Installation" on page 17-30.)

#### RELATED INFORMATION:

"Wing Lock Switch Mounting Plate Installation" on page 17-26

"Wing Lock Catch Adjustment" on page 17-36

"Wing Lock Mounting Plate Component Replacement" on page 17-33

### 17.5.1.5 Wing Lock Mounting Plate Component Replacement

Use the following procedure to replace components on the assembly after it is out of the wing.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Special Tools Required

None

**Parts Required**

None

**Aircraft System and Number**

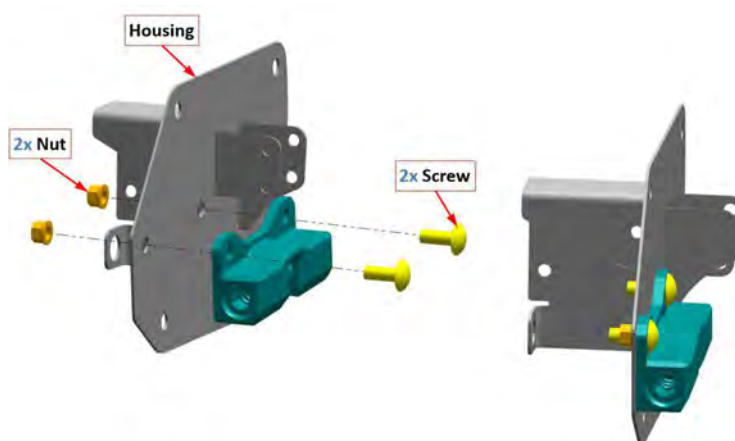
14 – Wing

**Consumables**

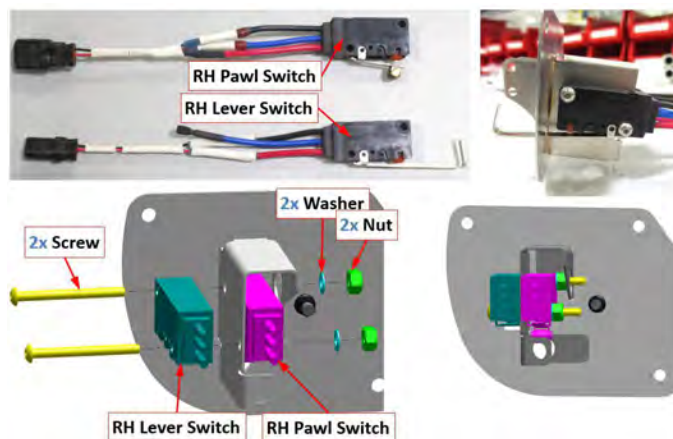
None

**TASK INSTRUCTIONS:**

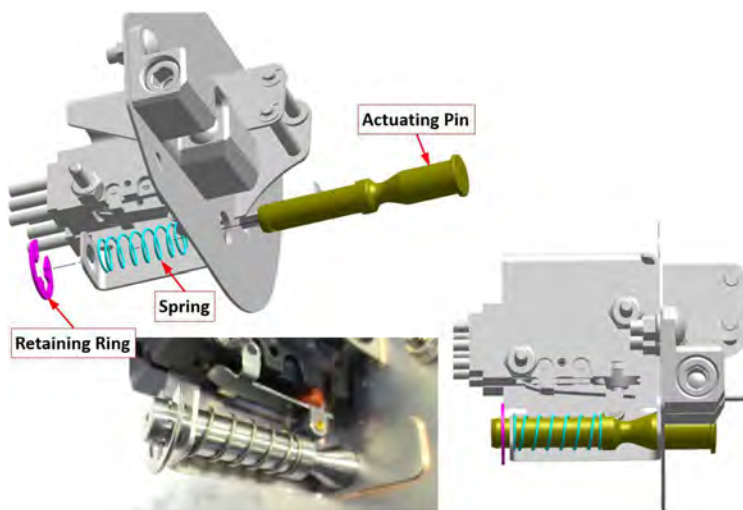
1. Remove the wing lock handle. (See “Wing Lock Handle Removal” on page 17-28.)
2. Remove the wing lock switch mounting plate. (See “Wing Lock Switch Mounting Plate Removal” on page 17-24.)
3. Remove the affected components from the wing lock switch mounting plate, discarding any retaining clips.
4. Install lock handle catch into lock mechanism housing ICA009260(R/H) and ICA009261(L/H), using two 6C37MTT3 screws and MS21043-06 nuts.



5. Install lever switch ICA009633 (L/H), ICA009632 (R/H) and pawl switch ICA009635 (L/H), ICA009634 (R/H) into the lock mechanism using two 92949A118 screws, 98019A309 washers, and 90715A005 nuts.



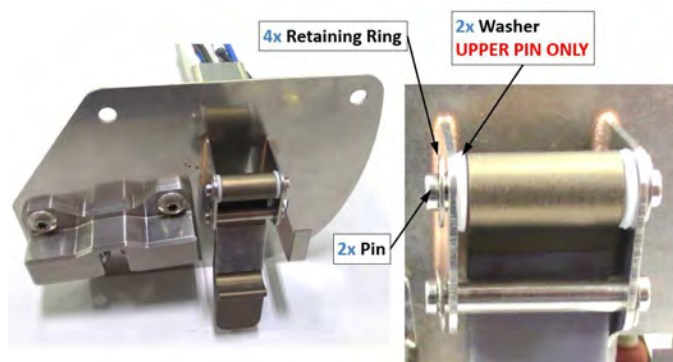
6. Install ICA008397 actuating pin, 9435K520 spring and new 98408A120 retaining clips. Ensure that new retaining clips are used.



7. Prepare the ICA010840 extended latch pawl by applying 76475A52 PTFE tape.



8. Install the extended latch pawl into the lock mechanism with two ICA008395 pins, four new 98408A116 retaining rings, and two 95630A234 washers. The pins should slide in easily by hand. Ensure that new retaining clips are used.



9. Install the wing lock switch mounting plate. (See "Wing Lock Switch Mounting Plate Installation" on page 17-26.)
10. Install the wing lock handle. (See "Wing Lock Handle Installation" on page 17-30.)

#### VERIFICATION METHOD:

The procedure is complete when the component has been replaced and the wing lock handle and wing lock switch mounting plate are reinstalled.

#### RELATED INFORMATION:

"Wing Lock Switch Mounting Plate Removal" on page 17-24  
 "Wing Lock Switch Mounting Plate Installation" on page 17-26  
 "Wing Lock Handle Removal" on page 17-28  
 "Wing Lock Handle Installation" on page 17-30

### 17.5.1.6 Wing Lock Catch Adjustment

Operate the wing lock handle and verify correct function. The initial handle pull out force from the stowed and locked position should be about 7 lb<sub>f</sub>. If not, then the wing lock catch may need to be adjusted using the procedure below.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

None

##### **Aircraft System and Number**

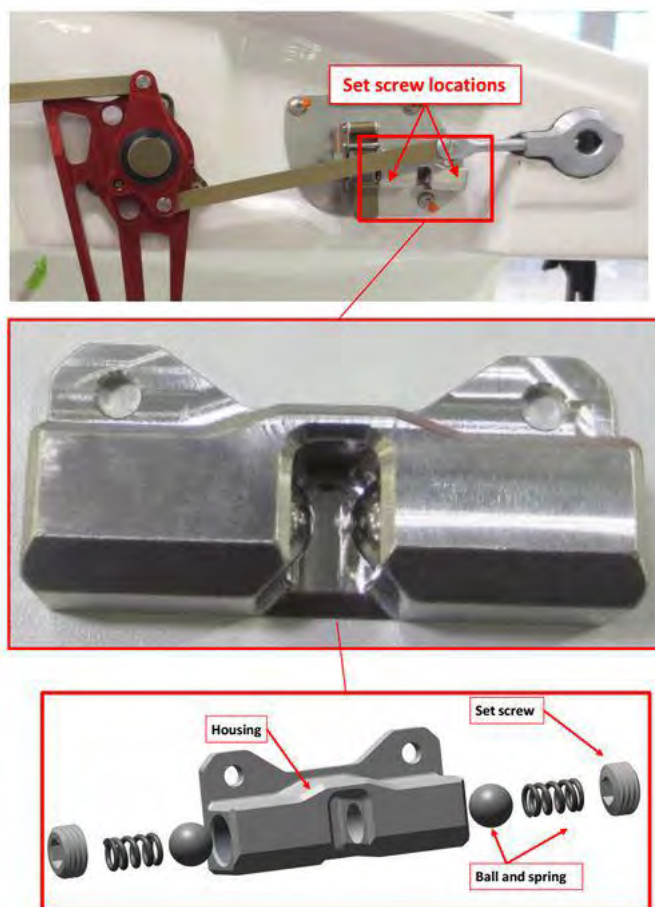
14 – Wing

##### **Consumables**

LOCTITE® 243™

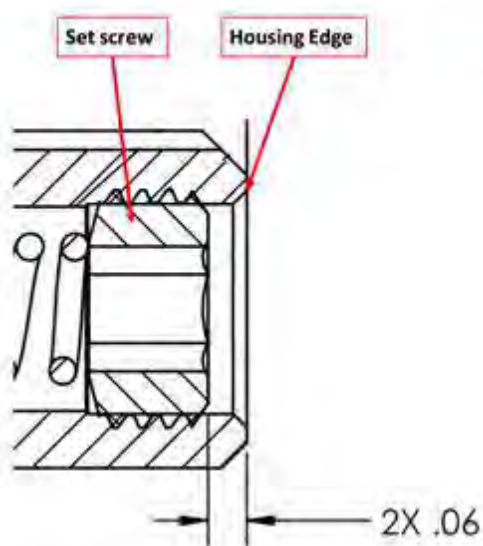
**TASK INSTRUCTIONS:**

1. Locate the ICA008702 wing lock catch housing. It mounts to the wing lock switch plate and contains two opposing spring-loaded balls that pinch a feature in the wing lock handle, thus creating a detent that helps hold the handle in the up and locked position (See Figure 17-11).



**FIGURE 17-11**  
WING LOCK CATCH

2. Use a 3/16 hex wrench to remove a set screw from one end of the housing. Use care not to lose the spring and ball that lie under the screw.
3. Apply LOCTITE® 243™ to the threads of a 91318A650 hollow-lock set screw.
4. Insert the ball, then the spring into the housing.
5. Install the set screw so that the spring is compressed against the ball and the head of the screw is set to a depth of  $.06 \pm .01$  below flush (see Figure 17-12).



**FIGURE 17-12**  
SET SCREW

6. Repeat the above steps for the other set screw in the housing.

**VERIFICATION METHOD:**

From the up and locked position, unlatch the handle locking pawl and pull the handle down. The force needed to displace the handle from the grasp of the lock catch should be  $7 \pm 2$  lb<sub>f</sub>. Adjust the housing set screws equally, together in or out, to achieve this force.

**RELATED INFORMATION:**

"Wing Lock Handle Installation" on page 17-30

# Chapter 18

## WING FOLD MECHANISM

Wing Fold Mechanism Description.....	18-2
Troubleshooting.....	18-3
Wing Fold Mechanism.....	18-3
Wing Fold Procedure.....	18-3
Wing Extend Procedure.....	18-4
Wing Fold/Extend Additional Information .....	18-6
Inspect Wing Pins.....	18-7
Wing Fold Mechanism General Maintenance .....	18-11
Wing Fold Roll Bellcrank Roller Replacement .....	18-11
Wing Fold Mechanism Security .....	18-12

## 18.1 Wing Fold Mechanism Description

Those devices which facilitates and/or controls the on-ground movement of the main wing structure and securing of wings for transport in the folded position. Includes mechanisms, linkages, actuators, locks and indicating/warning subsystems. Also includes the horizontal tail removable or hinged tip. Excludes mid, forward, and aft wing pins & receptacles, which are included in the Wing & Fuselage systems.



## 18.2 Troubleshooting

### 18.2.1 Wing Fold Mechanism

Wing Fold Mechanism .....	18-3
Wing Fold Procedure .....	18-3
Wing Extend Procedure .....	18-4
Wing Fold/Extend Additional Information .....	18-6

#### 18.2.1.1 Wing Fold Procedure

Instructions to fold the wings.

##### TASK INFORMATION:

###### Type of Maintenance

Line

###### Level of Certification

Owner/Pilot

###### Task Specific Training Required

No

###### Special Tools Required

None

###### Parts Required

None

###### Aircraft System and Number

15 – Wing Fold Mechanism

###### Consumables

None

The manual wing fold system allows the wings to be rotated and folded back along the fuselage, reducing the A5 width from approximately 35 feet to 8 feet for trailering, storage, and maintenance. The wing fold mechanism was designed to be simple, allowing one person to complete the task in a few minutes with no tools required using the following simple procedures.

**WARNING:** The handles built into the wing tips are to be used for wing folding only. They must not be used for ground handling purposes or pushing/pulling the entire aircraft.

##### TASK INSTRUCTIONS:

1. Set the parking brake or chock the wheels of the aircraft.

2. Flaps should be fully retracted prior to wing fold.
3. Press the small detent clip to release the red wing lock handle and pull down to the stop (90 degrees from stowed/locked position).
4. At wing tip, place one hand on the wing fold handle and the other on the tip trailing edge. Using a smooth, fluid motion, step away from the aircraft center line pulling the wing away from of the fuselage until the stop is reached, approximately 21 inches.
 

*NOTE: Pulling the wing away from the fuselage will require lifting the wing tip and slight vertical motion in order to take the weight off wing spar mating surface.*
5. As wing moves outward, be careful not to drop the wing as structural damage will occur.
6. Rotate wing leading edge up 90 degrees to the vertical position.
 

*NOTE: Due to camber of upper wing surface, bottom of wing will appear to be vertical while top of wing will appear to be past vertical.*
7. Walk the wing aft to the horizontal tail while being careful to keep the wing lower surface aligned vertically in order to prevent contact with the Seawings™ platform.
8. Approaching the horizontal tail, stop with the wing leading edge directly below the tail pin.
9. Slide wing approximately 21 inches to the stop being careful to keep the wing vertical to maintain clearance from the Seawings™ platform.
10. Lift the wing tip to connect socket with tail pin, being certain to align leading edge socket with tail pin.
 

*NOTE: There will be a recognizable and positive sound and feel when the socket is seated with the tail pin.*
11. See wing fold/extend additional information. (See "Wing Fold/Extend Additional Information" on page 18-6.)

#### VERIFICATION METHOD:

Verify security of the wing on the horizontal tail latches.

#### RELATED INFORMATION:

"Wing Fold Rinse" on page 4-7

"Wing Fold/Extend Additional Information" on page 18-6

"Wing Fold Roll Bellcrank Roller Replacement" on page 18-11

### 18.2.1.2 Wing Extend Procedure

Use the following procedure to extend the wing.

#### TASK INFORMATION:

##### Type of Maintenance

Line

**Level of Certification**

Owner/Pilot

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

15 – Wing Fold Mechanism

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Set the parking brake or chock the wheels of the aircraft.
2. Inspect the condition of wing fold joint mechanism and ensure that the pins and sockets are clean and free of wear.
3. Ensure red wing lock handle is seated in the down (90 degrees) position.
4. Place forward hand on wing tip handle, rear hand underneath the trailing edge of the wingtip.
5. Using lower hand, release the release pin and lower wing to carry position.  
*NOTE: Be prepared to hold the weight of the wing when the release pin is pushed. Failure to hold the wing up may result in the wingtip contacting the ground, causing structural damage.*
6. Pull the wing aft to the stop approximately 19 inches.  
*NOTE: Ensure proper vertical alignment so as to avoid impacting the Seawings™ platform with flap trailing edge.*
7. Walk the wing forward with the leading edge pointed upwards until it is in the forward position.
8. Rotate wing leading edge forward 90 degrees so the wing is in the horizontal position.
9. Line up wing with fuselage, ensuring both fore/aft and up/down position is correct.
10. Push wing in to the stop, noting that slight fore/aft and vertical motion may be required to fully seat wing.
11. Immediately rotate the red wing lock handle into the locked position.

**NOTE:** *If wing is not fully seated, wing lock handle will not latch in the stowed position.*

12. See wing fold/extend additional information. (See "Wing Fold/Extend Additional Information" on page 18-6.)

#### VERIFICATION METHOD:

Verify wing lock handle is fully latched and the cockpit annunciators are extinguished.

#### RELATED INFORMATION:

"Wing Fold Rinse" on page 4-7

"Wing Fold/Extend Additional Information" on page 18-6

### 18.2.1.3 Wing Fold/Extend Additional Information

Helpful reference information about the wing folding system on the A5. This is not a maintenance, repair, or alteration task.

- With both wings folded, the aircraft is light on the nose (tail heavy). Therefore, the wings should not be folded on an incline or the aircraft may tip onto its tail. Placing ballast on the floorboards of the passenger compartment can help offset this characteristic.
- The wing fold lock handle has three mechanical latch mechanisms – one latch and two ball detents.
- There are two switches on each wing for the wing latch handle position annunciator logic.
- There are two switches on each tail pin – one tip position indicator and one lock handle position.
- A three-pin locking design ensures the wing remains locked in-place during operations and automatic aileron alignment eliminates the need to manually adjust aileron positions before wing fold and after wing extension.
- Folding and unfolding of the wings must be done with the weight of the aircraft on the wheels. The wings cannot be folded while the aircraft is floating on water.
- Even though the propeller arc clears the folded wing surfaces, ICON does not recommend running the engine or taxiing with wings folded.

**NOTE:** *The folded wings do not impinge on the propeller arc.*

- An annunciator panel light in the cockpit will warn the pilot when the wing latch system is unlocked.
- Folding and unfolding the wings in winds above 10 knots is not recommended.

## RELATED INFORMATION:

"Wing Extend Procedure" on page 18-4

"Wing Fold Procedure" on page 18-3

## 18.2.2 Inspect Wing Pins

Check for excess play in the wing pins.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

Caliper and/or Micrometer

**Parts Required**

ICA007614 (WING LOCKING PIN, FWD), if replacement needed

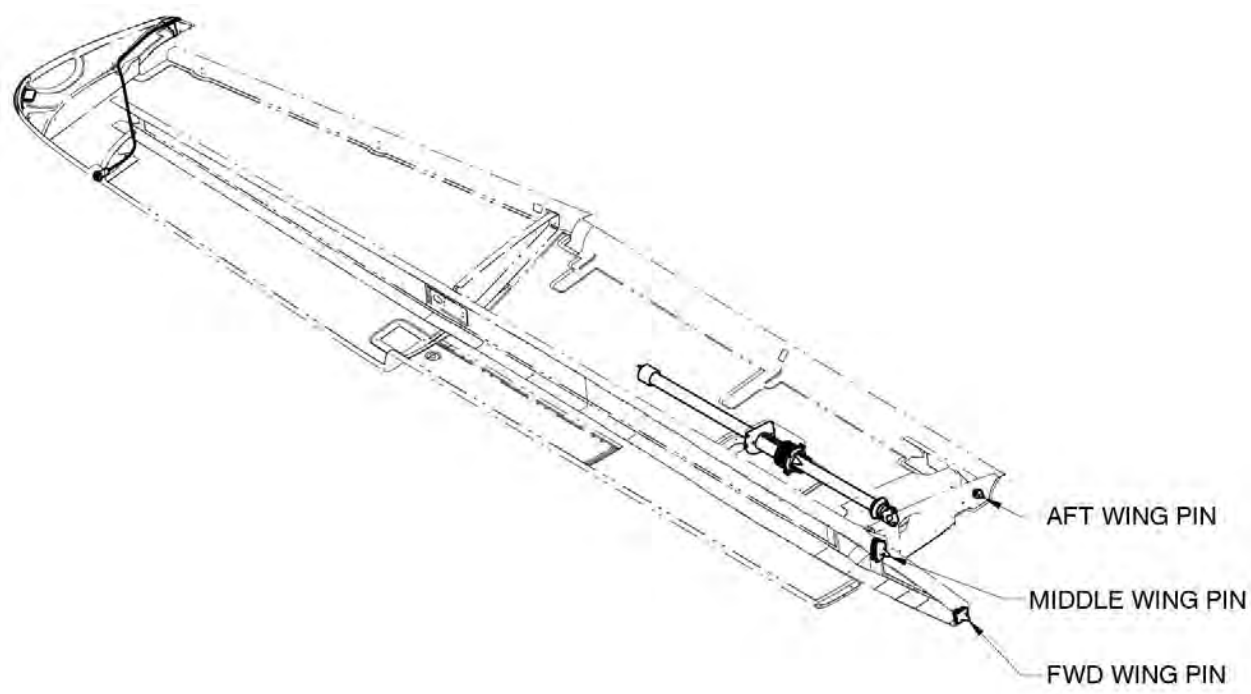
ICA007615 (WING LOCKING PIN, AFT), if replacement needed

**Aircraft System and Number**

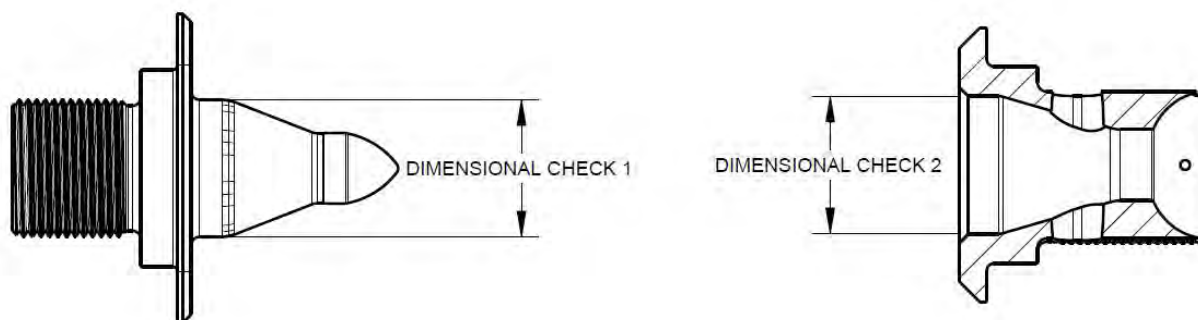
15 – Wing Fold Mechanism

**Consumables**

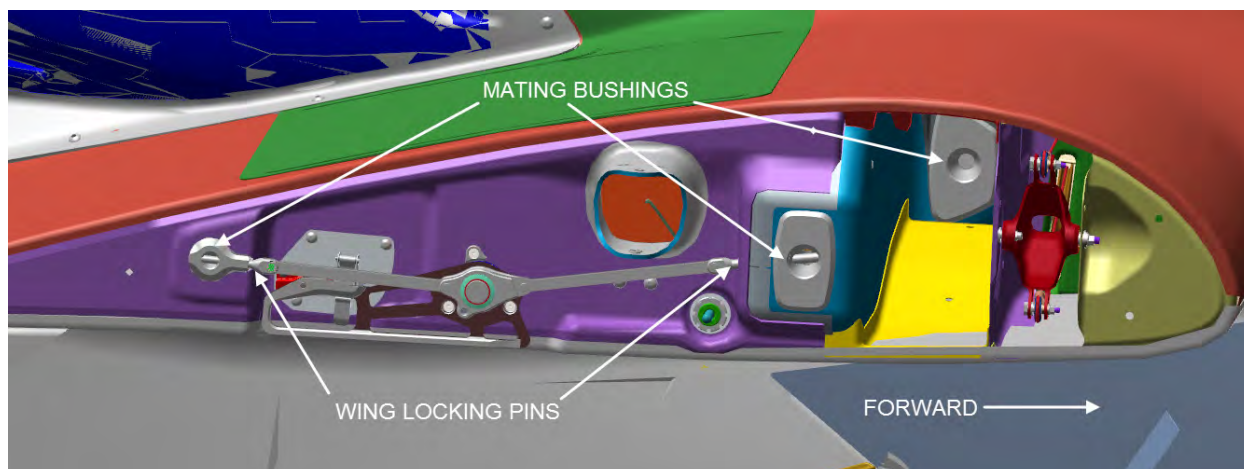
MOLYKOTE™ G-4700



**FIGURE 18-1**  
WING PINS LOCATION.



**FIGURE 18-2**  
WING PIN DIMENSIONAL CHECKS.



**FIGURE 18-3**  
WING PIN MATING BUSHINGS AND WING LOCKING PINS.

**NOTE:** The wings must be folded in order to perform this inspection. For the aft mating bushing, inspection can be completed by unlocking the wing lock and pulling the wing out of the bushing for access. Ensure the wings are supported to prevent accidental contact with the ground.

#### TASK INSTRUCTIONS:

- Using a rag, clean the six wing pins, six bushings, and four locking pins to remove any foreign material in the joint. Each wing pin has a mating bushing on the inboard side of the wing joint.

**NOTE:** The wing pins and bushings are not easily replaceable. Metal shavings in the grease is a symptom of wear that should be monitored closely for prevention of significant maintenance.

- Measure the wing pin diameter and bushing bores on both the left and right wings and compare to the target values in the table below.

Name/Part	Dimensional Check 1 [in]	Dimensional Check 2 [in]
Forward Wing Pin	Ø 1.0000	Ø 1.0075
Middle Wing Pin	Ø 1.000	Ø 1.0055
Aft Wing Pin	Ø 0.500	Ø 0.5095

- Visually inspect all wing pins and bushings for wear or damage.
- Measure the locking pin diameters on both the left and right wings and compare to the target values in the table below.

Name/Part	Minimum Diameter (in)
Forward Wing Locking Pin	Ø 0.3035
Aft Wing Locking Pin	Ø 0.2400

5. Apply a thin coat of MOLYKOTE™ G-4700 to the wing pins, bushings, and locking pins.

#### VERIFICATION METHOD:

If the wing pin dimensions are above the target values and the bushing dimensions are below the target values, then the wing pin fit is acceptable. If not, then contact ICON Aircraft for further information.

Any cracks found in the wing pins or bushings should be investigated further. Do not fly the airplane and contact ICON for further instructions.

If the wing locking pin dimension is above the target values, then the locking pin fit is acceptable. If not, replace all wing locking pins below the target values.

#### RELATED INFORMATION:

"Condition and 100-Hour Inspection – Wings" on page 3-11



## 18.3 Wing Fold Mechanism General Maintenance

### 18.3.1 Wing Fold Roll Bellcrank Roller Replacement

The roll control system loads pass across the wing fold joint through two intermeshing bellcranks. The bellcrank on the outboard side of the joint has a ball bearing that serves as a roller to guide the two bellcranks together during the wing fold operation. Perform the procedure below to replace this bearing.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

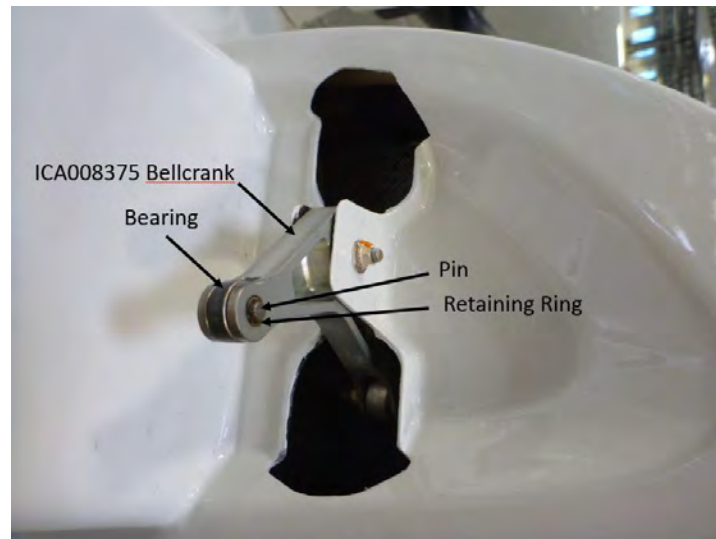
None

**Aircraft System and Number**

15 – Wing Fold Mechanism

**Consumables**

MOLYKOTE™



**FIGURE 18-4**  
BELLCRANK AND RETAINING RING

---

**TASK INSTRUCTIONS:**

1. Fold the wing to gain access to the ICA008375 bellcrank. (See "Wing Fold Procedure" on page 18-3.)
  2. Remove the retaining ring from the ICA009410 pin that secures the bearing, then press out the pin and remove the bearing.
  3. Inspect the pin and replace if worn.
  4. To reassemble, apply a thin coat of MOLYKOTE™ to the pin, install a new MS27640-3A bearing and press the pin through the bellcrank and bearing. The head of the pin should face aircraft aft.
  5. Install the 98410A110 retaining ring into the groove in the pin. It is recommended to replace the retaining ring with a new one.
- 

**VERIFICATION METHOD:**

Rotate the bearing by hand and verify that it turns freely.

**RELATED INFORMATION:**

"Wing Fold Procedure" on page 18-3

### 18.3.2 Wing Fold Mechanism Security

The following should be used to inspect the wing fold mechanism security and should be completed after the wings have been folded.

**TASK INFORMATION:**

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

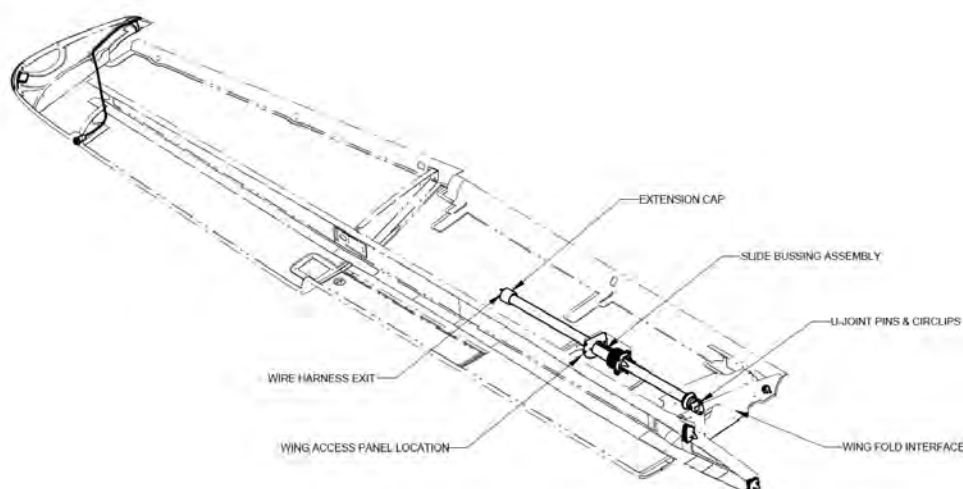
None

**Aircraft System and Number**

15 – Wing Fold Mechanism

**Consumables**

None



**FIGURE 18-5**  
INTERIOR WING ACCESS PANEL

**TASK INSTRUCTIONS:**

1. Test the socket assembly in the wing by carefully rotating the wing tip to ensure proper engagement and retention of the pin.

**CAUTION:** Be sure to support the wing in case of failure. The wing should move slightly but should not contact the Seawing.

2. Looking at the wing fold mechanism, ensure that all circlips and visible attachment points are fully secured. Evaluate the U-point pins and circlips.
3. With the wing fold mechanism exposed, actuate the wing fold handle to validate that there is full positive detent at the end of the handle rotation while also exhibiting smooth motion throughout the range. With the handle unlatched, check for excessive freeplay of the handle.

4. Visually inspect all fastening hardware to ensure it is secure and to ensure there is no missing hardware.
  5. Confirm that the slide bushing assembly is still securely bonded in place and is not able to slide or rotate.
  6. Ensure the extension cap spring is still fastened to the slide tube.
  7. Validate that the wire harness is in good working condition and is free of any wear and tear.
  8. Replace the wing access panel.
- 

#### VERIFICATION METHOD:

Completion of the steps above without any findings verifies proper security of the wing fold mechanism.

# Chapter 19

## ICON PARACHUTE SYSTEM (IPS)

IPS Description.....	19-3
Diagram/Schematic .....	19-4
Troubleshooting.....	19-5
Basic Parachute Inspection.....	19-5
Parachute Package.....	19-7
Parachute Package Description.....	19-7
Parachute Package Diagram.....	19-7
Inspection Instructions .....	19-7
Parachute Package Inspection .....	19-7
Maintenance Instructions.....	19-8
Parachute Package Removal.....	19-8
Parachute Installation.....	19-10
Harness.....	19-14
Harness Description .....	19-14
Harness Diagram/Schematic .....	19-14
Inspection Instructions .....	19-14
Harness Inspection Instructions .....	19-14
Maintenance Instructions.....	19-15
Harness Installation.....	19-15
Extraction Rocket .....	19-22
Extraction Rocket Description .....	19-22
Extraction Rocket Diagram/Schematic.....	19-22
Inspection Instructions .....	19-23
Extraction Rocket Inspection.....	19-23
Maintenance Instructions.....	19-24
Extraction Rocket Removal .....	19-24
Extraction Rocket Assembly and Installation .....	19-25
Arming Extraction Rocket.....	19-29
Activation System .....	19-33
Activation System Description .....	19-33
Activation System Diagram/Schematic.....	19-33
Inspection Instructions .....	19-33
Activation System Inspection.....	19-33

Maintenance Instructions .....	19-34
Activation System Installation .....	19-34

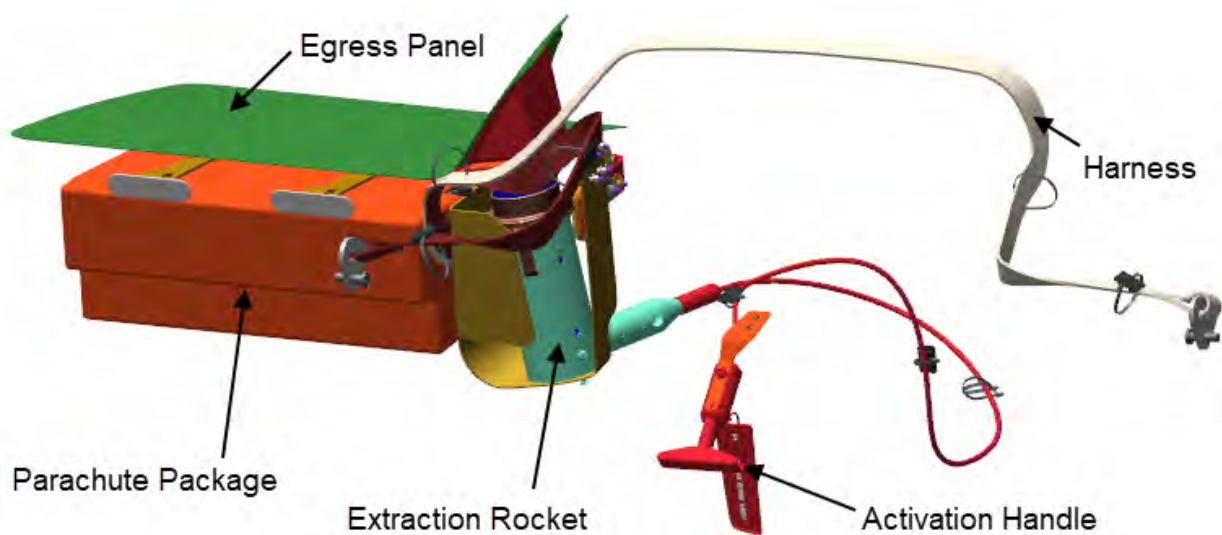
RELATED INFORMATION:

"Condition and 100-Hour Inspection – Parachute" on page 3-18

## 19.1 IPS Description

The ICON Parachute System (IPS) is comprised of the parachute package, harness, extraction rocket, activation system, landing gear deployment mechanism and all associated brackets and hardware. The parachute is a non-steerable round parachute used in conjunction with a three-point harness assembly to safely descend the planes occupants in an emergency. The parachute is triggered using the mechanical cockpit activation system and fired via a solid fuel cell extraction rocket from the parachute bay. When the activation system handle is pulled, the landing gear deployment mechanism will put the landing gear into the 'down' position.

## 19.2 Diagram/Schematic





## 19.3 Troubleshooting

### 19.3.1 Basic Parachute Inspection

Use the following tasks to inspect the parachute.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

16 – ICON Parachute System (IPS)

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. External Inspection
  - a. Inspect the parachute egress area for any cracks or displacement of the bond between the fuselage shell and removable cover.
  - b. Check the security of all external placards.
2. Internal Inspection
  - a. Ensure the detent pin with the “REMOVE BEFORE FLIGHT” flag is installed into the activation handle.
  - b. Check the security of the Rocket to the Rocket Mount (both fasteners in the base must be tight).
  - c. Ensure the carbon fiber Rocket Mount to which the Rocket Motor is attached is also secure (can be confirmed by means of loading the mount by hand from underneath and observing any movement indicative of loose Rocket Mount attach fasteners).
  - d. Inspect activation cable line from the activation handle to the rocket for evidence of cracking, kinking, or chaffing. At no time pull or force the cable - rocket could be activated.
  - e. Compare the section of the activation line that is routed through the engine bay against a section that is in a relatively cooler area (for example fwd. of the bulkhead near the activa-

- tion handle). Compare color, brightness, and texture. Replace activation line if there is any variation between these two sections.
- f. Check security of the activation handle mounting plate.
  - g. Visually inspect the activation handle for damage or abnormalities.
  - h. Confirm text on the placards is legible.
3. If any discrepancies are detected in the preceding instructions, the discrepancies must be rectified in order to consider the instruction complete. If all instructions are not completed the parachute system must be marked "Inoperative".
- 

#### VERIFICATION METHOD:

Verify there are no cracks or other anomalies.

#### RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

## 19.4 Parachute Package

### 19.4.1 Parachute Package Description

The IPS parachute package is comprised of deployment bag, BRS 601 rocket lanyard and retaining straps. The entire package, installed in the parachute bay, is enclosed under the Egress Panel. The parachute package contains a round, non-steerable parachute used for recovery of the aircraft and its occupants.

### 19.4.2 Parachute Package Diagram



**FIGURE 19-1**  
PARACHUTE PACKAGE INSIDE OF PARACHUTE BAY

### 19.4.3 Inspection Instructions

#### 19.4.3.1 Parachute Package Inspection

Use the following tasks to inspect the BRS parachute package.

TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

### **Task Specific Training Required**

No

### **Special Tools Required**

None

### **Parts Required**

None

### **Aircraft System and Number**

16 – ICON Parachute System (IPS)

### **Consumables**

None

---

#### **TASK INSTRUCTIONS:**

1. External Inspection
    - a. Inspect the parachute egress area for any cracks or displacement of the bond between the fuselage shell and removable cover.
    - b. Check the security of all external placards.
  2. Internal Inspection
    - a. Inspect the parachute release pin and tether for security. Verify the surgeon's knot is taught and properly holding release pin in place.
    - b. Check the deployment bag retaining straps for signs of discoloration or abnormalities.
- 

#### **VERIFICATION METHOD:**

Verify there is no chafing, discoloration, damage, or other anomalies.

#### **RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

## **19.4.4 Maintenance Instructions**

### **19.4.4.1 Parachute Package Removal**

Use the following tasks to remove the parachute package.

#### **TASK INFORMATION:**

##### **Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

16 – ICON Parachute System (IPS)

**Consumables**

05-02687 (WIRE, SAFETY, SST, .041)

**IPC Reference**

---

**TASK INSTRUCTIONS:**

1. Install the detent pin with the “REMOVE BEFORE FLIGHT” flag into the activation handle.
2. Carefully remove screw retaining activation cable into igniter. Unscrew the cone adapter (on the end of the activation cable housing) from the rocket cone and GENTLY pull the cable form the igniter/rocket cone.  
**WARNING:** *At the igniter, only 25-30 lb<sub>f</sub> is required to ignite the rocket assembly.*
3. Remove rocket cone and install safety wire through small hole in igniter body and threaded hole in actuator and tie to secure.
4. Remove the (2) shear screws retaining the pick-up collar onto the launch tube near the tip of the rocket motor. Slide the pick-up collar off the rocket motor.
5. Detach the ends of the harness straps from the 1/2” Quick Link.
6. Detach the parachute retaining straps.
7. Remove the packed parachute from the parachute bay.

**NOTE:** *Parachute only is ready to ship back to BRS for service.*

---

**VERIFICATION METHOD:**

The procedure is complete when the parachute package has been fully removed.

## RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

### 19.4.4.2 Parachute Installation

Use the following tasks to install the parachute package.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

16 – ICON Parachute System (IPS)

**Consumables**

None

## TASK INSTRUCTIONS:

1. Guide the retaining strap through the mounts in the parachute bay. Use Velcro<sup>®</sup> tapes on the retaining straps to restrain parachute into parachute bay.



**FIGURE 19-2**  
SECURING PARACHUTE DEPLOYMENT BAG

2. The packed parachute is sent from the BRS facilities as presented in , with pin tether and/or curved release pins install a secure in its grommet and loop. If release pin tether and/or curved release pins have been removed during installation, they will need to be reinstalled and secured. Secure pins with “2 and 1 knot” using Type 2 GLAZED, 4 ply thread.

*NOTE: Release pins are installed by BRS prior to delivery.*



**FIGURE 19-3**  
CURVED RELEASE PIN WITH TETHER

The “2 and 1 knot” is a “surgeons knot” with two additional overhand knots in opposing directions, for added security. Perform the “surgeons knot”, pull taught, then make an “overhand knot” in the opposite direction, pull taught; then make a second “overhand knot” opposite direction to first “overhand knot”, pull taught. This is a very secure knot around curved release pins.



**FIGURE 19-4**  
KNOT SECURING RELEASE PIN

*NOTE: Release pins are installed by BRS prior to delivery.*

3. Pull the flap on the left side to cover the rocket collar line and the incremental harness and secure the flap using Velcro<sup>®</sup> along the top left edge of the parachute deployment bag.



**FIGURE 19-5**  
SIDE FLAP CONTAINING COLLAR LINE AND INCREMENTAL HARNESS

*NOTE: Items are secured under flap when system is delivered from BRS Aerospace. This step is identified in case the lanyard and incremental have been removed during system installation.*

#### VERIFICATION METHOD:

The procedure is complete when the parachute package has been properly installed and the parachute release pin and retention straps are secure.



## RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

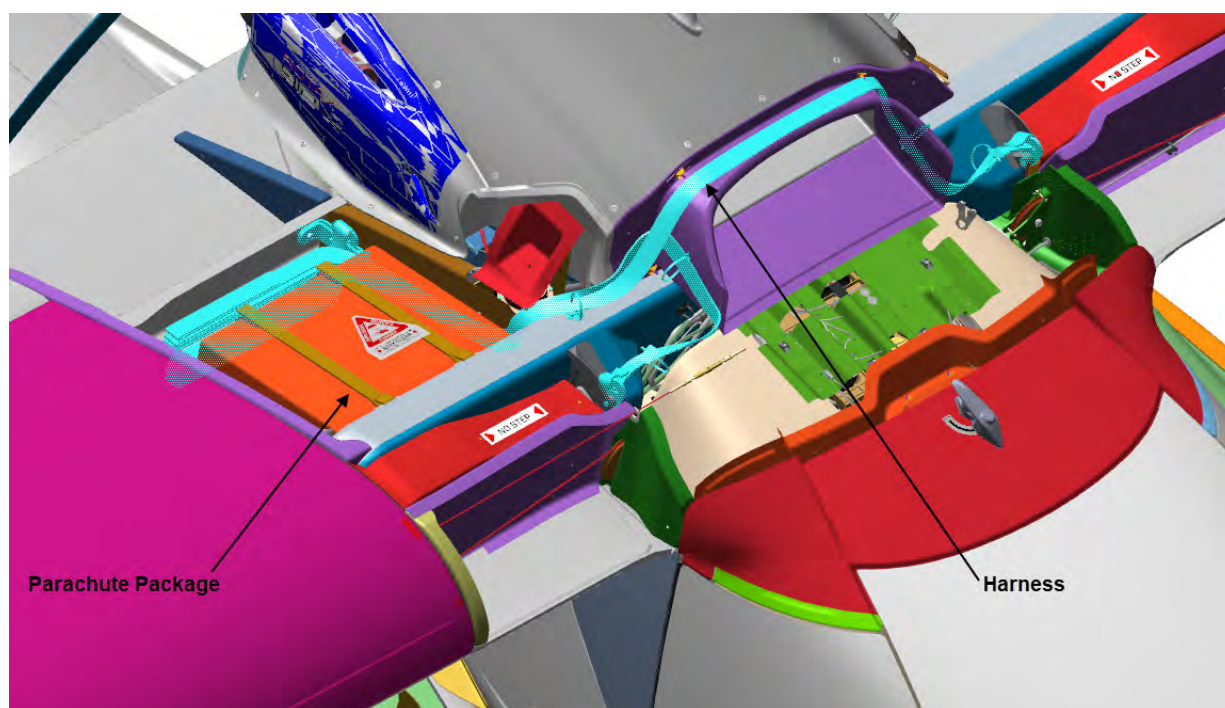
"Harness Installation" on page 19-15

## 19.5 Harness

### 19.5.1 Harness Description

The IPS harness system includes the FWD and AFT Kevlar bridles, parachute retaining straps and all mounting hardware. The harness system has three attachment points used to suspend the aircraft and its occupants under the canopy.

### 19.5.2 Harness Diagram/Schematic



### 19.5.3 Inspection Instructions

#### 19.5.3.1 Harness Inspection Instructions

Use the following tasks to inspect the harness system.

#### TASK INFORMATION:

##### Type of Maintenance

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

16 – ICON Parachute System (IPS)

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Check for harness and riser entanglement and obstruction at all locations.
  2. Ensure the full length of the harness is free of damage and fraying.
  3. Check the three attachment points for security, damage, and abnormalities.
- 

**VERIFICATION METHOD:**

Harness is secure at all locations and free of damage and other abnormalities.

**RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

## 19.5.4 Maintenance Instructions

### 19.5.4.1 Harness Installation

Use the following tasks to place and route the harness system.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

008007-01 (Assy., Packed Parachute, A5)  
014105-01 (Collar Assy., Pickup, Short Support)  
005061-01 (Link, Quick, 1/2", French SS)  
001432-01 (Retaining Strap, A5)  
007596-22 (Bridle, Kevlar, "A-C" End, Compact Tang)  
007596-23 (Bridle, Kevlar, "A-C" End, Compact Tang)  
ICA009063 (PIN, TIE OFF, CAP)  
VH-62-S16 (Retaining Ring, Internal, Light Duty, 316ss, .656x.0118)

**Aircraft System and Number**

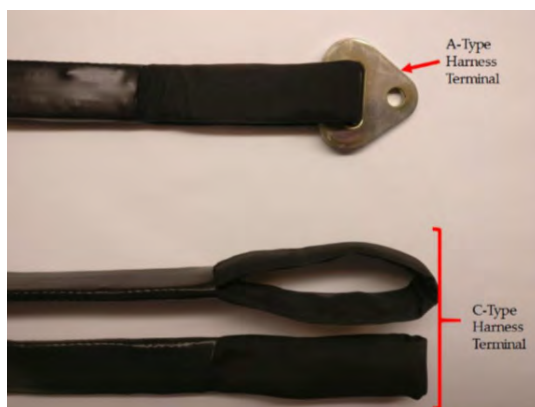
16 – ICON Parachute System (IPS)

**Consumables**

LOCTITE® 242

**TASK INSTRUCTIONS:**

1. Attach the "A" end of the rear harness to the mounting bracket located inside the parachute bay on the STARBOARD side of the aircraft.



**FIGURE 19-6**  
HARNESS ASSEMBLY ATTACHMENT POINTS, COMPONENT VIEW

**FIGURE 19-7**

“A” END OF HARNESS ATTACHMENT POINT (STARBOARD REAR)

2. Attach the “A” end of the forward harness to the forward attachment bracket on the STARBOARD side of the aircraft with the tie off pin and retaining ring.

**FIGURE 19-8**

“A” END OF HARNESS ATTACHMENT POINT (STARBOARD FORWARD)

3. Attach the “A” end of the forward harness to the mounting bracket PORT side of the aircraft with the pin and the retaining ring.

**FIGURE 19-9**

“A” END OF HARNESS ATTACHMENT POINT (PORT FORWARD)

4. Route the AFT harness into the parachute bay to be “S”-folded and routed to the 1/2” quick link and attached to the riser later in the parachute installation bay. (The STARBOARD AFT harness mount point is located in the parachute bay.)

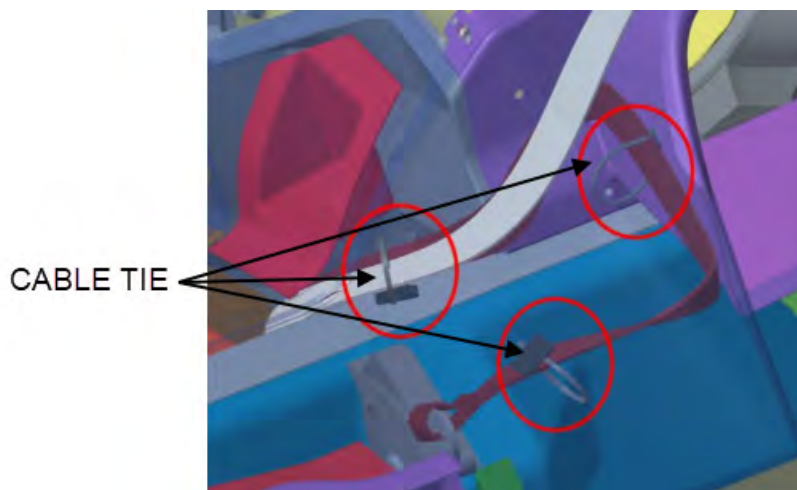
## HARNESS ROUTING, AFT, STARBOARD HARNESS TO PARACHUTE BAY

5. Route FORWARD PORT and STARBOARD harnesses into the parachute bay to be “S”-folded with the STARBOARD rear attachment point harness and routed to the 1/2” quick link then attached to the riser later in the parachute bay.
6. FORWARD PORT harness mount locations, total 2.



### FIGURE 10-11 FORWARD PORT HARNESS MOUNT LOCATIONS

7. FORWARD STARBOARD harness mount locations, total 3.



**FIGURE 19-12**  
FORWARD STARBOARD HARNESS MOUNT LOCATIONS

8. Install packed parachute assembly (Item 4) into parachute bay. Pin Release Tether and Retaining straps are shown below, attached to deployment bag. Rocket collar and lanyards can also be seen.



**FIGURE 19-13**  
HARNESS ROUTING, AFT, PORT HARNESS TO PARACHUTE BAY

9. Connect harnesses with 1/2" quick link. Riser can also be seen on the right side of the deployment bag. Apply LOCTITE Blue 242 threadlocker to the threads before closing the gates. A torque of 20 lb-ft to shut the quick link. Since this product does not have a standard torque value, ensure that all threads are engaged. Finally, check that hardware is secure.





**FIGURE 19-14**  
HARNESS ENDS INSERTED INTO 1/2" QUICK LINK

10. Lay the S-folded harnesses together as a package fixed with (2) two, 10.75" cable ties, into the parachute bay.
11. Insert the harness package into the space between parachute and parachute cover. Three harnesses will be "S" folded into space AFT of the parachute bag in the ICON parachute bay and placed in the bay as a unite tied together with (2) two, 10.75" cable ties.





**FIGURE 19-15**  
HARNESS INSTALLATION: "S"-FOLD AND TIE WRAP

**NOTE:** *When installing the parachute bag into the compartment, use care to be sure that bridles are neatly "S" folded and will be free from restrictions during recovery system deployment.*

**VERIFICATION METHOD:**

The procedure is complete when the harness has been successfully installed and all components are secure.

**RELATED INFORMATION:**

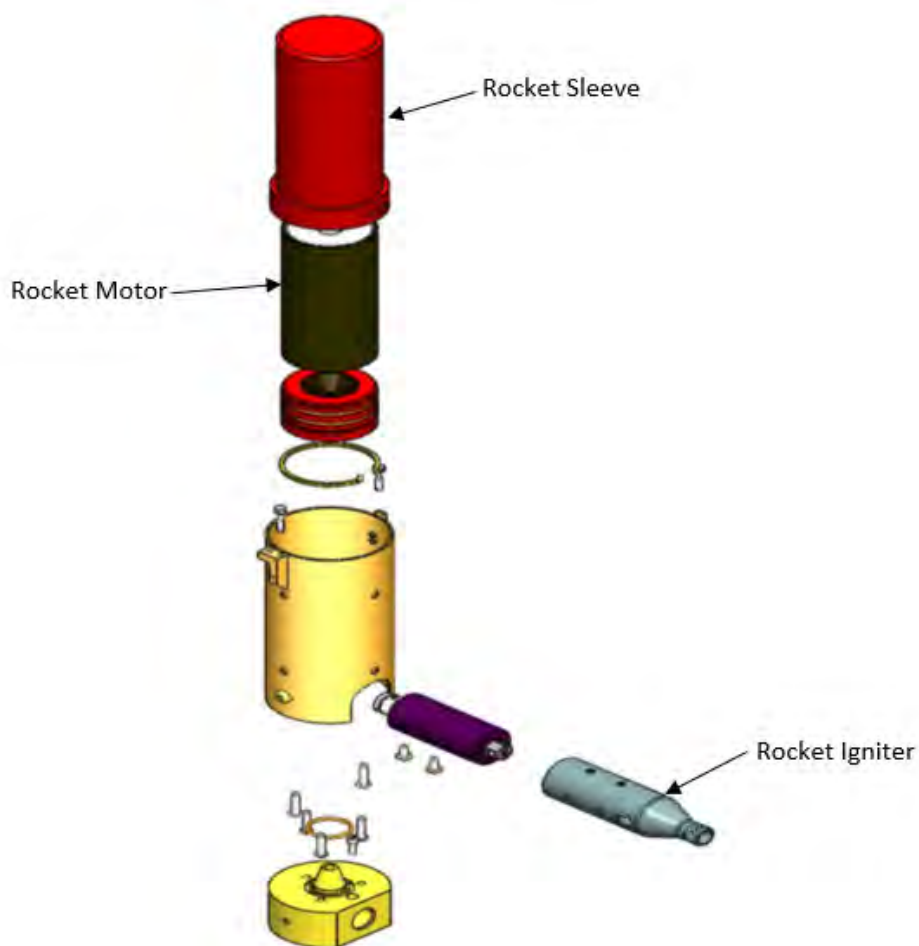
"Removal and Installation of Inspection Panels and Fairings" on page 3-34  
"Cockpit Panels Removal and Installation" on page 3-36  
"Parachute Installation" on page 19-10

## 19.6 Extraction Rocket

### 19.6.1 Extraction Rocket Description

The extraction rocket system is comprised of the rocket motor, rocket sleeve, rocket motor igniter, and mounting hardware. Once activated, a high-powered solid fuel rocket deploys the parachute and harness system.

### 19.6.2 Extraction Rocket Diagram/Schematic



## 19.6.3 Inspection Instructions

### 19.6.3.1 Extraction Rocket Inspection

Use the following tasks to inspect the extraction rocket system.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

16 – ICON Parachute System (IPS)

**Consumables**

None

---

#### TASK INSTRUCTIONS:

1. Ensure the detent pin with the “REMOVE BEFORE FLIGHT” flag is installed into the activation handle.
  2. Check the security of the Rocket to the Rocket Mount (both fasteners in the base must be secure).
  3. Ensure the carbon fiber Rocket Mount to which the Rocket Motor is attached is also secure (can be confirmed by means of loading the mount by hand from underneath and observing any movement indicative of loose Rocket Mount attach fasteners).
  4. Check the security of the Rocket Mount to the Engine Bay Closeout (both fasteners in the base must be tight).
- 

#### VERIFICATION METHOD:

All extraction rocket mounting hardware is properly secured.

## RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

## 19.6.4 Maintenance Instructions

### 19.6.4.1 Extraction Rocket Removal

Use the following tasks to remove the extraction rocket system.

## TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

16 – ICON Parachute System (IPS)

**Consumables**

05-02687 (WIRE, SAFETY, SST, .041)

## TASK INSTRUCTIONS:

1. Install the detent pin with the "REMOVE BEFORE FLIGHT" flag into the activation handle.
2. Carefully remove screw retaining activation cable into igniter. Unscrew the cone adapter (on the end of the activation cable housing) from the rocket cone and GENTLY pull the cable from the igniter/rocket cone.  
  

*NOTE: At the igniter, only 25-30lbs of force is required to ignite the rocket assembly.*
3. Remove rocket cone and install safety wire through small hole in igniter body and threaded hole in actuator and tie to secure.
4. Remove the two shear screws retaining the pick-up collar onto the launch tube near the tip of the rocket motor. Slide the pick-up collar off the rocket motor.
5. While supporting the rocket motor assembly, remove the screws that attach the rocket base to the mounting shelf from underneath.

6. Carefully remove rocket assembly from canister and place in a cool, secure location.

**NOTE:** *Do not return motor to BRS. It is illegal for non-licensed persons to ship a loaded rocket motor by commercial carrier.*

#### VERIFICATION METHOD:

The procedure is complete when the rocket system has been fully removed and placed in a secure location.

#### RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

### 19.6.4.2 Extraction Rocket Assembly and Installation

Use the following tasks to install the extraction rocket system.

#### TASK INFORMATION:

##### **Type of Maintenance**

Line

##### **Level of Certification**

LSA-RM

##### **Task Specific Training Required**

No

##### **Special Tools Required**

None

##### **Parts Required**

1/4"-20 x 3/4 Button HD Cap SS

8-32 x 3/4 Screw

##### **Aircraft System and Number**

16 – ICON Parachute System (IPS)

##### **Consumables**

LOCTITE® 242™

#### TASK INSTRUCTIONS:

1. Mount the rocket pedestal with the rocket into the rocket bay. Secure the BRS 601 rocket assembly to ICON's rocket mounting bracket using two of the BRS provided 1/4"-20 x3/4 Button HD Cap SS fasteners. Ensure that LOCTITE Blue 242 threadlocker is used to lock the fasteners in place. The torque value for the fastners is 5.4lb-ft. The fitting between BRS 601 fixing to the

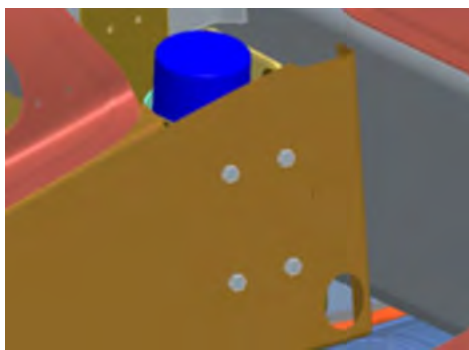
rocket mounting bracket should not allow rocket assembly to move in its mount, the two bolts should be enough to do so.

**NOTE:** *If the thickness of the mounting bracket allows BRS 601 movement after tightening the two bolts it is acceptable to use spacer to fully secure the rocket to the bracket.*



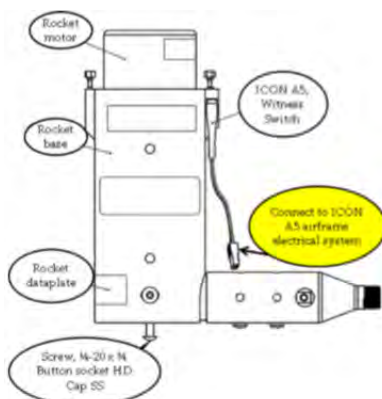
**FIGURE 19-16**  
SECURE ROCKET TO ICON A5 ROCKET MOUNT BRACKET

2. Fasten the rocket mount into the proper location in the ICON A5. Four AN3 bolts secure the rocket mount to the starboard center root rib.



**FIGURE 19-17**  
SECURE ROCKET MOUNT TO STARBOARD CENTER ROOT RIB

3. Connect electrical witness switch installed on the side of the rocket tube assembly to ICON A5 airframe electrical system.



**FIGURE 19-18**  
90° ROCKET ASSEMBLY

4. The rocket lanyard is already attached to the deployment bag at BRS Aerospace. The rocket lanyard will need to be routed and attached to the BRS 601 rocket in the ICON A5 rocket bay. Once the required length of lanyard is determined, the remaining length should be “looped” and secured with the small cable ties supplied. The rocket lanyards should be routed alongside of, rather than over the top of the rocket. They **MUST NOT** be routed under any harness or structure. Coil the lanyards without knotting them. Place the two cable ties around the lanyards so that they can be neatly stowed.



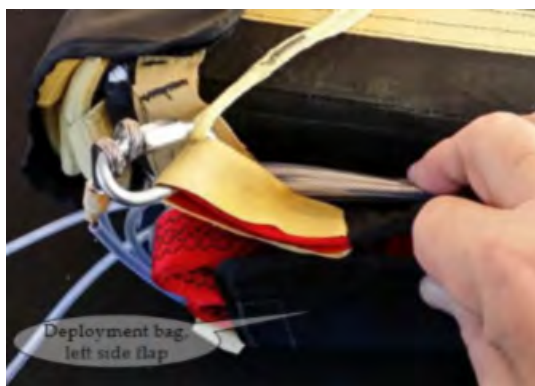
**FIGURE 19-19**  
SECURING ROCKET COLLAR LANYARD AND INCREMENTAL HARNESS

5. Ensure that the opposite end of the incremental harness, shown in under the left side flap, is connected to the deployment bag with a Lark's head knot.



**FIGURE 19-20**  
INCREMENTAL HARNESS TO DEPLOYMENT BAG STRAP

6. All items are secured under the left side flap of the deployment bag, using the installed Velcro® fasteners at the top side of the deployment bag.



**FIGURE 19-21**  
DEPLOYMENT BAG, LEFT SIDE FLAP

7. Connect rocket collar to the rocket tube. Insert and tighten screws, screw, 8-32 x 3/4, Special. These screws have been manufactured to shear when rocket is fired. Apply a small amount of LOCTITE Blue 242 threadlocker to threads. Torque fasteners to 5 in-lbs.



**WARNING:** Confirm that the safety pin and flag are installed in the activation handle before continuing to rocket installation section.



**FIGURE 19-22**  
SECURING ROCKET COLLAR TO BRS 601 ROCKET TUBE

#### VERIFICATION METHOD:

The procedure was completed when the component has been installed and the safety pin and flag are installed on the activation handle.

#### RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

### 19.6.4.3 Arming Extraction Rocket

Use the following tasks to arm the extraction rocket.

#### TASK INFORMATION:

**Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

04035-01 (Screw, 10-24 x 5/8" S.S.)  
04055-01 (Washer, Ext. Tooth, #10 S.S.)  
017004-01 (Screw, 10-24 x 3/8" PH)  
005033-01 (Plug, Non-Threaded, 1/2")

### Aircraft System and Number

16 – ICON Parachute System (IPS)

### Consumables

LOCTITE® 242

### TASK INSTRUCTIONS:

1. Thread activation cable end loop through the cone and insert the loop into the slot on the end of the actuator. Put a drop of LOCTITE Blue 242 threadlocker on the threads of 10-24 stainless steel screw. Install screw through the unthreaded end of the actuator first, with exterior tooth star washer into hole and through loop in cable. The torque value for this screw is 1.8 lb-ft.



**FIGURE 19-23**  
THREADING ACTIVATION CABLE LOOP

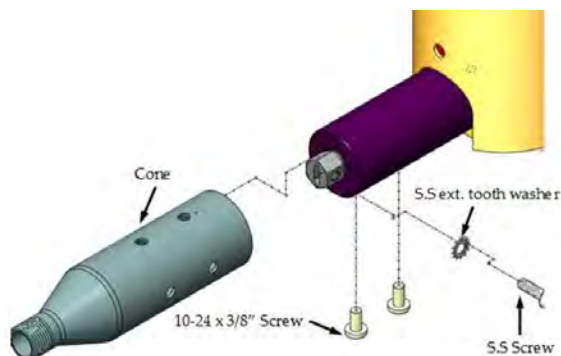
2. Ensure that the screw is tightened with a torque of 1.8 lb-ft, through the unthreaded side before completing this step. Assure screw is through the activation cable loop by checking security with a VERY light finger-tip pull (<1/2 pound force) on cable before reinstalling cone.



**FIGURE 19-24**  
CHECKING CABLE LOOP SECURITY

**WARNING:** Pulling too hard can cause the extraction rocket to fire.

3. Grasp the launch tube cone, secure it with (2) two screws, 10-24 x 3/8" PH, with a drop of LOCTITE Blue 242 threadlocker. A torque value of 1.5 lb-ft should be used to tighten this screw. Ensure mating threads are clean, free of debris and not cross threaded.



**FIGURE 19-25**  
REINSTALLATION OF LAUNCH TUBE CONE

4. Insert non-threaded plug into access hole to protect it from the elements.



**FIGURE 19-26**  
ACCESS HOLE PLUG

**VERIFICATION METHOD:**

The procedure is complete when the rocket has been successfully armed and all components are secure.

**RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

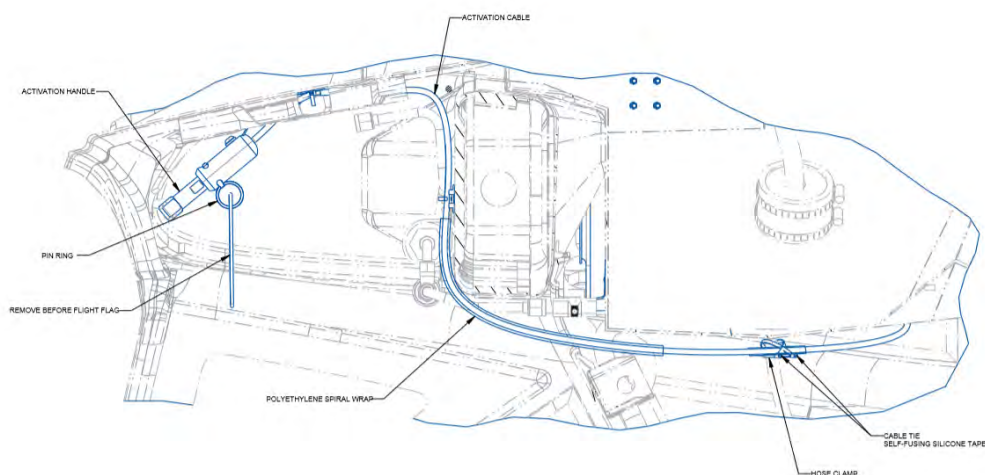
"Cockpit Panels Removal and Installation" on page 3-36

## 19.7 Activation System

### 19.7.1 Activation System Description

The IPS activation system is a mechanical cockpit activation system used to initiate the recovery system. The system consists of a cockpit handle, an enclosed activation cable that connects cockpit handle to the extraction rocket ignition.

### 19.7.2 Activation System Diagram/Schematic



### 19.7.3 Inspection Instructions

#### 19.7.3.1 Activation System Inspection

Use the following tasks to assemble and install the extraction rocket system.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

**Special Tools Required**

None

**Parts Required**

None

**Aircraft System and Number**

16 – ICON Parachute System (IPS)

**Consumables**

None

---

**TASK INSTRUCTIONS:**

1. Inspect activation cable line from the activation handle to the rocket for evidence of cracking, kinking, or chaffing.  
**WARNING:** *At no time pull or force the cable-rocket could be activated.*
  2. Compare the section of the activation line that is routed through the engine bay against a section that is in a relatively cooler area (for example fwd. of the bulkhead near the activation handle). Compare color, brightness, and texture. Replace activation line if there is any variation between these two sections.
  3. Check security of the activation handle mounting plate.
  4. Visually inspect the activation handle for damage or abnormalities.
- 

**VERIFICATION METHOD:**

Verify there is no chafing, discoloration, damage, or other anomalies.

**RELATED INFORMATION:**

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36

## 19.7.4 Maintenance Instructions

### 19.7.4.1 Activation System Installation

Use the following tasks to install the parachute activation system.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Special Tools Required**

None

**Parts Required**

ICA009677 (FLAG, REMOVE BEFORE FLIGHT, RED CLOTH, 1.5X4.5)

MS21043-4 (NUT, SLFKG, RDC HEX, CRES, .250-28)

TY24MX\_01 (CABLE-TIE, NYLON 6-6, 30LB, 5.50, TY-RAP .5 DIA)

**Aircraft System and Number**

16-ICON Parachute System (IPS)

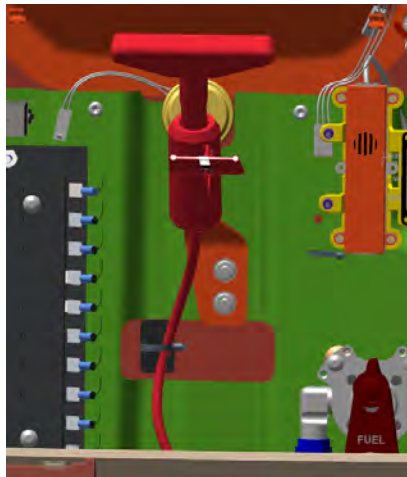
**Consumables**

None

---

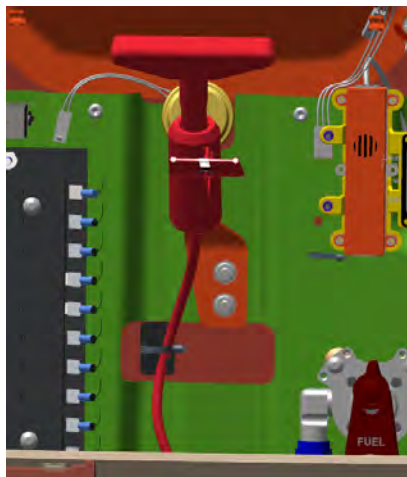
**TASK INSTRUCTIONS:**

1. Fasten the activation handle to the overhead console by position the handle tang in line with the two Click Bond studs and securing with self-locking hex nuts. Place safety pin with 'REMOVE BEFORE FLIGHT' flag into activation handle.



**FIGURE 19-27**  
ACTIVATION HANDLE, COCKPIT INSTALLATION

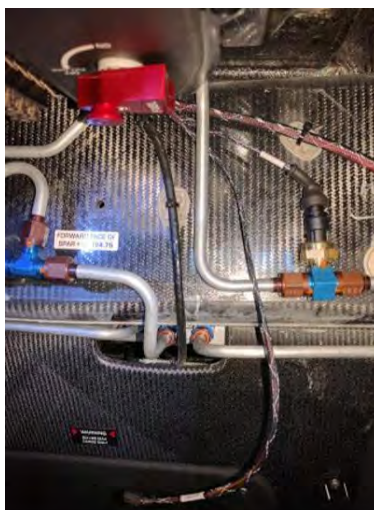
2. Route the rest of the activation assembly through the forward main bulkhead. Be sure that flight controls, engine controls, electrical lines and hydraulic lines are free and clear of the activation cable.
3. Securing activation cable. Apply first cable tie and secure the activation housing to the cable tie mount. Cable tie mount is located on the underside of the center wing skin.



**FIGURE 19-28**  
SECURING ACTIVATION CABLE ROUTING

**NOTE:** *The activation cable can be secured using cable ties.*

4. Route the activation assembly. Apply the second cable tie to secure the activation housing to the cable tie mount. The second cable tie is located on the front side of the center wing skin.



**FIGURE 19-29**  
SECURING ACTIVATION CABLE ROUTING

**NOTE:** *The activation cable can be secured using cable ties or any other suitable method.*

5. The activation cable must also be secured to the firewall drain line using 2 zip ties.





**FIGURE 19-30**  
SECURING ACTIVATION CABLE ROUTING

**NOTE:** *The activation cable can be secured using cable ties or any other suitable method.*

6. Activation cable routed to rocket mount position. After securing the activation cable in the previous step, the activation cable will be in position to connect to the launch tube cone at the rocket mounting point.

**WARNING:** *Confirm that the safety pin and flag are installed in the activation handle before continuing to rocket installation section.*

#### VERIFICATION METHOD:

Verify that the activation cable is properly secured and that the safety pin and flag are correctly installed on the activation handle.

#### RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 3-34

"Cockpit Panels Removal and Installation" on page 3-36



# Chapter 20

## STRUCTURAL REPAIR

Description.....20-2

General Bonded Fastener Replacement .....20-3

    General Bonded Fastener Removal .....20-3

    General Bonded Fastener Installation .....20-5

## 20.1 Description

ICON Aircraft does not allow for any structural repairs, other than what is included in this chapter, to be made to the aircraft without prior consent. Any structural repairs needed must be coordinated and approved by ICON through the Major Repair and/or Alteration (MRA) process.

### RELATED INFORMATION:

"Seawings™ Platform Tip Removal and Installation" on page 11-7

## 20.2 General Bonded Fastener Replacement

Use the following procedure to remove and install general bonded fasteners.

### RELATED INFORMATION:

"General Bonded Fastener Removal" on page 20-3

"General Bonded Fastener Installation" on page 20-5

### 20.2.1 General Bonded Fastener Removal

Remove disbonded or damaged bonded fasteners and any remaining adhesive using the procedure below.

#### TASK INFORMATION:

##### Type of Maintenance

Line

##### Level of Certification

LSA-RM

##### Task Specific Training Required

No

##### Specific Tools Required

None

##### Parts Required

Many bonded fasteners are used in the A5. These include:

CB3000 Large Metallic Base Stud

CB3021 Reverse-Mounted Stud

CB3033 Reverse-Mounted Standoff

CB4000 Large Composite Base Stud

CB4020 Composite Right-Angle Cable Tie Mount

CB5000 Small Metallic Base Stud

CB5001 Small Base Locking Thread Standoff

CB6007 Clip-Retained Corner Nutplate

CB6009 Clip-Retained 2-Lug Nutplate

CB6010 Sealed Two Lug Nutplate

CB9120 Low Profile Cable Tie Mount

CB9205 Strap Fastener

##### Aircraft System and Number

##### Consumables

None

Read these repair instructions in their entirety before starting. Any questions or uncertainties regarding interpretation of these instructions shall be forwarded to ICON Owner Support before any work is done.

All substrate materials must be protected from temperatures exceeding 200°F during the application of heat to soften the adhesive material attaching the fastener. Excessive temperatures can cause disbond, delamination, and blistering of composite substrates, resulting in a loss of strength and reliability.

**CAUTION:** *Temperature more than 200°F (93°C) can permanently damage the composite aircraft structure. Use extreme caution whenever using applied heat.*

Use the following methods to prevent temperature damage

- Keep the maximum output air temperature of the heat gun below the threshold of damage of the substrate and any surrounding components (200°F).
- Use any available technologies (e.g. infrared thermometer, thermocouple, etc.) to monitor the temperature of the nearby substrate during the operation. It should always be below the threshold temperature of 200°F (93°C).
- Mask adjacent components and substrates with thermal barrier (e.g. silicone sheet) to minimize heat transfer to unintended areas.

---

#### TASK INSTRUCTIONS:

1. Cut a conformal mask from silicone rubber sheet (0.25-inch thick). The mask should extend a minimum of 3-inches beyond the fastener in all directions. In the middle of the mask, cut a minimally sized hole to permit access to the fastener intended to be heated and removed. Drape the mask over the fastener and secure with aluminum foil tape (3M 425).
2. Use a heat gun to heat the fastener for removal. Hold the heat gun at a 90° inclination to the fastener (perpendicular to the adhesion surface), and position it approximately one inch from the baseplate of the fastener. Center the airstream on the fastener base plate to soften the underlying adhesive.
3. Allow the heat gun to dwell above the fastener until the underlying adhesive softens (about 30 to 45 seconds). It may help to grip the fastener with pliers and apply a twisting load (twisting about an axis perpendicular to substrate surface) while the heat is applied.
4. Once the adhesive is soft, and before any cooling occurs, use pliers to grip and twist the fastener from the substrate. The twisting motion is important as it allows the initial bond to be broken with an in-plane load. An out-of-plane load, such as that generated by pulling or prying, is more likely to result in delamination damage.
5. If any adhesive remains on the substrate after fastener removal, use the same method to heat the remaining adhesive and use a hard plastic chisel or similar tool to wedge the adhesive and

use a hard plastic chisel or similar tool to wedge the adhesive off. Be careful not to damage the underlying or surrounding substrate during this operation.

**VERIFICATION METHOD:**

Once all adhesive is removed, inspect the underlying substrate for damage (delaminations, blisters, broken fibers, cracks etc.).

**RELATED INFORMATION:**

"General Bonded Fastener Replacement" on page 20-3

## 20.2.2 General Bonded Fastener Installation

Install disbonded or damaged bonded fasteners and any remaining adhesive using the procedure below.

**TASK INFORMATION:****Type of Maintenance**

Line

**Level of Certification**

LSA-RM

**Task Specific Training Required**

No

**Specific Tools Required**

None

**Parts Required**

Many bonded fasteners are used in the A5. These include:

CB3000 Large Metallic Base Stud

CB3021 Reverse-Mounted Stud

CB3033 Reverse-Mounted Standoff

CB4000 Large Composite Base Stud

CB4020 Composite Right-Angle Cable Tie Mount

CB5000 Small Metallic Base Stud

CB5001 Small Base Locking Thread Standoff

CB6007 Clip-Retained Corner Nutplate

CB6009 Clip-Retained 2-Lug Nutplate

CB6010 Sealed Two Lug Nutplate

CB9120 Low Profile Cable Tie Mount

CB9205 Strap Fastener

## Aircraft System and Number

### Consumables

None

The new fastener must be selected and located in accordance with the appropriate supporting documentation. Contact ICON Owner Support if lacking definition of what fastener to use or where to place it.

---

#### TASK INSTRUCTIONS:

1. Prepare and clean the substrate in the area to be bonded in accordance with the Click Bond<sup>®</sup> CBPS-206 Rev. E procedure.
  2. Loosely install the replacement fastener in the location specified by the appropriate supporting documentation and verify fit.
  3. Apply CB200 adhesive to the fastener in accordance with Click Bond<sup>®</sup> procedure CBPS-206 Rev. E.
- 

#### VERIFICATION METHOD:

Once the CB200 cures, remove fixturing and inspect the fastener for security and complete adhesive squeeze out.

#### RELATED INFORMATION:

"General Bonded Fastener Replacement" on page 20-3



---

# Chapter 21

---

## PAINTING AND COATINGS

Description. .... 21-2

## 21.1 Description

The A5 has a carefully designed paint scheme that reflects radiation from sunlight to prevent the underlying structure from reaching excessive temperatures. Any alteration to the paint or paint scheme of the ICON A5 is not permitted at this time. Repairs to the paint or coatings must be coordinated with ICON through the MRA process or handled by ICON directly.

# Chapter 22

## FEEDBACK FORMS

Feedback Forms .....22-2

Continued Operational Safety Reporting.....22-3

Continued Operational Safety Reporting Form.....22-4

Change of Address/Ownership Form .....22-5

Manual Improvement or Correction Form.....22-6

## 22.1 Feedback Forms

The following forms are for the aircraft owner or maintainer to provide notification to ICON Aircraft about:

- 1) Issues and anomalies identified during the operation or maintenance of the aircraft or in the content of this manual.
- 2) Improvement suggestions or corrections for this maintenance manual.
- 3) Change of address or ownership transfer of your aircraft.

RELATED INFORMATION:

"Safety Directives and Continued Operational Safety" on page 2-14

## 22.2 Continued Operational Safety Reporting

To notify ICON Aircraft of operational or other safety concerns please complete a report via your aircraft reporting portal; instructions can be found at the back of the POH. ICON Customer Service and Support can also be reached via the following channels:

ICON Aircraft, Inc.

Attention: Customer Service & Support

2141 ICON Way

Vacaville, California 95688

1-855-FLY-ICON (359-4266)

Email: [support@iconaircraft.com](mailto:support@iconaircraft.com)

## 22.2.1 Continued Operational Safety Reporting Form



2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – [www.iconaircraft.com](http://www.iconaircraft.com)

### CONTINUED OPERATIONAL SAFETY REPORTING

DATE:

#### CONTACT INFORMATION

NAME:	<input type="text"/>	
	First	Last
COMPANY:	<input type="text"/>	
ADDRESS:	<input type="text"/>	
	Street Address	
	<input type="text"/>	
	Street Address 2	
	<input type="text"/>	<input type="text"/>
	City	State
	<input type="text"/>	USA
	Postal / Zip Code	Country
PHONE NO.:	<input type="text"/>	
	Main	Alternate
EMAIL ADDRESS:	<input type="text"/>	

#### AIRCRAFT INFORMATION

MODEL:	A5	SERIAL NUMBER:	<input type="text"/>
REGISTRATION NUMBER:	<input type="text"/>		
ENGINE TACH TIME:	<input type="text"/>		
TOTAL TIME:	<input type="text"/>		

#### DESCRIPTION OF SAFETY OF FLIGHT ISSUE OR SIGNIFICANT SERVICE DIFFICULTY:

Please forward this form and any supporting information to ICON Owner Support:  
 ICON Aircraft  
 2141 ICON Way  
 Vacaville, CA 95688  
 (855) FLY-ICON (359-4266)  
[support@iconaircraft.com](mailto:support@iconaircraft.com)

ICA009720-D

PAGE 1 of 1

## 22.2.2 Change of Address/Ownership Form



2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – [www.iconaircraft.com](http://www.iconaircraft.com)

### CHANGE OF ADDRESS/OWNERSHIP FORM

#### AIRCRAFT INFORMATION

MODEL:  SERIAL NUMBER:   
 REGISTRATION NUMBER:

#### OLD INFORMATION

NAME:    
First Last  
 COMPANY:   
 ADDRESS:   
Street Address  
  
Street Address 2  
  
City State  
   
Postal / Zip Code Country  
 PHONE NO.:   
Main Alternate  
 EMAIL ADDRESS:

#### NEW INFORMATION

NAME:    
First Last  
 COMPANY:   
 ADDRESS:   
Street Address  
  
Street Address 2  
  
City State  
   
Postal / Zip Code Country  
 PHONE NO.:   
Main Alternate  
 EMAIL ADDRESS:

Please forward this form to ICON Owner Support at:

ICON Aircraft  
 2141 ICON Way  
 Vacaville, CA 95688  
 (855) FLY-ICON (359-4266)  
[support@iconaircraft.com](mailto:support@iconaircraft.com)

ICA009721-D

PAGE 1 of 1

## 22.2.3 Manual Improvement or Correction Form



2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – [www.iconaircraft.com](http://www.iconaircraft.com)

### MANUAL IMPROVEMENT OR CORRECTION FORM

#### CONTACT INFORMATION

NAME:		
	First	Last
COMPANY:		
ADDRESS:		
	Street Address	
	Street Address 2	
	City	State
	USA	
	Postal / Zip Code	Country
PHONE NO.:		
	Main	Alternate
EMAIL ADDRESS:		

#### AIRCRAFT INFORMATION

MODEL:	A5	SERIAL NUMBER:	
REGISTRATION NUMBER:			
ENGINE TACH TIME:			
TOTAL TIME:			

#### DESCRIPTION OF IMPROVEMENT OR CORRECTION:

☐ Maintenance Manual   ☐ Pilot's Operating Handbook (POH)   ☐ Other

SIGNATURE	DATE

Please forward this form and any supporting information to ICON Owner Support at:  
 ICON Aircraft  
 2141 ICON Way  
 Vacaville, CA 95688  
 (855) FLY-ICON (359-4266)  
[support@iconaircraft.com](mailto:support@iconaircraft.com)

ICA009722-D

PAGE 1 of 1