

MAINTENANCE MANUAL ICON A5 CERTIFIED EDITION

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Publication ICA014865, Issue B1

Aircraft Model: A5-B

Airplane Registration Number: _____

Airplane Serial Number: _____

Date: 28 July 2023

ICON Aircraft / 2141 ICON Way, Vacaville, CA 95688



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

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Chapter 1

REVISIONS

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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	31 March 2021	All	ICON Aircraft
A1	02 July 2021	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22	ICON Aircraft
B	30 June 2022	All	ICON Aircraft
B1	28 July 2023	1, 2, 3, 4, 7, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19	ICON Aircraft

RELATED INFORMATION:

"Manual Revisions" on page 1-16

1.1.1 Issue B1

General

- Updated engine references throughout

Chapter 01

- Updated revision information

Chapter 02

- Updated 100-Hour Inspection definition
- Updated Maintenance Schedules
- Updated Required Equipment
- Updated Optional Equipment That Replaces Required or Standard Equipment
- Updated Additional Optional Equipment

Chapter 03

- Added Mandatory Inspections
- Removed all inspections other than Mandatory Inspections

Chapter 04

- Moved all Maintenance Schedules and Annual Inspections and 100-Hour Inspections except Mandatory Inspections to this chapter

- Updated Maintenance Schedules
- Changed one of the Interval Calendar years from 7.5 to 8
- Updated Annual Inspections and 100-Hour Inspections
- Updated Annual and 100-Hour Inspection – Avionics and Electrical

Chapter 07

- Updated Ignition Switch Replacement
- Added Remove Individual Center Stack Bezel Components (Aera 796)
- Added Install Individual Center Stack Bezel Components (Aera 796)
- Added Remove Individual Center Stack Components (G3X)
- Added Install Individual Center Stack Components (G3X)

Chapter 09

- Updated Seat Belt Replacement
- Updated Center Console Bucket Installation
- Updated Throttle Handle and Bezel Installation
- Updated Aero 796 GPS Mount and Radio Stack Bezel Installation. Removed redundant Radio Stack Removal and Radio Stack Installation.
- Updated Right Instrument Panel Top Panel Installation
- Updated Left Instrument Panel Top Panel Installation
- Added Remove G3X Center Stack Bezel
- Added Install G3X Center Stack Bezel

Chapter 10

- Updated Inspect Roll Cable Tension
- Updated Rigging Roll Controls
- Updated Inspect Pitch Cable Tension
- Updated Rigging Pitch Controls
- Updated Inspect Yaw Cable Tension
- Updated Rigging Yaw Controls

Chapter 11

- Updated Remove Fuel Shutoff Valve
- Updated Install Fuel Shutoff Valve

Chapter 12

- Updated Canopy Installation
- Updated Replace Water Rudder

Chapter 13

- Updated Horizontal Tail Installation
- Updated Elevator Pushrod Installation
- Updated Air Rudder Installation

Chapter 14

- Added additional description information
- Added Attitude Indicator (AI)
- Updated Transponder information
- Added G3X Equipped Aircraft Transponder Troubleshooting
- Added 796 Equipped Aircraft Transponder Troubleshooting
- Updated Magnetic Direction Indicator Calibration
- Updated Replace Overhead Console Fuses
- Updated Replace Instrument Panel Gauges verification method
- Updated Install Instrument Cluster
- Updated Access Center Stack Instrument and Switches
- Updated Transponder and ELT Antenna Replacement
- Updated Install OAT Sensor verification method
- Updated Install Pitch Servo (Autopilot Configuration)
- Updated Install Roll Servo (Autopilot Configuration)
- Updated Remove EIS
- Updated Install Magnetometer
- Updated Install Garmin G3X Display verification method
- Updated Connect Pitot Line
- Updated Connect Static Line
- Updated Connect High Pressure AOA Line
- Updated Connect Low Pressure AOA Line
- Updated Comm Antenna Installation

- Added Remove VHF Comm Transceiver and Transponder (G3X Configuration)
- Updated Install VHF Comm Transceiver and Transponder
- Added Install VHF Comm Transceiver and Transponder (G3X Configuration)
- Updated Install G3X ADS-B Antenna
- Updated Install G3X ADS-B GPS Receiver
- Updated DAC Memory Unit Re-installation
- Added DAC Memory Unit Description
- Updated Pitot-Static-AOA Leak Test Procedures
- Updated AOA System Testing

Chapter 15

- Updated Main Landing Gear (MLG) Installation
- Updated Nose Landing Gear (NLG) Cam Follower Replacement

Chapter 17

- Updated Install Engine Cowlings
- Updated Coolant Overflow Bottle Installation

Chapter 18

- Updated Wing Hang Pin Replacement
- Updated Wing Lock Handle Installation
- Updated Wing Lock Mounting Plate Component Replacement

Chapter 19

- Updated Wing Fold Roll Bellcrank Roller Replacement

1.1.2 Issue B

General

- Added new chapter, Airworthiness Limitations
- Moved Maintenance Schedules and Annual Inspections and 100-Hour Inspections to Airworthiness Limitations chapter from Inspection chapter
- General Editorial Changes, Updated Related Information and Cross References throughout
- Updated engine references throughout
- Updated titles of Rotax engine manuals throughout

Chapter 01

- Updated revision information

Chapter 02

- Updated Introduction
- Updated Directives and Continued Operational Safety
- Updated Disposable Replacement Parts
- Updated Tire Inflation Pressures
- Updated Torque Procedure and Fastener Torque Values

Chapter 03

- Updated Annual and 100-Hour Inspection – Landing Gear
- Updated Interval Maintenance – Calendar Intervals
- Updated Interval Maintenance – Operational Hours
- Updated Overhaul Maintenance
- Updated Annual and 100-Hour Inspection – Engine and Propeller
- Updated Annual and 100-Hour Inspection – Avionics and Electrical
- Added Signature Page

Chapter 04

- Changed the chapter name Inspection to Inspection Information
- Added Remove and Install Autopilot (AP) Control Panel procedures
- Updated Install Seat Back

Chapter 05

- Added note to Overall Exterior Rinse

Chapter 07

- Updated Description
- Added System Wiring Diagram, Garmin G3X Autopilot
- Added System Wiring Diagram, Garmin G3X Can Bus
- Added System Wiring Diagram, Garmin G3X EIS and ADAHRS Display
- Added System Wiring Diagram, Garmin G3X Pitch Trim
- Added System Wiring Diagram, Garmin G3X Transponder
- Added System Wiring Diagrams, Garmin G3X VHF AUX and AUX 2

- Updated Battery Remove and Install instructions
- Updated Battery Diagram/Schematic
- Updated Installation of Wing Tip Lights procedure

Chapter 08

- Updated Heater Fan and Core Installation procedures

Chapter 09

- Updated Aero 796 GPS Mount and Radio Stack Bezel Removal and Installation
- Updated Right Instrument Panel Top Panel Removal and Installation
- Updated Left Instrument Panel Top Panel Removal and Installation
- Added Garmin G3X and Autopilot Radio Stack Removal and Installation procedures
- Added Garmin G3X and Autopilot Bezel Removal and Installation procedures

Chapter 10

- Updated Inspect Roll Cable Tension inspection
- Updated Inspect Pitch Cable Tension inspection
- Updated Measure Pitch Trim Tab Wear procedure
- Updated Rigging Flap controls procedure
- Updated Rudder Pedals Remove and Redo procedure

Chapter 11

- Updated Remove and Install Fuel Pump procedures
- Updated Install Isolation Strip on Fuel Tank Support

Chapter 12

- Updated Water Rudder Actuator and Cables inspection
- Updated Check Water Rudder Rigging procedure
- Updated Installation of Water Rudder Cable

Chapter 13

- Updated Description
- Updated Horizontal Tail content and title to Inspect Horizontal Tail
- Updated Elevator Pushrod Removal procedure
- Updated Horizontal Tail Removal and Installation procedures
- Updated Measure Horizontal Tail Tip Anti Rotation Pin Wear procedure

- Updated Horizontal Tail Tip Pin procedure
- Updated ELT Diagram/Schematic

Chapter 14

- Updated Replace Overhead Console Fuses procedure
- Updated Replace Instrument Panel Gauge procedure
- Updated Install Instrument Cluster verification method
- Updated Remove and Install Hour Meter part numbers
- Updated ELT Transponder and Transmitter Antenna Replacement procedure
- Added descriptions of the Garmin Aera 796 and Garmin G3X Touch™
- Added Garmin G3X Touch™ section
- Added Remove and Install OAT Sensor
- Added Remove and Install Pitch Servo (Autopilot Configuration)
- Added Remove and Install Roll Servo (Autopilot Configuration)
- Added Remove and Install Roll Servo to Bracket
- Added Remove and Install ADAHRS
- Added Remove and Install EIS
- Added Remove and Install Magnetometer
- Added Instructions for setting the Magnetometer level
- Added Remove and Install G3X Display
- Added Remove and Install IP Center Spine
- Added Disconnect and Connect Garmin G3X and Autopilot Navigation System
- Updated description of Pitot-Static-AOA Leak Test Procedures
- Added Remove and Install IP Center Spine
- Added Remove and Install Main Wire Harness
- Added Make Electrical Connections
- Added Cut Tubing to Length
- Added Disconnect and Connect Pitot Line
- Added Disconnect and Connect Static Line
- Added Disconnect and Connect High Pressure AOA Line

- Added Disconnect and Connect Low Pressure AOA Line
- Updated Comm Antenna Installation part information
- Added Remove and Install VHF Comm Transceiver and Transponder
- Updated Remove and Install ADS-B Antenna to indicate Garmin 796 only
- Updated Remove and Install ADS-B Receiver to indicate Garmin 796 only
- Added Remove and Install G3X ADS-B Antenna
- Added Remove and Install G3X ADS-B GPS Receiver
- Updated DAC Memory Unit Re-Installation parts
- Updated Pitot Static Leak Check Operation
- Updated AOA System Testing

Chapter 15

- Updated the Check Landing Gear Extended Position procedure
- Updated the Check Landing Gear Retracted Position procedure
- Updated Main Landing Gear Inspection
- Updated Landing Gear Indicator Lights test
- Updated landing gear Retraction and Extension Time inspection
- Updated Landing Gear Excessive Friction Check
- Updated Rudder Pedal Connector Lines Replacement procedure
- Updated Forward Lines Replacement procedure
- Updated Aft Lines Replacement procedure
- Updated verification method of Parking Brake Valve Assembly and Installation Procedure
- Updated Main Landing Gear (MLG) Removal procedure
- Updated tools list of Main Landing Gear (MLG) Wheel and Axle Removal
- Updated tools list of Main Landing Gear (MLG) Actuator Removal
- Updated Main Landing Gear (MLG) Actuator Installation procedure
- Updated Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Up procedure
- Updated Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down procedure
- Updated tools list of Nose Landing Gear (NLG) Wheel Installation

- Updated tools list of Nose Landing Gear (NLG) Leg Assembly Removal and Installation
- Updated Prepare Nose Gear and Nose Gear Steering Bearing for Bonding
- Updated Bond New Nose Landing Gear Steering Bearing
- Updated Remove Nose Landing Gear Steering Bearing
- Added Remove and Install Nose Landing Gear Fork
- Updated Remove Nose Landing Gear Actuator
- Updated Nose Landing Gear (NLG) Rigging and Check with Landing Gear UP
- Updated Nose Landing Gear (NLG) Rigging and Check with Landing Gear Down
- Updated Aft Nose Landing Gear (NLG) Door Mechanism Removal, Installation, and Rigging

Chapter 16

- Added Fuses placard which includes Garmin G3X Touch™

Chapter 17

- Updated the Engine Air Filter section
- Updated the Cooling System section
- Updated the Oil System section
- Updated Engine Test Run
- Added Adjust Engine Idle RPM
- Updated Grease Coil Park Connections procedure
- Updated Install Exhaust System procedure
- Updated Inspect Throttle Control for Proper Travel and Security
- Updated verification of Install Coolant Radiator
- Updated A5-B Specific Oil Change Procedures
- Updated task list for Remove Oil Cooler and Thermostat
- Updated Propeller Assembly
- Updated the Balance Propeller procedure

Chapter 18

- Updated Install Left Wing verification method
- Updated Install Right Wing verification method
- Updated Flap Hing Repair procedure

Chapter 19

- Updated Inspect Wing Pins

Chapter 20

- Updated Harness Installation
- Added Remove and Install Parachute Egress Panel
- Updated Parachute Package Installation

Chapter 21

- Updated Description
- Updated General Bonded Fastener Removal and Installation

1.1.3 Issue A1

Chapter 1

- General Editorial Changes, Updated Related Information and Cross References
- Updated revision information
- Updated Manual Revisions information

Chapter 2

- General Editorial Changes, Updated Related Information and Cross References
- Updated Introduction
- Updated Maintenance System Introduction
- Updated the Organization and Structure description to reflect changes to Task Information throughout document
- Added Aircraft Serial Number to the Maintenance Terminology and Abbreviations
- Updated Overhaul Maintenance description
- Updated Line Maintenance, Repairs, and Alterations
- Updated Heavy Maintenance, Repairs, and Alterations
- Updated Disposable Replacement Parts
- Updated the Special Tools information

Chapter 3

- General Editorial Changes, Updated Related Information and Cross References

Chapter 4

- General Editorial Changes, Updated Related Information and Cross References

Chapter 6

- General Editorial Changes, Updated Related Information and Cross References
- Updated Battery information in description
- Updated Battery Diagnostic
- Updated Battery Removal and Installation instructions
- Updated Installation of Wing Tip Lights
- Updated Install Landing and Taxi Lights

Chapter 7

- General Editorial Changes, Updated Related Information and Cross References
- Updated the Cabin Heater description
- Updated Heater Fan and Core Installation task information

Chapter 8

- General Editorial Changes, Updated Related Information and Cross References

Chapter 9

- General Editorial Changes, Updated Related Information and Cross References
- Updated Install Flap Actuator
- Updated Re-Rigging Rudder Pedals

Chapter 10

- General Editorial Changes, Updated Related Information and Cross References
- Updated Install Fuel Tank instructions
- Updated the Coarse Fuel Filter description

Chapter 11

- General Editorial Changes, Updated Related Information and Cross References
- Updated Installation of Water Rudder Cable instructions

Chapter 12

- General Editorial Changes, Updated Related Information and Cross References
- Updated Elevator Push Rod Installation instructions
- Updated Measure Horizontal Tail Tip Anti Rotation Pin Wear instructions

Chapter 13

- General Editorial Changes, Updated Related Information and Cross References
- Updated Annunciator Panel Diagnostic instructions
- Updated Replace Instrument Panel Gauge task information
- Updated Install Fuel Level Sensor instructions

Chapter 14

- General Editorial Changes, Updated Related Information and Cross References
- Updated Rudder Pedal Connector Lines Replacement torque information
- Updated Forward Lines Replacement torque information
- Updated Aft Lines Replacement torque information
- Updated Parking Brake Valve Assembly and Installation Procedure

Chapter 16

- General Editorial Changes, Updated Related Information and Cross References
- Updated the Engine Description
- Updated Remove Oil Cooler and Thermostat instructions

Chapter 17

- General Editorial Changes, Updated Related Information and Cross References

Chapter 18

- General Editorial Changes, Updated Related Information and Cross References

Chapter 19

- General Editorial Changes, Updated Related Information and Cross References

Chapter 20

- Updated Structural Repair description

Chapter 21

- Updated Paintings and Coatings description

Chapter 22

- General Editorial Changes, Updated Related Information and Cross References

1.1.4 Issue A

All Chapters

- Initial creation of the manual

1.2 List of Effective Chapters

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

Chapter	Change	Date
1. REVISION	B1	28 July 2023
2. GENERAL	B1	28 July 2023
3. AIRWORTHINESS LIMITATIONS	B1	28 July 2023
4. INSPECTION INFORMATION	B1	28 July 2023
5. STRUCTURES	B0	30 June 2022
6. DOORS AND WINDOWS	B0	30 June 2022
7. ELECTRICAL SYSTEM	B1	28 July 2023
8. ENVIRONMENTAL CONTROL (UTILITY SYSTEMS)	B0	30 June 2022
9. EQUIPMENT AND FURNISHINGS	B1	28 July 2023
10. FLIGHT CONTROLS	B1	28 July 2023
11. FUEL SYSTEM	B1	28 July 2023
12. FUSELAGE AND VERTICAL TAIL	B1	28 July 2023
13. HORIZONTAL TAIL	B1	28 July 2023
14. INSTRUMENTS (AND AVIONICS)	B1	28 July 2023
15. LANDING GEAR	B1	28 July 2023
16. PLACARDS AND MARKINGS	B0	30 June 2022
17. PROPULSIONS	B1	28 July 2023
18. WING	B1	28 July 2023

Chapter	Change	Date
19. WING FOLD MECHANISM	B1	28 July 2023
20. ICON PARACHUTE SYSTEM (IPS)	B0	30 June 2022
21. STRUCTURAL REPAIR	B0	30 June 2022
22. PAINTING AND COATINGS	B0	30 June 2022
23. FEEDBACK FORMS	B0	30 June 2022

Applicable to Maintenance Manual Revision: Issue B1

RELATED INFORMATION:

"Manual Revisions" on page 1-16

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.

Updates and changes to the manual are defined as corrections or changes to the content of the manual. These changes are indicated by a change bar. Change bars are not placed on small editorial changes like the correction of spelling errors or typos when the substance of the content is not affected or reference information related to the content like Related Information and cross references.

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 1-14

Chapter 2

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2.1 Introduction

This maintenance manual provides the standard maintenance and inspection procedures for the A5-B. Repairs, alterations, and maintenance tasks included within this manual are considered *minor*. Any repairs, alterations, or maintenance tasks not listed in this manual are considered *major*. Major repairs, alterations, or maintenance tasks require coordination with the governing civil aviation authority, and may limit or invalidate the manufacturer's warranty. 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 F2483-18e1, 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

Annual Inspection

A detailed inspection accomplished once in the preceding 12 calendar months 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.

Maintenance Manual (MM)

A manual provided by an original 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.

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

An article has been disassembled, cleaned, inspected, repaired reassembled, and tested in accordance with approved standards and technical data acceptable to the civil authority and documented by ICON Aircraft, Inc.

Overhaul Facility

Facility in which the article is overhauled.

Repair Facility

Facility in which the article is repaired.

Repair Station

An organization that inspects, repairs, replaces, or overhauls aviation articles.

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 an annual 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 aircraft is being used for commercial operations such as flight instruction or rental, or both. A 100-Hour Inspection will be required for aircraft used for hire or flight instruction.

ASN

Aircraft Serial Number

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

HT

Horizontal Tail

INOP

Inoperable

EMS

Engine Management System

LH

Left Hand

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-B operates.

The Inspections chapter gives a list of the inspection tasks developed for the A5-B. In many cases these inspection tasks are useful in completing annual 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-B 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.

Applicable Aircraft Serial Number

Task is valid for all serial numbers unless otherwise specified.

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 or A&P).

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.

2.6 Maintenance System

2.6.1 Introduction

Most maintenance, inspection, repair, or 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.

2.6.2 Line Maintenance, Repairs, and Alterations

Line maintenance, repairs, and alterations must be approved by a certified A&P mechanic or Part 145 repair station. Some preventative maintenance tasks are authorized for completion by an Owner/Pilot. In these cases, the person performing the work must hold at least a Private Pilot certificate.

2.6.3 Heavy Maintenance, Repairs, and Alterations

Heavy maintenance, repairs, and alterations must be approved by a certified A&P mechanic or Part 145 repair station.

2.6.4 Overhaul

See Overhaul Maintenance section for overhaul information in this manual.

RELATED INFORMATION:

"Overhaul Maintenance" on page 4-6

2.6.5 Task-Specific Training

Task-specific training is specified for those tasks where specialized knowledge of the A5-B is required in order for the owner/pilot to accomplish the task properly. All maintenance may be performed by an A&P mechanic.

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

2.7 Directives and Continued Operational Safety

ICON Aircraft's Continued Operational Safety (COS) Program, ICA003321, is in place to monitor the safety of the A5-B 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 an airworthiness directive, service bulletin, or a service letter.

An FAA Airworthiness Directive requires immediate action from the owner/operator. Service Bulletins recommend future action and a service letter provides important information. Service letters 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 Owner Support via the following channels:

ICON Aircraft, Inc.
Attention: Owner 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 2-11
- "Feedback Forms" on page 23-2

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:

"Directives and Continued Operational Safety" on page 2-11

2.8 Maintenance Schedules

The A5-B 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.

NOTE: *A 100-Hour Inspection is only required for aircraft used for hire or commercial use, such as flight instruction and rental use. For personal use, a 100-Hour Inspection is optional.*

RELATED INFORMATION:

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

"Interval Maintenance – Calendar Intervals" on page 4-4

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.

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>

support@iconaircraft.com

"Disposable Replacement Parts" on page 2-16

2.11 Disposable Replacement Parts

The following lists the disposable replacement parts and source of supply for the A5-B. All items may be purchased through ICON Certified Service Providers. ICON Owner Support can help find the nearest service provider.

Item	Part Number
Main Gear Tires	ICA013047
Nose Gear Tire	ICA013789 or ICA013710 ¹
Brake Pads	ICA014949
Coarse Fuel Filter	FX 375-M
Fine Fuel Filter	874060
Air Filter	RU-0800
Spark Plugs	Per Rotax Maintenance Manual
Oil Filter	825016
Battery, ELT	ICA015030
ELT Remote Control Panel Indicator Battery	6 volt Lithium battery
ELT Audio Annunciator Battery	CR2,3

1. Weight and Balance update required when replacing ICA013789 with ICA013710 or ICA01370 with ICA013789.

2.12 Special Tools

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

Tool	ICON Part Number
Tie-Down Adapter	QRP9C0405
Fuel Sumping Tool	ME001052
Wing Hard Jacking Point	ICA009749 plus o-ring (9452K14)
Nose Landing Gear Rigging Tool	ITL002460-002
Eyeball Vent Tool	ITL001563
Gas Spring Compression Tool	ITL000971
Rudder Deflection Template	ICA013055
Propeller Pitch Adjustment Tool	ITL002081

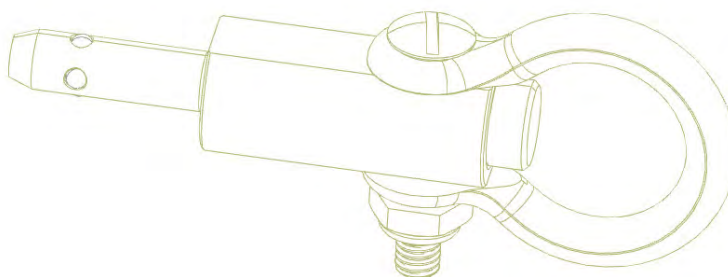


FIGURE 2-1
TIE-DOWN ADAPTER – QRP9C0405

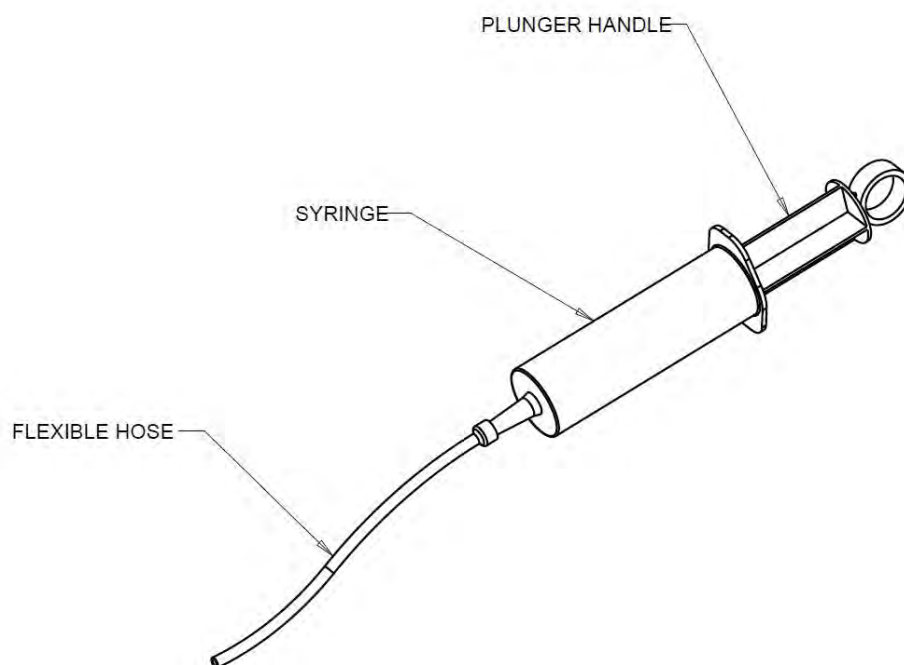


FIGURE 2-2
FUEL SUMPING TOOL – ME001052.

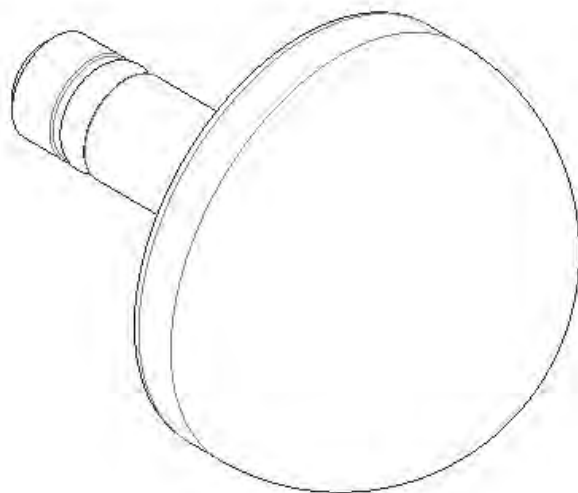


FIGURE 2-3
WING JACKING HARD POINT – ICA009749 WITH O-RING (9452K14).

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

- 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[®] 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
- Calibrated Tire Pressure Gauge

2.13 Weight and Balance Information

The A5-B 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:

"Empty Weight and CG Measurement While on Gear" on page 2-23

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

2.13.1 Aircraft Dimensional Data

2.13.1.1 Aircraft Reference Locations

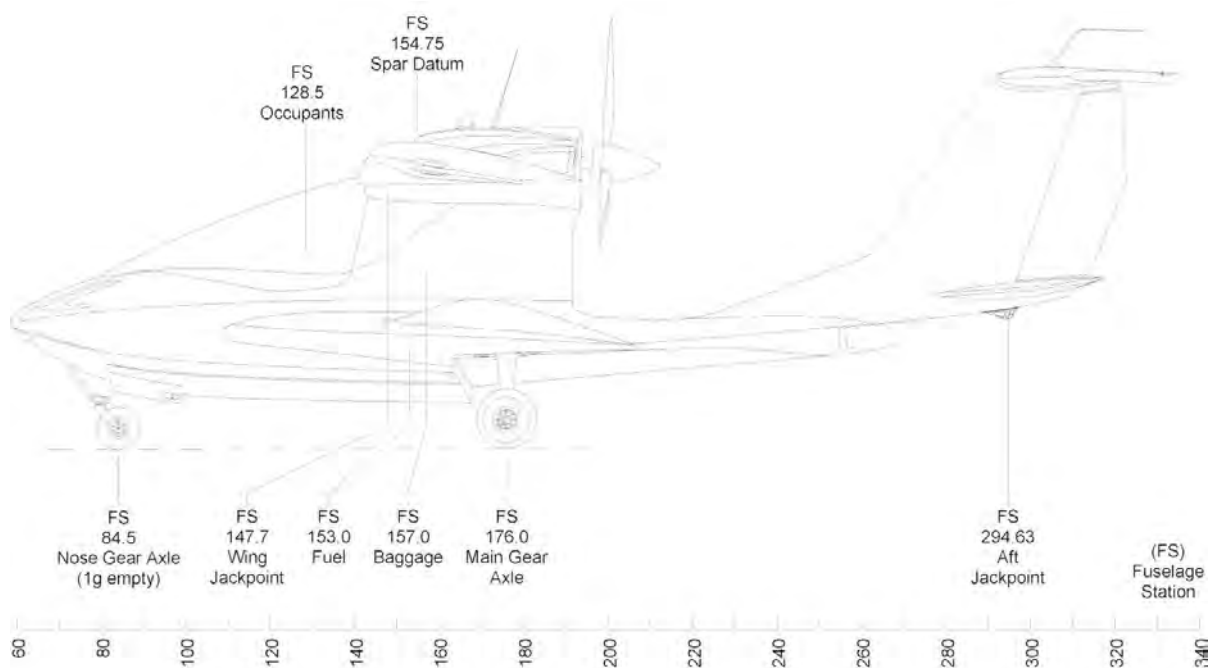


FIGURE 2-4
AIRCRAFT REFERENCE LOCATIONS.

2.13.2 Operating Weights and Loading

Maximum Occupant Weight

250 lb_f

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

Maximum Baggage/Cargo Weight

60 lb_f

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_f

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_f

Full Usable Fuel Weight

120 lb_f (20 US gal at 6 lb_f per US gal)

Removable Side Window Weight and Fuselage Station

7.18 lb_f (total both windows)

FS 127.6

Removable Wind Deflector Weight and Fuselage Station

0.3 lb_f (total both deflectors)

FS 113.4

2.13.3 CG Limits and Station Information

Maximum Takeoff Weight (MTOW)

1,510 lb_f

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. (See Figure 2-5.)

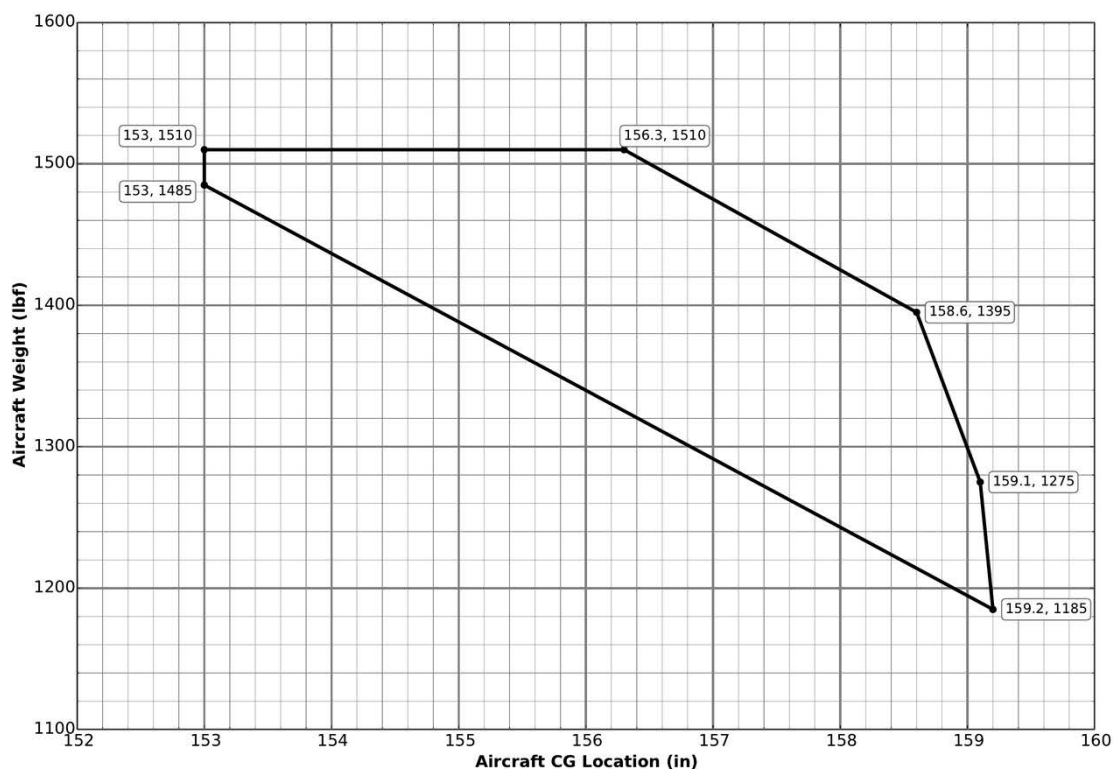
2.13.4 Center of Gravity Limits

FIGURE 2-5
WEIGHT AND CG ENVELOPE LIMITS

2.13.5 Empty Weight and CG Measurement

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

- 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.
- Brake fluid properly serviced.
- Bilge pump shall be run to ensure no water is in the aircraft.
- The wings shall be confirmed free of water.
- All control surfaces (ailerons, elevator, flaps) shall be checked and drained of water.
- The BRS Safety Pin for the Complete Aircraft Parachute shall be installed.
- The key shall be in the aircraft, installed in the ignition switch.
- All aircraft accessories are to be removed: Wind Deflectors, Tie Downs, Headsets, Removable Garmin, etc.
- POH must be in the aircraft, located in the co-pilot seatback pocket.
- Left and right hand rudder pedals must be in the most aft position.
- Verify all three (3) jacks are properly inserted in the jack points and are on the center of the scale (if used).
- Load cells or scales are verified to be within calibration.

2.13.5.1 Empty Weight and CG Measurement While on Gear

Use this procedure to determine the weight and balance condition of the A5-B on its landing gear.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

Consumable

None

TASK INSTRUCTIONS:

1. Install the platform scales under the two Main Gear and Nose Gear.
2. Remove the Cockpit Floorboard. (See "Remove Cockpit Floorboard" on page 4-39.)
3. Shim or block up the aircraft so that the bubble level beneath the right-side floorboard indicates a level condition.
4. Install the Cockpit Floorboard once level is attained. (See "Install Cockpit Floorboard" on page 4-40.)
5. Record the weight readings on the scales under the Nose Gear, RH Main Gear, and LH Main Gear.
6. 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 _f)	Arm, FS (in)	Moment, M=Wt x Arm (lb _f -in)
Nose Gear		84.5	
Right Main Gear		176.0	
Left Main Gear		176.0	
Total			

Total Weight (lb _f)	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 (POH) records. Enter the new weight and balance information as a new baseline in the POH.

RELATED INFORMATION:

"Weight and Balance Information" on page 2-20

"Interval Maintenance – Calendar Intervals" on page 4-4

"Pump Usable Fuel From Fuel Tank" on page 11-9

2.13.5.2 Empty Weight and CG Measurement While on Jackpoint Scales

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.
3. Verify that the scales are properly tared for an accurate reading.
4. Remove the floorboard by pulling up. (See "Remove Cockpit Floorboard" on page 4-39.) It will pop loose.
5. Jack the aircraft clear of the ground, so that the bubble level on the right floor support indicates a level condition.

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

6. Install Cockpit Floorboard. (See "Install Cockpit Floorboard" on page 4-40.)
7. Complete the following worksheet.
8. 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 _f)	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 POH records. Enter the new weight and balance information as a new baseline in the POH.

RELATED INFORMATION:

- "Weight and Balance Information" on page 2-20
- "Interval Maintenance – Calendar Intervals" on page 4-4
- "Main Landing Gear Inspection" on page 15-8
- "Nose Gear Inspection" on page 15-60
- "Check Landing Gear Extended Position" on page 15-5
- "Check Landing Gear Retracted Position" on page 15-6
- "Landing Gear Indicator Lights" on page 15-10
- "Main Landing Gear (MLG) Wheel and Axle Removal" on page 15-49
- "Main Landing Gear (MLG) Wheel and Axle Installation" on page 15-52
- "Pump Usable Fuel From Fuel Tank" on page 11-9
- "Landing Gear Excessive Friction Check" on page 15-16

2.13.5.3 G3X Empty Weight and CG Measurement While on Jackpoint Scales

Use this procedure to determine the weight and balance condition of the A5-B on its landing gear in G3X equipped aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.
3. Verify that the scales are properly tared for an accurate reading.
4. Remove the floorboard by pulling up. (See "Remove Cockpit Floorboard" on page 4-39.) It will pop loose.

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

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

6. Install Cockpit Floorboard. (See "Install Cockpit Floorboard" on page 4-40.)
7. Complete the following worksheet.
8. 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 _f)	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 POH records. Enter the new weight and balance information as a new baseline in the POH.

Record new weight and balance in the G3X. From the CONFIGURATION MODE home screen, select WEIGHT & BALANCE

- 1) Select EMPTY CG ARM and enter calculated value
- 2) Select EMPTY WEIGHT and enter measured value

2.14 Installed Equipment List

2.14.1 Required Equipment

The minimum equipment list for the aircraft is specified in ASTM 2245-16c section 8.2 and listed below. This document has been approved by the Aircraft Certification Office for the certification basis of the ICON A5-B.

ICA015294 (INDICATOR, AIRSPEED, 3.12DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

ICA014478 (INDICATOR, ALTIMETER, SINGLE PTR, 3.12DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

ICA010990 (INDICATOR, FUEL QTY, 2.25 DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

ICA010991 (INDICATOR, TACHOMETER, 2.25 DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

ICA014851 (IGNITION SWITCH ASSEMBLY)

See "Ignition Switch Replacement" on page 7-41.

ICA010987 (INDICATOR, ANGLE OF ATTACK, 2.25 DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

LS5000-904 (PANEL, ANNUNCIATOR)

See "Replace Annunciator Panel" on page 14-63.

ICA010992 (INDICATOR, OIL TEMP, 1.25 DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

ICA010993 (INDICATOR, OIL PRESSURE, 1.25 DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

ICA010994 (INDICATOR, COOLANT TEMP, 1.25 DIA)

See "Replace Instrument Panel Gauges" on page 14-47.

2.14.2 Standard Equipment

No standard equipment is available.

2.14.3 Optional Equipment That Replaces Required or Standard Equipment

There is no optional equipment that replaces required or standard equipment.

2.14.4 Additional Optional Equipment

Table 2-1: Specified Optional Equipment for the Aircraft

Part Number	Name	Weight (lbs)	Arm (in)
ICA008004 (IPS HANDLE INSTL)	ICON Parachute System (IPS)	35.7	161.8
ICA011670 (IPS HARNESS/RISER INSTL)			
ICA011669 (IPS PACKAGE INSTL)			
ICA008003 (IPS ROCKET INSTL)			

NOTE: Any additional equipment installed must comply with reference drawings and weight and balance limits, or be installed under a Supplemental Type Certificate (STC). Equipment installed under a STC may limit or invalidate the product's warranty.

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_f.

The nose gear tire is size 10-3.50x4, 4-ply aircraft tire with a maximum load rating of 460 lb_f.

The nose gear alternate tire size is 10-3.50x4, 6-ply aircraft tire with a maximum load rating of 555 lb_f.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Landing Gear" on page 4-14

2.16 Engine Specifications

The A5-B uses a Rotax 912iSc2 Sport 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 ³
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

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 17-77

"Engine Coolant Replacement" on page 17-57

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-B fuel system is designed to allow mixing of automotive fuel and AVGAS.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Operational Inspection" on page 4-25

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 region to 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 17-55

"Engine Test Run" on page 17-7

2.20 Fasteners

2.20.1 General

The A5-B 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.

When reused, lock nuts exhibiting less than the run-on torque listed in Table 2-2 shall be discarded.

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[®], 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 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.

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

NOTE: *For small fasteners (6-32 and 4-40) not using thread locking features, such as in electrical and electronic installations, the required tightening torques are as follows: For 6-32, torque to 6-10 in-lb. For 4-40, torque to 2-4 in-lb.*

Table 2-2: Torque Values for Specified Thread and Lock Nut. All values given are in-lb_f.

Condition	Specified thread and Lock Nut	
	No Lubrication	Lubrication Required
Thread	Final Torque (in-lb _f)	Final Torque (in-lb _f)
#6-32	8.0-9.5	7.8-9.3
#8-32	11.3-13.3	11.1-13.1
#10-32	19.3-22.3	16.4-19.4
1/4-28	38.9-48.9	38.4-48.4
5/16-24	70.2-95.2	70.8-95.8
3/8-24	110.2-125.2	113.2-128.2
7/16-20	N/A	307-337
1/2-20	N/A	338.5-458.5
9/16-18	N/A	540-660

Table 2-2: Torque Values for Specified Thread and Lock Nut. All values given are in-lb_f. (Continued)

Condition	Specified thread and Lock Nut	
	No Lubrication	Lubrication Required
Thread	Final Torque (in-lb _f)	Final Torque (in-lb _f)
5/8-18	N/A	705-885

Table 2-3: Torque Values for Specified Thread and Locking Nutplate. All values given are in-lb_f.

Condition:	Specified Thread and Locking Nutplate
	Nutplates, Lubrication Required
Thread	Final Torque (in-lb _f)
#6-32	6.5-8.0
#8-32	12.4-14.4
#10-32	25-28
1/4-28	48.7-58.7
5/16-24	77-102

Table 2-4: Torque Values for Specified Thread and Locking Helicoils All Values are Given in in-lb_f

Condition:	Specified Thread and Locking Helicoil
	Locking Helicoils, Stainless Steel Only, Applicable for Lubrication Required and no Lubrication
Thread	Final Torque (in-lb _f)
#6-32	6.5-8.0
#8-32	11.5-13.5
#10-32	24-27
1/4-28	57-64
5/16-18	93-108
5/16-24	120-145

Table 2-4: Torque Values for Specified Thread and Locking Helicoils All Values are Given in in-lb_f

Condition:		Specified Thread and Locking Helicoil	
		Locking Helicoils, Stainless Steel Only, Applicable for Lubrication Required and no Lubrication	
Thread		Final Torque (in-lb_f)	
3/8-24		175-190	
1/2-13		390-440	
1/2-20		440-560	

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-B 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 the A5-B 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-B will have unknown and possibly severe consequences for the airworthiness of the A5-B.

Chapter 3

AIRWORTHINESS LIMITATIONS

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3.1 Signature Page

The Airworthiness Limitations Section is FAA approved and specifies maintenance required under 14 CFR 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Los Angeles Aircraft Certification Office (ANM-100L)
3960 Paramount Blvd., Suite 100
Lakewood, CA 90712-4137
Phone: (562) 627-5200

FAA ACTION		
West Certification Branch		
<input checked="" type="checkbox"/> Approve	<input type="checkbox"/> Concur	<input type="checkbox"/> CFRs
<input type="checkbox"/> Reject	<input type="checkbox"/> Accept	<input type="checkbox"/> EASA CS
<input type="checkbox"/> Acknowledge		<input type="checkbox"/> CARs
TSO/Project #s: <u>TC Proj TC17574LA-A</u>		
Comments:		
Response Number:		
File Code: 8110 TC		
for WCB Manager	PAUL E LIPSKI	Digitally signed by PAUL E LIPSKI Date: 2023.12.21 12:41:01 -08'00'

3.2 Mandatory Inspections

There are no mandatory inspections or life limited parts installed on the A5-B.

Chapter 4

RECOMMENDED INSPECTIONS

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4.1 Maintenance Schedules

The A5-B 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.

NOTE: *A 100-Hour Inspection is only required for aircraft used for hire or commercial use, such as flight instruction and rental use. For personal use, a 100-Hour Inspection is optional.*

RELATED INFORMATION:

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

"Interval Maintenance – Calendar Intervals" on page 4-4

4.1.1 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)						
		Initial 25	50	100	200	500	1000	Initials
Engine	Annual and 100-Hour Inspection (See “Annual Inspections and 100-Hour Inspections” on page 4-8.)	See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series						
Engine	Engine Line Maintenance	See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series						
Engine	Spark Plugs Remove and Replace (See “General Engine Line Maintenance” on page 17-29.)	See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series						
	NOTE: If using leaded fuel (e.g. AVGAS) more than 30% of the time, See “Annual Inspections and 100-Hour Inspections” on page 4-8.							

Inspection Item	Maintenance	Interval (Flight Hours)						
		Initial 25	50	100	200	500	1000	Initials
Engine	Oil Change if using leaded fuel (i.e. AvGas more than 30% of the time). (See “Engine Oil Check and Replenish” on page 17-77.)	See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series						
	NOTE: If using primarily MoGas, See “Annual Inspections and 100-Hour Inspections” on page 4-8.							
Engine	Check/Clean Oil Tank (See “General Engine Line Maintenance” on page 17-29.)	See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series						
	NOTE: If using leaded fuel (e.g. AVGAS) more than 30% of the time, See “Annual Inspections and 100-Hour Inspections” on page 4-8.							

RELATED INFORMATION:

"Maintenance Schedules" on page 2-13

"Annual Inspections and 100-Hour Inspections" on page 4-8

"General Engine Line Maintenance" on page 17-29

4.1.2 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.

Inspection Item	Maintenance	Interval (Calendar Years)							Initials
		3 mo.	1	2	5	6	8	15	
Per Condition Inspections	Annual Inspection and 100-hr Inspection (See “Annual Inspections and 100-Hour Inspections” on page 4-8.)		X ¹² or every 100-hrs						
Avionics	Transponder Inspection/Test per “ELT Inspection and Function Check” on page 14-68(See “Transponder” on page 14-21.)			X					
Avionics	Perform a ELT Battery Self Test (See “ELT Battery Self Test” on page 14-71.)	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 2-22.)			X					
	NOTE: A new weight and balance is required every two years (24 calendar months). 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 manuals)				X				

Inspection Item	Maintenance	Interval (Calendar Years)							
		3 mo.	1	2	5	6	8	15	Initials
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 "Annual Inspections and 100-Hour Inspections" on page 4-8.) is required every 100 flight hours or every 12 calendar months, dependent on which comes first. On completion of the annual inspection or 100-hr inspection both the operation hours and calendar time are reset.

2.The 100-hour limitation may be exceeded by not more than 10 hours while en route to reach a place where the inspection can be done. The excess time used to reach a place where the inspection can be done must be included in computing the next 100 hours of time in service.

RELATED INFORMATION:

"Maintenance Schedules" on page 2-13

"Annual Inspections and 100-Hour Inspections" on page 4-8

"General Engine Line Maintenance" on page 17-29

"Wheel and Brake System Maintenance" on page 15-17

"Transponder" on page 14-21

"Empty Weight and CG Measurement While on Gear" on page 2-23

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

4.1.3 Overhaul Maintenance

The overhaul maintenance in the table below must be completed at the specified hours or calendar intervals. 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 Maintenance Manual (Heavy Maintenance) for Rotax Engine Type 912 i Series)	See Rotax Maintenance Manual (Heavy Maintenance) for Rotax Engine Type 912 i Series	

Area	Task	2000 Hours	Initials
Airframe	Inspection and Overhaul	X Or 10 years, whichever is shorter	

RELATED INFORMATION:
"Overhaul" on page 2-10

4.2 Annual Inspections and 100-Hour Inspections

This task includes the checklists that must be completed to accomplish an Annual 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.

NOTE: *The 100-hour limitation may be exceeded by not more than 10 hours while en route to reach a place where the inspection can be done. The excess time used to reach a place where the inspection can be done must be included in computing the next 100 hours of time in service.*

NOTE: *A 100-Hour Inspection is only required for aircraft used for hire or commercial use, such as flight instruction and rental use. For personal use, a 100-Hour Inspection is optional.*

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ME001052 Fuel Sumping Tools
 (2) ICA009750 Jack Adapters
 Engine Compression Tester
 Battery Capacity Tester
 Digital level (inclinometer) with 0.1° resolution

Parts Required

- (1) ME001080 100 Hour Kit, which includes
- (1) 874060 Fine Fuel Filter
 - (4) 842950 Exhaust Lock Nuts
 - (2) ICA012120 MLG Cotter Pins
 - (1) 825016 Oil Filter
 - (3) ICA012149 Aeroshell Sport Plus 4 Engine Oil

RELATED INFORMATION:

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

"Interval Maintenance – Calendar Intervals" on page 4-4

4.2.1 Annual and 100-Hour Inspection – Aircraft Identification and General

AIRCRAFT IDENTIFICATION			
Type & S/N	A5-B S/N:	Engine Model & S/N	
Registration 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
1	Using ICON Aircraft service website, verify all applicable service letters, service bulletins, and airworthiness directives/alerts have been complied with.			
2	Airworthiness displayed, registration aboard			
3	Aircraft identification plate installed			
5	POH/Weight and Balance aboard			
6	Verify complete aircraft weight and balance has been completed within the past 2 calendar years.			
7	Verify Transponder Inspection/Test per FAR 91.413 has been completed within the past 2 calendar years.			

4.2.2 Annual and 100-Hour Inspection – Wings

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory				
		S	U	Comments
1	Remove Inspection panels (4) (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)			
2	General inspection of the exterior/interior wing			
3	Aileron horn condition			
4	Aileron hinges proper attachment, no binding			
5	Aileron push rods, rod ends, bellcranks good condition, hardware secure			
6	Roll controls properly rigged (See "Inspect Roll Rigging" on page 10-17.)			
7	Flap hinges good condition, no binding, properly fastened, check for play side-to-side and up/down			
8	Flap push rods, rod ends, bellcranks good condition, hardware secure (See "Inspect Flap Rigging" on page 10-66.)			
9	Flaps properly rigged (See "Inspect Flap Rigging" on page 10-66.)			
10	Flap bellcrank stops secure			
11	Wing skins delaminate/voids (Visually check. If anomalies found, perform tap test. See "Manual Tap Test" on page 4-56.)			
12	Inspect all bonded joints, for cracks and delaminations (See "Wing Bonded Joints, Cracks, or Delaminations" on page 18-6.)			
13	Wing fold mechanism secure Check wave springs and U-joint attach rivets			
14	Check for excess play in wing pins (See "Inspect Wing Pins" on page 19-6.)			
15	Pitot tubes and lines good condition and connections secure			

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
16	AOA ports clear (left wing)			
17	Inspect wiring harness routing through wing and fold tube, security to spar			
18	Check wing electrical connector condition			
19	Check wingtip lights function and seal (See "Installation of Wing Tip Lights" on page 7-79.)			
20	Check that hardware is secure			
21	Reinstall inspection panels (4) (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)			

RELATED INFORMATION:

- "Inspect Roll Rigging" on page 10-17
- "Inspect Flap Rigging" on page 10-66
- "Installation of Wing Tip Lights" on page 7-79
- "Inspect Wing Pins" on page 19-6
- "Manual Tap Test" on page 4-56

4.2.3 Annual and 100-Hour Inspection – Fuel Systems

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory				
		S	U	Comments
1	Fuel lines check for chafing/signs of age/security/condition			
2	Fuel tank leak check (inspect near low fuel level sensor, access plate)			
3	Fuel tank secure (inspect rubber strap isolators and support isolators)			
4	Sump fuel tank for water or debris			
5	Fuel cap and neck secure			
6	Fuel pump leak check/security			
7	Check fuel valve for smooth operation and security			
8	Clean coarse fuel filter (Replace if damaged)			
9	Replace fine fuel filter.			
10	Perform leak check			
11	Fuel tank vent system clear. (See "Clear Fuel Tank Vent Line" on page 11-42.)(See "Clear Filler Neck" on page 11-11.)			

RELATED INFORMATION:

"Clear Fuel Tank Vent Line" on page 11-42

"Clear Filler Neck" on page 11-11

4.2.4 Annual and 100-Hour Inspection – Landing Gear

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
1	Check for rigging of all components, extended and retracted ((See “Check Landing Gear Extended Position” on page 15-5.)(See “Check Landing Gear Retracted Position” on page 15-6.)			
2	Test/check indicator lights. (See “Landing Gear Indicator Lights” on page 15-10.)			
3	Perform retraction/extension, note and investigate anything unusual (See “Retraction and Extension Time” on page 15-12.)			
4	Inspect Struts / Trunnions / Pushrods / Bellcranks / Actuator for attachment (See “Main Landing Gear Inspection” on page 15-8.)			
5	Inspect spring gear legs for cracks			
6	Check all bushings/bearings for wear/free play			
7	Check composite structure near mounts for cracks/disbonds/delaminations/fraying/etc.			
8	Inspect tires for cracks, wear, and serviceability			
9	Check wheel bearings for smooth operation			
10	Check tire pressure (See “Tire Inflation Pressures” on page 2-31.)			
11	Brake pads within limits (replacement recommended) (See “Beringer® Wheel and Brakes Maintenance Manual”)			
12	Check brake disks for wear (min thickness 2.8mm) (See “Beringer® Wheel and Brakes Maintenance Manual”)			
13	Check radial play between disc and internal rim per Beringer Maintenance Manual (See “Beringer® Wheel and Brakes Maintenance Manual”)			

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
14	Check brake fluid level (use only fluid that meets MIL-PRF-83282) (See "Beringer® Wheel and Brake Maintenance Manual")			
15	Check brake hydraulic lines for leaks and security			
16	Test toe brake pedals for sponginess (See "Beringer® Wheel and Brake Maintenance Manual")			
17	Check rigging of pedals (See "Inspect Rudder Pedal Rigging" on page 10-84.)			
18	Inspect condition of wheel/rotor clips.			
19	Check for corrosion			

RELATED INFORMATION:

- "Landing Gear Indicator Lights" on page 15-10
- "Main Landing Gear Inspection" on page 15-8
- "Nose Gear Inspection" on page 15-60
- "Tire Inflation Pressures" on page 2-31
- "Wheel and Brake System Maintenance" on page 15-17
- "Inspect Rudder Pedal Rigging" on page 10-84
- "Check Landing Gear Retracted Position" on page 15-6
- "Check Landing Gear Extended Position" on page 15-5

4.2.5 Annual and 100-Hour Inspection – Forward Fuselage and Hull

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory				
		S	U	Comments
1	Inspect bulkheads and skins for cracks			
2	Inspect for delaminated skin/voids (Visually check. If anomalies found, perform tap test See "Manual Tap Test" on page 4-56.)			
3	Inspect all visible bond lines for cracks and delaminations			
4	Inspect the security of all internal systems			
5	Inspect windows/canopy for cracks and fit			
6	Inspect canopy latching mechanism, hinges, and lock			
7	Check that windshield and windows are bonded to frames with no delaminations			
8	Inspect rudder pedals and master cylinders for security/leaks			
9	Check rudder pedal adjust mechanism for correct function. (See "Inspect Rudder Pedal Rigging" on page 10-84.)			
10	Inspect wing-to-fuselage root rib for cracks and delaminations			
11	Inspect systems and structure behind main bulkhead access panel (fuse box, ECU, relay panel, landing gear, water rudder actuator, and cables)			
12	Inspect roll cable tension. (See "Inspect Roll Cable Tension" on page 10-13.)			
13	Check control sticks for freedom of movement			
14	Check flap control operation and flap actuator/bellcrank/cables			
15	Check control cables, bellcranks and pulleys for corrosion, attachment, and operation (See "Inspect Control Cables" on page 10-8.)			

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
16	Ensure the cockpit instruments are properly marked			
17	Inspect DAC/MSC/instruments/lines for security and condition			
18	Inspect cockpit fresh air vents			
19	Inspect seats, seat belts/shoulder harnesses for security and condition			
20	Check taxi/landing lights function and condition/fogging/condensation			

RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Inspect Roll Cable Tension" on page 10-13

"Inspect Control Cables" on page 10-8

4.2.6 Annual 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
1	Ensure the detent pin with the "REMOVE BEFORE FLIGHT" flag is installed into the activation handle			
2	Inspect egress area for cracks/disbonds			
3	Check external placards for security			
4	Check the Do-Not-Use date of the parachute in the aircraft logbook. If past the Do-Not-Use date, follow the removal steps (See "Parachute Package Removal" on page 20-14.) and contact BRS for instructions.			
5	Check the Do-Not-Use date of the rocket in the aircraft logbook. If past the Do-Not-Use date, follow the removal steps (See "Extraction Rocket Removal" on page 20-31.) and contact BRS for instructions.			
6	Check rocket for security			
7	Check carbon fiber Rocket Mount for security			
8	Inspect activation cable line from the activation handle to the rocket for cracking, kinking, or chaffing.			
9	Inspect activation line for color, brightness, and texture variations			
10	Check activation handle mounting plate for security			
11	Inspect activation handle for damage			
12	Ensure electrical connector on the back of the rocket mount bracket is properly connected and check for corrosion and chafing damage			
13	Ensure placards text is legible			

RELATED INFORMATION:
"ICON Parachute System (IPS)" on page 20-1

4.2.7 Annual and 100-Hour Inspection – Aft Fuselage and Empennage

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
1	Remove two inspection panels and inspect seals			
2	Check horizontal tail for security and condition			
3	Check horizontal tail tips for security and condition (See "Measure Horizontal Tail Tip Anti Rotation Pin Wear" on page 13-26.)			
4	Check horizontal tail attach points for security, evidence of motion, damage			
5	Inspect outboard elevator and rudder attach points and verify hardware is secure			
6	Inspect hinges/rod ends for attachment and free play			
7	Inspect empennage skin for damage/delaminations Verify no lateral play on elevator			
8	Verify no more vertical play/slop on air rudder than 0.018"			
9	Inspect yaw cable tension (See "Inspect Yaw Cable Tension" on page 10-81.)			
10	Inspect pitch cable tension (See "Inspect Pitch Cable Tension" on page 10-43.)			
11	Inspect pitch trim system, mounting bracket, and linkage for security, proper rigging, and wear (See "Measure Pitch Trim Tab Wear" on page 10-64.)(See "Inspect Pitch Trim Tab Rigging" on page 10-62.)			
12	Inspect all control cables, hinges, pulleys, pushrods, bellcranks			
13	Check the water rudder for excessive play. There should not be more than 0.040" play vertically			
14	Check for corrosion			

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
15	Inspect all control stops for condition and security and proper rigging			
16	Static ports clear			
17	Inspect yaw rigging (See "Inspect Yaw Rigging" on page 10-86.)			
18	Inspect pitch rigging (See "Inspect Pitch Rigging" on page 10-45.)			
19	Reinstall tail access panels			

RELATED INFORMATION:

"Inspect Pitch Rigging" on page 10-45

"Inspect Yaw Rigging" on page 10-86

"Inspect Pitch Cable Tension" on page 10-43

"Inspect Yaw Cable Tension" on page 10-81

"Measure Horizontal Tail Tip Anti Rotation Pin Wear" on page 13-26

4.2.8 Annual and 100-Hour Inspection – Engine and Propeller

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory				
		S	U	Comments
1	Inspect engine per Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series			
3	Inspect engine mount for wear, cracking, missing paint, general condition. (See “Inspect Engine Mount” on page 17-33.)			
4	Check engine mount attachments (10 places) are secure. (See “Inspect Engine Mount” on page 17-33.)			
5	Check for oil leaks from line fittings and oil tank drain valve. See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series			
6	Check firewall for condition and coverage (gaps between airframe and firewall)			
7	Check oil tank/mounting brackets for security			
8	Inspect oil cooler and radiator for leaks and condition			
9	Inspect throttle control for proper travel and security (See “Inspect Throttle Control for Proper Travel and Security” on page 17-36.)			
10	Check exhaust system for attachment, cracks, general condition			
11	Check cowling for cracks and condition and security of fasteners. (See “Install Engine Cowlings” on page 17-19.)			
12	Inspect propeller/hub per the latest Revision of Sensenich 3B0R5 Installation Instructions, verify that hardware is secure			
13	Inspect fan and propeller extension, verify that hardware is secure			
14	Remove spinner dome (See “Remove Spinner Dome” on page 17-111.)			

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
15	Check torque of propeller bolts per latest revision of Sensenich 3B0R5 Installation Instructions			
16	Reinstall spinner dome (See "Install Spinner Dome" on page 17-112.)			
17	Check security and condition of engine grounding wires			

RELATED INFORMATION:

- "Propeller Inspection" on page 17-94
- "Air Filter Cleanliness Inspection" on page 17-47
- "Air Filter Security Inspection" on page 17-48
- "Propeller Installation Onto Engine" on page 17-109
- "Inspect Throttle Control for Proper Travel and Security" on page 17-36
- "Remove Spinner Dome" on page 17-111
- "Install Spinner Dome" on page 17-112
- "Grease Coil Pack Connections" on page 17-43

4.2.9 Annual and 100-Hour Inspection – Avionics and Electrical

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
1	Check that battery is free of corrosion and secure			
2	Perform battery capacity test in accordance with latest release of Concorde Maintenance Manual			
3	Perform ELT inspection/functional check. Record ELT battery expiration date. See “ELT Inspection and Function Check” on page 14-68. <i>NOTE: ELT inspection/functional check required annually per 14 CFR 21.207(d). Not required during a 100-Hour Inspection.</i>			
4	Inspect antenna mount and wiring for security			
6	Check wires to battery ground			
7	Inspect radio/leads/wires for attachment and security			
8	Inspect wiring instrument panel for attachment and security			
9	Check bilge pump for function, clear of debris. See “Check Bilge Pump Function” on page 7-70. See “Bilge Pump Debris Removal” on page 8-6.			
10	Check wiring harness for chafing/security/condition. See “Inspect, Repair, and Secure Wiring Harness with Signs of Chafing” on page 7-43.			
11	Check for wire/connector strains			
12	Calibrate AOA pressure transducer. See “Calibrate AOA Pressure Transducer” on page 14-46.			
13	Verify regulator B fan is operating with master power turned on			
14	Inspect regulator B wires for browning near connector. See “Inspect Regulator Wires” on page 17-85.			

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory		S	U	Comments
15	Inspect regulator A wire for browning near connector. See "Inspect Regulator Wires" on page 17-85.			
16	Inspect Rotax fuse box for blown fuses and correct sized fuses are installed			
17	Inspect overhead panel for blown fuses and correct sized fuses are installed. See "Replace Overhead Console Fuses" on page 14-38.			

RELATED INFORMATION:

- "Bilge Pump Debris Removal" on page 8-6
- "Check Bilge Pump Function" on page 7-70
- "Calibrate AOA Pressure Transducer" on page 14-46
- "Verify Altimeter Calibration" on page 14-197

4.2.10 Annual and 100-Hour Inspection – Operational Inspection

Correct all unsatisfactory items prior to flight S=Satisfactory, U=Unsatisfactory				
		S	U	Comments
1	Perform toolbox inventory check (no tools left in aircraft)			
2	Visual inspection of the engine/propeller			
3	All inspection panels and fairings secure			
4	Personnel with fire bottles standing by			
5	Brake system check			
6	Proper fuel in tank			
7	Engine start procedures			
8	Perform engine runup per POH			
9	Electrical system check			
10	Check annunciator panel function			
11	Cool down period/engine shut down (See "Engine Test Run" on page 17-7.)			
12	Perform oil, hydraulic, and fuel leak check			
13	Check overhead console fuses			

RELATED INFORMATION:

"Annunciator Panel Function" on page 14-62

"Oil Cooler and Radiator Condition Inspection" on page 17-56

"Approved Fuel Grades and Specifications" on page 2-34

"Inspect Engine Mount" on page 17-33

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Basic Electrical System Inspection" on page 7-39

4.2.11 Annual and 100-Hour Inspection – Paperwork

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

Aircraft A5-B S/N _____ (serial number) has completed an annual inspection as detailed in the checklist above.

Aircraft Total Time: _____

Name: _____

Signature: _____

Date: _____

4.3 General Inspection Tasks

4.3.1 Removal and Installation of Inspection Panels and Fairings

Removing and installing the aircraft inspection panels.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

Consumables

Tef-Gel® (ICA012078)

The A5-B 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 with Tef-Gel[®] using a T20 Torx driver. Torque to 25-28 in-lbs.
 - Water Rudder Access Panel – 8X Torx head 8-32 fasteners with Tef-Gel[®] using a T15 Torx driver. Torque to 12.4-14.4 in-lbs.
 - Air Rudder Access Panel – 7X Torx head 8-32 fasteners with Tef-Gel[®] using a T15 Torx driver. Torque to 12.4-14.4 in-lbs.
 - Horizontal Tail Tip Access Panel – 2X Torx head 6-32 fasteners (under each tip) with Tef-Gel[®] using a T10 Torx driver. Torque to 6.5-8.0 in-lbs.
 - Wing Fold Access Panel – 9X Torx head 8-32 fasteners (on each wing) with Tef-Gel[®] using a T15 Torx driver. Torque to 12.4-14.4 in-lbs.
 - Aileron Access Panel – 4X Torx head 8-32 fasteners (on each wing) with Tef-Gel[®] using a T15 Torx driver. Torque to 12.4-14.4 in-lbs.

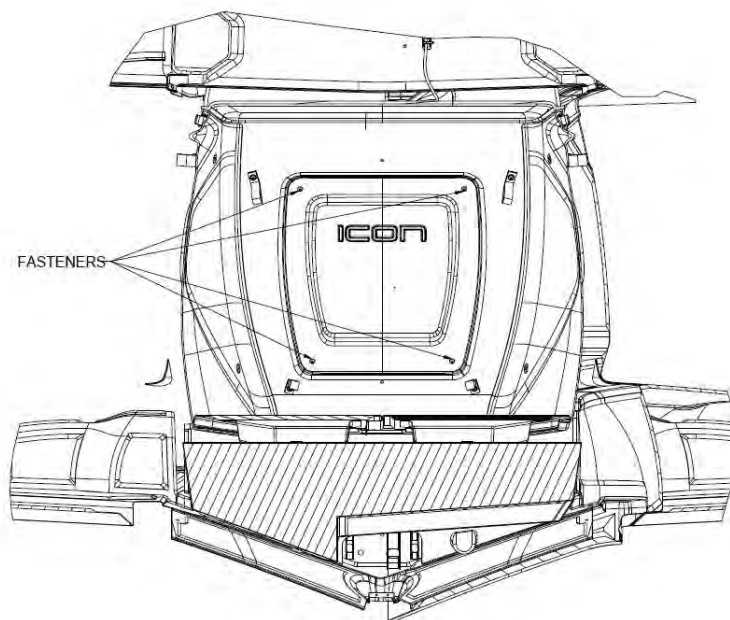


FIGURE 4-1
AFT BULKHEAD BAGGAGE PANEL.

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Forward Fuselage and Hull" on page 4-16
"Annual and 100-Hour Inspection – Operational Inspection" on page 4-25
"Install Flap Gas Strut" on page 10-78
"Basic Structural and Firewall Inspection" on page 4-56
"Main Landing Gear Inspection" on page 15-8
"Check Landing Gear Extended Position" on page 15-5
"Check Landing Gear Retracted Position" on page 15-6
"Basic Electrical System Inspection" on page 7-39
"Remove Flap Actuator" on page 10-72
"Install Flap Actuator" on page 10-75
"Horizontal Tail Removal" on page 13-14
"Horizontal Tail Installation" on page 13-16
"Removal of Water Rudder Cable" on page 12-19
"Installation of Water Rudder Cable" on page 12-21
"Remove Flap Gas Strut" on page 10-77
"Air Rudder Installation" on page 13-20
"Air Rudder Removal" on page 13-9
"Inspect Rudder Pedal Adjustment Mechanism" on page 10-5
"Adjust Rudder Pedal Rigging" on page 10-102
"Rudder Pedals Remove and Redo" on page 10-104
"Adjust Yaw Rigging" on page 10-100
"Rigging Roll Controls" on page 10-20
"Inspect Roll Cable Tension" on page 10-13
"Rigging Yaw Controls" on page 10-88
"Rigging Pitch Controls" on page 10-47
"Basic Parachute Inspection" on page 20-5
"Inspect Yaw Cable Tension" on page 10-81
"Parachute Package Inspection" on page 20-12
"Parachute Package Removal" on page 20-14
"Parachute Package Installation" on page 20-15
"Harness Inspection Instructions" on page 20-20
"Extraction Rocket Inspection" on page 20-30
"Extraction Rocket Removal" on page 20-31
"Extraction Rocket Assembly and Installation" on page 20-32
"Arming Extraction Rocket" on page 20-36
"Activation System Inspection" on page 20-40
"Activation System Installation" on page 20-42
"Harness Installation" on page 20-21
"Main Landing Gear (MLG) Actuator Removal" on page 15-54
"Inspect, Repair, and Secure Wiring Harness with Signs of Chafing" on page 7-43
"Remove Fuse Box and Regulators" on page 17-87
"Install Fuse Box and Regulators" on page 17-90
"Inspect Regulator Wires" on page 17-85
"Rigging Flap Controls" on page 10-68
"Remove Horizontal Tail Tip Lock Switches" on page 13-6
"Install Horizontal Tail Tip Lock Switches" on page 13-21
"Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-18
"Extract ECU Data" on page 17-13

4.3.2 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 10-20
- "Inspect Roll Cable Tension" on page 10-13
- "Rigging Yaw Controls" on page 10-88
- "Rigging Pitch Controls" on page 10-47
- "Basic Parachute Inspection" on page 20-5
- "Parachute Package Inspection" on page 20-12
- "Parachute Package Removal" on page 20-14
- "Parachute Package Installation" on page 20-15
- "Harness Inspection Instructions" on page 20-20
- "Extraction Rocket Inspection" on page 20-30
- "Extraction Rocket Removal" on page 20-31
- "Extraction Rocket Assembly and Installation" on page 20-32
- "Arming Extraction Rocket" on page 20-36
- "Activation System Inspection" on page 20-40
- "Activation System Installation" on page 20-42
- "Harness Installation" on page 20-21
- "Inspect, Repair, and Secure Wiring Harness with Signs of Chafing" on page 7-43

4.3.2.1 Headliner Removal

Use this procedure to remove the headliner.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Fine Fuel Filter" on page 11-37
"Rigging Roll Controls" on page 10-20
"Inspect Roll Cable Tension" on page 10-13
"Rigging Yaw Controls" on page 10-88
"Rigging Pitch Controls" on page 10-47
"Remove Roll Cables" on page 10-28
"Remove Fuel Tank Assembly" on page 11-12
"Remove Fuel Pressure Sensor" on page 14-203
"Remove Fine Fuel Filter" on page 11-37
"Baggage Sidewall Panel Removal" on page 4-36

4.3.2.2 Headliner Installation

Use this procedure to install the headliner.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 11-37
 "Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Install Fuel Tank Assembly" on page 11-16
 "Install Fuel Pressure Sensor" on page 14-204
 "Install Fine Fuel Filter" on page 11-40
 "Baggage Sidewall Panel Installation" on page 4-38

4.3.2.3 Seat Belt Inertia Reel Removal

Use this procedure to remove the seat belt inertia reel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Rigging Roll Controls" on page 10-20
"Inspect Roll Cable Tension" on page 10-13
"Rigging Yaw Controls" on page 10-88
"Rigging Pitch Controls" on page 10-47
"Baggage Sidewall Panel Removal" on page 4-36

4.3.2.4 Seat Belt Inertia Reel Installation

Uses this task to install the seat belt inertia reel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Baggage Sidewall Panel Installation" on page 4-38

4.3.2.5 Baggage Floor Removal

Use the following procedure to remove the baggage floor.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Remove Fuel Level Sensor" on page 14-207
"Main Landing Gear (MLG) Removal" on page 15-39
"Main Landing Gear (MLG) Installation" on page 15-42
"Rigging Roll Controls" on page 10-20
"Inspect Roll Cable Tension" on page 10-13
"Rigging Yaw Controls" on page 10-88
"Rigging Pitch Controls" on page 10-47
"Seat Belt Replacement" on page 9-3
"Remove Roll Cables" on page 10-28
"Remove Fuel Tank Assembly" on page 11-12
"Baggage Sidewall Panel Removal" on page 4-36

4.3.2.6 Baggage Floor Installation

Use the following procedure to install the baggage floor.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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_f.
-

VERIFICATION METHOD:

The procedure is complete when the baggage floor is installed.

RELATED INFORMATION:

"Remove Fuel Level Sensor" on page 14-207
 "Main Landing Gear (MLG) Removal" on page 15-39
 "Main Landing Gear (MLG) Installation" on page 15-42
 "Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Seat Belt Replacement" on page 9-3
 "Install Fuel Tank Assembly" on page 11-16
 "Baggage Sidewall Panel Installation" on page 4-38

4.3.2.7 Baggage Sidewall Panel Removal

Use the following task to remove the baggage sidewall panel.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

05 – Equipment and Furnishings

Consumables

None

TASK INSTRUCTIONS:

1. Remove the headliner. Push outboard on sidewall panel as necessary to remove headliner flange from sidewall panel U-channel. (See “Headliner Removal” on page 4-30.)

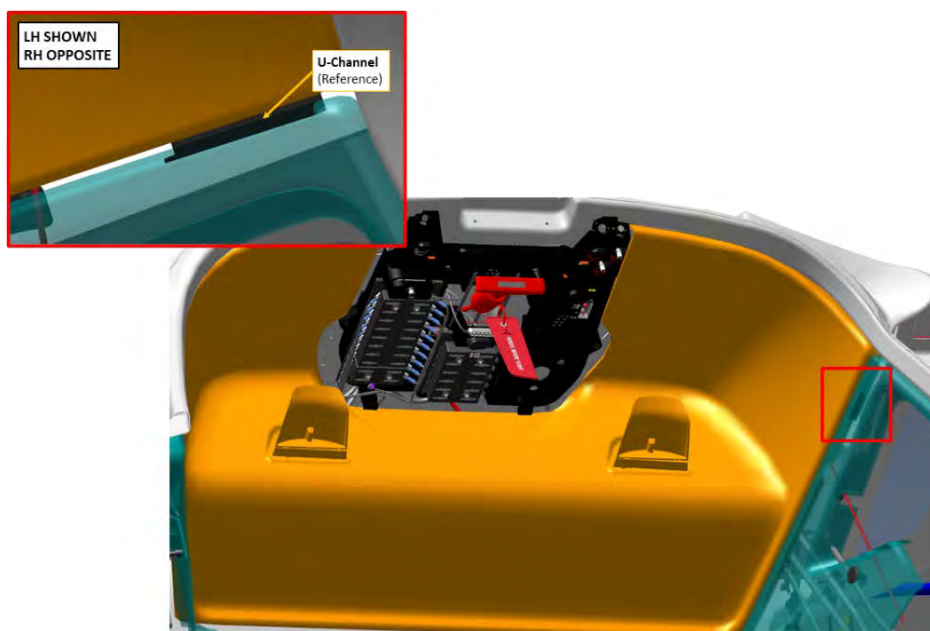


FIGURE 4-2
BAGGAGE SIDEWALL PANEL REMOVAL

2. Remove the baggage floors. (See “Baggage Floor Removal” on page 4-34.)
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 4-32.)
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 four of these fasteners in each sidewall panel.
6. Remove sidewall panel from the aircraft.

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Remove Roll Cables" on page 10-28
 "Baggage Floor Removal" on page 4-34
 "Seat Belt Inertia Reel Removal" on page 4-32
 "Headliner Removal" on page 4-30

4.3.2.8 Baggage Sidewall Panel Installation

Use the following procedure to install the baggage sidewall panel.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

05 – Equipment and Furnishings

Consumables

None

TASK INSTRUCTIONS:

1. Locate the sidewall panel into rough position.
 2. Align the four holes with the underlining structure and install the four push-clip fasteners. Pushing their center buttons in flush once in place, will expand their locking feature.
 3. Use a T20 Torx driver and 3/8 wrench to install the seat back closeout. Torque 3x fasteners to 25-28 in-lbs.
 4. Install the seat belt reels. (See "Seat Belt Inertia Reel Installation" on page 4-33.)
 5. Install the baggage floors. (See "Baggage Floor Installation" on page 4-35.)
 6. Install the headliner. Ensure headliner flange is inserted into the U-channel on the top of the side-wall panels. (See "Headliner Installation" on page 4-31.)
-

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Seat Belt Inertia Reel Installation" on page 4-33
 "Baggage Floor Installation" on page 4-35
 "Headliner Installation" on page 4-31

4.3.2.9 Remove Cockpit Floorboard

Use this procedure is used to remove the cockpit floorboard.

TASK INFORMATION:
Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Remove Roll Cables" on page 10-28

4.3.2.10 Install Cockpit Floorboard

Use this procedure to install the Cockpit Floorboard.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

Consumables

None

TASK INSTRUCTIONS:

1. Guide the forward "tongue" of the forward floorboard through the gap under the heelstrike fitting.
 2. Slide the floorboard's forward edge tabs into the receiving slots of the forward floor support.
 3. Place the Aft Floorboard into position, align the four ball socket fasteners, and press down until the balls engage the sockets.
-

VERIFICATION METHOD:

After installing the floorboard, the task is complete.

RELATED INFORMATION:

"Rigging Roll Controls" on page 10-20
"Inspect Roll Cable Tension" on page 10-13
"Rigging Yaw Controls" on page 10-88
"Rigging Pitch Controls" on page 10-47

4.3.2.11 Remove Cockpit Sidewall Panel

Use this procedure to remove the Cockpit Sidewall Panel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

Consumables

None

TASK INSTRUCTIONS:

1. Remove the armrest pad (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:

After removing the Cockpit Sidewall Panel, the task is complete.

4.3.2.12 Install Cockpit Sidewall Panel

Use this procedure to install the Cockpit Sidewall Panel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

ConsumablesTef-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® and torque each to 13 in-lb_f with a T15 Torx driver.
 4. Install the armrest.
-

VERIFICATION METHOD:

After installing the Cockpit Sidewall Panel in the aircraft, the task is complete.

4.3.2.13 Remove Seat Back

Use this procedure to remove the Seat Back.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 "Remove Cockpit Sidewall Panel" on page 4-41.)
2. Remove Baggage Floor adjacent to the Seat Back to be removed. (See "Baggage Floor Removal" on page 4-34.)

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 two 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 the Seat Back carefully so as not to scratch paint or damage the Seat Belt.

VERIFICATION METHOD:

After removing the Seat Back from the aircraft, the task is complete.

RELATED INFORMATION:

"Remove Fuel Level Sensor" on page 14-207
 "Seat Pan Removal" on page 4-45
 "Main Landing Gear (MLG) Removal" on page 15-39
 "Main Landing Gear (MLG) Installation" on page 15-42
 "Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Seat Belt Replacement" on page 9-3
 "Remove Roll Cables" on page 10-28
 "Remove Fuel Tank Assembly" on page 11-12

4.3.2.14 Install Seat Back

The following procedure is used to install the seat back.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

1x AN3C6A (BOLT)

5x NAS1149C036R (WASHER)

ME000334-F (RH SEATBACK)

ME000335-F (LH SEATBACK)

Aircraft System and Number

NA

Consumables

Tef-Gel® (ICA012078)

TASK INSTRUCTIONS:

1. Place seat back into position.
 2. Place seat belt into channel.
 3. Install the seat back using the five seat back mounting bolts finger with Tef-Gel®. Torque all bolts to 25-28 in-lbs with a 3/8 wrench.
 4. Install the seat back closeout using the two screws (two for the LH and one for the RH) and one bolt with Tef-Gel®. Torque all screws and bolts to 25-28 in-lbs with a T20 Torx driver and 3/8 wrench.
 5. Install the baggage floors. (See "Baggage Floor Installation" on page 4-35.)
 6. Install the cockpit sidewall panels. (See "Install Cockpit Sidewall Panel" on page 4-42.)
-

VERIFICATION METHOD:

The task was completed when the seat back is installed.

RELATED INFORMATION:

"Remove Fuel Level Sensor" on page 14-207
"Main Landing Gear (MLG) Removal" on page 15-39
"Main Landing Gear (MLG) Installation" on page 15-42
"Rigging Roll Controls" on page 10-20
"Inspect Roll Cable Tension" on page 10-13
"Rigging Yaw Controls" on page 10-88
"Rigging Pitch Controls" on page 10-47
"Seat Belt Replacement" on page 9-3
"Install Fuel Tank Assembly" on page 11-16

4.3.2.15 Seat Pan Removal

The following procedure is used to remove the seat pan.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

Consumables

None

TASK INSTRUCTIONS:

1. Remove seat back. (See "Remove Seat Back" on page 4-43.)
 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 "Remove Cockpit Floorboard" on page 4-39.)
 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:

- "Remove Seat Back" on page 4-43
- "Rigging Roll Controls" on page 10-20
- "Inspect Roll Cable Tension" on page 10-13
- "Rigging Yaw Controls" on page 10-88
- "Rigging Pitch Controls" on page 10-47
- "Seat Belt Replacement" on page 9-3
- "Remove Roll Cables" on page 10-28

4.3.2.16 Seat Pan Installation

Use the following task to install the seat pan.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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_f.

6. Install the aft cockpit floor board on the appropriate side. (See "Install Cockpit Floorboard" on page 4-40.)
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:

"Rigging Roll Controls" on page 10-20
 "Inspect Roll Cable Tension" on page 10-13
 "Rigging Yaw Controls" on page 10-88
 "Rigging Pitch Controls" on page 10-47
 "Seat Belt Replacement" on page 9-3

4.3.2.17 Remove Autopilot (AP) Control Panel

Use the following procedure to remove the Autopilot (AP) control panel.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

Consumables

None

TASK INSTRUCTIONS:

1. G3X Only--Remove Autopilot blank from center stack bezel by unclipping RH side first and pushing LH side out of face of center stack bezel. (See Figure 4-9.)

AP Only

2. Remove the six screws and six threaded inserts from the radio stack bezel. (See Figure 4-8.)
3. Remove the controller from the bracket. (See Figure 4-7.)
4. Remove trim position indicator. (See Figure 4-4. See Figure 4-5.)

AP and G3x

5. Remove threaded inserts from radio stack bezel. (See Figure 4-3.)
-

VERIFICATION METHOD:

Procedure is complete when AP control panel can be removed.

RELATED INFORMATION:

"Install Autopilot (AP) Control Panel" on page 4-49

4.3.2.18 Install Autopilot (AP) Control Panel

Use the following procedure to install the Autopilot (AP) control panel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME000622-NSG3X (BEZEL PAD PRINTED ASSY, CENTER STACK)

2x IUC-440-2 (INSERT, THREADED, TAPERED, 4-40X.219)

6x IUC-632-2 (INSERT, THREADED, TAPERED, 6-32X.250)

ICA013683 (INDICATOR, TRIM POSITION)

ICA014828 (BRACKET, AUTOPILOT, GMC 507, GARMIN)

ICA014703 (CONTROLLER, AUTOPILOT FLIGHT CONTROL SYSTEM, GMC 507, GARMIN)

6x 6C50MTT3 (SCREW, MACH TRH, 6LOBE, CRES, 6-32X.5000)

ME001906 (BLANK, AUTOPILOT)

TY24MX (CABLE TIE)

Aircraft System and Number

NA

Consumables

ICA012078 (LUBRICANT)

TASK INSTRUCTIONS:

1. Heat stake the threaded inserts into the radio stack bezel flush $+.010/-0.03$ as shown. Install inserts in the orientation shown, leading with the tapered side into the hole.
 - a. Heat the soldering iron to approximately $\sim 700^{\circ}\text{F}$.
 - b. Set the insert into the hole with the tapered side down.
 - c. Using the pre-heated soldering tip, gently press the insert into the indicated hole until the insert is flush $+.010/-0.03$.
 - d. Repeat for remaining inserts.

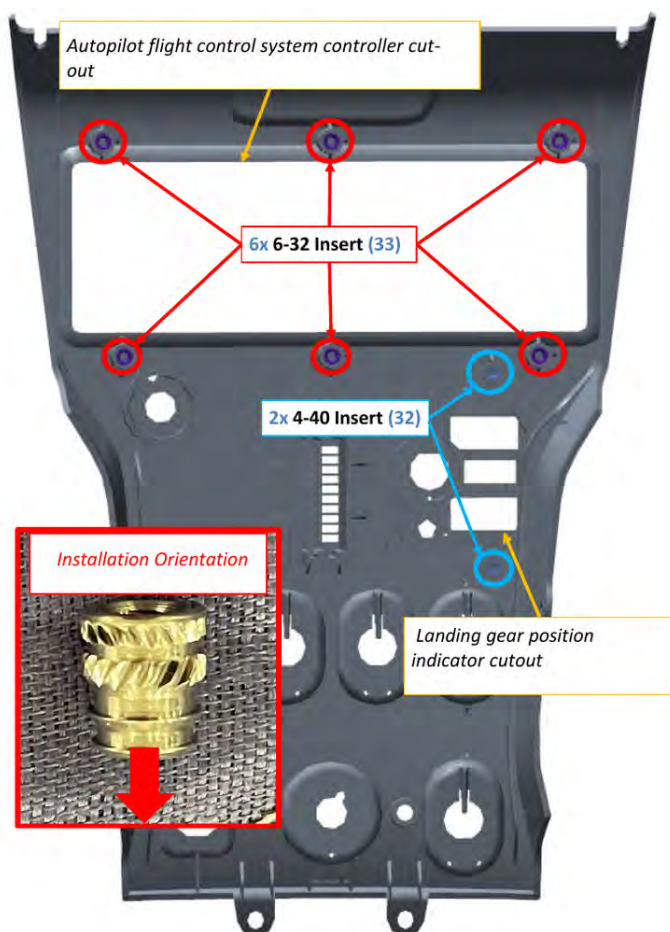


FIGURE 4-3
HEAT STAKE INSERTS

2. Install 2x 4-40 inserts landing gear position indicator cutout.
3. Install 6x 6-32 inserts around autopilot flight control system controller cutout as shown.

4. Install trim indicator.
 - a. Drill open trim indicator mounting holes using #50 drill bit (.070"Ø) x .5"-.75" deep.

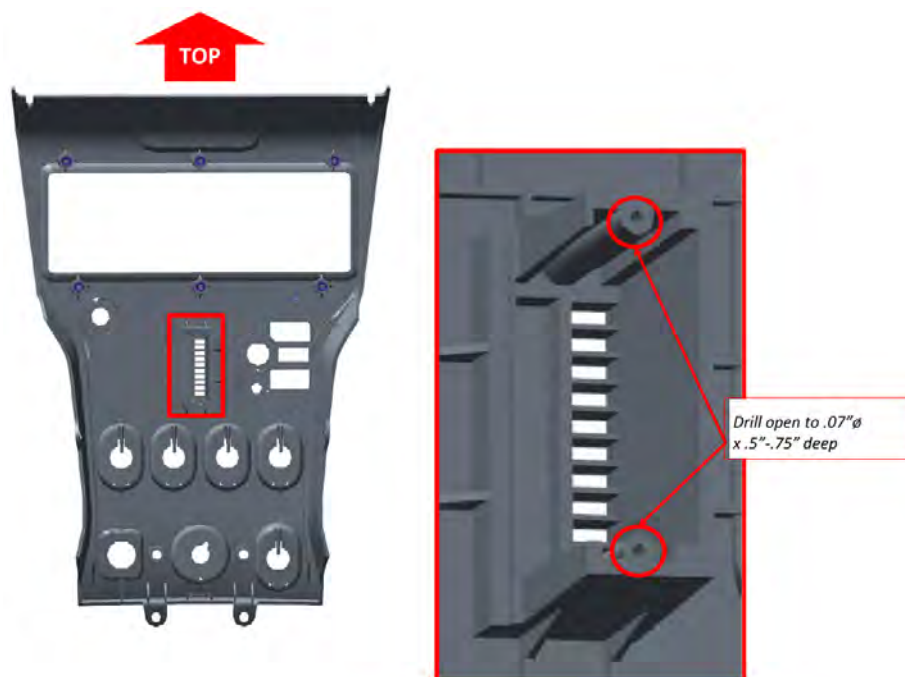


FIGURE 4-4
DRILL OPEN TRIM

- b. Remove trim position indicator from factory housing by temporarily removing 2x screws. Discard factory housing and save 2x screws.

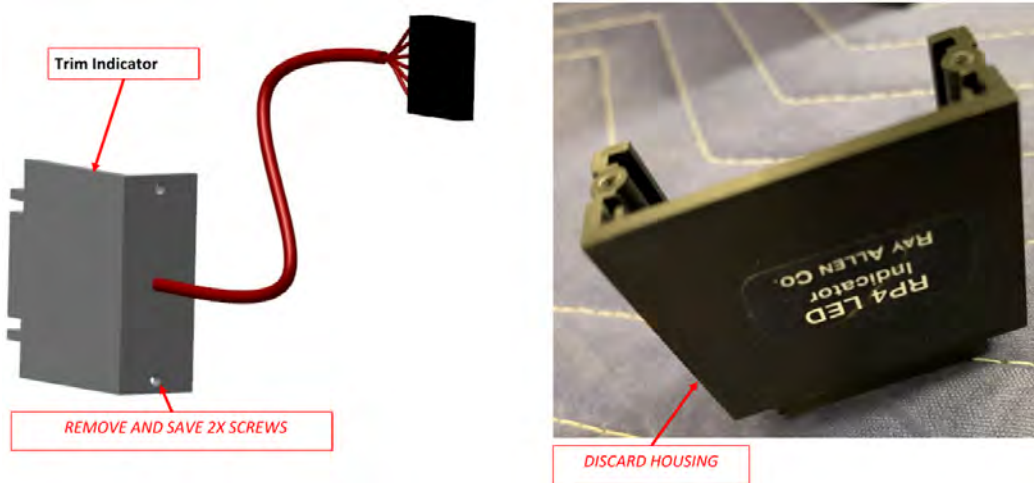


FIGURE 4-5
INSTALL TRIM INDICATOR

- c. Test fit the trim position indicator into the radio stack bezel. If the LED indicators do not fit through the slots in the bezel, use a small jeweler's file to clean up any plastic material that causes the interference. Install trim position indicator into radio stack bezel using the 2x

screws removed in the previous step. Apply lubricant liberally to the threads and shanks of 2x screws.

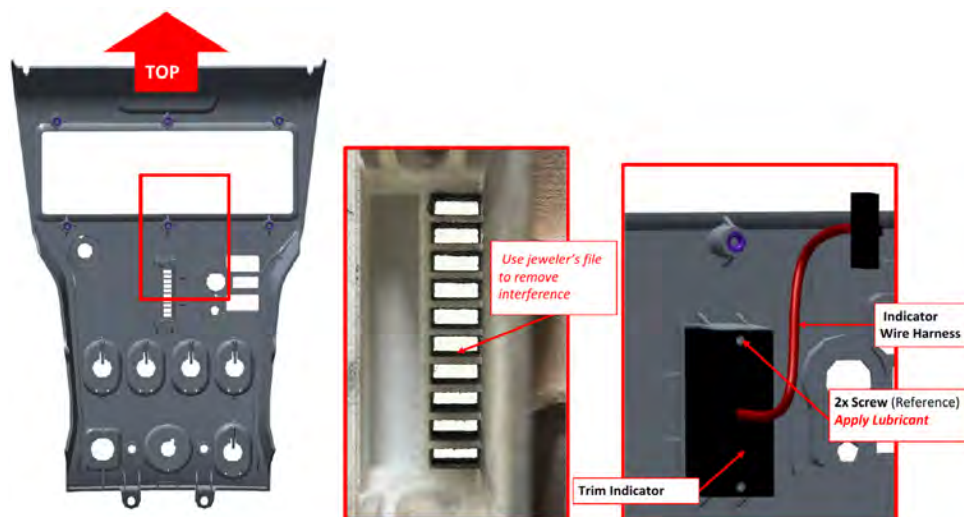


FIGURE 4-6
TEST FIT TRIM POSITION

AP Only

5. Install the autopilot flight controller into bracket.
6. Locate two mounting opening on LH and RH edge of the controller, use a 3/32" hex drive tool, turn clockwise to latch to autopilot until tightened to 20 ± 2 in-lbs.

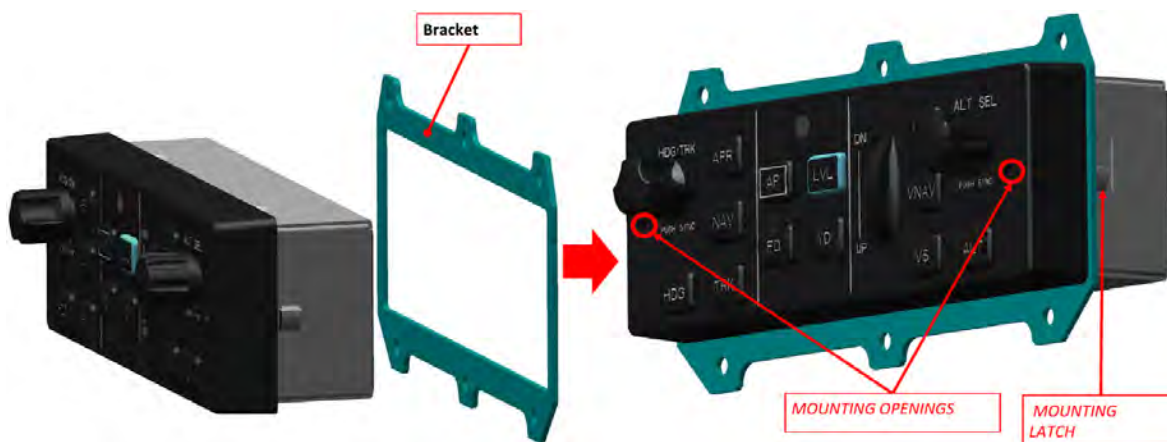


FIGURE 4-7
AUTOPILOT FLIGHT CONTROLLER

7. Apply lubricant liberally to threads and shanks of 6x screws.
8. Locate the six threaded inserts on the radio stack bezel. Install the Garmin Autopilot Flight Control System Controller using 6x screws.

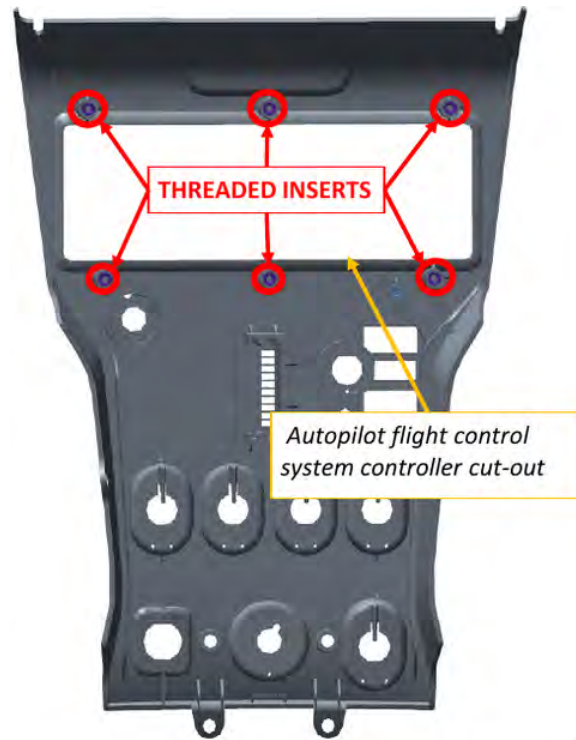


FIGURE 4-8
THREADED INSERTS

9. Torque screws to 6.5-8.0 in-lbs.

G3X Only

10. Install autopilot blank into center stack bezel by clipping LH side first and the pushing RH side into face of center stack bezel until snap feature engages.



FIGURE 4-9
AUTOPILOT BLANK

AP and G3X

- Secure TB9010 terminal block to wire harness with cable-tie.

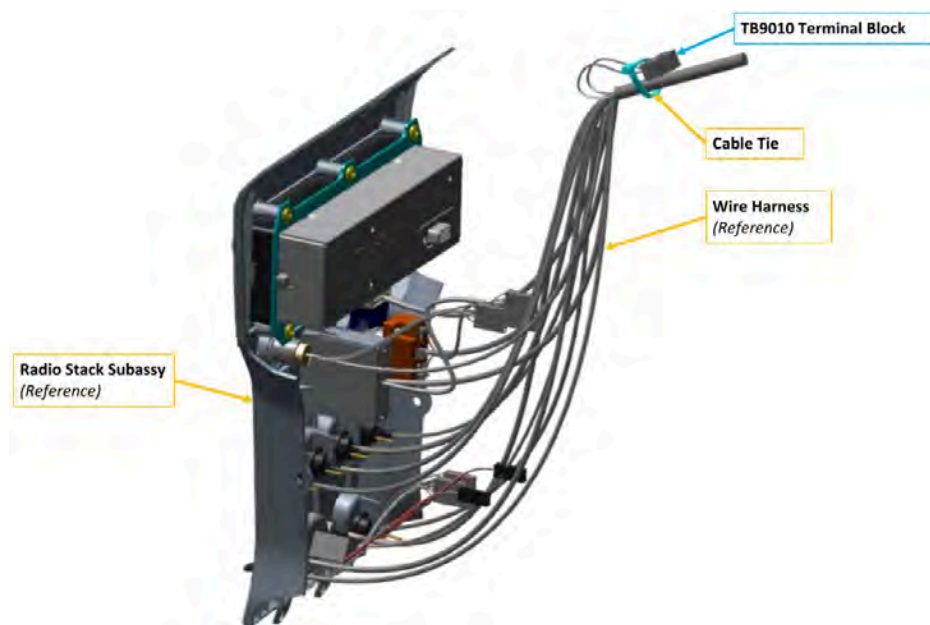


FIGURE 4-10
SECURE TERMINAL BLOCK WITH CABLE-TIE

VERIFICATION METHOD:

Autopilot control panel has been installed.

RELATED INFORMATION:

"Remove Autopilot (AP) Control Panel" on page 4-48

4.3.3 Manual Tap Test

See ICON Structural Repair Manual, ICA010822, for required qualifications and task instructions.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Wings" on page 4-11

"Inspect Empennage Skin" on page 13-4

"Wing Skins Delaminate/Voids" on page 18-4

4.3.4 Basic Structural and Firewall Inspection

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.)
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 4-27

4.4 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 6-1.

Electrical

See "Electrical System" on page 7-1.

Environmental Control (Utility Systems)

See "Environmental Control (Utility Systems)" on page 8-1.

Equipment and Furnishings

See "Equipment and Furnishings" on page 9-1.

Flight Controls

See "Flight Controls" on page 10-1.

Fuel

See "Fuel System" on page 11-1.

Fuselage and Vertical Tail

See "Fuselage and Vertical Tail" on page 12-1.

Horizontal Tail

See "Horizontal Tail" on page 13-1.

Instruments and Avionics

See "Instruments (and Avionics)" on page 14-1.

Landing Gear

See "Landing Gear" on page 15-1.

Placards and Markings

See "Placards and Markings" on page 16-1.

Propulsion

See "Propulsion" on page 17-1.

See "Engine" on page 17-4.

See "Propeller" on page 17-93.

Wing

See "Wing" on page 18-1.

Wing Fold Mechanism

See "Wing Fold Mechanism" on page 19-1.

ICON Parachute System (IPS)

See "ICON Parachute System (IPS)" on page 20-1.

Chapter 5

STRUCTURES

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5.1 Structures Description

The A5-B 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.

5.1.1 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-B 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.*

5.1.2 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.

5.1.3 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.

5.1.4 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° castering nose wheel allows for ease of movement when moving the A5-B 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 touch-down.

5.1.5 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_f.

The nose gear tire is size 10-3.50x4, 4-ply aircraft tire with a maximum load rating of 460 lb_f.

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 floor-board 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.

5.2 Rinse After Salt Water Operations

The structure and many other parts of the A5-B 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.

Table 5-1: Rinse After Salt Water Operations

	Level 1	Level 2	Level 3
"Overall Exterior Rinse" on page 5-5	Normal aircraft wash cycle	End of each day of salt water ops	End of each day of salt water ops
"Interior Rinse" on page 5-6	Not Required	End of each month of salt water ops	End of each week of salt water ops
"Salt-Away Rinse" on page 5-7	Not Required	Not Required	Optional for severe conditions
"Corrosion Inhibitor Application" on page 5-8	1-2 times per year	Each month	End of each week of salt water ops

RELATED INFORMATION:

"Overall Exterior Rinse" on page 5-5

"Interior Rinse" on page 5-6

"Salt-Away Rinse" on page 5-7

5.2.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

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. Rinse all exposed metal parts (nose, main landing gear, control surface hinges, and water rudder) a second time.

NOTE: *Confirm all water has drained.*

3. (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 5-4

"Salt-Away Rinse" on page 5-7

5.2.2 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

Consumables

None

TASK INSTRUCTIONS:

1. Remove floor boards. 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.

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Rinse After Salt Water Operations" on page 5-4

5.2.3 Salt-Away Rinse

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

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

None

Aircraft System and Number

NA

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 5-5.)

VERIFICATION METHOD:

Task is done when overall exterior rinse procedure is completed.

RELATED INFORMATION:

"Rinse After Salt Water Operations" on page 5-4

"Overall Exterior Rinse" on page 5-5

5.2.4 Corrosion Inhibitor Application

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

No

Aircraft System and Number

NA

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.

5.3 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

3M[®] Adhesion Promoter 111

Parts Required

None

Aircraft System and Number

NA

Consumables

70006738424; 3M[®] VHB Tape 5915WF White, 1/2 in, 16 mil

70006738531; 3M[®] VHB Tape 5952WF White, 1/2 in, 45 mil

70006436714; 3M[®] 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[®] 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 18-19

Chapter 6

DOORS AND WINDOWS

Doors and Windows Description.....6-2

6.1 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 7

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Install Dome Light Switch7-89

7.1 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 or 19 fuses on the AP configuration, 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 14-1.)

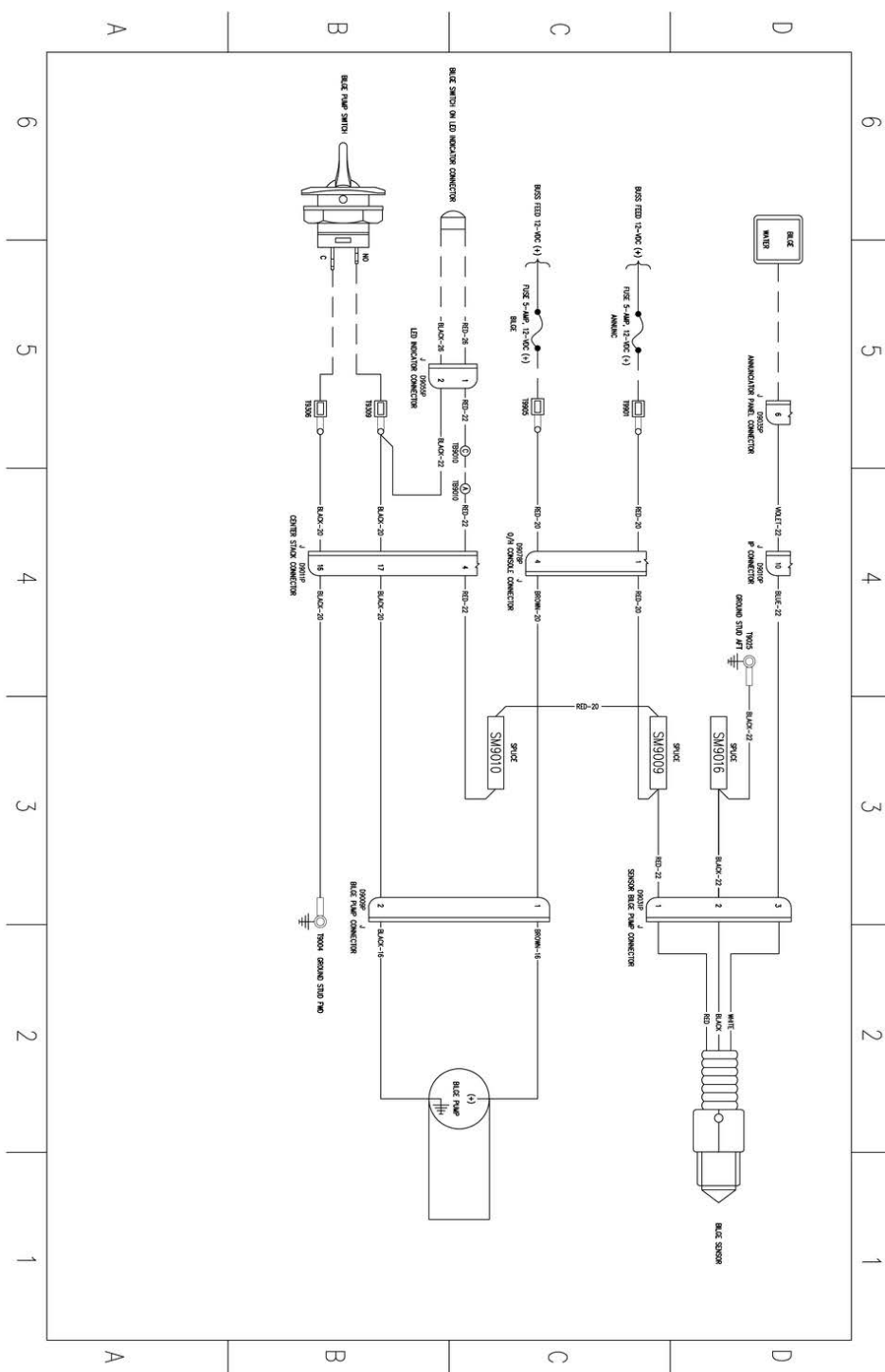
The aircraft is powered by a 12 VDC lead acid battery RG-25XC or a 12 V 11AH VRLA, battery for the G3X configuration and the engine's internal alternator. The battery is manufactured by Concorde and has a rated capacity of 24Ah or 11Ah for the G3X configuration. The internal alternator of the engine 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 ± 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.

NOTE: See “Electrical System Wiring Diagrams” on page 7-5 for electrical schematics.

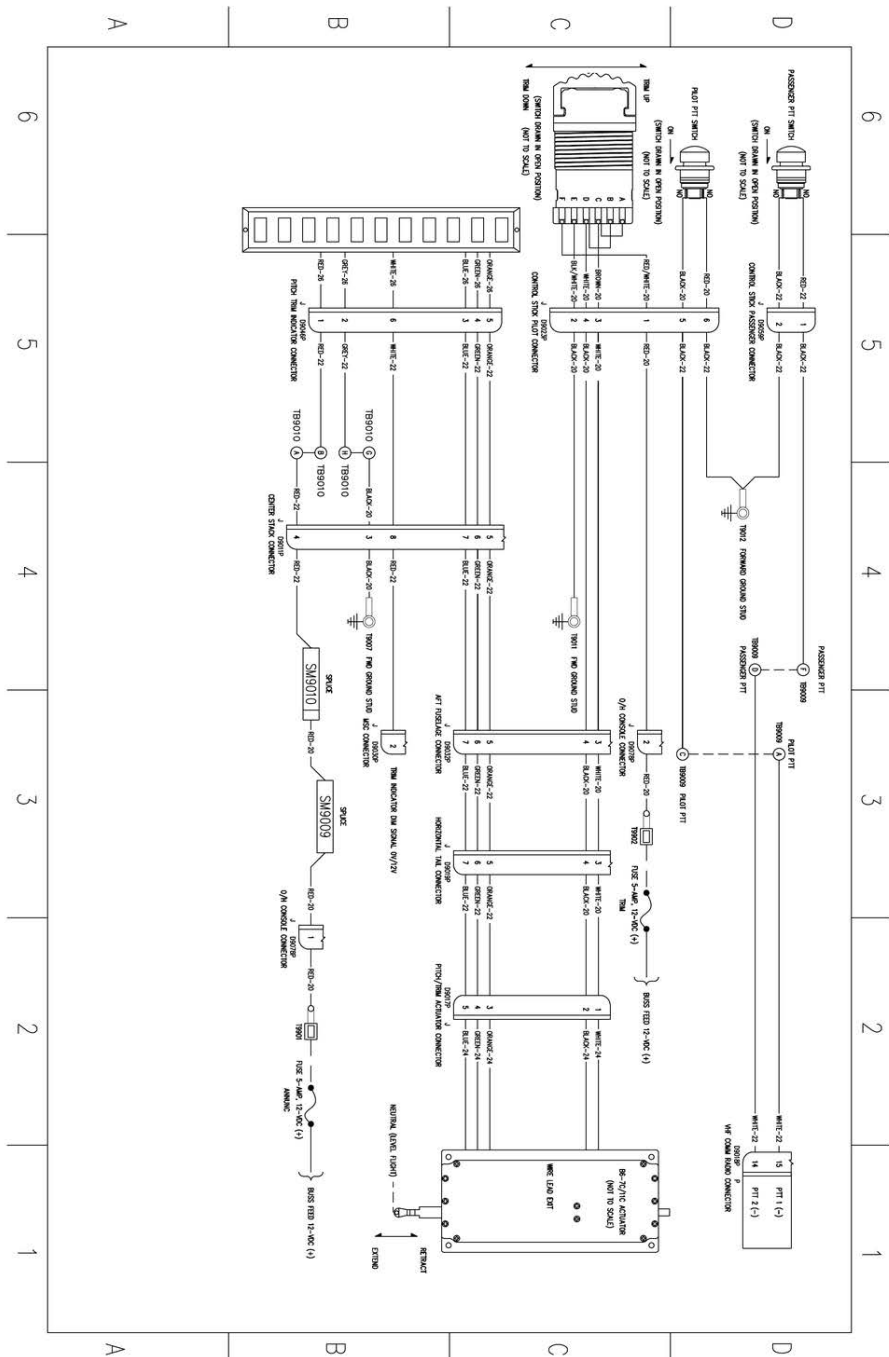
7.2 Electrical System Wiring Diagrams

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.

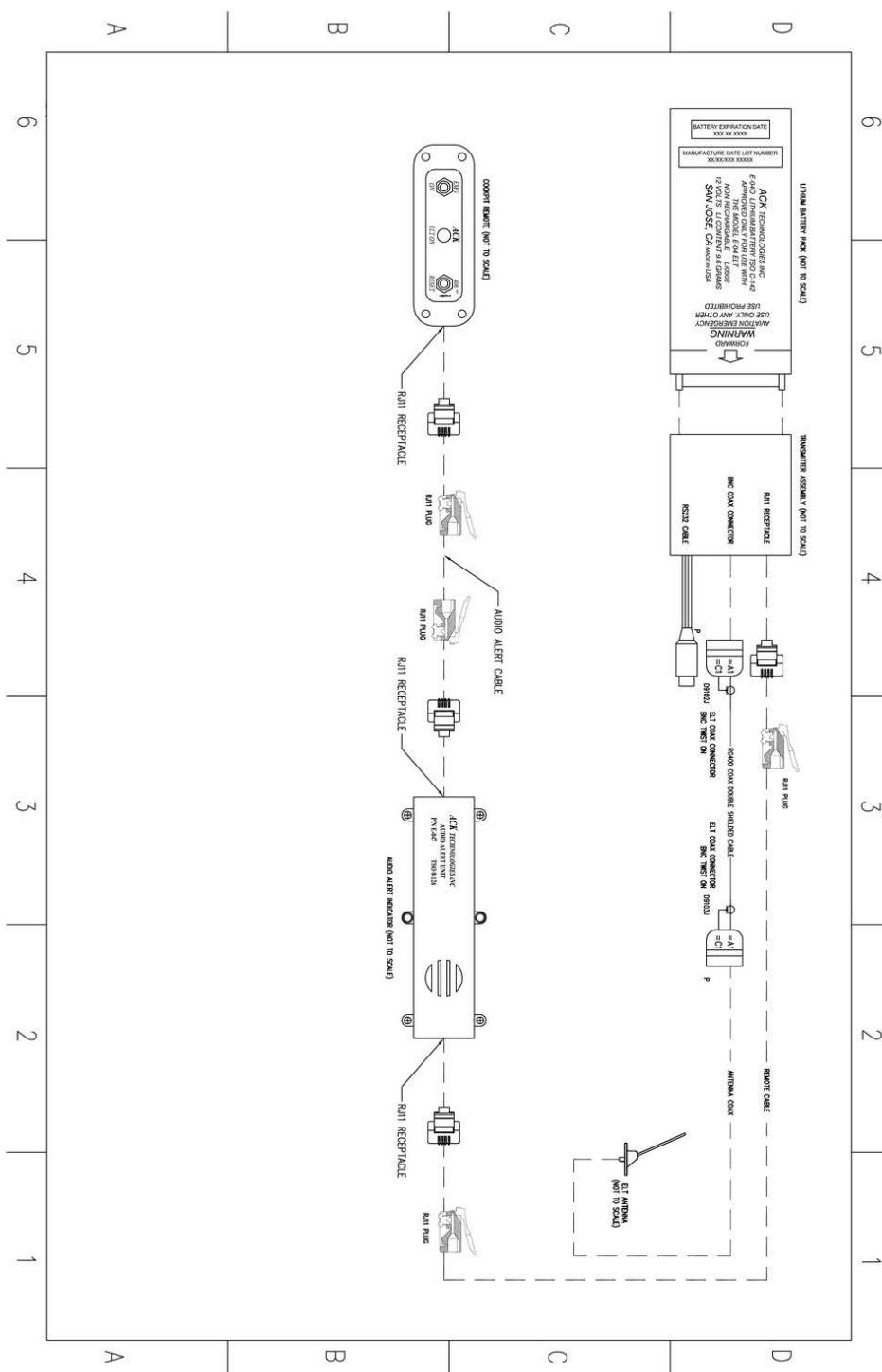
7.2.1 System Wiring Diagram, Bilge



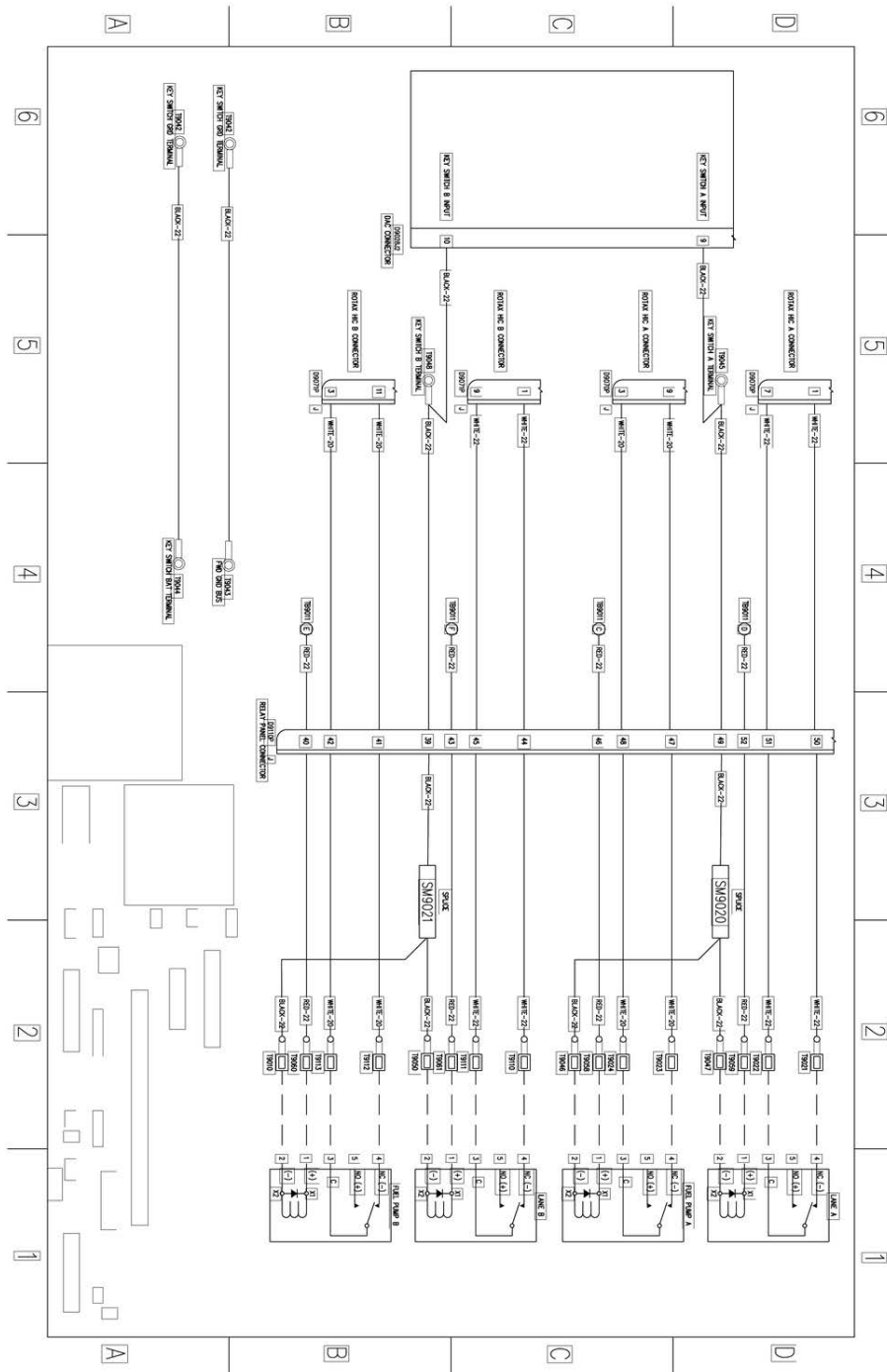
7.2.2 System Wiring Diagram, Control Sticks, Pitch Trim

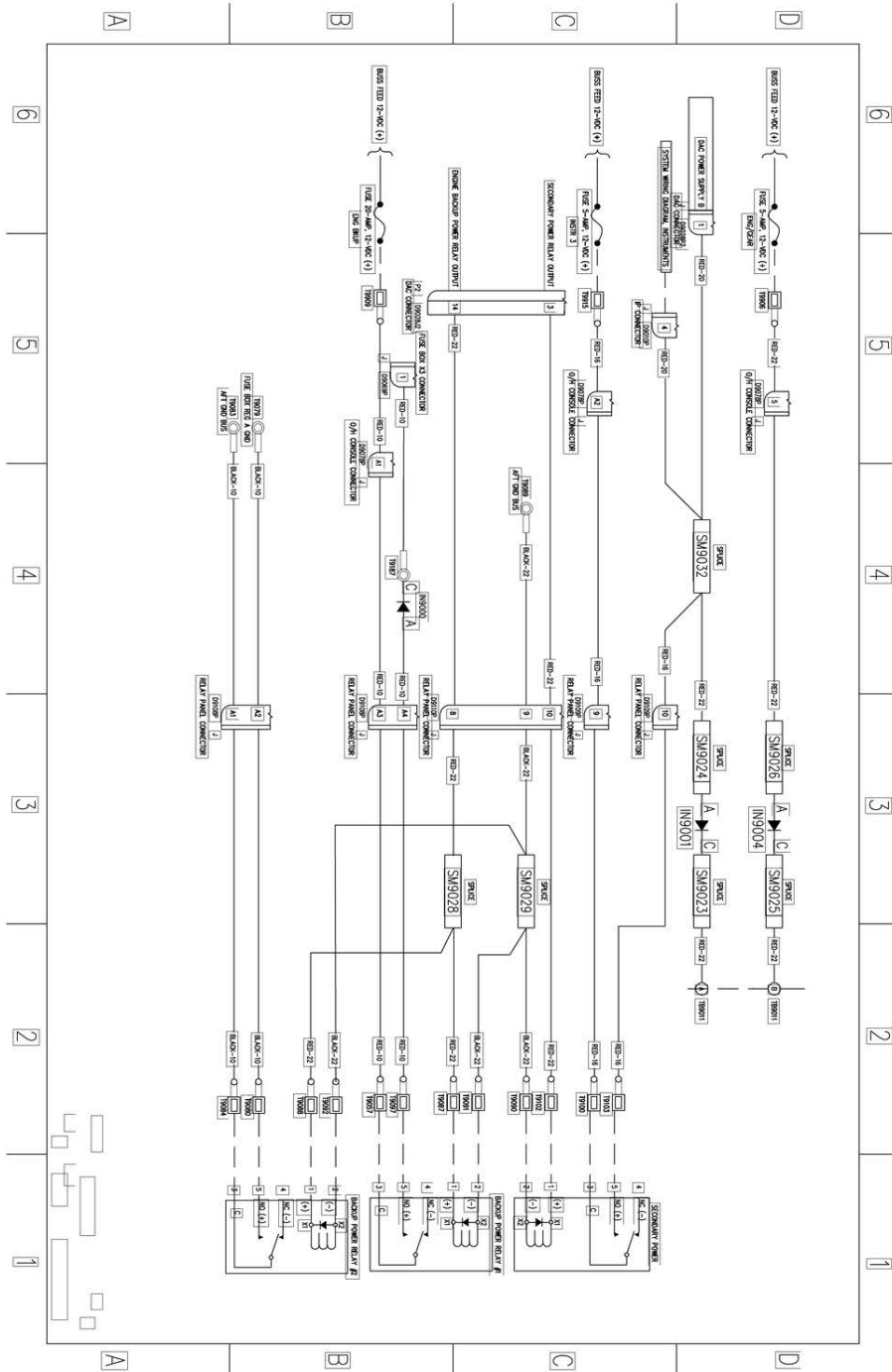


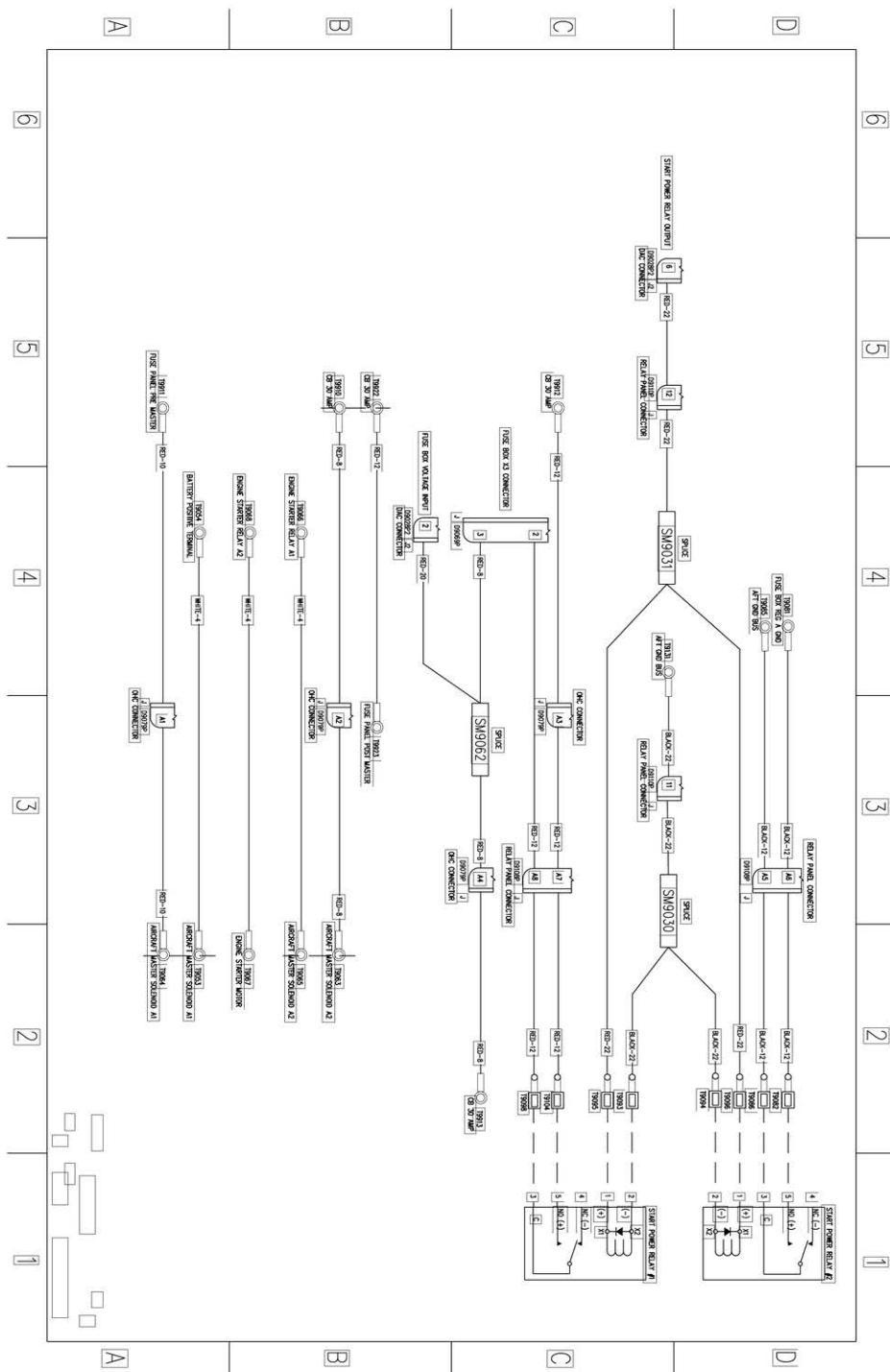
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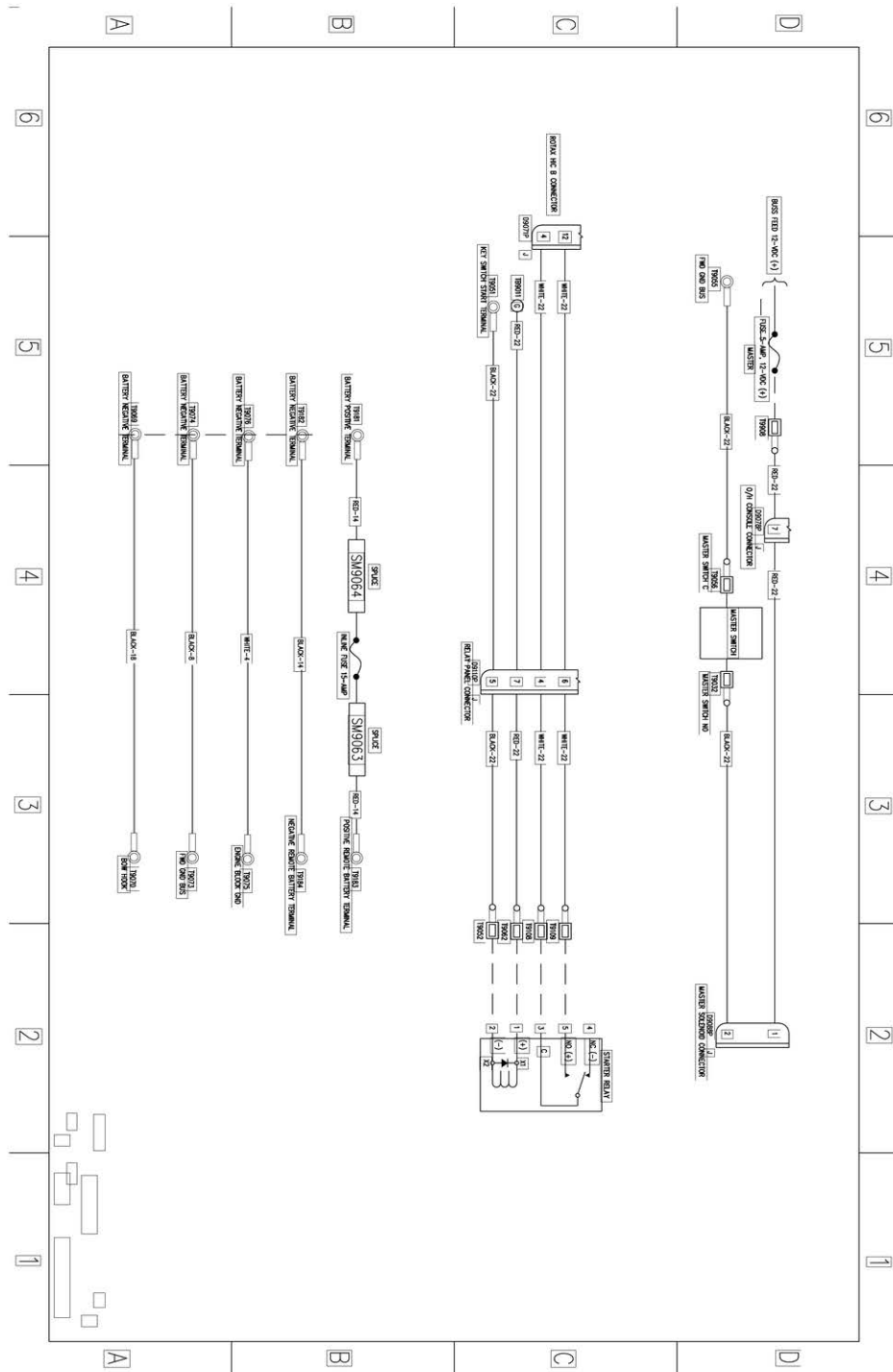


7.2.4 System Wiring Diagram, Engine Interface

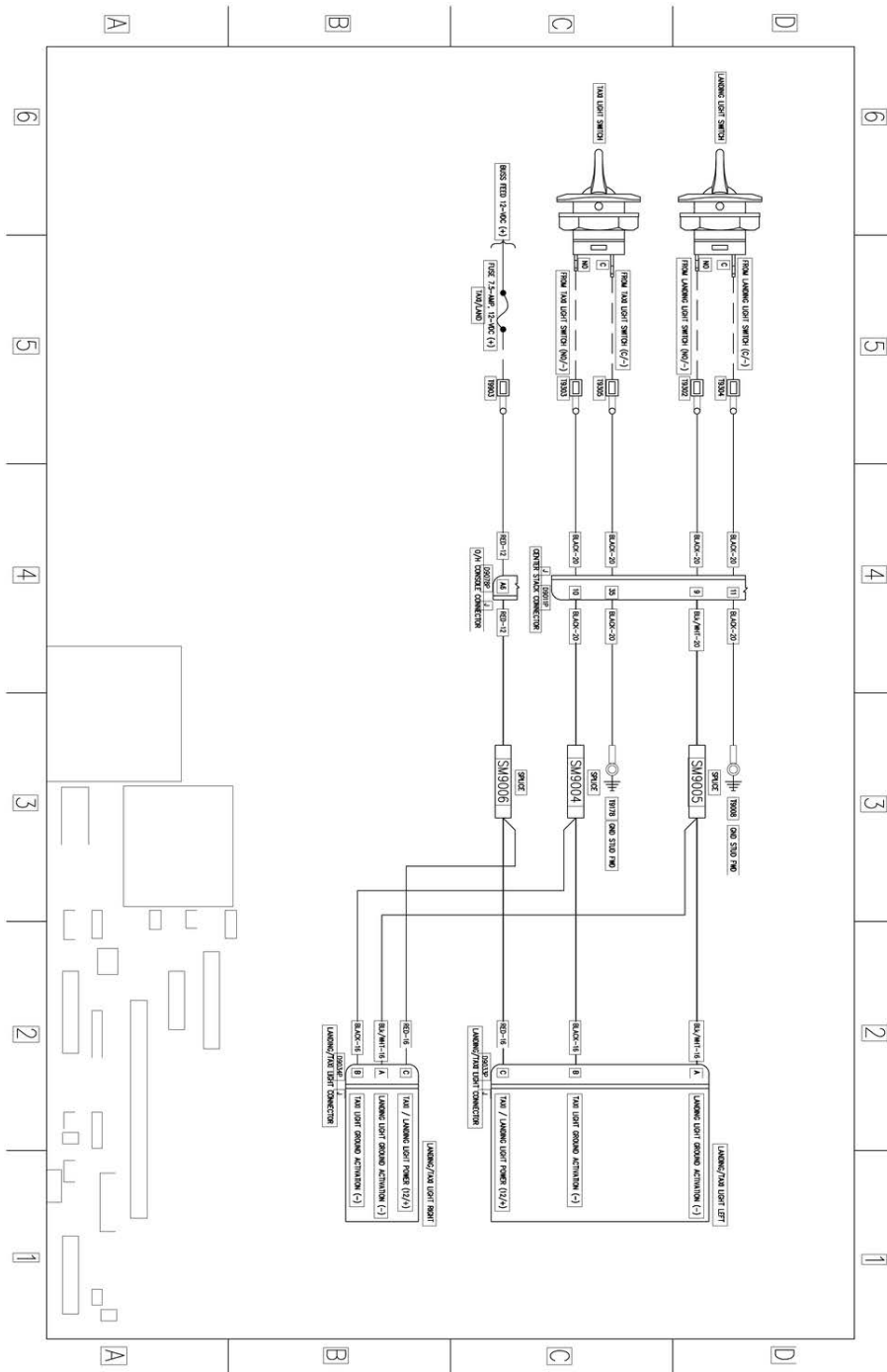






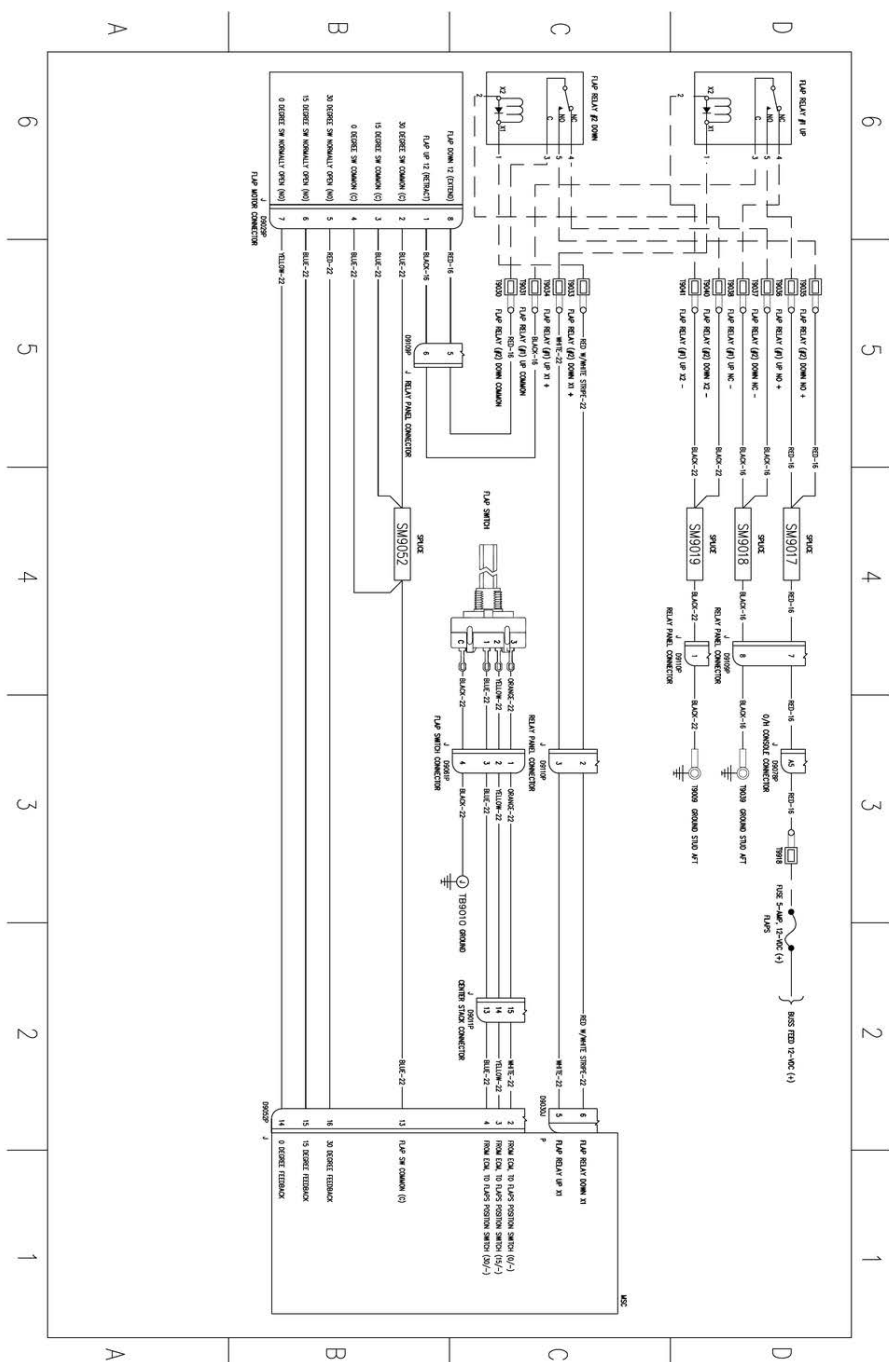


7.2.5 System Wiring Diagram, Exterior Lights

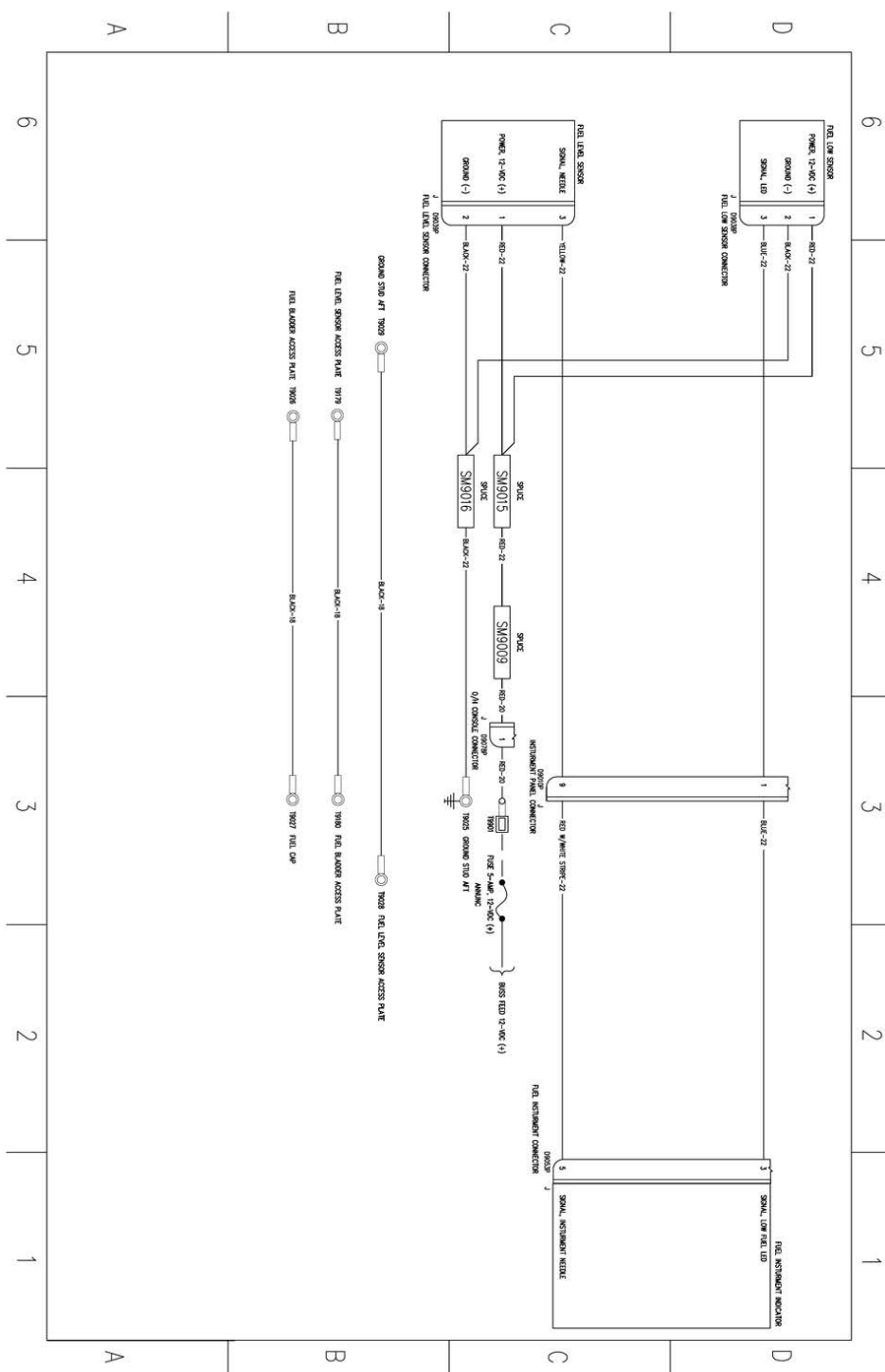




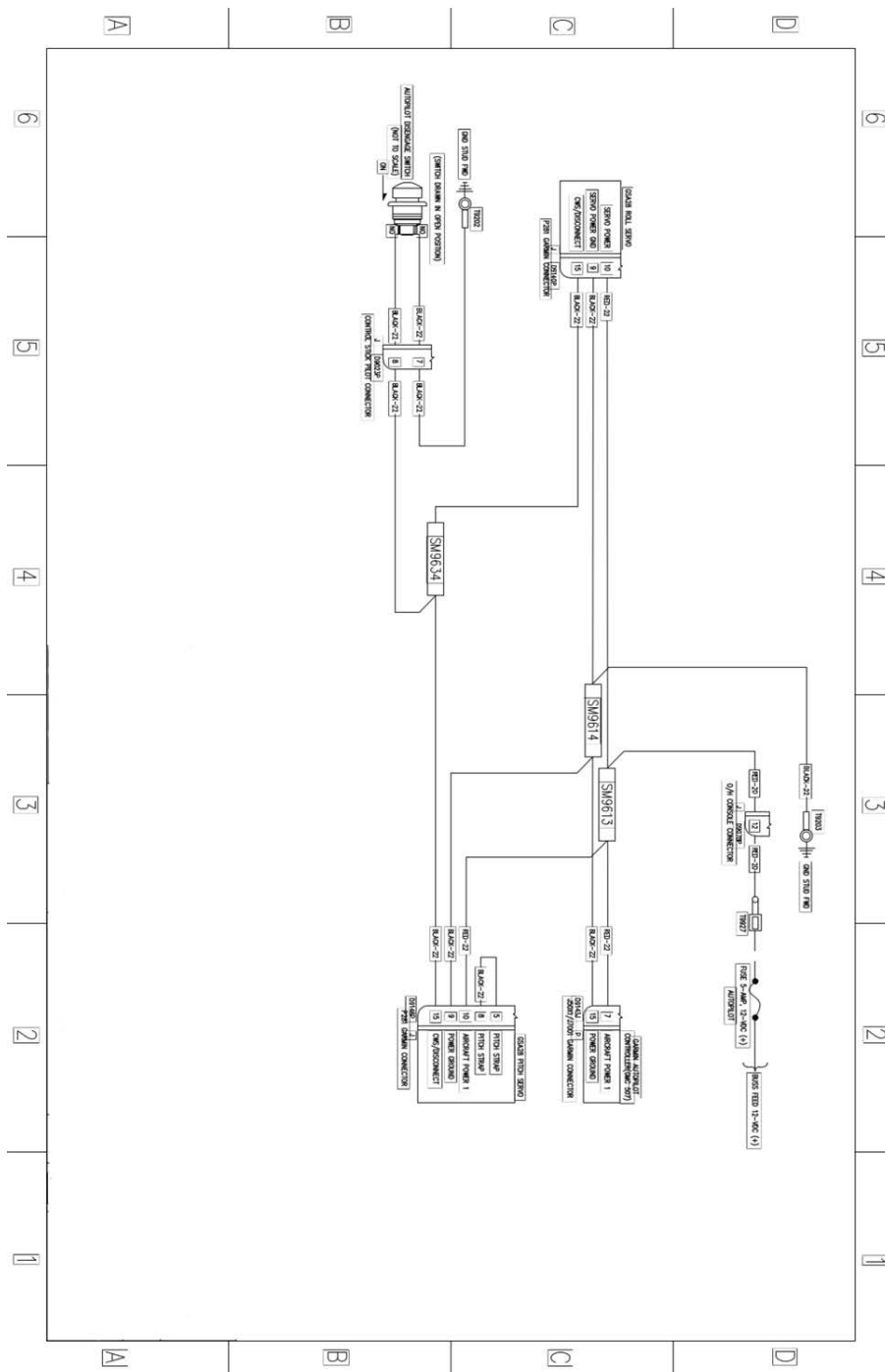
7.2.6 System Wiring Diagram, Flaps



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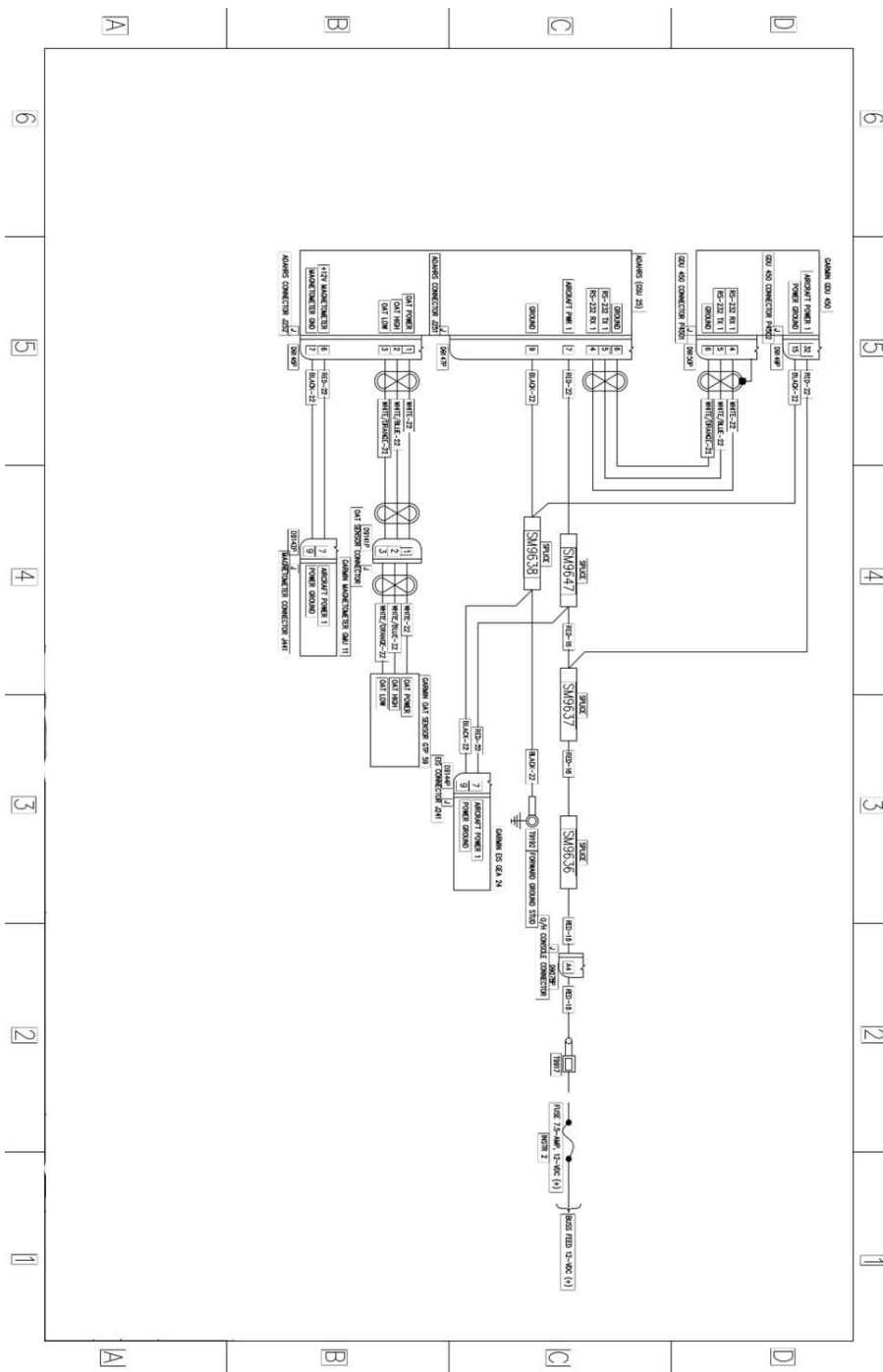
7.2.8 System Wiring Diagram, Garmin G3X Autopilot



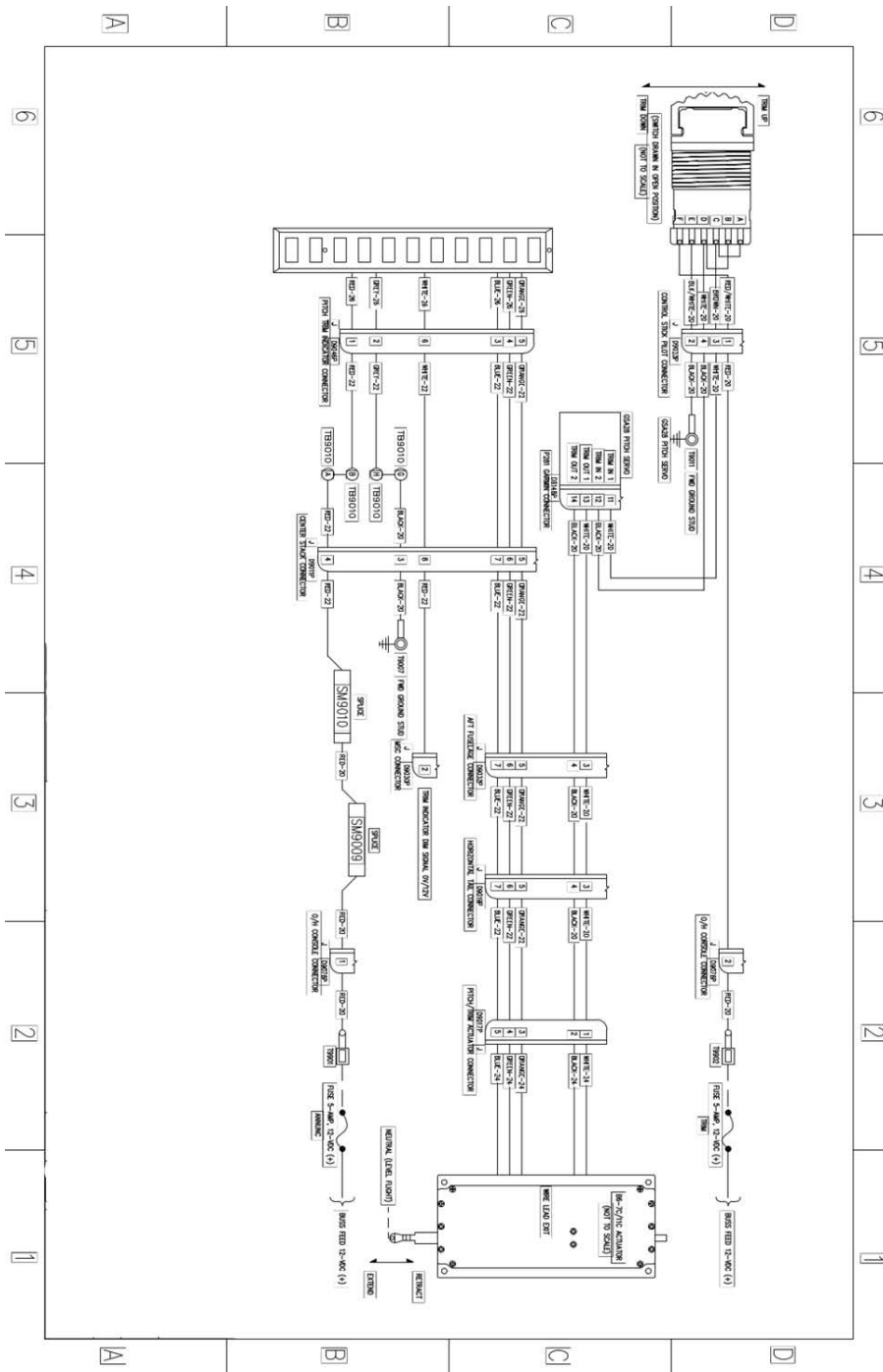
CHAPTER 7



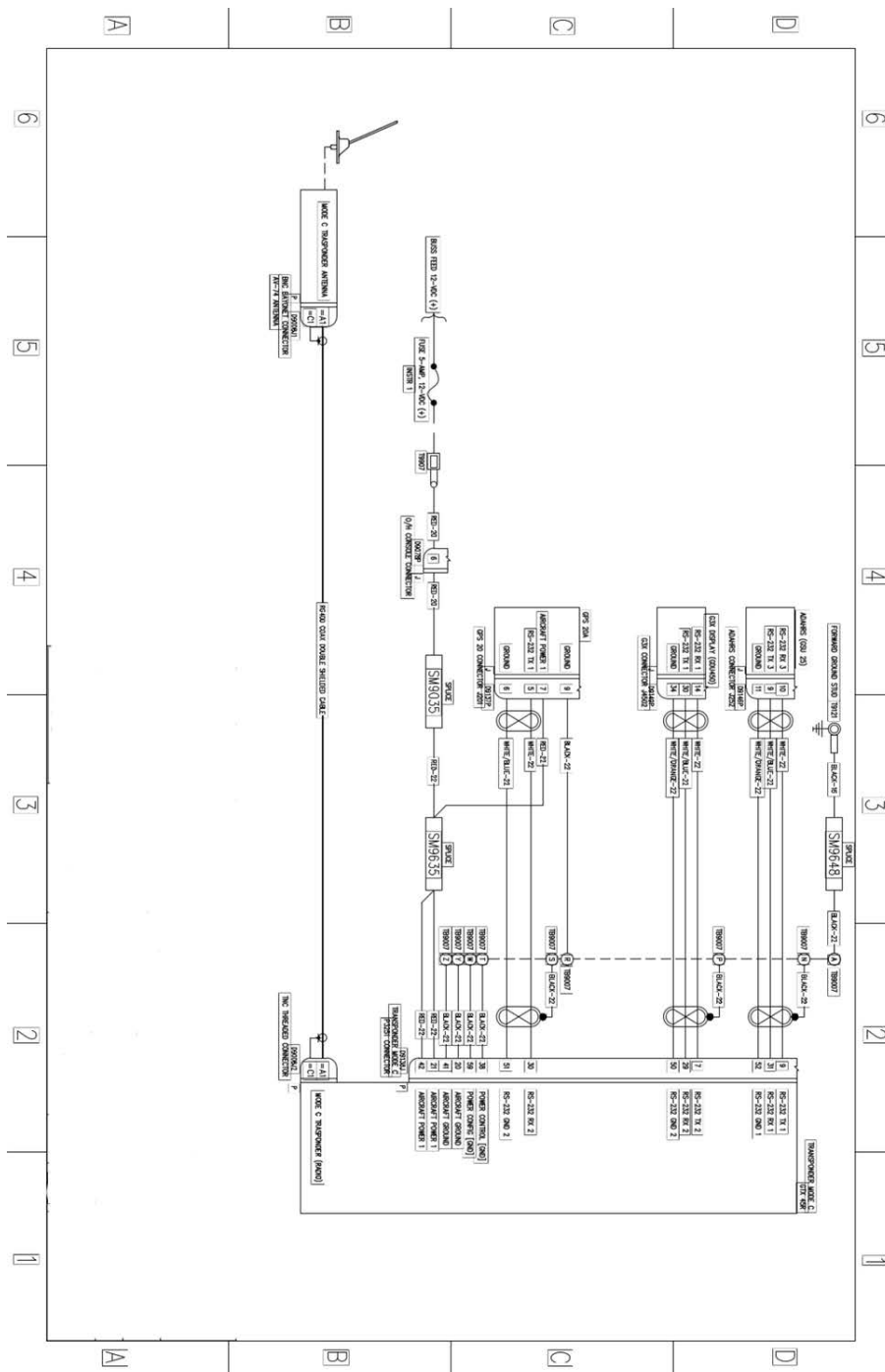
CHAPTER 7



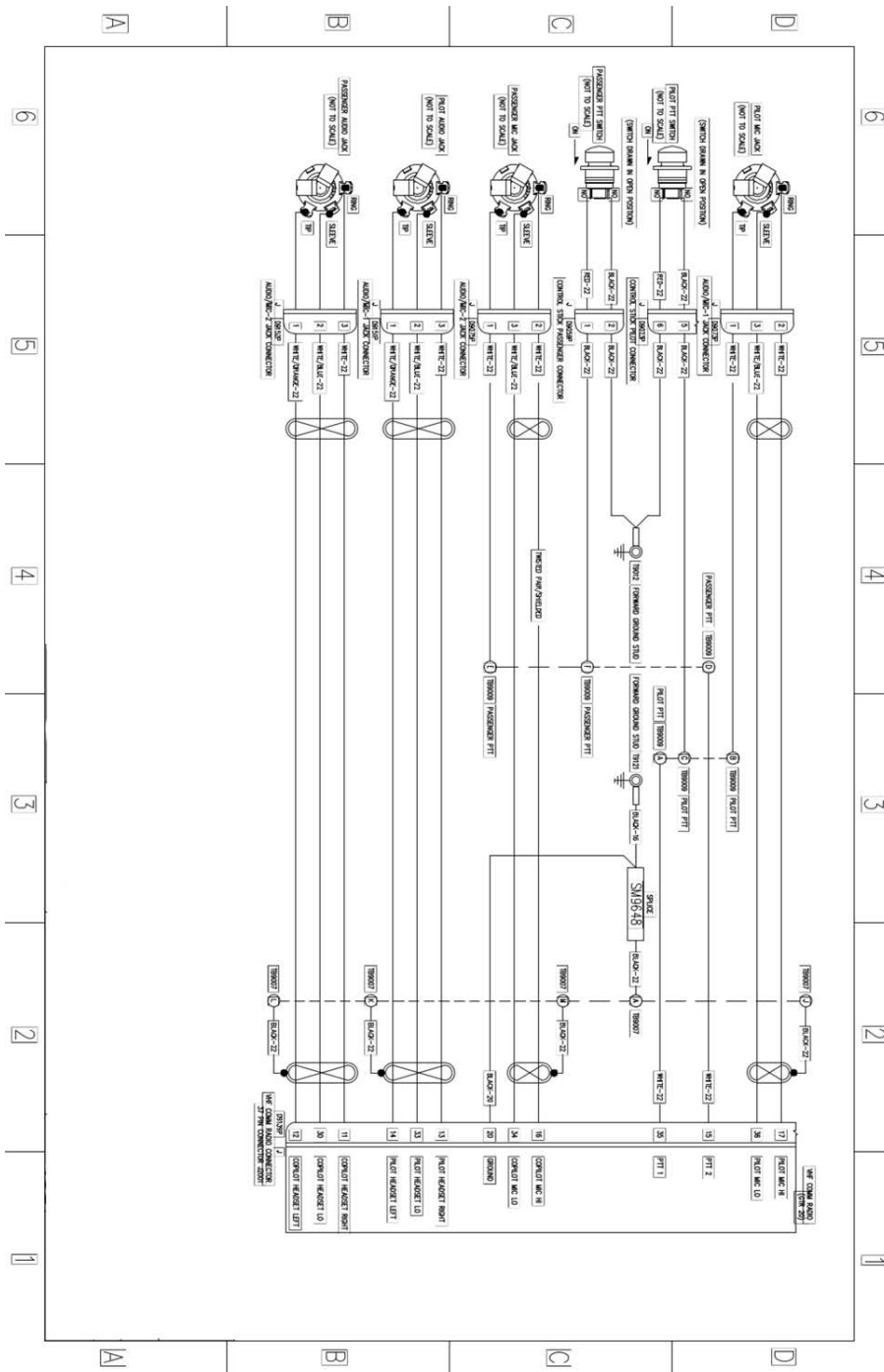
7.2.11 System Wiring Diagram, Garmin G3X Pitch Trim



7.2.12 System Wiring Diagram, Garmin G3X Transponder

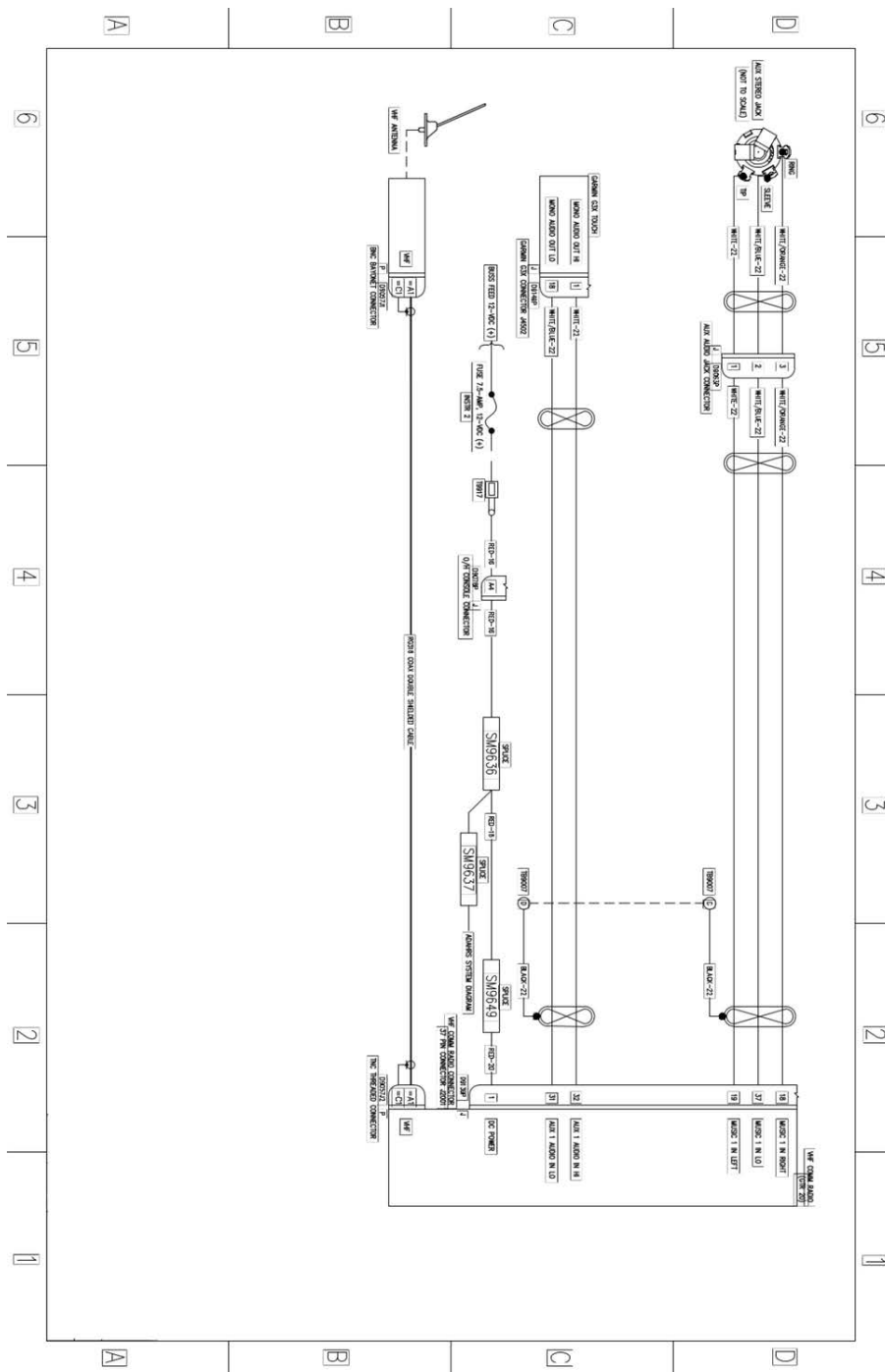


7.2.13 System Wiring Diagram, Garmin G3X VHF AUX

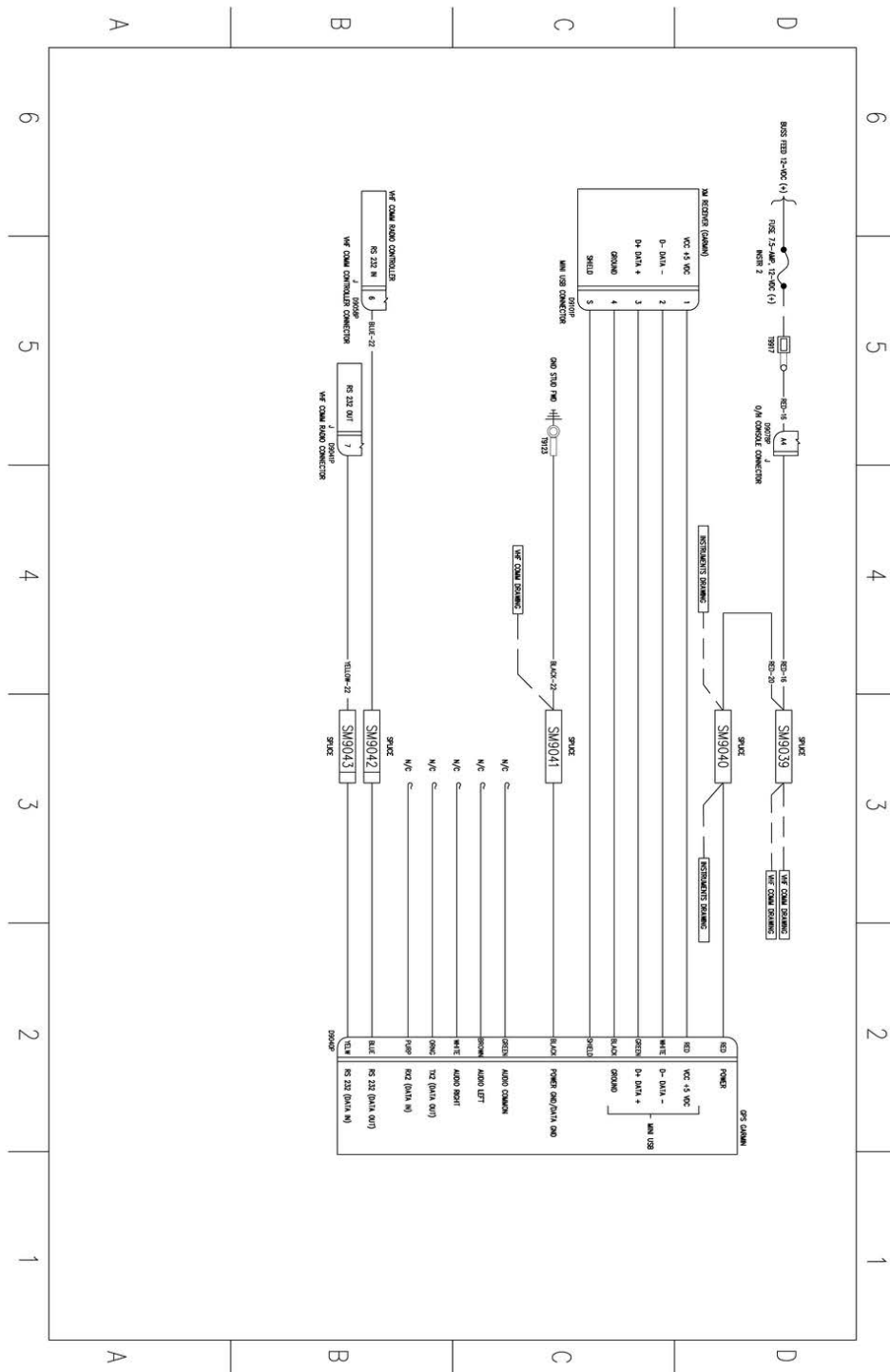


7.2.14 System Wiring Diagram, Garmin G3X VHF AUX 2

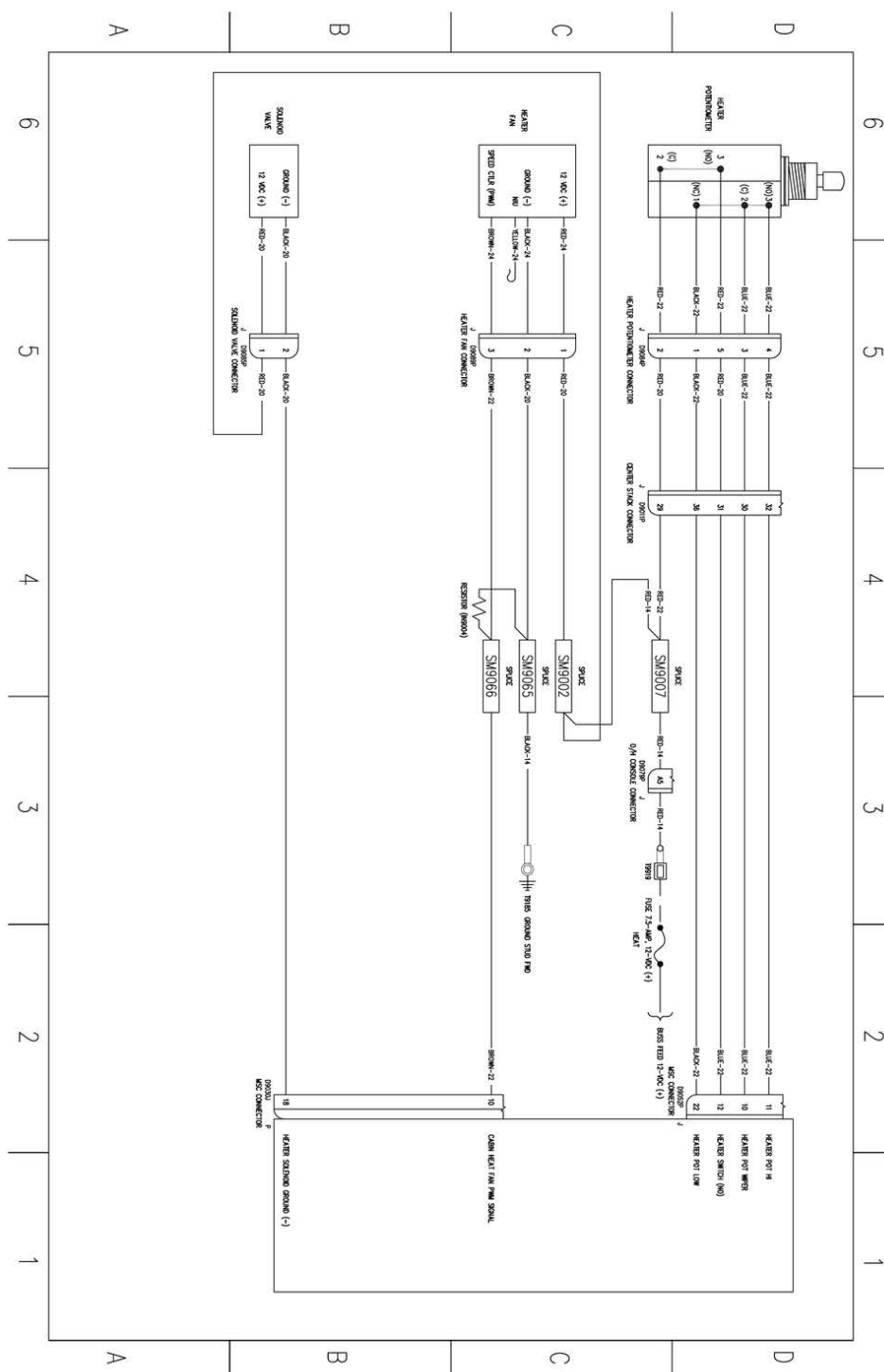
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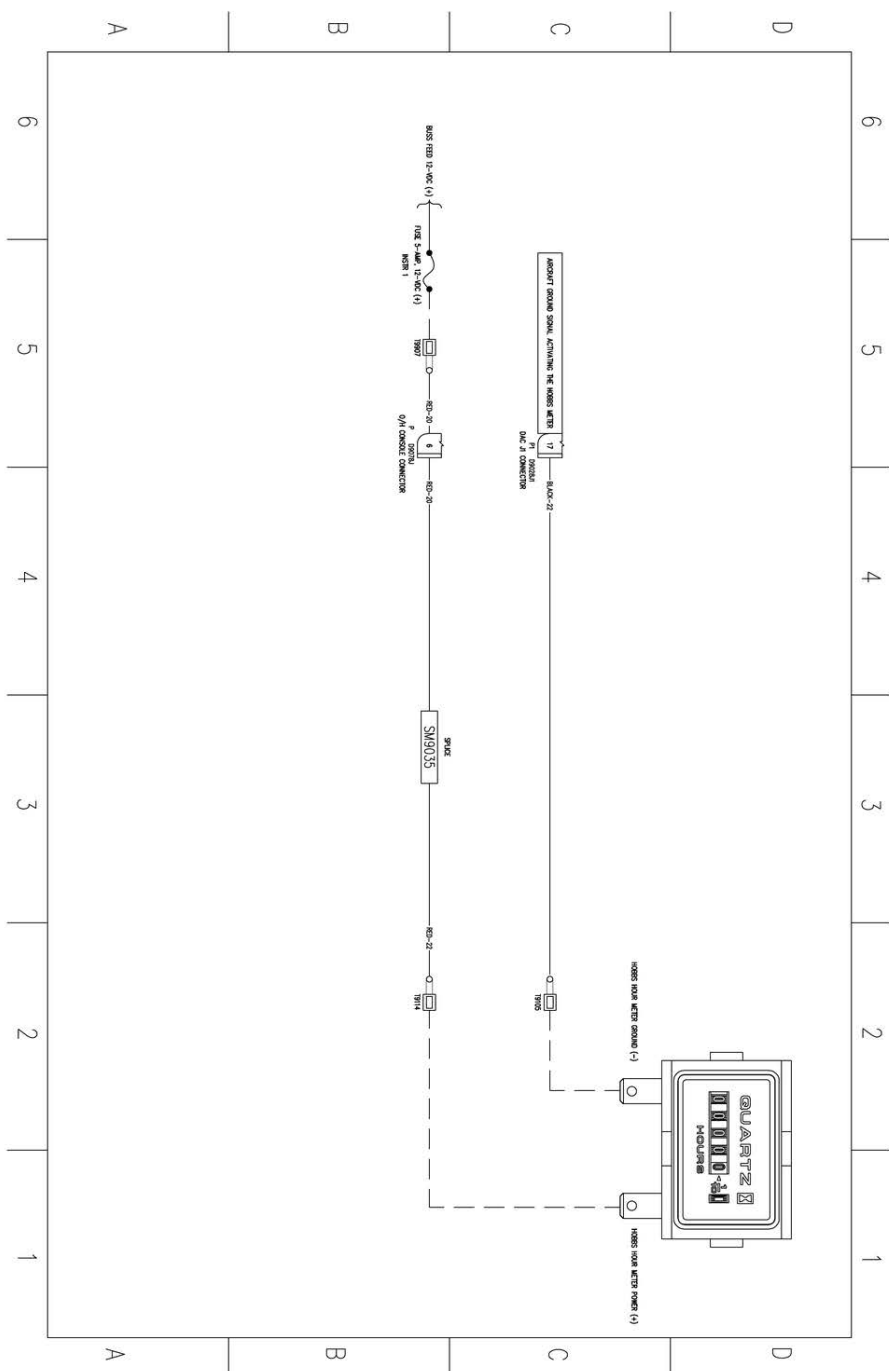
7.2.15 System Wiring Diagram, GPS



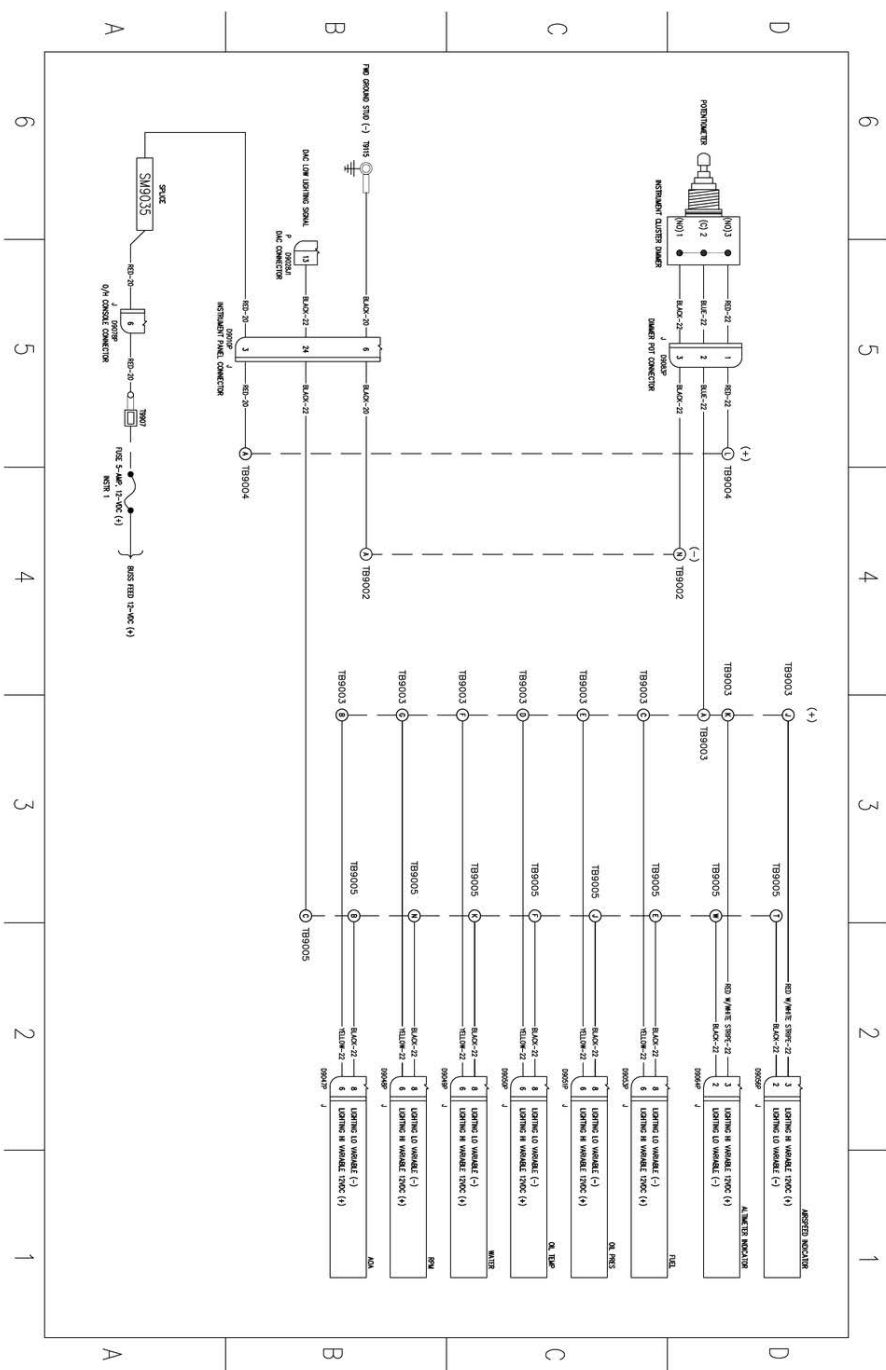
7.2.16 System Wiring Diagram, Heater



CHAPTER 7



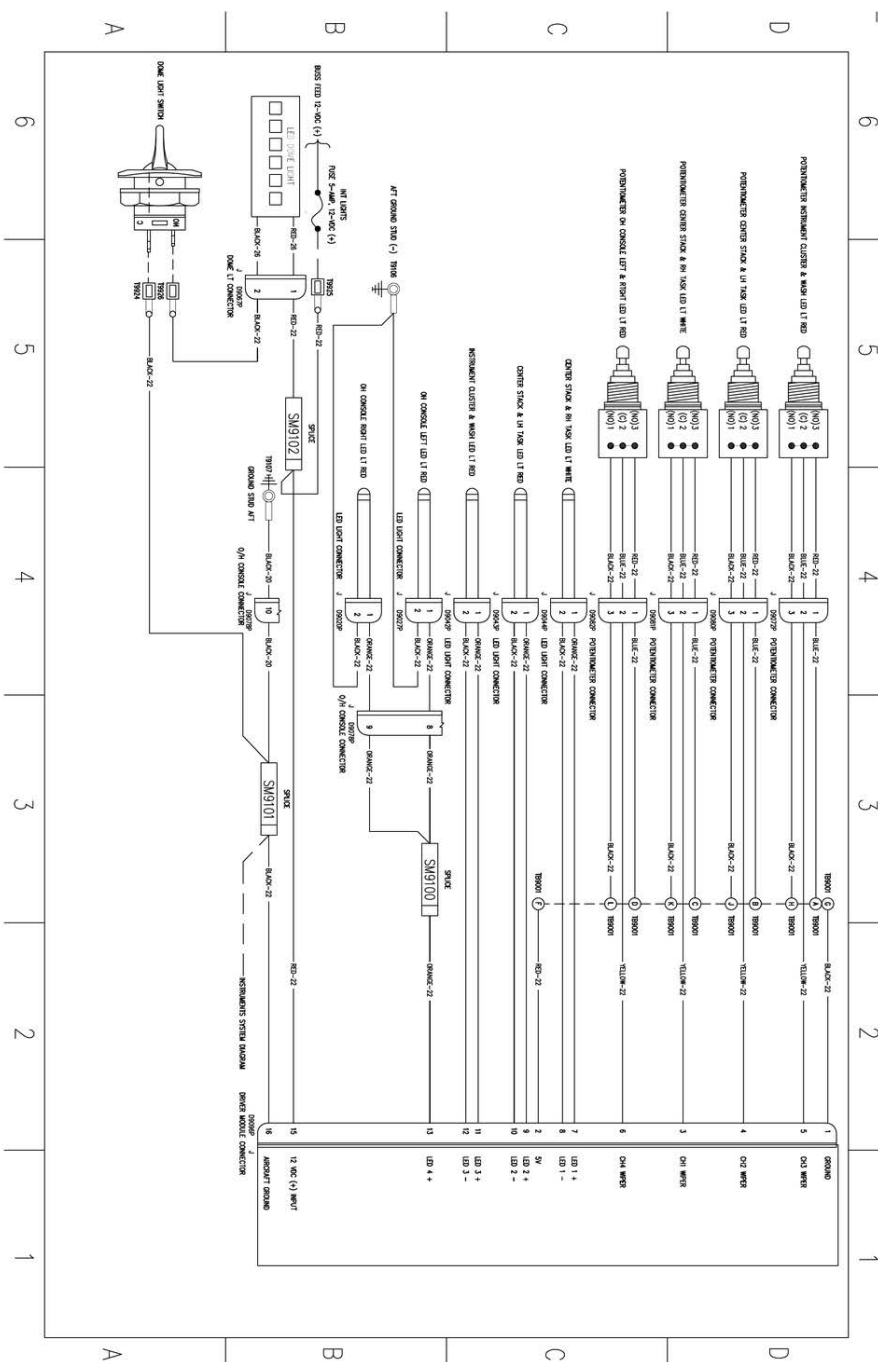
7.2.18 System Wiring Diagram, Instrument Lighting



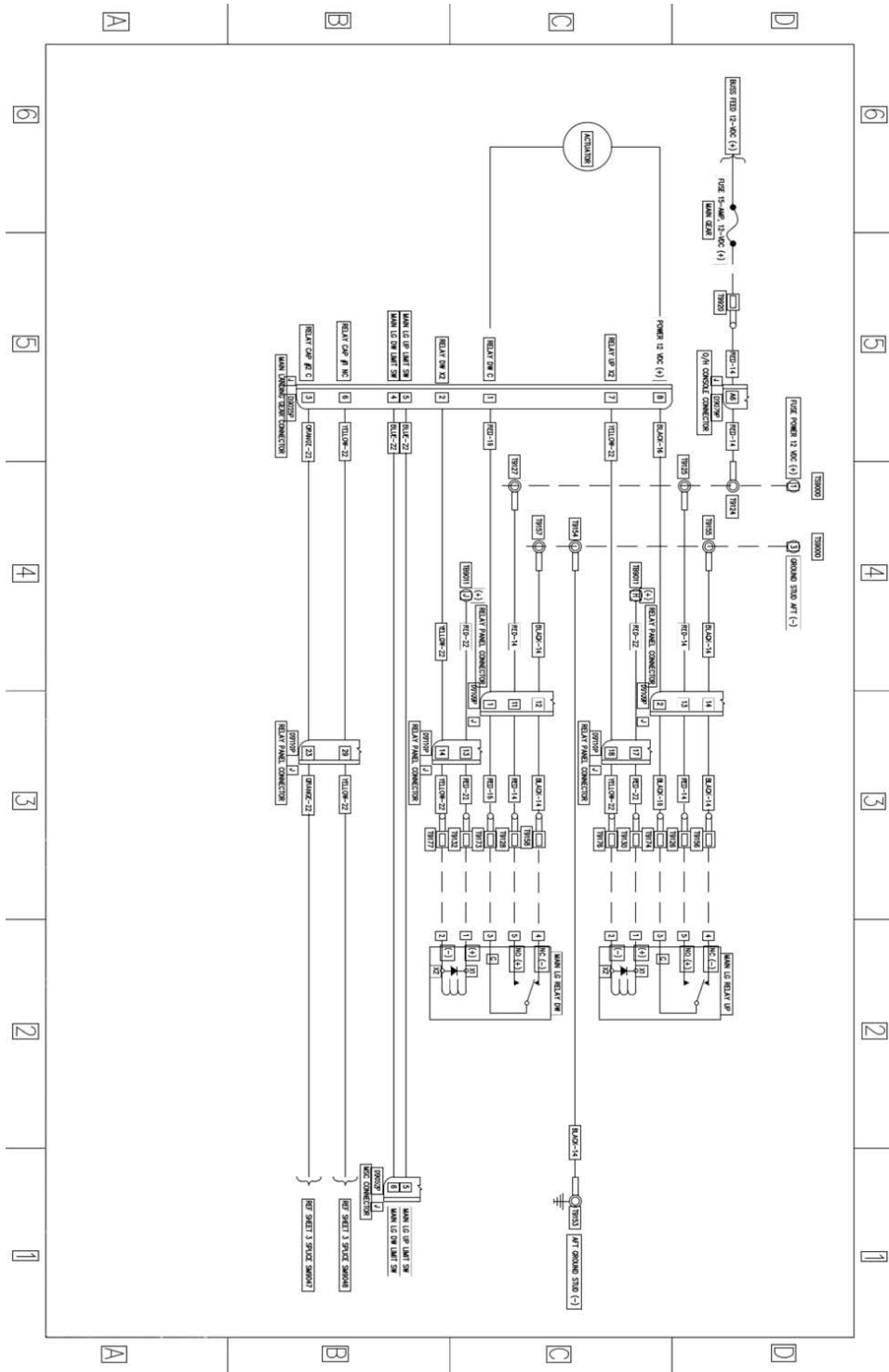
CHAPTER 7

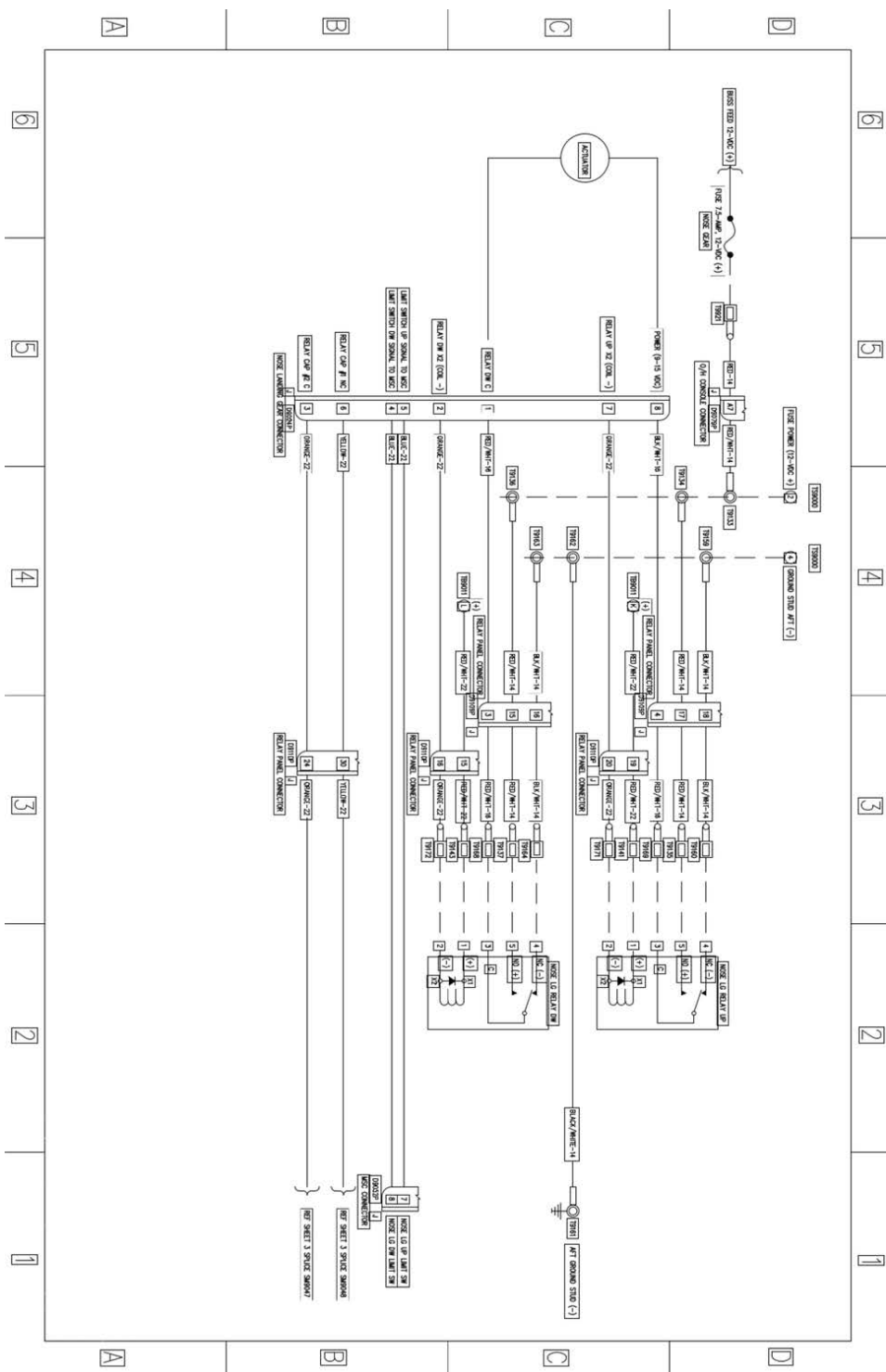


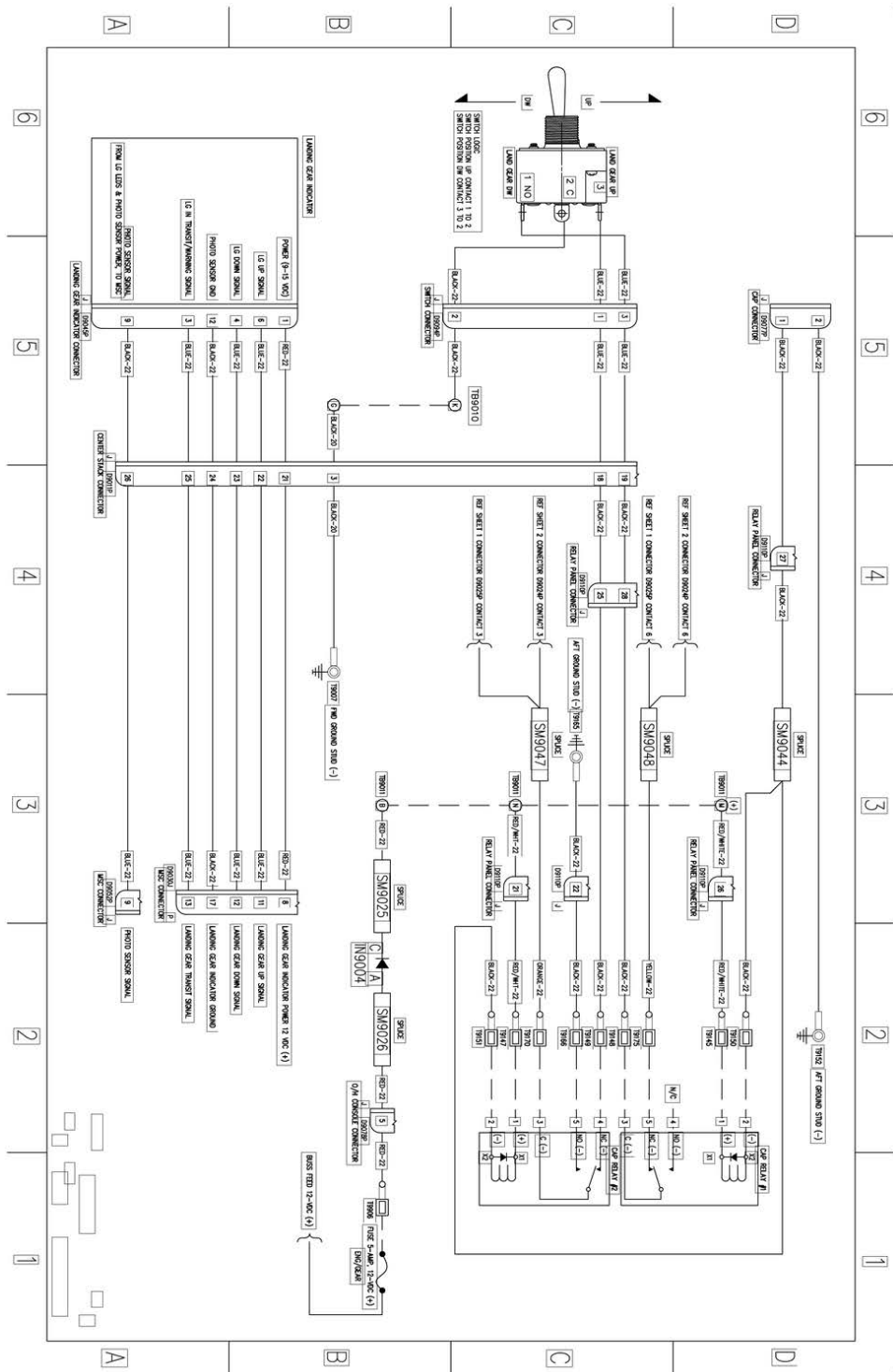
7.2.20 System Wiring Diagram, Interior Lighting



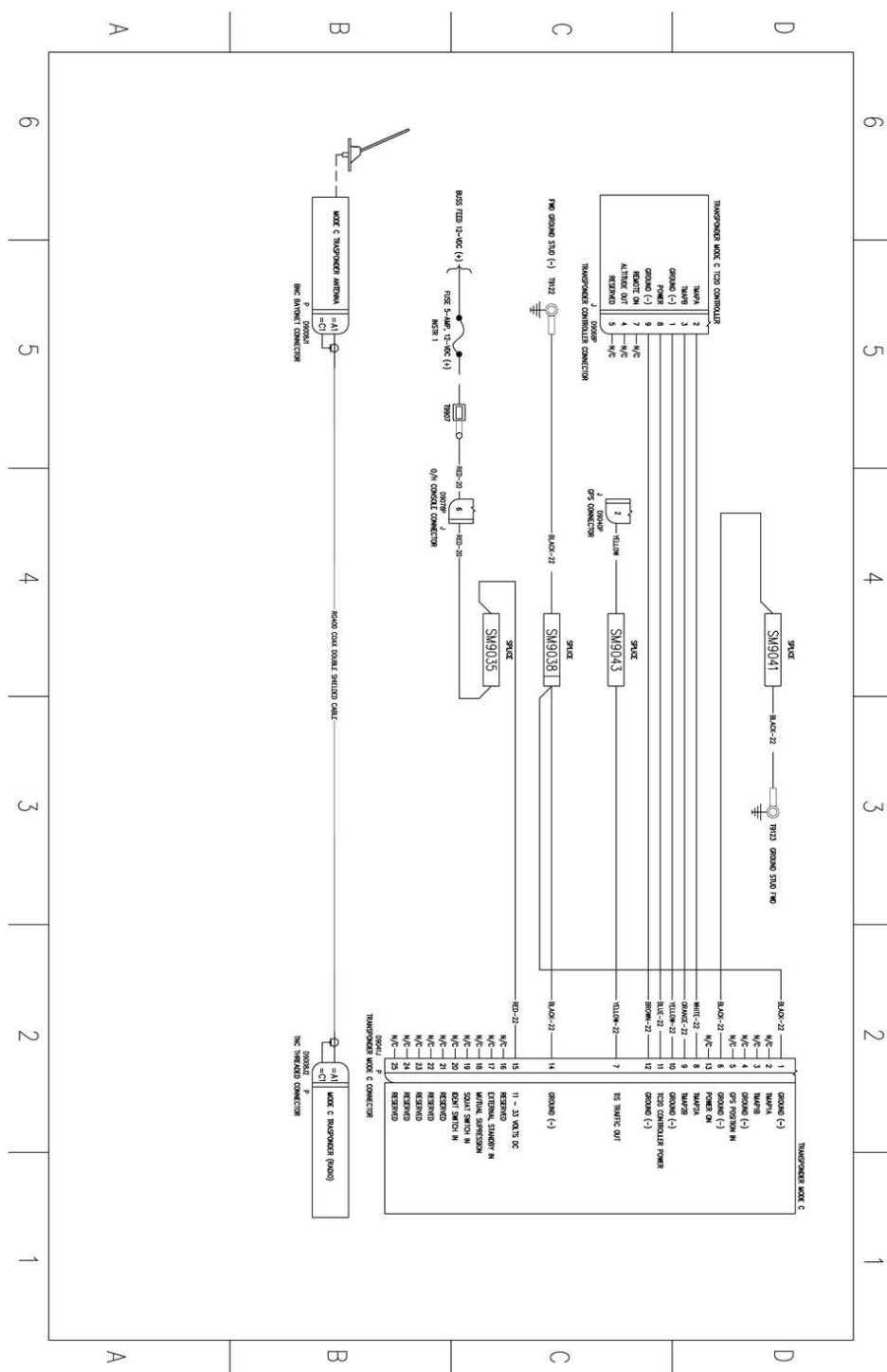
7.2.21 System Wiring Diagram, Landing Gear



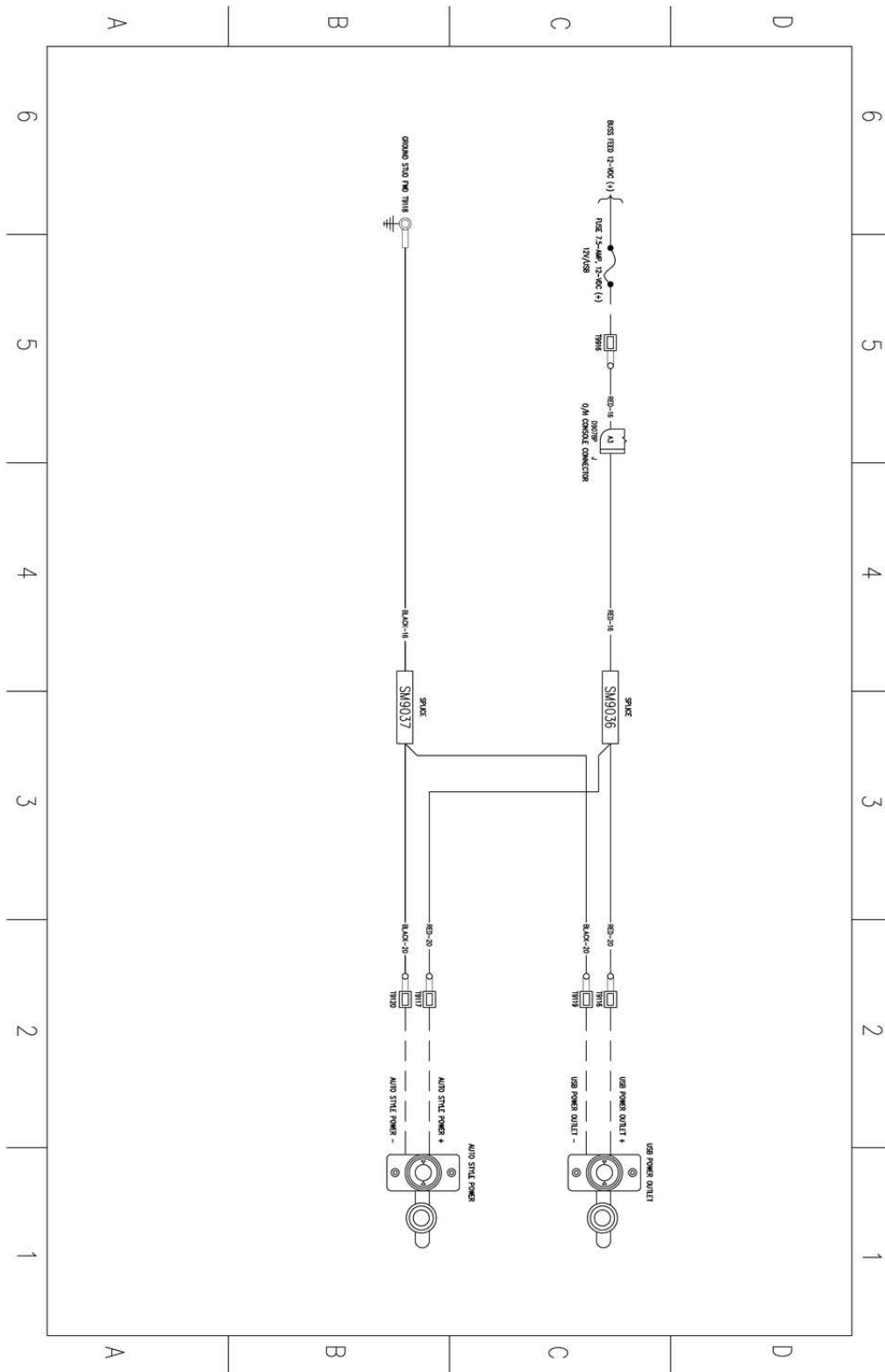




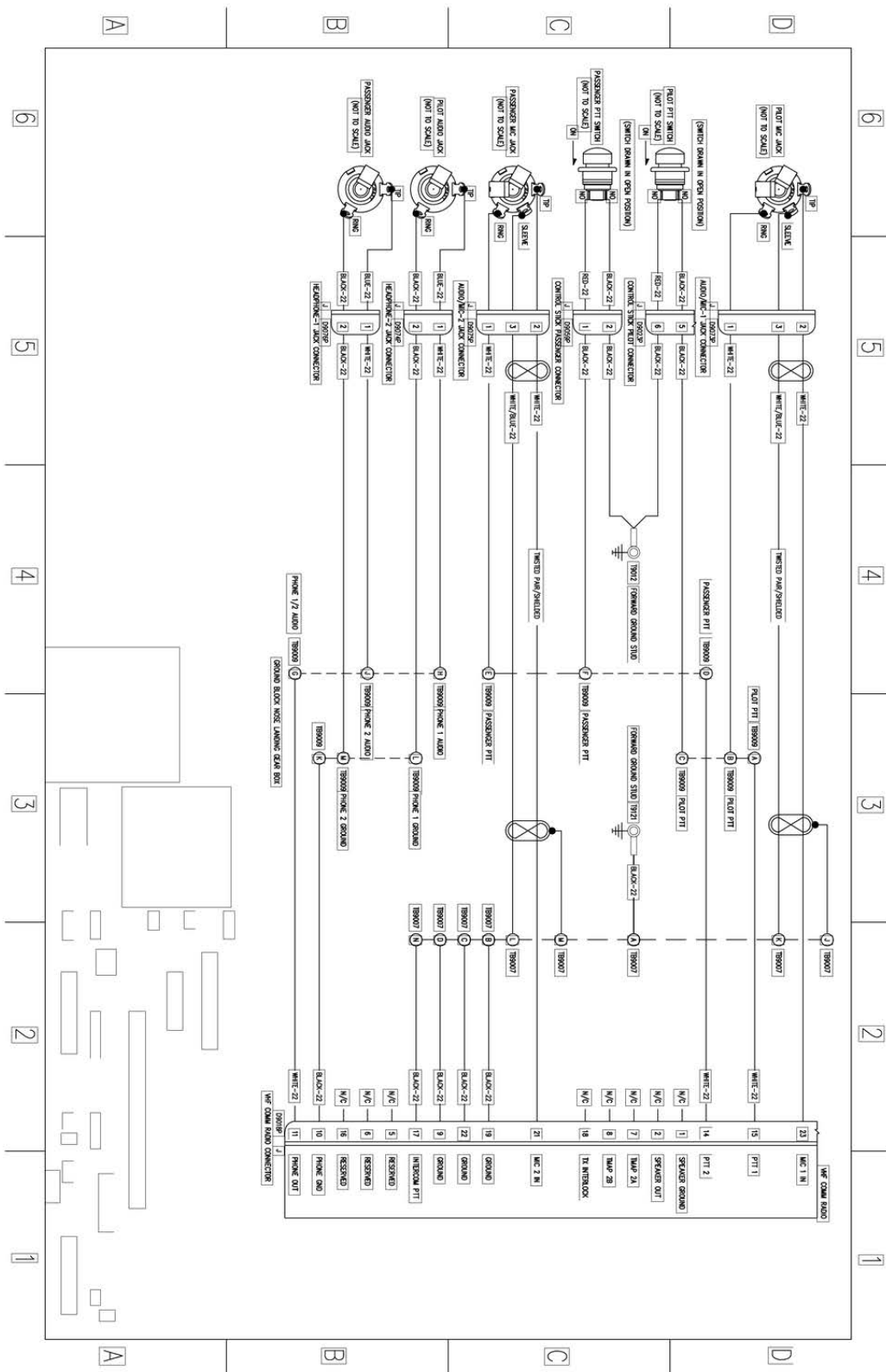
7.2.22 System Wiring Diagram, Mode C



7.2.23 System Wiring Diagram, Outlets

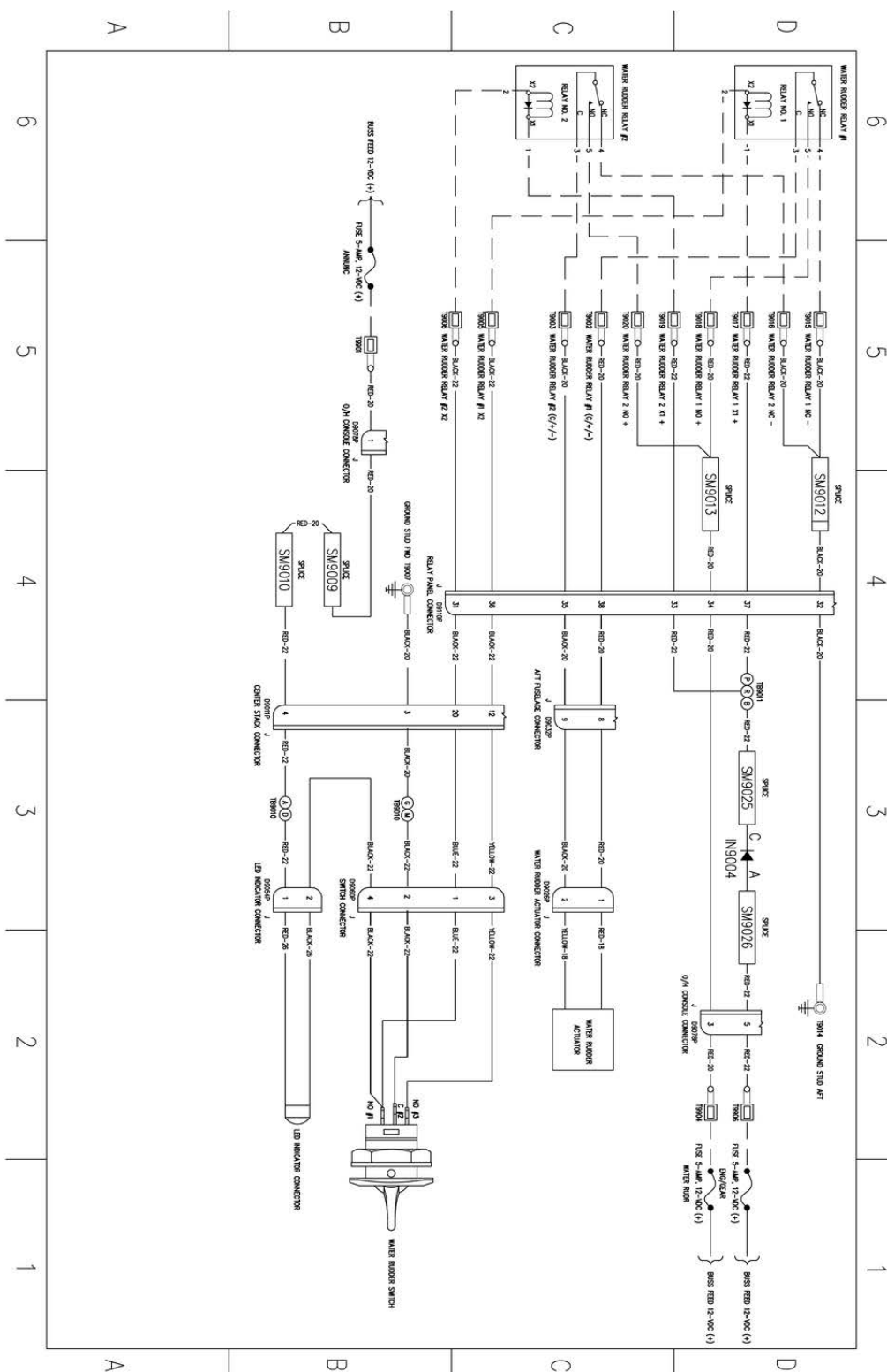


7.2.24 System Wiring Diagram, VHF

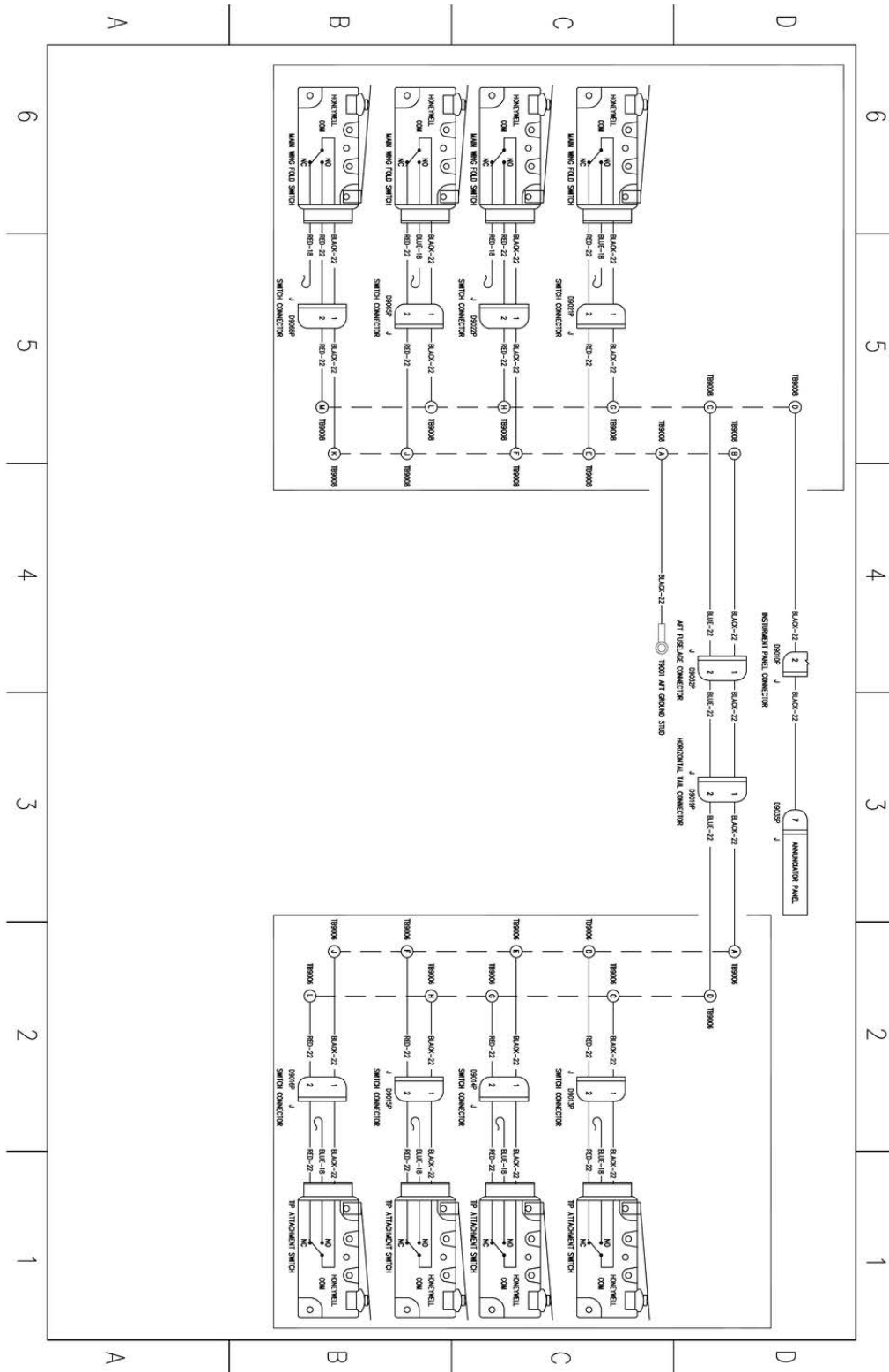




7.2.25 System Wiring Diagram, Water Rudder



7.2.26 System Wiring Diagram, Wing & Tip Switches



7.3 Troubleshooting

7.3.1 Basic Electrical System Inspection

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Annual and 100-Hour Inspection – Operational Inspection" on page 4-25

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

7.3.2 Battery Diagnostic

Table 7-1 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 14-29.

Table 7-1: 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 7-66.
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 "Remove Aircraft Battery" on page 7-62. See "Install Aircraft Battery" on page 7-63.
	Needs conditioning.	See the Conditioning Charge Procedure. ¹
Battery does not hold charge.	Battery beyond serviceable	Replace battery. See "Battery Removal and Installation – Configuration A" on page 1-123. See "Remove Aircraft Battery" on page 7-62. See "Install Aircraft Battery" on page 7-63.
Battery temperature is greater than 55°C/130°F during charging.	Battery beyond serviceable life.	Replace battery. See "Remove Aircraft Battery" on page 7-62. See "Install Aircraft Battery" on page 7-63.
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.

1. Concorde Battery Corporation; Component Maintenance Manual RG[®] Series Main Aircraft Battery, Document Number 5-0171, Most Recent Version

7.4 Electrical System General Maintenance

7.4.1 Ignition Switch Replacement

The following is used to replace the ignition switch.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014851 (IGNITION SWITCH ASSEMBLY)

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.



FIGURE 7-1
IGNITION SWITCH 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.

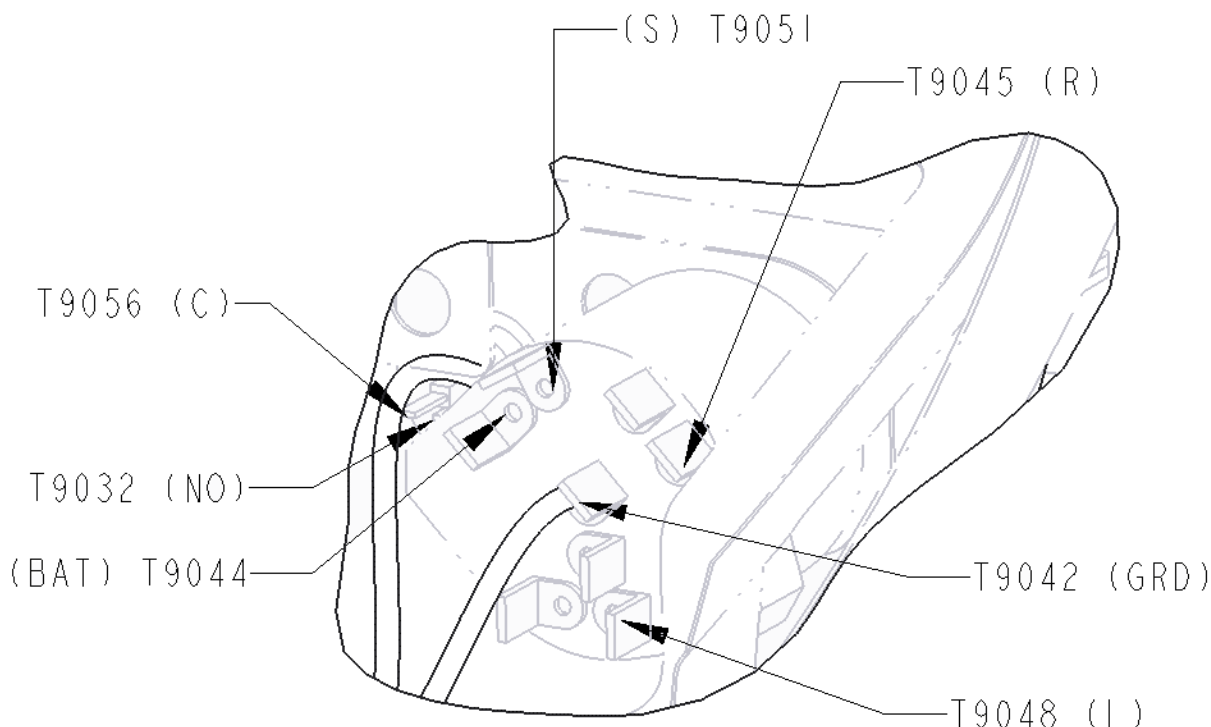


FIGURE 7-2
BACK VIEW OF THE IGNITION SWITCH

7. Remove the cap from the new ignition switch and install the ignition switch to the left hand crossbeam.
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.

7.4.2 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27. See "Cockpit Panels Removal and Installation" on page 4-29. See "Remove Engine Cowlings" on page 17-14.
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 4-29

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Remove Engine Cowlings" on page 17-14

7.4.3 Remove Connector/Terminal

Use the following procedure to remove any spade (disconnect/Push-On) or ring terminal.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Wire Stripper

Parts Required

None

Aircraft System

03 – Electrical System

Consumables

None

TASK INSTRUCTIONS:

1. Identify connector requiring replacement and confirm connector part number.

2. Cut wire as close as possible to old connector and discard connector.

NOTE: Verify the wire will not be pulled tight after the installation of new connector. If the wire will be taught after installation of new connector, the component may need to be replaced.

3. Strip wire insulation as required to properly install new connector.

VERIFICATION METHOD:

See the Note on Step 2 for verification.

RELATED INFORMATION:

"Install Connector/Terminal" on page 7-45

7.4.4 Install Connector/Terminal

Use the following procedure to install connector or terminal.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Panduit CT-100A Crimper or equivalent

Parts Required

ICA011164 (Terminals FML COUPLER 16-14), As Needed

ICA011073 (Terminals FML COUPLER 22-18), As Needed

ICA011175 (TERMINAL, RTANG, PUSH ON, 10-12 AWG), As Needed

Terminals #10 12-10 RING YELLOW, As Needed

TERMINAL, RING, YELLOW, 10-12 x 1/4", As Needed

Terminals NYL-RING 12-10 YEL #8, As Needed

TERMINAL, RING, BLUE, 14-16X#10, PANDUIT, As Needed

Terminals RING 16-14 AWG 5/16, As Needed

TERMINAL, RING, RED, 18-22X#10, PANDUIT, As Needed

Terminals NYL-RING 22-18 RED 1/4, As Needed

Terminals #6 22-18 RING TERM, As Needed

TERMINAL, RING, RED, 18-22X#8, PANDUIT, As Needed

Aircraft System and Number

03 – Electrical System

Consumables

Isopropyl Alcohol (TT0I-735A or Equivalent)

TASK INSTRUCTIONS:

1. Clean connector and wire with isopropyl alcohol and let it dry before crimping.
 2. Install new connector on stripped wire. Verify wire is fully seated in crimp portion of connector.
 3. Crimp connector in accordance with crimper operation instructions.
 4. Reconnect connector.
-

VERIFICATION METHOD:

Procedure is complete when connector or terminal have been installed.

RELATED INFORMATION:

"Remove Connector/Terminal" on page 7-44

7.4.5 Remove Individual Center Stack Bezel Components (Aera 796)

Use the following procedure to remove the individual center stack bezel components of Aera 796 equipped aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

03 – Electrical System

Consumables

Masking Tape

TASK INSTRUCTIONS:

1. Remove center stack bezel. (See "Aera 796 GPS Mount and Radio Stack Bezel Removal" on page 9-15.)
2. Remove rocker switch for lights and bilge pump.
 - a. Disconnect spade terminal connectors from back of switch.
 - b. Unscrew plastic retaining nut.
 - c. Remove switch.
3. Remove flap lever.
 - a. Remove 4-40 hex set screw on bottom of flap selector switch knob.
 - b. Remove retaining nut and locking washer for flap selector switch.
 - c. Remove flap switch.
 - d. Disconnect electrical connector.
4. Remove landing gear switch.
 - a. Remove set screw on landing gear switch knob.
 - b. Remove landing gear switch knob.
 - c. Pry plastic overlap from center stack bezel. Using masking tape around center to prevent damage.
 - d. Remove retaining nut and locking washer.
 - e. Remove landing gear switch.
 - f. Disconnect electrical connector.
5. Remove landing gear position indicator.
 - a. Remove landing gear switch.
 - b. Remove electrical connector from indicator circuit board.
 - c. Remove 2 screws on back of indicator circuit board.
 - d. Remove indicator circuit board.
6. Remove heater knob.
 - a. Remove set screw on plastic heater knob.
 - b. Pull knob from switch shaft.
 - c. Remove retaining nut and washer.
 - d. Remove heater knob switch.
 - e. Disconnect electrical connector.
7. Remove water rudder switch.
 - a. Unscrew plastic nut on back side of switch.
 - b. Remove switch.
 - c. Disconnect electrical connector.

8. Remove LED indicator (bilge and water rudder)
 - a. Pull LED out of socket in center stack bezel.
 - b. Disconnect electrical connector.
9. Remove Trig VHF Radio and transponder
 - a. Remove 6x screws holding radio bracket to bezel.
 - b. Disconnect all electrical connectors.
 - c. Remove radio and transponder.
10. Remove trim indicator (Garmin Aera 796)
 - a. Remove 4 screws on back of unit.
 - b. Remove indicator.
 - c. Disconnect electrical connector.

VERIFICATION METHOD:

Procedure is complete when desired components have been removed.

RELATED INFORMATION:

"796 Equipped Aircraft Transponder Troubleshooting" on page 14-25

7.4.6 Install Individual Center Stack Bezel Components (Aera 796)

Use the following instructions to install individual center stack bezel components on Aera 796 equipped aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

r13-133a-01 (SWITCH, SPST, 30A)

ICA011040 (INDICATOR, LANDING GEAR POSITION)

2X MS16995-9 (SCREW, CAP HD, SCH-HEX, CRES, 4-40X.250)

ICA005939 (SWITCH, SPDT, LANDING GEAR)

ICA009187 (GRAPHIC OVERLAY, LANDING GEAR POSITION)

90291A103 (SET SCREW, 4-40X.125, SOFT-TIP)
ICA007743 (KNOB, SWITCH, LANDING GEAR)
50J5140-4 (WASHER, NON-TURN, K-STYLE)
ICA011228 (SWITCH, 1 POLE, ROTARY, SOLDER, 3-POSN)
ICA007742 (KNOB, SWITCH, FLAP SELECTOR)
90291a103 (SET SCREW, 4-40X.125, SOFT-TIP)
ICA015379 (POTENTIOMETER, HEATER KNOB, 320 DEG)
ICA015381 (SPACER, POTENTIOMETER, HEATER KNOB)
ICA015453 (SET SCREW, HEX, CUP-POINT, BLACK OXIDE STEEL, #4-40 X .375)
ICA015380 (KNOB, SWITCH, 320 DEG, HEATER)
ICA007533 (SWITCH, 2P SPDT)
ICA003958 (INDICATOR, TRIM POSITION)
00649-00 (TRANSPONDER RADIO CONTROL UNIT, TC20)
00857-00-01 (VHF RADIO CONTROL UNIT, TC90)
6C37KCS30 (SCREW, MACH SHCS, 6LOBE, CRES BLACK. 6-32X.375)
ICA009654 (LED, ORNG, REAR PNL MNT, 3MM, RH)
ICA009655 (LED, ORNG, REAR PNL MNT, 3MM, LH)

Aircraft System and Number

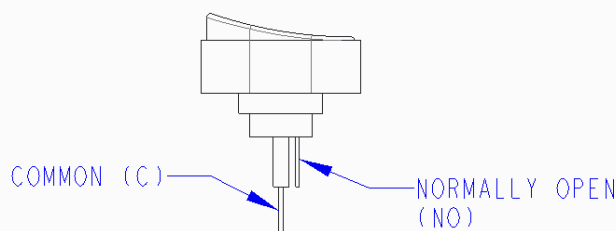
03 – Electrical System

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®
TT-I-735A or equivalent (ISOPROPYL ALCOHOL)
LOCTITE® 220™

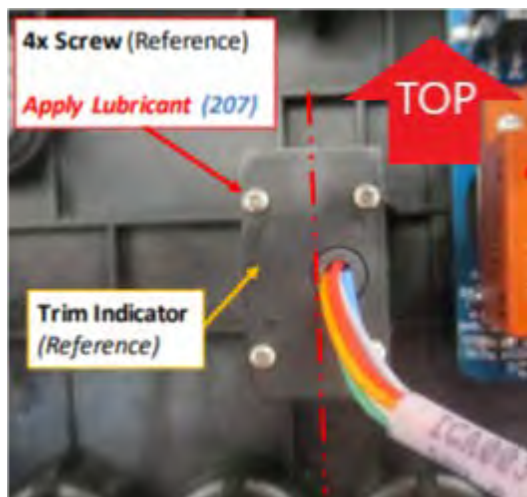
TASK INSTRUCTIONS:

1. Install rocker switches to bezel. [r13-133a-01 (SWITCH, SPST, 30A)]
 - a. Install switch into recess of bezel.
 - b. Install plastic nut on back side of switch, finger tight.

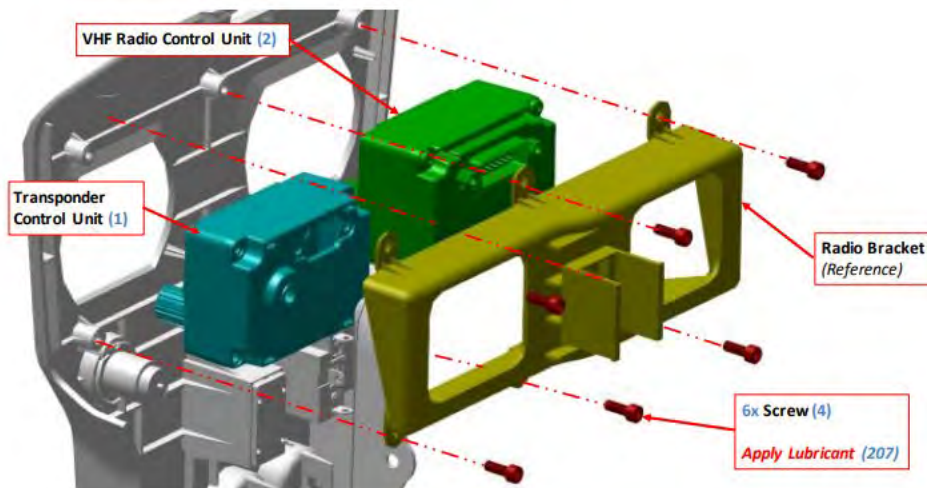


- c. Install T9302 (NO) and T9304 (C) to land light.
 - d. Install T9303 (NO) and T9305 (C) to taxi light.
 - e. T9309 (NO) and T9306 (C) to bilge light.
 - f. T9301 (NO) and T9307 (C) to strobe light.
 - g. T9300 (NO) and T9308 (C) to NAV light.
 - h. Confirm switches actuate normally and all hardware is secure.
2. Install landing position indicator. [ICA011040 (INDICATOR, LANDING GEAR POSITION); 2X MS16995-9 (SCREW, CAP HD, SCH-HEX, CRES, 4-40X.250)]
 - a. Apply Tef-Gel to threads of 2X 4-40 CAP HEAD SCREWS and install landing gear position indicator onto back side of bezel with slotted openings for gear position indicator using screws. Torque to $5.7 \pm .1$ in-lbs. Electrical connector socket should be on top.
 - b. Install electrical connector D9045P into indicator board.
 3. Install landing gear switch. [ICA005939 (SWITCH, SPDT, LANDING GEAR); ICA009187 (GRAPHIC OVERLAY, LANDING GEAR POSITION); 90291A103 (SET SCREW, 4-40X.125, SOFT-TIP); ICA007743 (KNOB, SWITCH, LANDING GEAR)]
 - a. Apply Tef-Gel to threads of landing gear switch. Insert landing gear switch into keyed hole of bezel. Install locking washer and nut over front of switch. Torque nut to 13-15 in-lbs.
 - b. Remove adhesive backing and install graphic overlay cover into recess on bezel.
 - c. Apply Tef-Gel onto thread of soft tip set screw and install landing gear knob onto landing gear switch using set screw with hole for set screw facing up. Torque set screw to 2-4 in-lbs.
 - d. Install electrical connector D9094J to P.

4. Install flap lever switch. [50J5140-4 (WASHER, NON-TURN, K-STYLE); ICA011228 (SWITCH, 1 POLE, ROTARY, SOLDER, 3-POSN); ICA007742 (KNOB, SWITCH, FLAP SELECTOR); 90291a103 (SET SCREW, 4-40X.125, SOFT-TIP)]
 - a. Remove and retain nut and locking washer from switch. Unscrew original switch knob and discard.
 - b. Clean flap switch and set screw threads with isopropyl alcohol and apply Tef-Gel onto threads.
 - c. Install K-style washer into keyed slot for flap selector on back side of bezel.
 - d. Install flap switch into keyed hole in bezel, install lock washer and nut to secure in place. Torque nut to 13-15 in-lbs.
 - e. Install flap selector knob over switch and secure in place by installing set screw. Torque to 2-4 in-lbs. Lever should be pointed in line with 0 marking on front face of instrument bezel when switch is in its most clockwise position.
 - f. Install electrical connector D9061J to P.
5. Install heater knob. [ICA015379 (POTENTIOMETER, HEATER KNOB, 320 DEG); ICA015381 (SPACER, POTENTIOMETER, HEATER KNOB); ICA015453 (SET SCREW, HEX, CUP-POINT, BLACK OXIDE STEEL, #4-40 X .375); ICA015380 (KNOB, SWITCH, 320 DEG, HEATER)]
 - a. Remove nut and lock washer from heater potentiometer.
 - b. Install heater knob spacer over heater potentiometer such that the key hole on the right side face of the potentiometer aligns with the cutout in the spacer.
 - c. Install heater potentiometer into bezel such that the keyed feature from the spacer aligns with the keyed feature in the bezel.
 - d. Clean threads of heater potentiometer with isopropyl alcohol and apply Loctite 220. Install lock washer and nut to secure potentiometer onto bezel. Torque nut to 7-15 in-lbs while holding the potentiometer firmly in place.
 - e. Install electrical connector D9084J to P.
6. Install water rudder switch. [ICA007533 (SWITCH, 2P SPDT)]
 - a. Apply Tef-Gel to threads of water rudder switch and install into square recess of bezel with blue wire on top.
 - b. Install plastic nut and torque to 1-2 flats of nut past finger tight.
 - c. Install electrical connector D9060P to J.
7. Install trim indicator (Aero 796).[ICA003958 (INDICATOR, TRIM POSITION)]
 - a. Remove and retain 4x screws from back of trim position indicator. Discard housing.
 - b. Insert trim position indicator into back of bezel.

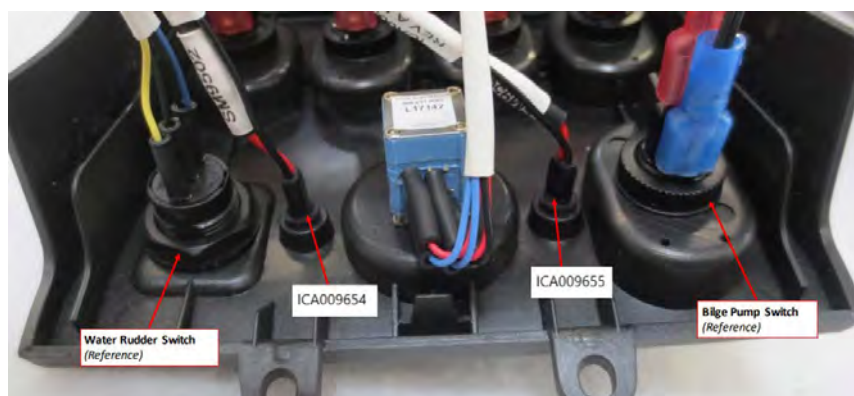


- c. Clean screw threads with isopropyl alcohol and apply Tef-Gel. Install 4x screws into indicator.
 - d. Install electrical connector D9046J to P.
8. Install radio and transponder (Aero 796). [00649-00 (TRANSPONDER RADIO CONTROL UNIT, TC20), 00857-00-01 (VHF RADIO CONTROL UNIT, TC90), 6C37KCS30 (SCREW, MACH SHCS, 6LOBE, CRES BLACK. 6-32X.375)]
- a. Position transponder control unit and VHF radio control unit with radio bracket into center stack bezel.



- b. Clean 6-32 screw threads with isopropyl alcohol and apply Tef-Gel. Use 6x screws to screw radio bracket into place. Torque screws to 6-10 in-lbs. Ensure bracket is flush with no gaps.
- c. Install electrical connector D9058 into VHF radio control unit and connector D9068 into transponder control unit.
- d. Install static air line into transponder control unit.

9. Install LED indicator light installation. [ICA009654 (LED, ORNG, REAR PNL MNT, 3MM, RH); ICA009655 (LED, ORNG, REAR PNL MNT, 3MM, LH)]
 - a. Install LED indicators into light openings on bezel.



- b. For ICA009654, Water Rudder LED Indicator, install electrical connector D9054J to P.
 - c. For ICA009655, Bilge Pump LED Indicator, install electrical connector D9055J to P.

VERIFICATION METHOD:

Confirm center stack and all components are secure.

Turn on master switch. Confirm all switches are operating properly and activating their associated function.

Perform Pitot-Static test per "Pitot-Static-AOA Leak Test Procedures" on page 14-181.

Perform a transponder correspondence test. If the control unit was replaced, configure the transponder. See 00560-00-AQ--TRiG TT21/TT22 Mode S Transponder Installation Manual.

Ensure VHF radio header screen turns on and is operable. Test radio transmission and receiving with an external radio.

7.4.7 Remove Individual Center Stack Components (G3X)

The following procedure is used to remove the individual components on a G3X equipped aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

03 – Electrical System

Consumables

None

TASK INSTRUCTIONS:

1. If applicable, remove Autopilot (AP) controller unit. See steps 2-5 of "Remove Autopilot (AP) Control Panel" on page 4-48.
2. If applicable, remove AP blank. See step 1 of "Remove Autopilot (AP) Control Panel" on page 4-48.
3. Remove rocker switch for lights and bilge pump.
 - a. Disconnect spade terminal connectors from back of switch.
 - b. Unscrew plastic retaining nut.
 - c. Remove switch.
4. Remove flap lever.
 - a. Remove 4-40 hex set screw on bottom of flap selector switch knob.
 - b. Remove retaining nut and locking washer for flap selector switch.
 - c. Remove flap switch.
 - d. Disconnect electrical connector.
5. Remove landing gear switch.
 - a. Remove set screw on landing gear switch knob.
 - b. Remove landing gear switch knob.
 - c. Pry plastic overlap from center stack bezel. Use masking tape around center stack to prevent damage.
 - d. Remove retaining nut and locking washer.
 - e. Remove landing gear switch.
 - f. Disconnect electrical connector.
6. Remove landing gear position indicator.
 - a. Remove landing gear switch.
 - b. Remove electrical connector from indicator circuit board.
 - c. Remove 2 screws on back of indicator circuit board.
 - d. Remove indicator circuit board.

7. Remove heater knob.
 - a. Remove set screw on plastic heater knob.
 - b. Pull knob from switch shaft.
 - c. Remove retaining nut and washer.
 - d. Remove heater knob switch.
 - e. Disconnect electrical connector.
8. Remove water rudder switch.
 - a. Unscrew plastic nut on back side of switch.
 - b. Remove switch.
 - c. Disconnect electrical connector.
9. Remove LED indicator (bilge and water rudder).
 - a. Pull LED out of socket in center stack bezel.
 - b. Disconnect electrical connector.
10. Remove trim indicator (G3X specific).
 - a. Remove 2 screws on back of unit.
 - b. Remove indicator.
 - c. Disconnect electrical connector.

VERIFICATION METHOD:

Procedure is complete when desired components have been removed.

RELATED INFORMATION:

"G3X Equipped Aircraft Transponder Troubleshooting" on page 14-22

7.4.8 Install Individual Center Stack Components (G3X)

Use the following procedure to install individual center stack components on G3X equipped aircraft.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

r13-133a-01 (SWITCH, SPST, 30A)
 ICA011040 (INDICATOR, LANDING GEAR POSITION)
 2X MS16995-9 (SCREW, CAP HD, SCH-HEX, CRES, 4-40X.250)
 ICA005939 (SWITCH, SPDT, LANDING GEAR)
 ICA009187 (GRAPHIC OVERLAY, LANDING GEAR POSITION)
 90291A103 (SET SCREW, 4-40X.125, SOFT-TIP)
 ICA007743 (KNOB, SWITCH, LANDING GEAR)
 50J5140-4 (WASHER, NON-TURN, K-STYLE)
 ICA011228 (SWITCH, 1 POLE, ROTARY, SOLDER, 3-POSN)
 ICA007742 (KNOB, SWITCH, FLAP SELECTOR)
 90291a103 (SET SCREW, 4-40X.125, SOFT-TIP)
 ICA015379 (POTENTIOMETER, HEATER KNOB, 320 DEG)
 ICA015381 (SPACER, POTENTIOMETER, HEATER KNOB)
 ICA015453 (SET SCREW, HEX, CUP-POINT, BLACK OXIDE STEEL, #4-40 X .375)
 ICA015380 (KNOB, SWITCH, 320 DEG, HEATER)
 ICA007533 (SWITCH, 2P SPDT)
 ICA013683 (INDICATOR, TRIM POSITION)
 ICA009654 (LED, ORNG, REAR PNL MNT, 3MM, RH)
 ICA009655 (LED, ORNG, REAR PNL MNT, 3MM, LH)

Aircraft System and Number

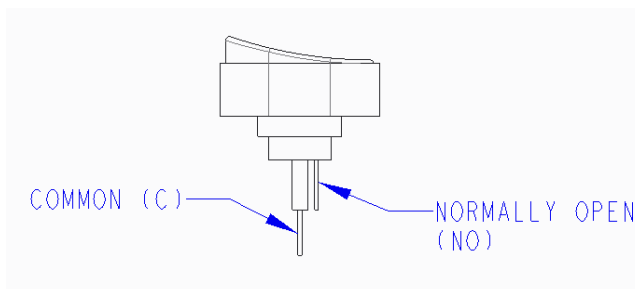
03 – Electrical System

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®
 TT-I-735A or equivalent (ISOPROPYL ALCOHOL)
 LOCTITE® 220™

TASK INSTRUCTIONS:

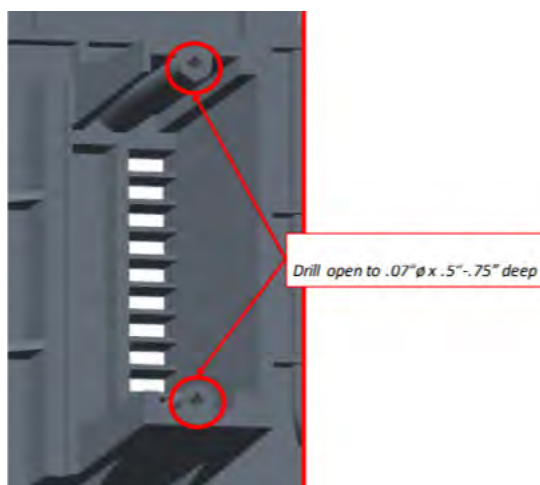
1. If applicable, install Autopilot (AP) controller unit. See steps 5-11 of "Install Autopilot (AP) Control Panel" on page 4-49.
2. If applicable, install AP blank. See step 10 of "Install Autopilot (AP) Control Panel" on page 4-49.
3. Install rocker switches to bezel. [r13-133a-01 (SWITCH, SPST, 30A)]
 - a. Install switch into recess of bezel.
 - b. Install plastic nut on back side of switch, finger tight.



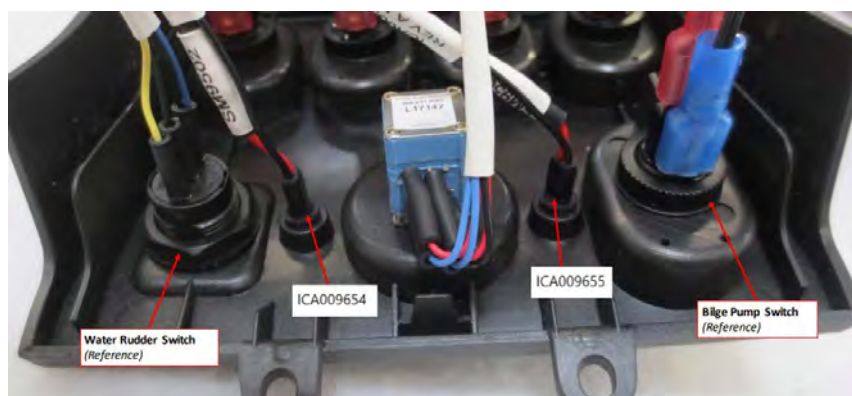
- c. Install T9302 (NO) and T9304 (C) to land light.
 - d. Install T9303 (NO) and T9305 (C) to taxi light.
 - e. T9309 (NO) and T9306 (C) to bilge light.
 - f. T9301 (NO) and T9307 (C) to strobe light.
 - g. T9300 (NO) and T9308 (C) to NAV light.
 - h. Confirm switches actuate normally and all hardware is secure.
4. Install landing position indicator. [ICA011040 (INDICATOR, LANDING GEAR POSITION); 2X MS16995-9 (SCREW, CAP HD, SCH-HEX, CRES, 4-40X.250)]
 - a. Apply Tef-Gel to threads of 2X 4-40 CAP HEAD SCREWS and install landing gear position indicator onto back side of bezel with slotted openings for gear position indicator using screws. Torque to $5.7 \pm .1$ in-lbs. Electrical connector socket should be on top.
 - b. Install electrical connector D9045P into indicator board.
5. Install landing gear switch. [ICA005939 (SWITCH, SPDT, LANDING GEAR); ICA009187 (GRAPHIC OVERLAY, LANDING GEAR POSITION); 90291A103 (SET SCREW, 4-40X.125, SOFT-TIP); ICA007743 (KNOB, SWITCH, LANDING GEAR)]
 - a. Apply Tef-Gel to threads of landing gear switch. Insert landing gear switch into keyed hole of bezel. Install locking washer and nut over front of switch. Torque nut to 13-15 in-lbs.
 - b. Remove adhesive backing and install graphic overlay cover into recess on bezel.
 - c. Apply Tef-Gel onto thread of soft tip set screw and install landing gear knob onto landing gear switch using set screw with hole for set screw facing up. Torque set screw to 2-4 in-lbs.
 - d. Install electrical connector D9094J to P.

6. Install flap lever switch. [50J5140-4 (WASHER, NON-TURN, K-STYLE); ICA011228 (SWITCH, 1 POLE, ROTARY, SOLDER, 3-POSN); ICA007742 (KNOB, SWITCH, FLAP SELECTOR); 90291a103 (SET SCREW, 4-40X.125, SOFT-TIP)]
 - a. Remove and retain nut and locking washer from switch. Unscrew original switch knob and discard.
 - b. Clean flap switch and set screw threads with isopropyl alcohol and apply Tef-Gel onto threads.
 - c. Install K-style washer into keyed slot for flap selector on back side of bezel.
 - d. Install flap switch into keyed hole in bezel, install lock washer and nut to secure in place. Torque nut to 13-15 in-lbs.
 - e. Install flap selector knob over switch and secure in place by installing set screw. Torque to 2-4 in-lbs. Lever should be pointed in line with 0 marking on front face of instrument bezel when switch is in its most clockwise position.
 - f. Install electrical connector D9061J to P.
7. Install heater knob. [ICA015379 (POTENTIOMETER, HEATER KNOB, 320 DEG); ICA015381 (SPACER, POTENTIOMETER, HEATER KNOB); ICA015453 (SET SCREW, HEX, CUP-POINT, BLACK OXIDE STEEL, #4-40 X .375); ICA015380 (KNOB, SWITCH, 320 DEG, HEATER)]
 - a. Remove nut and lock washer from heater potentiometer.
 - b. Install heater knob spacer over heater potentiometer such that the key hole on the right side face of the potentiometer aligns with the cutout in the spacer.
 - c. Install heater potentiometer into bezel such that the keyed feature from the spacer aligns with the keyed feature in the bezel.
 - d. Clean threads of heater potentiometer with isopropyl alcohol and apply Loctite 220. Install lock washer and nut to secure potentiometer onto bezel. Torque nut to 7-15 in-lbs while holding the potentiometer firmly in place.
 - e. Install electrical connector D9084J to P.
8. Install water rudder switch. [ICA007533 (SWITCH, 2P SPDT)]
 - a. Apply Tef-Gel to threads of water rudder switch and install into square recess of bezel with blue wire on top.
 - b. Install plastic nut and torque to 1-2 flats of nut past finger tight.
 - c. Install electrical connector D9060P to J.

9. Install trim indicator (G3X) [ICA013683 (INDICATOR, TRIM POSITION)]
 - a. If necessary, drill open holes in bezel for trim position indicator to .070" diameter x .5"-.75" deep.



- b. Remove and retain 2x screws from back of trim position indicator. Discard housing.
 - c. Insert trim position indicator into back of bezel.
 - d. Clean screw threads and isopropyl alcohol and apply Tef-Gel. Install 2x screws into indicator. Torque screws to 6-10 in-lbs.
 - e. Install electrical connector D9046J to P.
10. Install LED indicator light installation. [ICA009654 (LED, ORNG, REAR PNL MNT, 3MM, RH); ICA009655 (LED, ORNG, REAR PNL MNT, 3MM, LH)]
 - a. Install LED indicators into light openings on bezel.



- b. For ICA009654, Water Rudder LED Indicator, install electrical connector D9054J to P.
 - c. For ICA009655, Bilge Pump LED Indicator, install electrical connector D9055J to P.

VERIFICATION METHOD:

Confirm center stack and all components are secure.

Turn on master switch. Confirm all switches are operating properly and activating their associated function.

Perform a transponder correspondence test. If the control unit was replaced, configure the transponder. See 190-01499-10 Garmin GTX 34R/45R Installation Manual and 190-01115-01 Garmin G3X/G3X Touch Installation Manual.

Ensure VHF radio header screen turns on and is operable. Test radio transmission and receiving with an external radio.

7.5 Battery

7.5.1 Battery Description

The A5-B uses Concord RG-series Valve Regulated Lead Acid (VRLA) 12V Absorbent Glass Mat (AGM) aircraft battery. The RG series is constructed with non-removal vent valves-no addition of electrolyte or water required. AGM batteries are sensitive to overcharging, the recommend charge rate should be kept around 2.25-2.30V/cell and shall not exceed 2.40V/cell. An AGM compatible charging system is required.

7.5.2 Aircraft Battery Diagram/Schematic

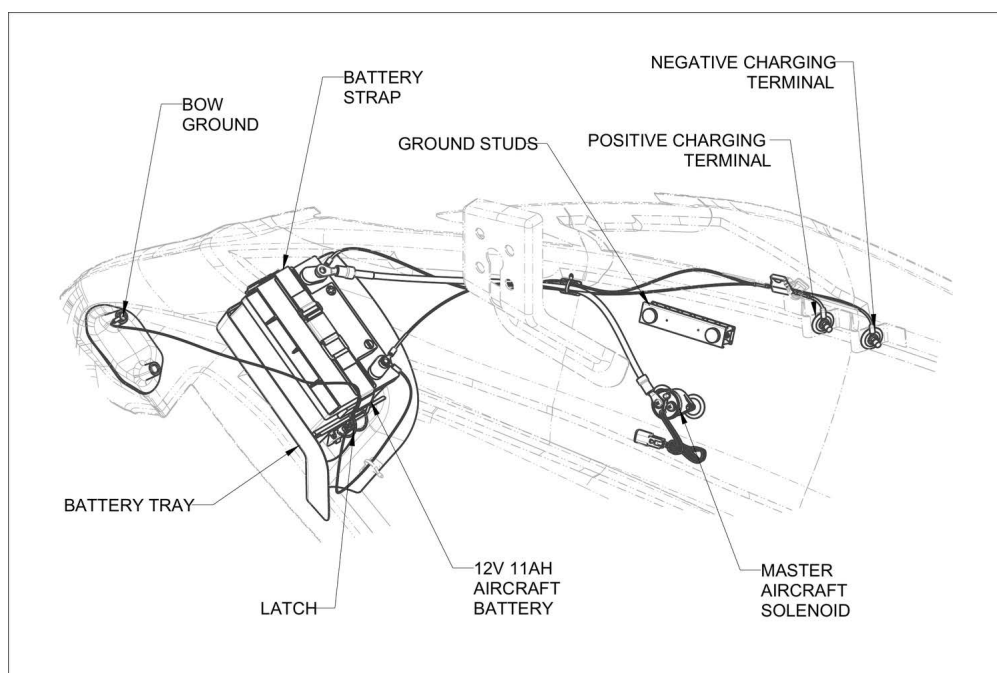


FIGURE 7-3
BATTERY INSTL-VIEW LOOKING RIGHT AND FWD FROM INBOARD TO OUTBOARD

7.5.3 Maintenance Instructions

7.5.3.1 Remove Aircraft Battery

Use this procedure to remove the Aircraft Battery. Procedure includes steps to remove the battery strap, j-hook, and toggle latch.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

03 – Electrical System

Consumables

None

See Figure 7-3

TASK INSTRUCTIONS:

1. Remove the Right Top Instrument Panel Cover. (See “Right Instrument Panel Top Panel Removal” on page 9-17.)
2. Disconnect the negative battery terminals.
3. Disconnect the positive battery terminals.
4. Carefully open the latch.
5. Pull Battery Strap off the Latch.
6. Pull the Aircraft Battery up and place AFT edge on AFT edge of Battery Tray.
7. Remove the Aircraft Battery out of the aircraft.
8. If replacing the Battery Strap, pull the FWD side of the Battery Strap down out of the J-Hook. See Figure 7-4.

9. If replacing the Latch, remove lock nut and washer. See Figure 7-5.
10. If replacing the J-Hook, remove lock nut and washer. See Figure 7-4.

VERIFICATION METHOD:

Task is complete when the Aircraft Battery has been removed.

7.5.3.2 Install Aircraft Battery

Use this procedure to install the battery.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

1x ICA014884 (BATTERY, VRLA, 12V 11AH)

1x ICA014995 (STRAP ASSY, TIE-DOWN, POLYESTER & 2X RUBBER, RG-12LSA)

Common Parts:

4x ICA014327 (FOAM STRIP, ADH-BACKED, FR, BUNA-N, .25 X 1.0 X 4.25)

1x ICA014561 (FOAM STRIP, ADH-BACKED, FR, BUNA-N, .25 X 1.0 X 1.5)

1x ICA013995 (LATCH, TOGGLE, SPRING CLAW, SAFETY CATCH, 304SS)

1x ICA013801 (TAB, J-HOOK, 1.00 STRAP, 316L SS, .036)

Aircraft System and Number

03 – Electrical System

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

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

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

O-A-51 or equivalent (ACETONE)

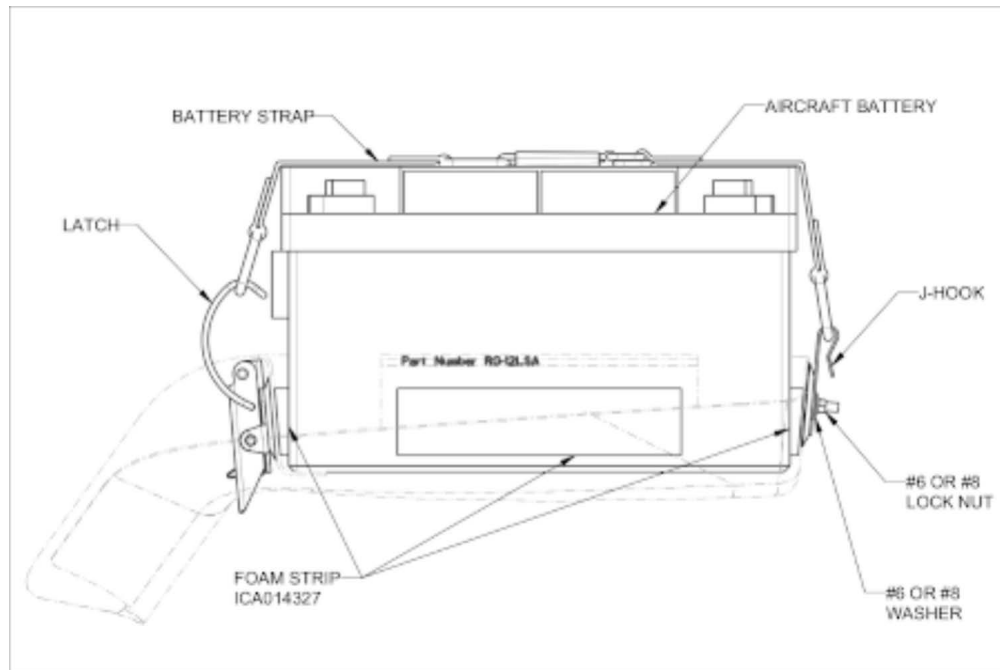


FIGURE 7-4
BATTERY INSTL – VIEW LOOKING INBOARD FROM RHS

TASK INSTRUCTIONS:

1. If removed, secure J-Hook to the FWD side of the Battery Tray with the lock nut and washer previously removed. Apply lubricant to stud and torque #6 hardware to 7.8-9.3 in-lbs (11.1-13.1 in-lbs for #8 hardware). See Figure 7-4.
2. If removed, secure Latch to the AFT side of the Battery Tray with the lock nut and washer previously removed. Apply lubricant to stud and torque #6 hardware to 7.8-9.3 in-lbs (11.1-13.1 in-lbs for #8 hardware). See Figure 7-5.

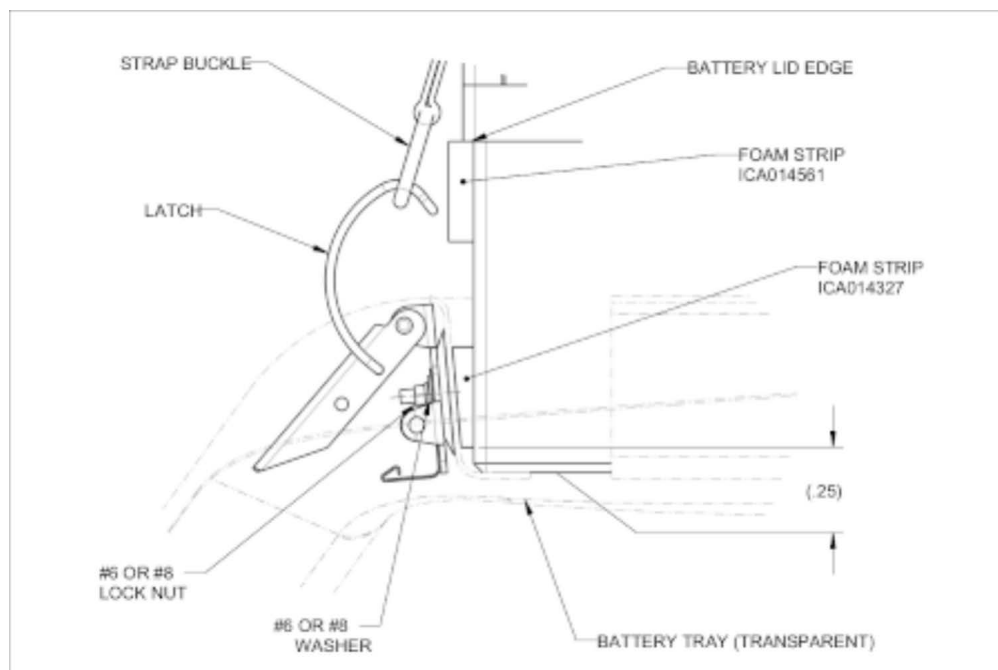


FIGURE 7-5
LATCH MECHANISM

3. If removed, secure one end of the strap to the J-Hook by pulling on the strap until it snaps into the J-Hook. See Figure 7-4.
4. Clean the four sides of the Aircraft Battery with Isopropyl Alcohol, MEK, or acetone.
5. Install one foam strip (ICA014327) .25 inches from the base of the Aircraft Battery and centered on each side of the Aircraft Battery as shown in Figure 7-4 and Figure 7-5.
6. Install one foam strip (ICA014561) horizontally on the AFT side of the Aircraft Battery right below the top lid as shown in Figure 7-5.
7. Slide the Aircraft Battery forward into the Battery Tray and place down into place.
8. Pull Battery Strap over the top of the Aircraft Battery.
9. Position Latch into the Battery Strap as shown in Figure 7-5.
10. Ensure the Battery Strap is positioned flat from FWD to AFT edge of the Aircraft Battery.
11. Close the Latch until it clicks. Ensure the Latch is closed.
12. Reconnect the positive battery terminals first: T9181, T9054.
13. Reconnect the negative battery terminals: T9069, T9076, T9182.
14. Install the Right Top Instrument Panel Cover. (See "Right Instrument Panel Top Panel Installation" on page 9-19.)

VERIFICATION METHOD:

Complete the Engine Test Run. (See "Engine Test Run" on page 17-7.)

7.5.3.3 Charge Battery

Use this procedure to boost-charge the aircraft battery.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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

IPC Reference

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 7-6.)

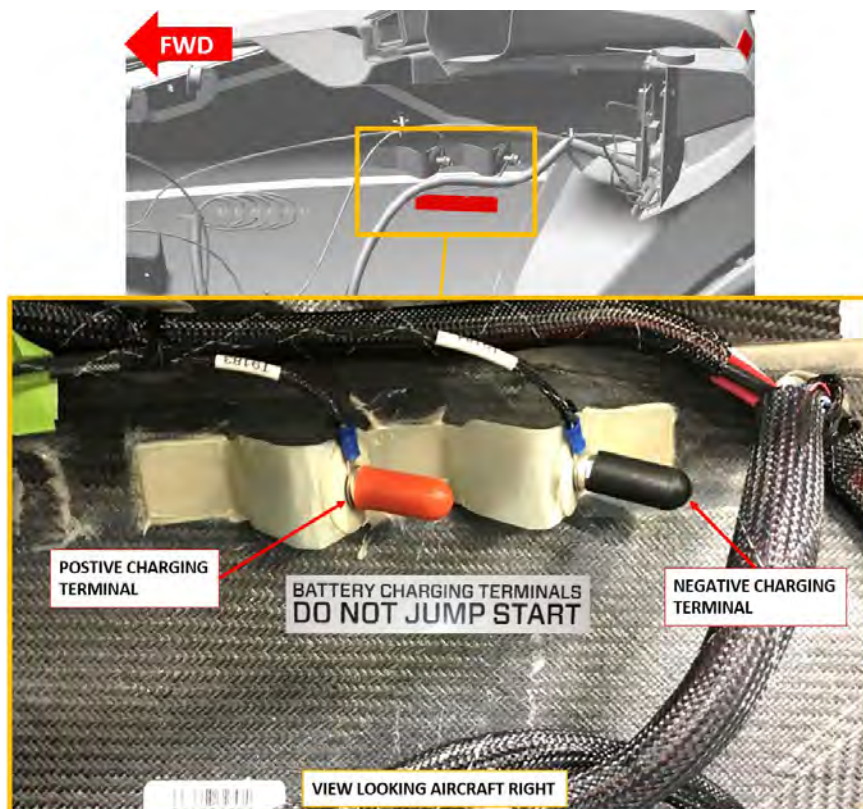


FIGURE 7-6
AIRCRAFT BATTERY CHARGING TERMINALS

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 7-2 for state of charge (SOC). Turn off charging unit once charging is complete.

Table 7-2: 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 7-6.)

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 7-40.*

RELATED INFORMATION:

"Extract ECU Data" on page 17-13

7.6 Bilge Pump

7.6.1 Bilge Pump Description

The A5-B 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.

7.6.2 Bilge Pump Diagram/Schematic

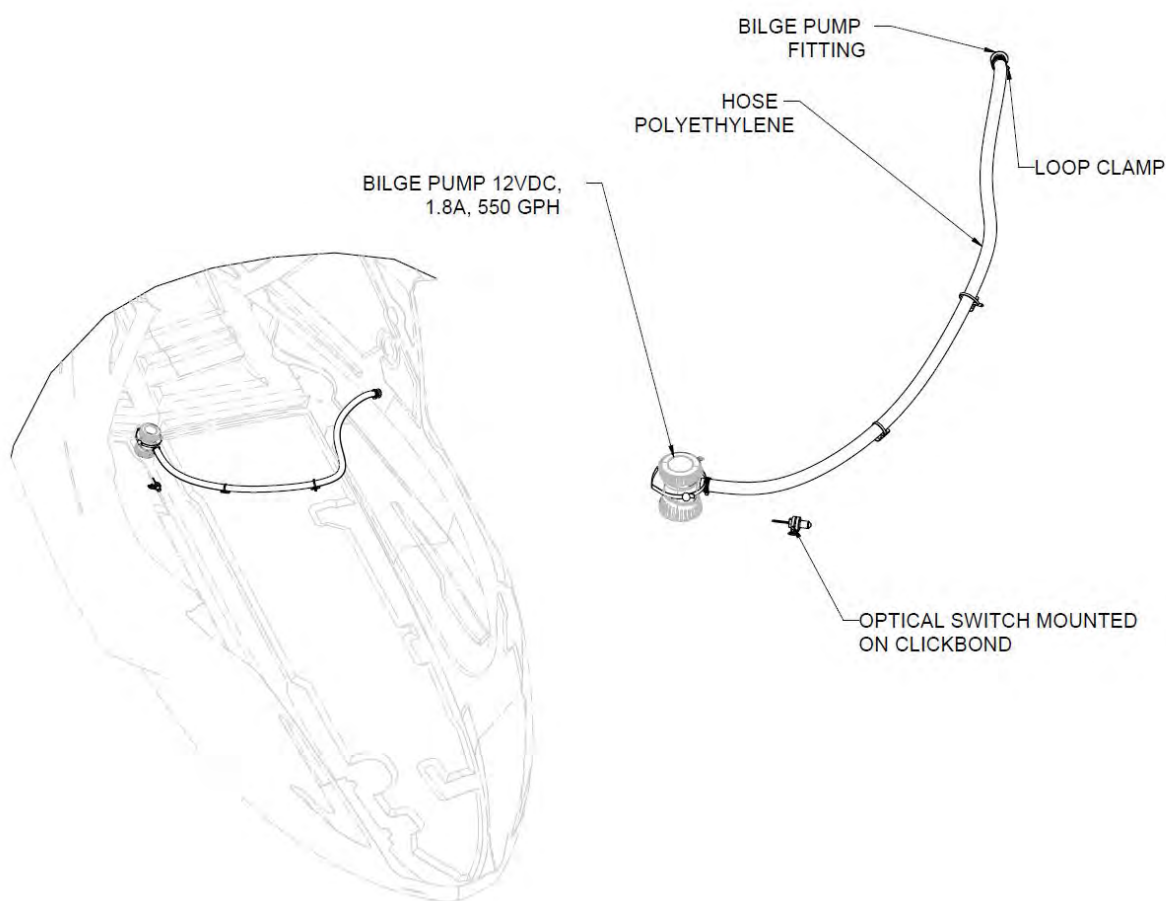


FIGURE 7-7
BILGE PUMP INSTALLATION AND OUTLET ROUTING.

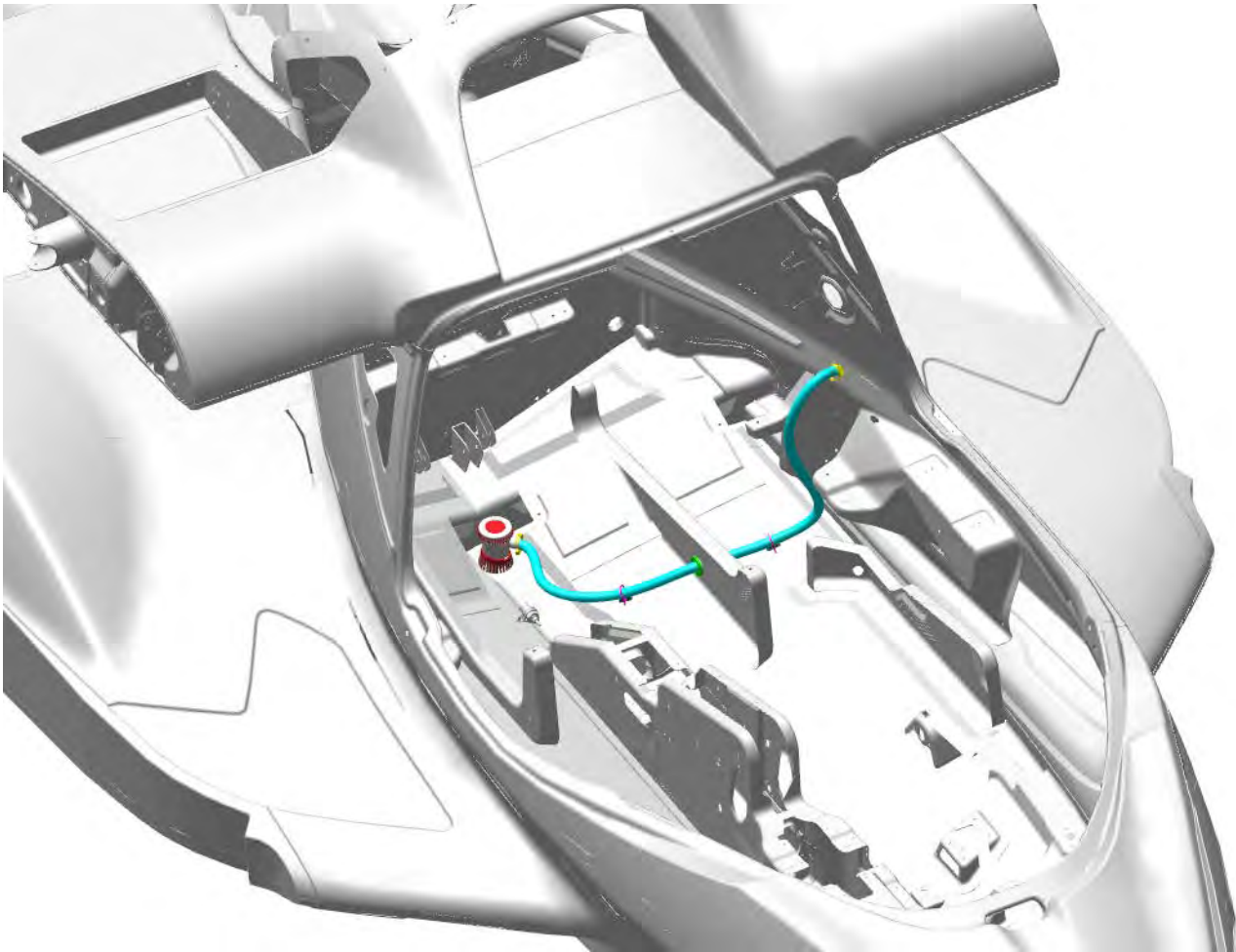


FIGURE 7-8
BILGE PUMP INSTALLATION AND OUTLET ROUTING

7.6.3 Inspection Instructions

7.6.3.1 Check Bilge Pump Function

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 “Remove Cockpit Floorboard” on page 4-39.)
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 “Install Cockpit Floorboard” on page 4-40.)
-

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Avionics and Electrical" on page 4-23

7.6.3.2 Bilge Pump Removal

The following procedure should be used to remove the bilge pump.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 Assembly" on page 11-12.)
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.

7.6.3.3 Bilge Pump Installation

Use the following procedure to install the bilge pump.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.*

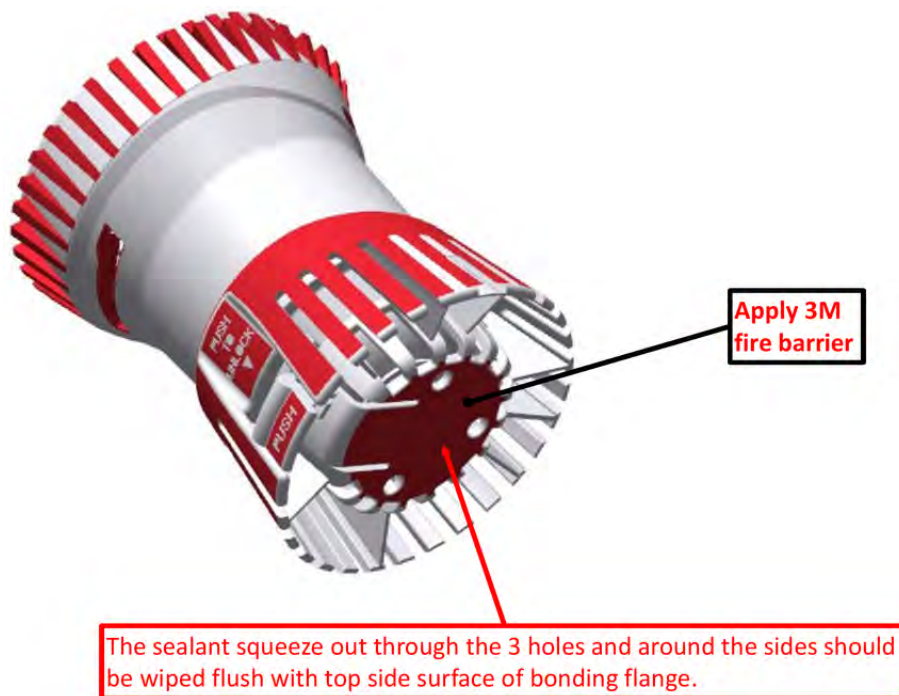


FIGURE 7-9
APPLY 3M FIRE BARRIER

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"±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).

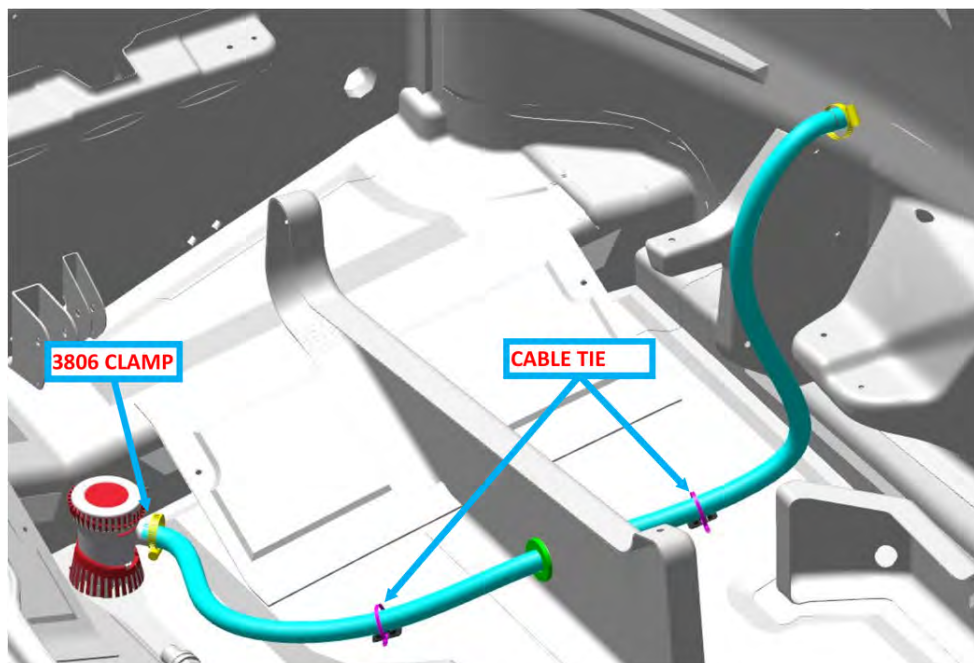


FIGURE 7-10
SECURE BILGE PUMP HOSE

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.

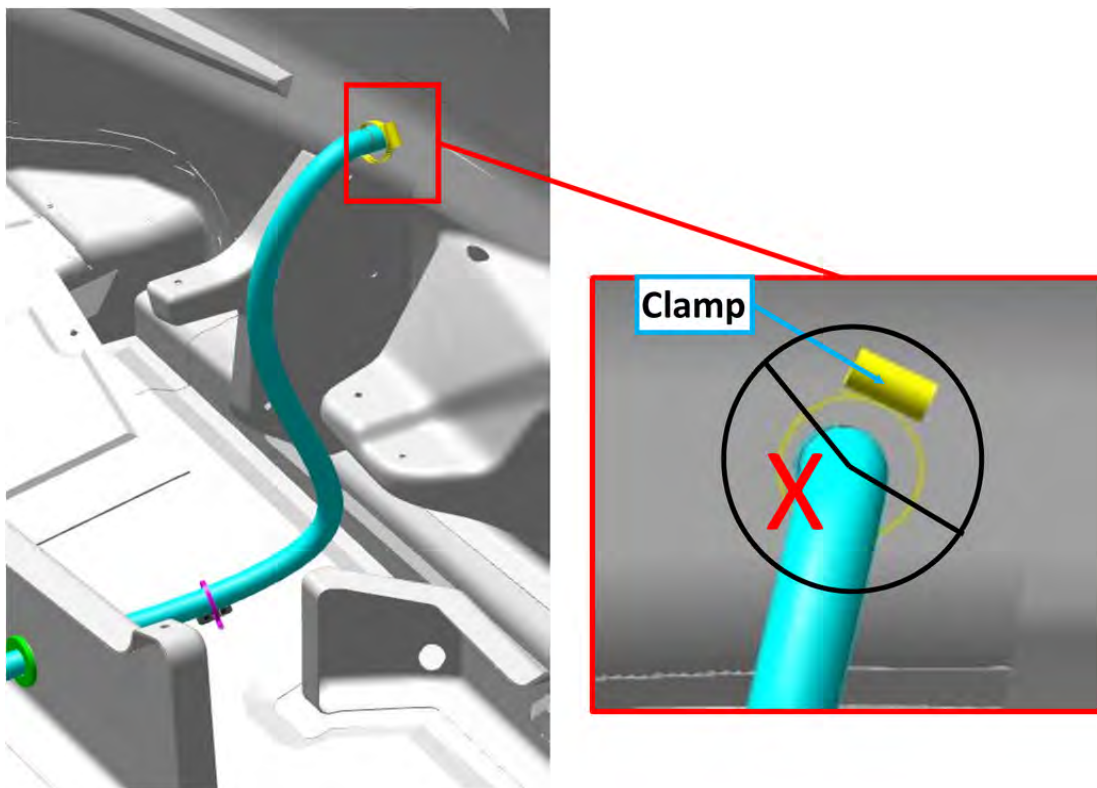


FIGURE 7-11
CLAMP ORIENTATION

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 Assembly” on page 11-16.)

VERIFICATION METHOD:

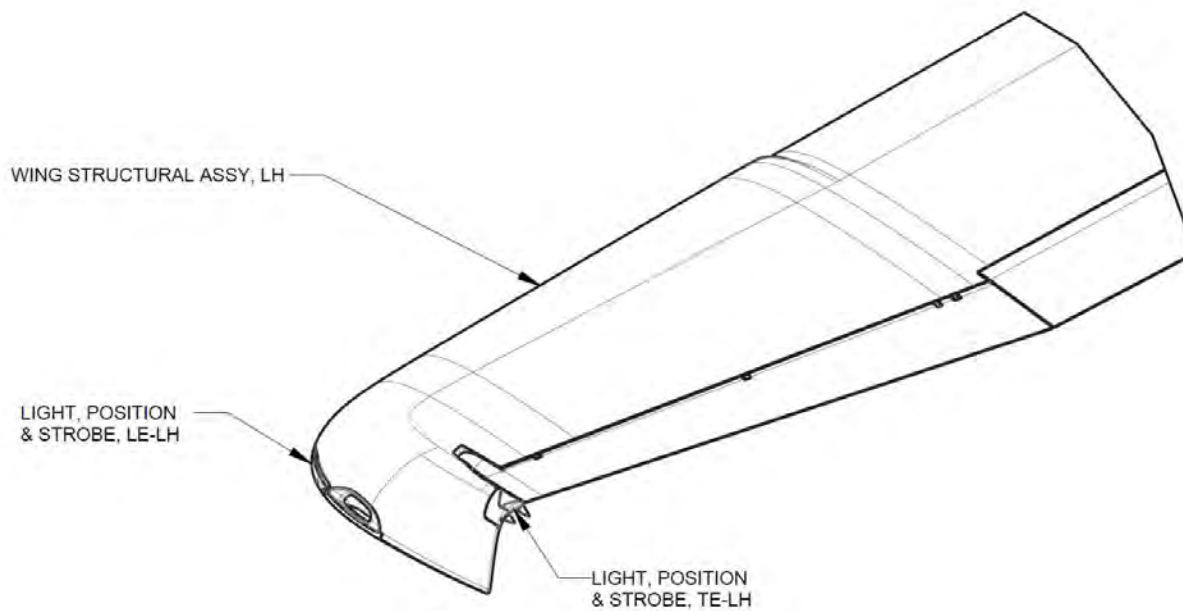
The procedure is complete when the fuel tank is installed.

7.7 Wing Tip Lights

7.7.1 Wing Tip Lights Description

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

7.7.2 Wing Tip Lights Diagram/Schematic



7.7.3 Maintenance Instructions

7.7.3.1 Removal of Wing Tip Lights

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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 D9002P2 on LIGHT, POSITION & STROBE, LE-LH from D9002P1 and D90002J2 on aircraft wire harness, respectively.

NOTE:

- b. Disconnect D9003P on LIGHT, POSITION & STROBE, TE-LH from D9003J on aircraft wire harness.
- c. Disconnect D9006J1 and D9006P2 on LIGHT, POSITION & STROBE, LE-RH from D9006P1 and D9006J2 on aircraft wire harness, respectively.
- d. Disconnect D9007P on LIGHT, POSITION & STROBE, TE-RH from D9007J on aircraft wire harness.



FIGURE 7-12
LEADING EDGE LIGHT ASSEMBLY, LH



FIGURE 7-13
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 7-79

7.7.3.2 Installation of Wing Tip Lights

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

ICA013955 (LIGHT, POSITION & STROBE, LE-RH)
 GTV-IC1600-0-AJ (LIGHT, POSITION & STROBE, TE-RH)
 ICA013956 (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)
 ICA014012 (SCREW, TORX, BUTTON HEAD, BUNA SEAL, 300SS, 8-32X.625)

Aircraft System and Number

03 – Electrical System

Consumables

LOCTITE 243

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 7-13) prior to installation.
3. For Leading Edge Lights only: trim the foam to .110" thick, $\pm .020$ " if replacing with a new light.
4. 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.
5. Attach light to wing.
 - a. For Trailing Edge Lights use SCREW, BUNA-N, 8-32x5-8 with LOCTITE 243. Verify light is seated and torque screw to 15-20 in-lbs with a T15 Torx drive
 - b. For Leading Edge Lights attach light to wing using ICA014012 SCREW, TORX, BUTTON HEAD, BUNA SEAL, 300ss, 8-32X.625 and secure with LOCTITE 243. Verify light is seated and torque screw to 15-20 in-lbs 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 18-19.)

VERIFICATION METHOD:

The task is complete when the light is secure.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Wings" on page 4-11

"Removal of Wing Tip Lights" on page 7-77

7.8 Landing and Taxi Lights

7.8.1 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.

7.8.2 Landing and Taxi Lights Diagram/Schematic

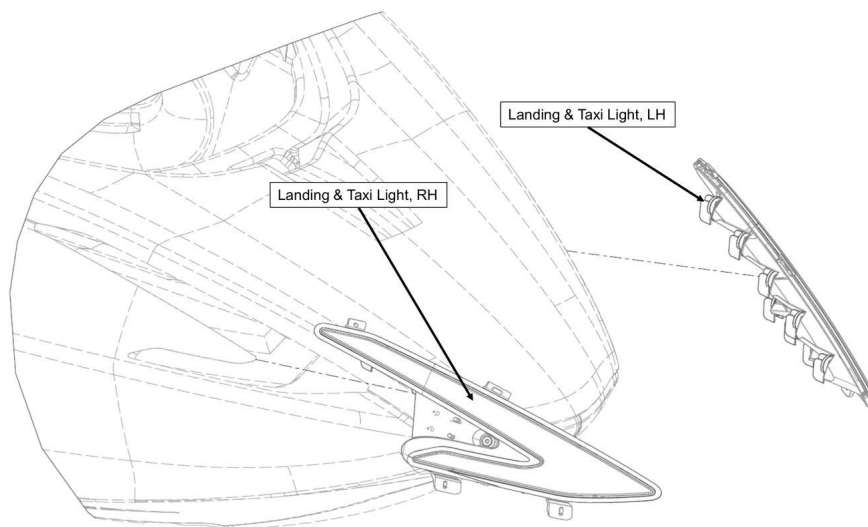


FIGURE 7-14
LANDING AND TAXI LIGHTS DIAGRAM

7.8.3 Maintenance Instructions

7.8.3.1 Remove Landing and Taxi Lights

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

03 – Electrical System

Consumables

None

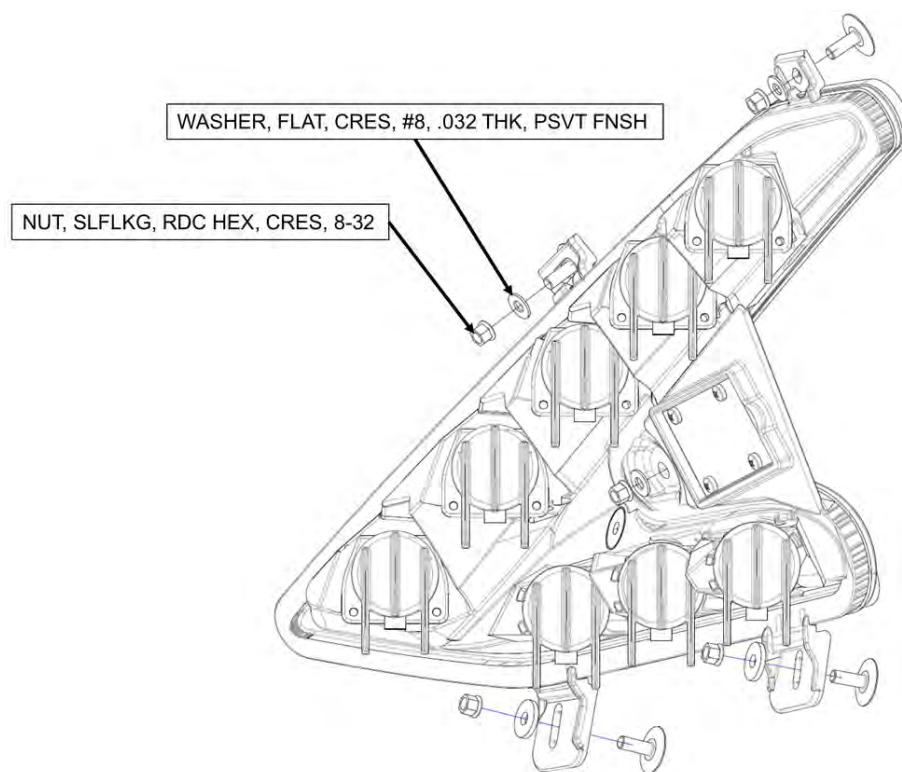


FIGURE 7-15
LANDING AND TAXI LIGHTS INSTALLATION, RH (LH OPPOSITE)

TASK INSTRUCTIONS:

1. Remove top instrument panel. (See “Right Instrument Panel Top Panel Removal” on page 9-17.)(See “Left Instrument Panel Top Panel Removal” on page 9-20.)
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 5 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 9-17

"Left Instrument Panel Top Panel Removal" on page 9-20

"Install Landing and Taxi Lights" on page 7-84

7.8.3.2 Install Landing and Taxi Lights

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

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

13 INCH POUND TORQUE WRENCH

Parts Required

ICA014417 (LIGHT, TAXI AND LANDING, RH)

ICA014418 (LIGHT, TAXI AND LANDING, LH)

2x ICA014414 OVERSIZED WASHER

3x NAS1149CN8324 #8 WASHER

5x MS21043-08 NUT

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 7-15.
 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 9-19
- "Left Instrument Panel Top Panel Installation" on page 9-21
- "Remove Landing and Taxi Lights" on page 7-82

7.9 Dome Light Switch

7.9.1 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.

7.9.2 Dome Light Switch Diagram/Schematic

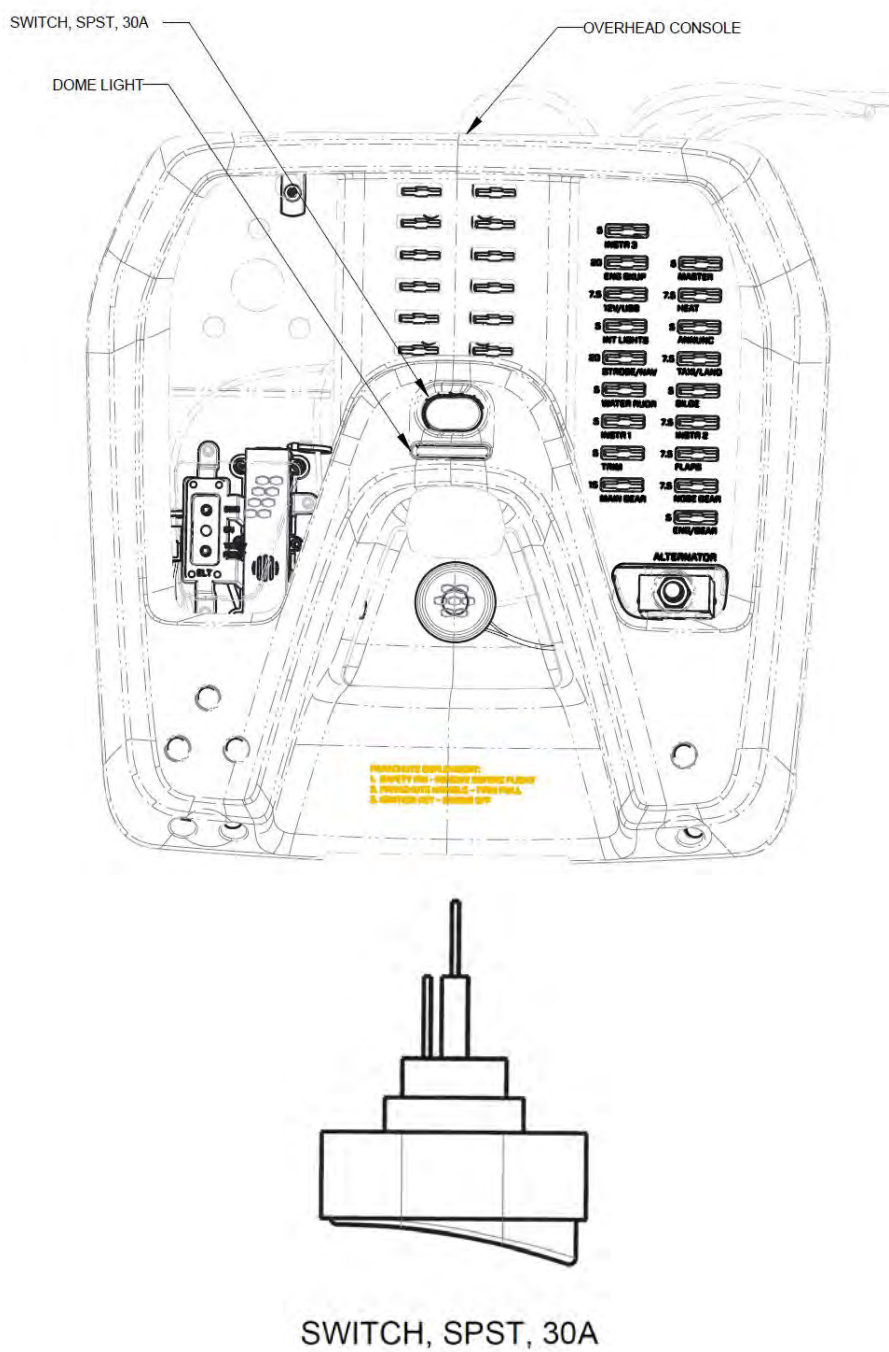


FIGURE 7-16
OVERHEAD CONSOLE AND DOME LIGHT SWITCH

7.9.3 Maintenance Instructions

7.9.3.1 Remove Dome Light Switch

Use the following task to remove the dome light switch.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 14-35.)
 2. Carefully remove the connectors from short and long posts on SWITCH, SPST, 30A. (See Figure 7-16.)
 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 14-35

7.9.3.2 Install Dome Light Switch

Use the following task to install the dome light switch.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 7-17.

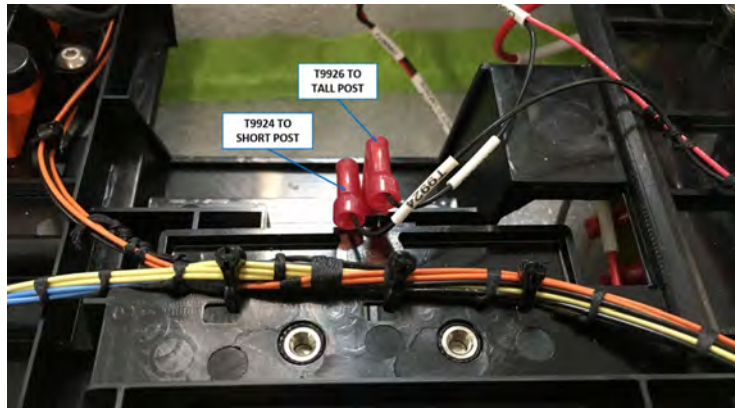


FIGURE 7-17
TOP VIEW DOWN OF OVERHEAD CONSOLE

3. Reinstall the console bezel. (See "Overhead Console Component Replacement" on page 14-35.)

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 14-35

Chapter 8

ENVIRONMENTAL CONTROL (UTILITY SYSTEMS)

Environmental Control System Description.....	8-2
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Cabin Heater Description.....	8-3
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Heater Fan and Core Removal.....	8-3
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Bilge Pump Debris Removal.....	8-6

8.1 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.

8.2 Cabin Heater

8.2.1 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.

8.2.2 Inspection Instructions

8.2.2.1 Heater Fan and Core Removal

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-17. See “Left Instrument Panel Top Panel Removal” on page 9-20.)
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. Remove the heater core subassembly by removing the four nuts and washers on the carbon support bracket.
5. Using a 3mm ball-end hex key, remove the four screws and washers securing the heater fan and core to the composite bracket.
6. 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.
7. Remove the heater core fittings (2x) and O-rings, retain fittings and discard O-rings.

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Right Instrument Panel Top Panel Removal" on page 9-17

"Left Instrument Panel Top Panel Removal" on page 9-20

8.2.2.2 Heater Fan and Core Installation

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

PA815D4 (ECS Heater Core Assembly)

AS3582-907 (O-Ring)

ICA013124 (Heater Core and Fan)

ICA008146 (Bracket)

92290A186 (Screws)

NAS1149CN832R (Washers)

MS21043-3 (LOCKING NUT, 10-32)

Aircraft System and Number

04 – Environmental Control (Utility Systems)

Consumables

LOCTITE 243 (THREADLOCKER, PRIMERLES, OIL TOL, REMOVABLE MED STR, BLUE

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

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

TASK INSTRUCTIONS:

1. If ME000251, ECS Heater Core Assembly is not available in stock, then perform Step 2 through Step 8 to assemble prior to installation. Otherwise proceed to Step for installation.
 2. Discard hardware that came with HX-CU420V, heater core, if any.
 3. Place O-ring (AS3582-907) in O-ring groove of fitting (PA815D4).
 4. Repeat Step 3 so that a total of two fittings are prepared for installation.
 5. Apply minimal amount of LOCTITE 243 to threads of the heater core.
 6. Ensure that no LOCTITE is applied to the surface of the heater core where the fitting O-ring interfaces. Wipe away excess as necessary.
 7. Install 2x fittings into heater core.
 8. Torque fittings to 95-105 in-lbs. Ensure to keep torque wrench level and parallel with heater core while fittings are being torqued. Inspect for any damage.
 9. Ensure fan is oriented as shown with air low indication arrow pointing towards heater core and wire harness positioned in upper right (next to fittings). Apply Loctite 243 to screw threads.
 10. Install heater core and fan (ICA013124) onto bracket (ICA008146) using 4x screws (92290A186) and 4x washers (NAS1149CN832R).
 11. Torque screws to 7-9 in-lbs.
 12. Install heater core assembly (ME000251) onto 4x studs using lubricant and 4x nuts (MS21043-3) and 4x washers (NAS1149C0332R).
 13. Torque 4x nuts to 20 in-lbs.
 14. Connect connector D9089J to D9089P at the heater fan. Connector should be wrapped with 1.5 full wraps of F4 tape and secured to zip tie mount with TY24MX zip tie.
 15. Connect ESC supply and return lines to ECS heater core fittings. Torque B-nuts to 110-130 in-lbs.
-

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.

Verify heater is emitting heat. If not, continue running engine as there may be a bubble in the ECS lines that needs to be pushed out to overflow.

8.3 Maintenance Instructions

8.3.1 Bilge Pump Debris Removal

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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 4-34.)
 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 4-35.)
 6. Tighten and secure the 4 Torx #20, 10-32 thread flat head screws.
-

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Avionics and Electrical" on page 4-23

Chapter 9

EQUIPMENT AND FURNISHINGS

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Instrument Panel Center Spine Removal and Installation	9-28
Remove G3X Center Stack Bezel	9-31
Install G3X Center Stack Bezel	9-32

9.1 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.

9.2 Equipment and Furnishings General Maintenance

9.2.1 Seat Belt Replacement

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

200-US-121XX (SEAT BELT)

AN5C6A (BOLT)

ICA001942 (BUSHING)

ICA006812 (RH, LONGERON)

ICA006814 (LH, LONGERON)

2X NAS1149C06634 (WASHER)

MS21043-5 (NUT)

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 4-34.) (See “Remove Seat Back” on page 4-43.)

NOTE: Though not necessary, removal of the seat back and seat pan makes the following steps easier. (See “Seat Pan Removal” on page 4-45.)

2. Remove the seat belt inertia reel. (See “Seat Belt Inertia Reel Removal” on page 4-32.)
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 9-1.



FIGURE 9-1
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 9-2.

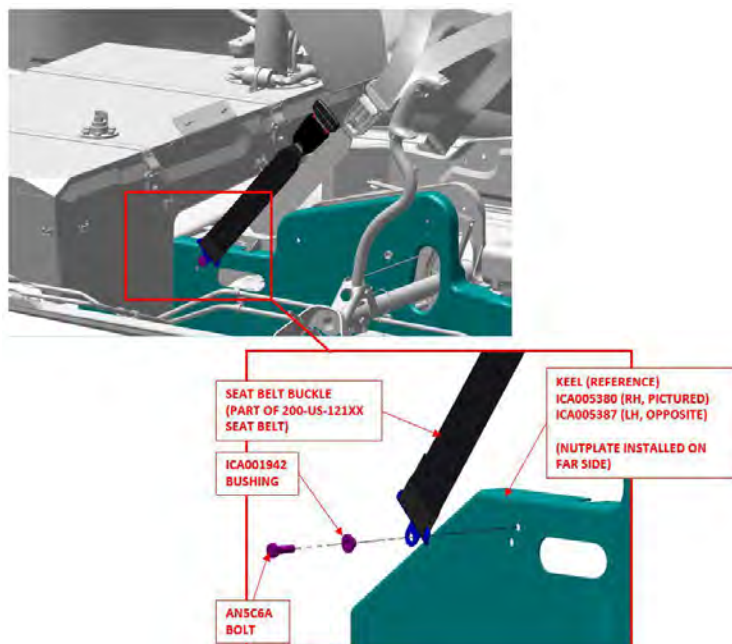


FIGURE 9-2
CO-PILOT SIDE SHOWN

Installation

5. Install the seat belt buckle side of the belt assembly onto the inboard keel as shown in Figure 9-2. Torque the bolt to 90 in-lb_f.
6. Install the free end of the seat belt assembly into the outboard longeron as shown in Figure 9-1. Torque the fastener to 85 in-lb_f.
7. Install the seat belt inertia reel. (See "Seat Belt Inertia Reel Installation" on page 4-33.)
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 4-47.)(See "Install Seat Back" on page 4-44.)(See "Baggage Floor Installation" on page 4-35.).

VERIFICATION METHOD:

Procedure is complete when steps are finished.

RELATED INFORMATION:

"Baggage Floor Removal" on page 4-34
 "Remove Seat Back" on page 4-43
 "Seat Pan Removal" on page 4-45
 "Baggage Floor Installation" on page 4-35
 "Install Seat Back" on page 4-44
 "Seat Pan Installation" on page 4-47

9.2.2 Center Console Bucket Removal

Use the following procedure to remove the center console bucket.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-3.

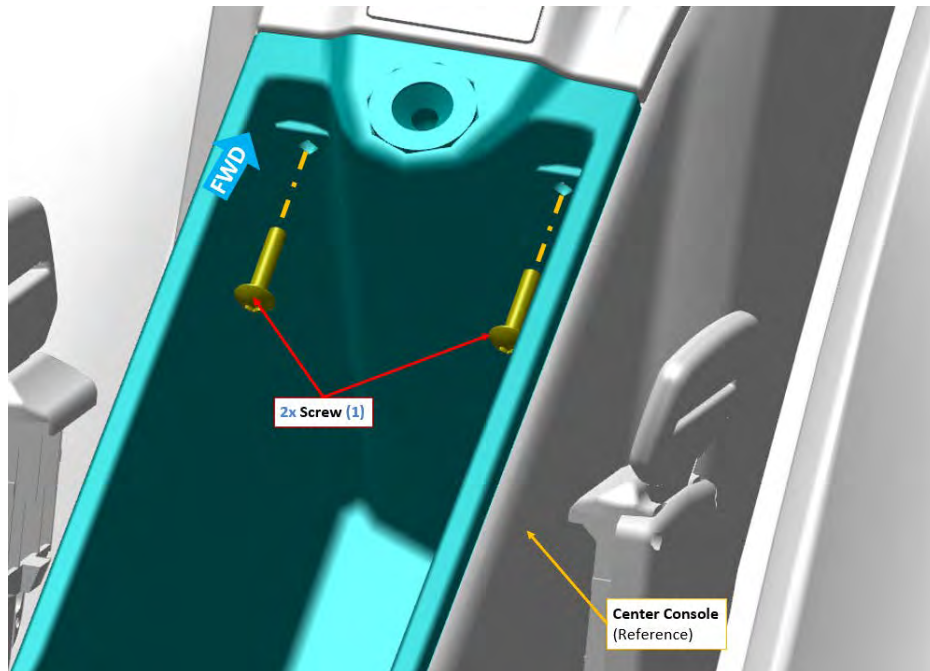


FIGURE 9-3
FWD EDGE BUCKET SCREWS

2. Remove 2X Screws which secure the center armrest. Retain all fastening hardware. See Figure 9-4.

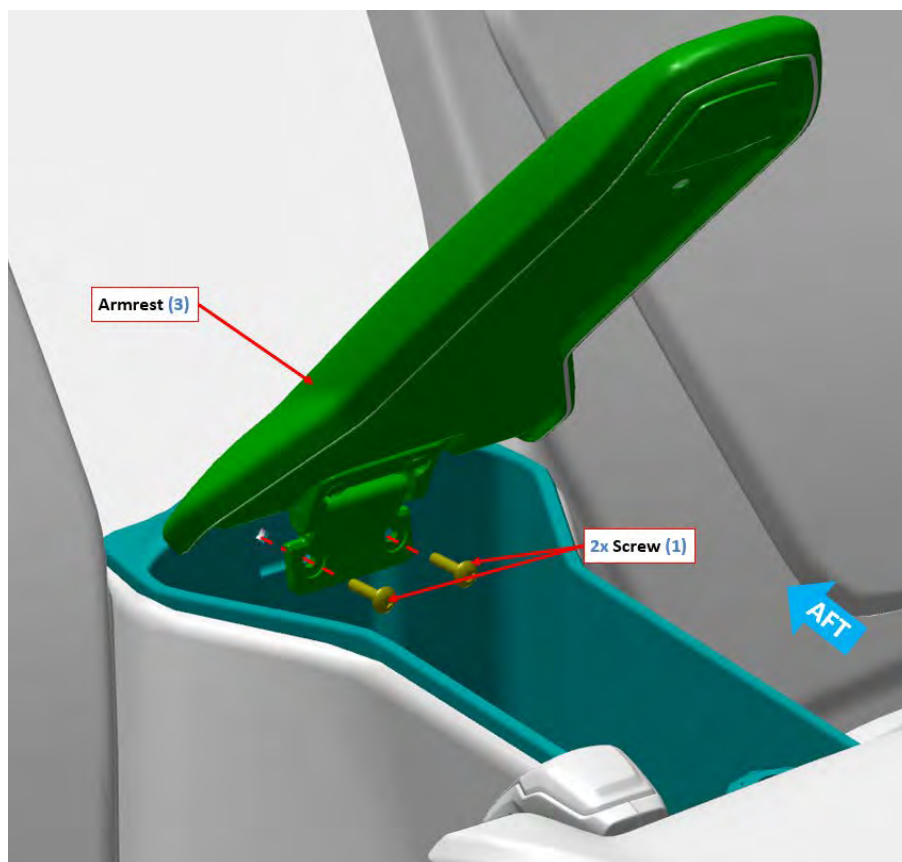


FIGURE 9-4
CENTER ARMREST SCREWS

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 9-5.

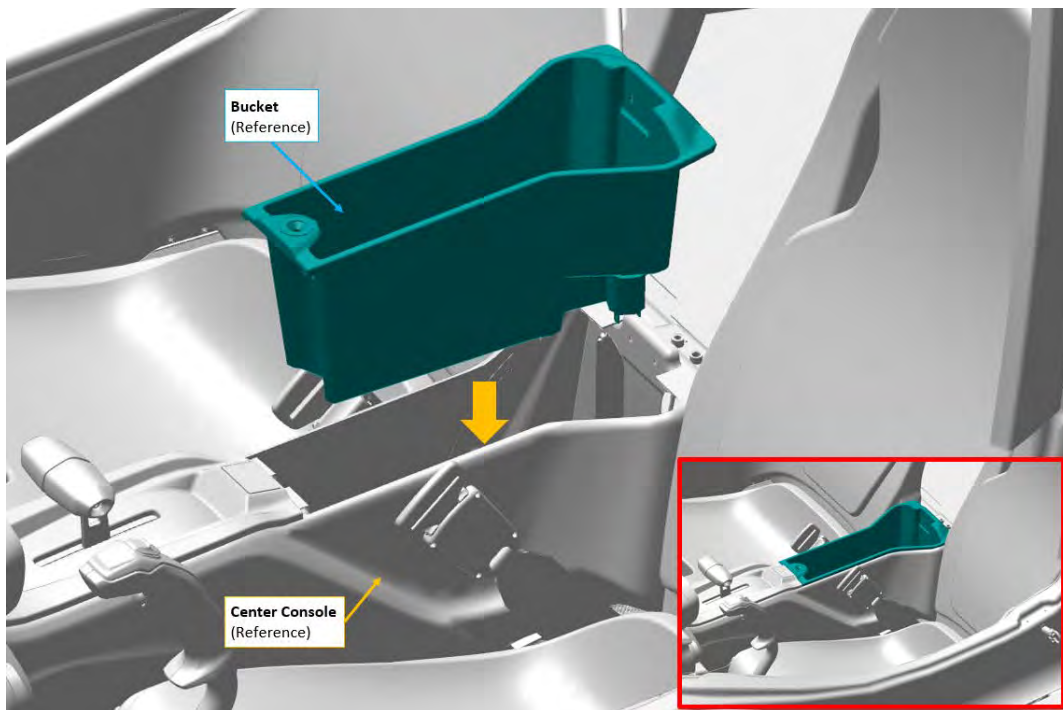


FIGURE 9-5
CENTER CONSOLE BUCKET REMOVAL

VERIFICATION METHOD:

Procedure is complete when the center console is removed.

RELATED INFORMATION:

"Inspect Yaw Cable Tension" on page 10-81

"Rigging Yaw Controls" on page 10-88

"Rigging Pitch Controls" on page 10-47

"Aera 796 GPS Mount and Radio Stack Bezel Removal" on page 9-15

9.2.3 Center Console Bucket Installation

Use the following procedure to install the center console bucket.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA001746 (BUCKET, CENTER CONSOLE)

Aircraft System and Number

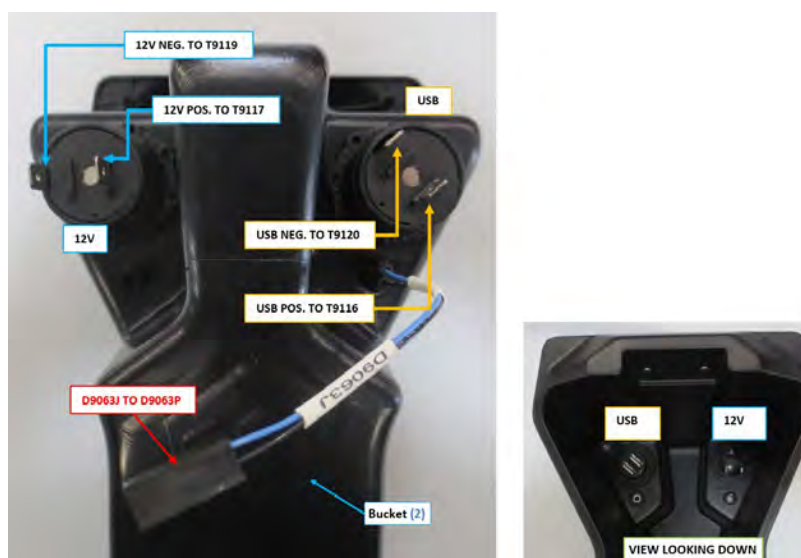
05 – Equipment and Furnishing

Consumables

None

TASK INSTRUCTIONS:

1. Connect electrical connections as follows, refer to Figure 9-6:
 - 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 9-6****CENTER CONSOLE BUCKET ELECTRICAL CONNECTIONS**

2. Install center console bucket. See Figure 9-5.

3. Install 2x screws which secure the center armrest. Apply ICA012078 lubricant and torque to 12 in-lbs. See Figure 9-4.
4. Install 2x screws which secure the FWD edge of the center console bucket. Apply ICA012078 lubricant and torque to 12 in-lbs. See Figure 9-3.

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Inspect Yaw Cable Tension" on page 10-81

"Rigging Yaw Controls" on page 10-88

"Rigging Pitch Controls" on page 10-47

"Aera 796 GPS Mount and Radio Stack Bezel Installation" on page 9-16

9.2.4 Throttle Handle and Bezel Removal

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-5.)

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 9-7.

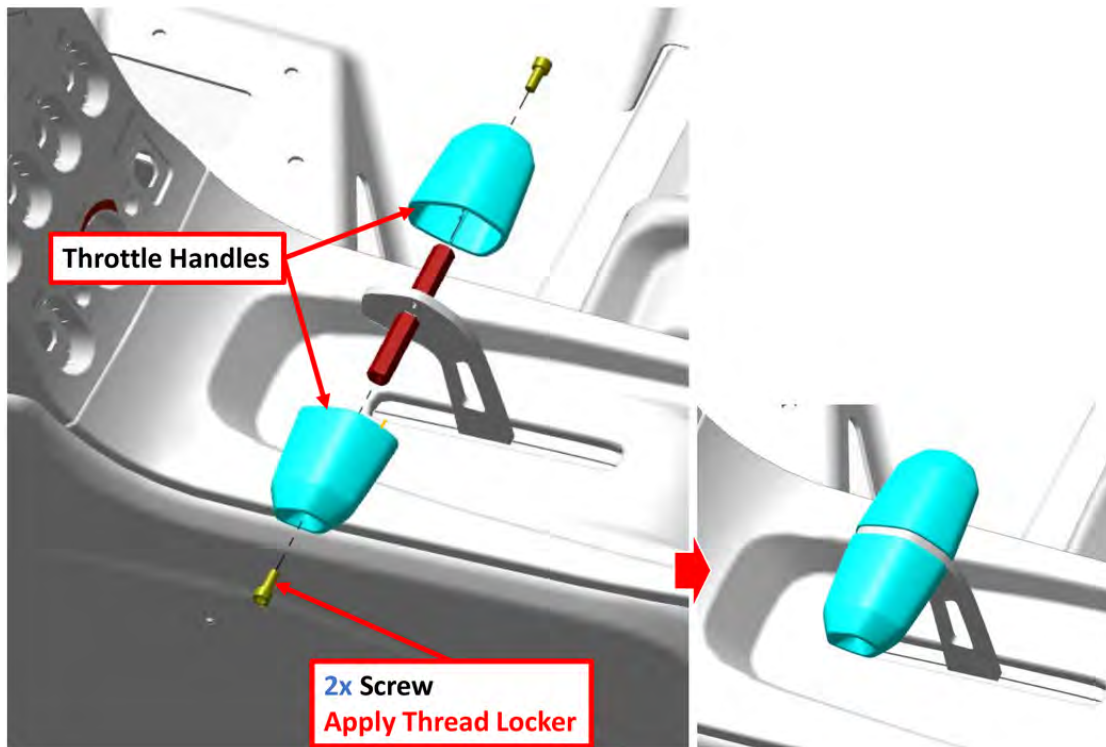


FIGURE 9-7
THROTTLE HANDLE SCREWS

3. Remove the standoff that is inserted into the throttle lever. Retain hardware. See Figure 9-8.

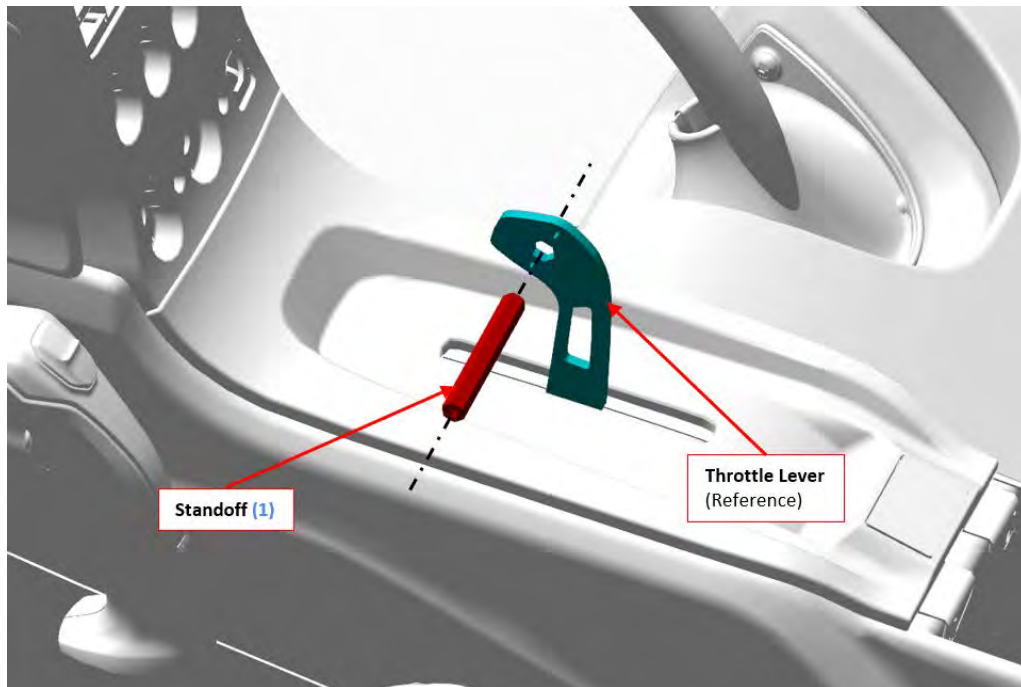


FIGURE 9-8
STANDOFF REMOVAL

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.

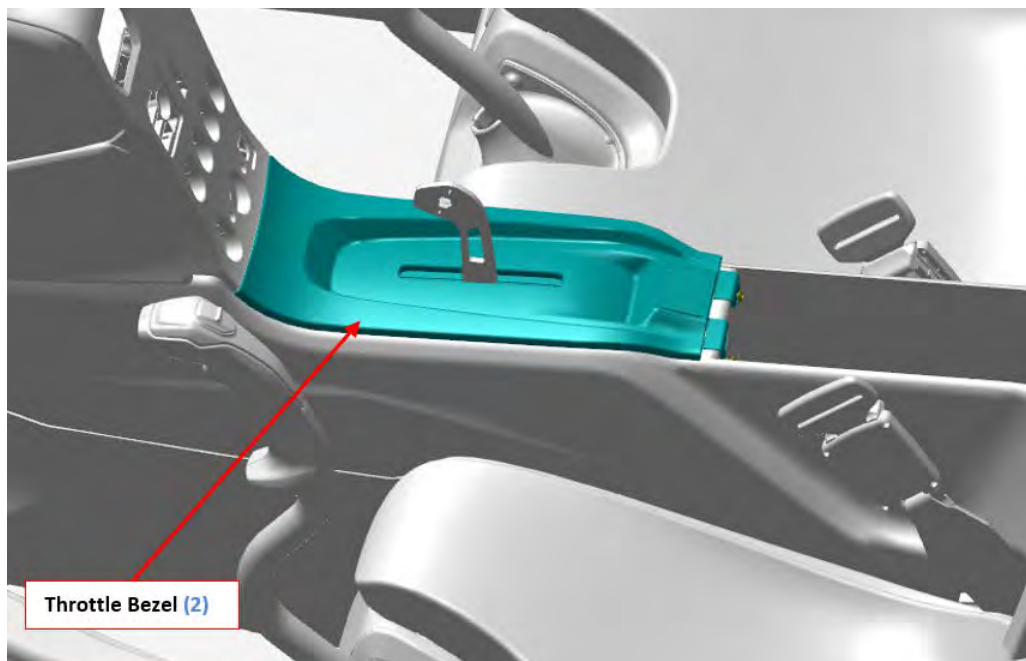


FIGURE 9-9
THROTTLE BEZEL REMOVAL

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Rigging Yaw Controls" on page 10-88

"Rigging Pitch Controls" on page 10-47

"Aera 796 GPS Mount and Radio Stack Bezel Removal" on page 9-15

9.2.5 Throttle Handle and Bezel Installation

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools

No

Parts Required

ICA004704 (HANDLE, THROTTLE, RH)

ICA008348 (HANDLE, THROTTLE, LH)

ICA004373 (BEZEL, THROTTLE)

Aircraft System and Number

05 – Equipment and Furnishing

Consumables

LOCTITE® 243™

TASK INSTRUCTIONS:

1. Connect electrical connections as follows, refer to Figure 9-10:
 - 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.

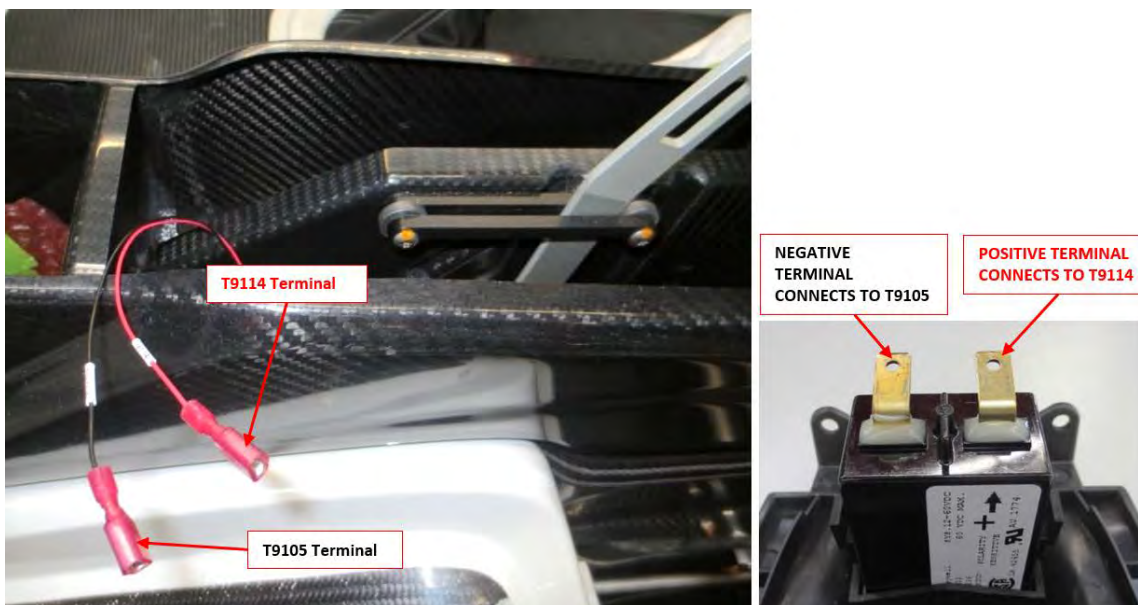


FIGURE 9-10
THROTTLE BEZEL ELECTRICAL CONNECTIONS

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

3. Install the standoff by inserting it into the throttle lever. See step 2. See Figure 9-8.
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 9-7.

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Rigging Yaw Controls" on page 10-88

"Rigging Pitch Controls" on page 10-47

"Aera 796 GPS Mount and Radio Stack Bezel Installation" on page 9-16

9.2.6 Aera 796 GPS Mount and Radio Stack Bezel Removal

Use the following procedure to remove the GPS mount and Radio stack bezel. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-5.) (See "Throttle Handle and Bezel Removal" on page 9-10.)
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 (D9058P). 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 9-5

"Throttle Handle and Bezel Removal" on page 9-10

"Aera 796 GPS Mount and Radio Stack Bezel Installation" on page 9-16

9.2.7 Aera 796 GPS Mount and Radio Stack Bezel Installation

Use the following procedure to install the GPS mount and Radio stack bezel. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA008105 (MOUNTING MODULE, GARMIN GPS)

ICA010562 (BEZEL PAD PRINTED ASSY, CENTER STACK)

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. Connect the electrical harness D9011J to the instrument panel cross beam. Connect the transponder harness (D9068P) and the Radio harness (D9058P). Connect the static line to the transponder control head.
3. 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_f.
4. Install the throttle handle and bezel. (See "Throttle Handle and Bezel Installation" on page 9-13.)
5. Install the center console bucket. (See "Center Console Bucket Installation" on page 9-8.)

VERIFICATION METHOD:

Confirm center stack and all components are secure.

Turn on master switch. Confirm all switches are operating properly and activating their associated function.

Perform Pitot-Static test per "Pitot-Static-AOA Leak Test Procedures" on page 14-181.

Perform a transponder correspondence test. If the control unit was replaced, configure the transponder. See 00560-00-AQ--TRiG TT21/TT22 Mode S Transponder Installation Manual.

Ensure VHF radio header screen turns on and is operable. Test radio transmission and receiving with an external radio.

RELATED INFORMATION:

"Center Console Bucket Installation" on page 9-8

"Throttle Handle and Bezel Installation" on page 9-13

"Aera 796 GPS Mount and Radio Stack Bezel Removal" on page 9-15

9.2.8 Right Instrument Panel Top Panel Removal

Use the following procedure to remove the right instrument panel top panel. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-5.)
 2. Remove the throttle handle and bezel. (See “Throttle Handle and Bezel Removal” on page 9-10.)
 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 “Aera 796 GPS Mount and Radio Stack Bezel Removal” on page 9-15.)
 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:

- "Heater Fan and Core Removal" on page 8-3
- "Multiple Systems Controller (MSC) Replacement" on page 14-49
- "Canopy Removal" on page 12-3
- "Canopy Installation" on page 12-4
- "Nose Landing Gear (NLG) Leg Assembly Removal" on page 15-64
- "Remove Landing and Taxi Lights" on page 7-82
- "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-18

9.2.9 Right Instrument Panel Top Panel Installation

Use this procedure to install the right instrument panel top panel. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

- T15 Torx driver
- #2 right-angle crosshead driver
- Eyeball Vent Tool (ITL001563)

Parts Required

- ICA004622 (PANEL, IP TOP, RH SIDE)
- AV467408-1 (AIR VALVE, DISC TYPE, 1.50)

Aircraft System and Number

05 – Equipment and Furnishing

Consumables

None

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_f.
 - c. Install 8-32 screws at right-forward side of and aft-left corner of panel, torquing each to 13 in-lb_f.

2. Install right eyeball air valve using eyeball vent tool (ITL001563 or equivalent). Torque to 30-50 in-lbs.
3. Install Throttle Handle and Bezel. (See "Throttle Handle and Bezel Installation" on page 9-13.)
4. Install the Center Console Bucket. (See "Center Console Bucket Installation" on page 9-8.)
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:

- "Multiple Systems Controller (MSC) Replacement" on page 14-49
- "Canopy Removal" on page 12-3
- "Canopy Installation" on page 12-4
- "Nose Landing Gear (NLG) Leg Assembly Installation" on page 15-66
- "Install Landing and Taxi Lights" on page 7-84
- "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-18

9.2.10 Left Instrument Panel Top Panel Removal

Use the following procedure to remove the left instrument panel top panel. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-5.)
 2. Remove the throttle handle and bezel. (See "Throttle Handle and Bezel Removal" on page 9-10.)
 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 "Aera 796 GPS Mount and Radio Stack Bezel Removal" on page 9-15.)
 5. Remove the ICA008624 cluster hood. (See "Replace Instrument Panel Gauges" on page 14-47.)
 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 Gauges" on page 14-47
- "Heater Fan and Core Removal" on page 8-3
- "Canopy Removal" on page 12-3
- "Canopy Installation" on page 12-4
- "Nose Landing Gear (NLG) Leg Assembly Removal" on page 15-64
- "Remove Landing and Taxi Lights" on page 7-82

9.2.11 Left Instrument Panel Top Panel Installation

Use the following procedure to install the left instrument panel top panel. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA004620 (PANEL, IP TOP, LH SIDE)

AV467408-1 (AIR VALVE, DISC TYPE, 1.50)

Aircraft System and Number

05 – Equipment and Furnishing

Consumables

None

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_f.
 - c. Install 8-32 screws at left-forward side of and aft-right corner of panel, torquing each to 13 in-lb_f.
 2. Install right eyeball air valve using special tool (ITL001563 or equivalent). Torque to 30-50 in-lbs.
 3. Install Throttle Handle and Bezel. (See “Throttle Handle and Bezel Installation” on page 9-13.)
 4. Install the Center Console Bucket. (See “Center Console Bucket Installation” on page 9-8.)
 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:

"Canopy Removal" on page 12-3

"Canopy Installation" on page 12-4

"Nose Landing Gear (NLG) Leg Assembly Installation" on page 15-66

"Install Landing and Taxi Lights" on page 7-84

9.2.12 Instrument Panel Top Panel Removal

Use the following procedure to remove the IP Top. This task is applicable to the Garmin G3X configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ITL001563 (AIR VALVE INSTALLATION TOOL)

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

Isopropyl Alcohol

TASK INSTRUCTIONS:

1. Loosen air valve using installation tool ITL001563 and disconnect the air valve from RH IP top.
2. Disconnect IP top flange from the Garmin G3X Bezel clip. Disconnect LH and RH IP tops. (See Figure 9-14.)
3. Disconnect vent hose from forward side of the RH side IP top. (See Figure 9-13.)
4. Disconnect the RH side IP Top from RH crossbeam.

5. Disconnect vent hose from LH side IP Top. (See Figure 9-12.)
 6. Disconnect the LH side IP Top from LH crossbeam. (See Figure 9-11.)
-

VERIFICATION METHOD:

Procedure is complete when the IP Top has been removed.

RELATED INFORMATION:

"Instrument Panel Top Panel Installation" on page 9-24

9.2.13 Instrument Panel Top Panel Installation

Use the following task to install the IP Top. This task is applicable to the Garmin G3X configuration only.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ITL001563 (AIR VALVE INSTALLATION TOOL)

Parts Required

5Y03651 (CLAMP, HOSE, HAND TIGHTENED, 2.125)

2x 8C50MTT3 (SCREW, TRUSS, 6 LOB, 8-32 X .50, SS316)

2x 91770A148 (SCREW, MACH, TRUSS HEAD, 6-32 X.5)

2x NAS1149CN632R (WASHER, FLAT, CRES, #6, .032 THK, PSVT FNSH)

ME001107-NSG3X-A (PAINTED, PANEL, IP TOP, RH)

ME001106-NSG3X+A (PAINTED, PANEL, IP TOP, LH)

AV467408-1 (AIR VALVE, DISC TYPE, 1.50)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

Isopropyl Alcohol

TASK INSTRUCTIONS:

1. Place the LH side IP top into position over the LH crossbeam.

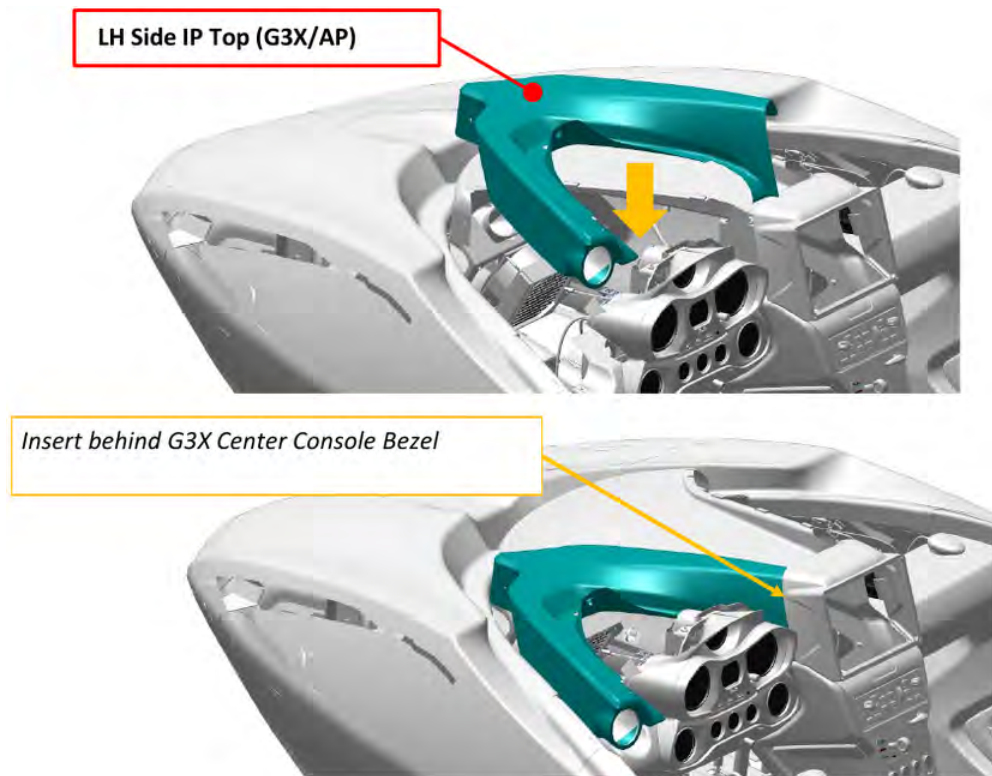


FIGURE 9-11
LH SIDE IP TOP

2. Connect vent hose. With the LH side IP Top still loose, connect the LH hose to the forward side of the IP top and secure with the clamp.

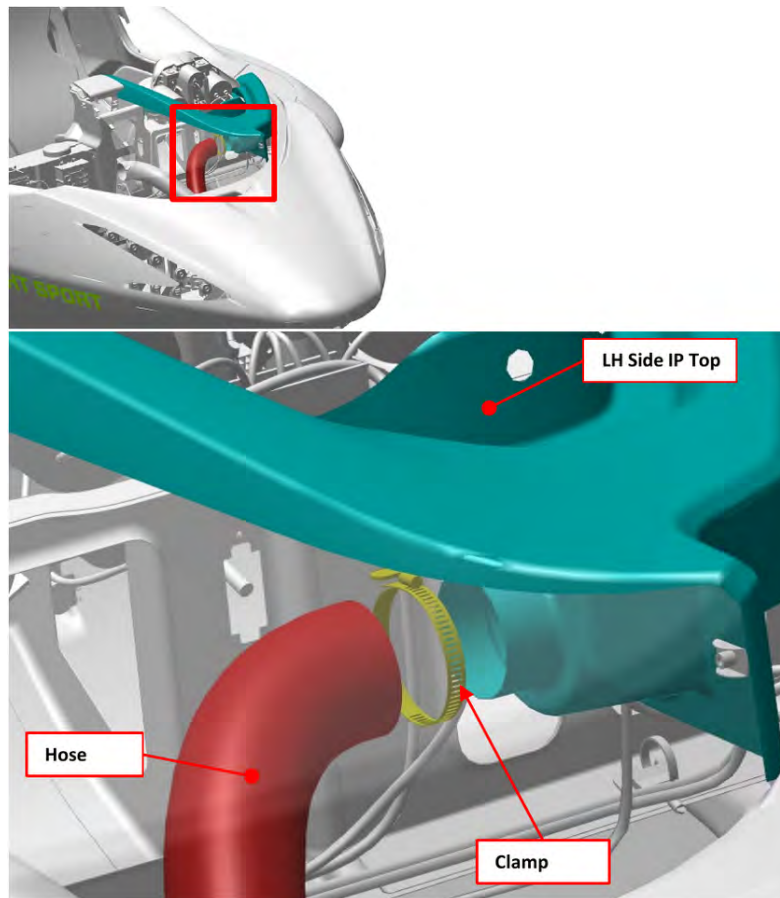
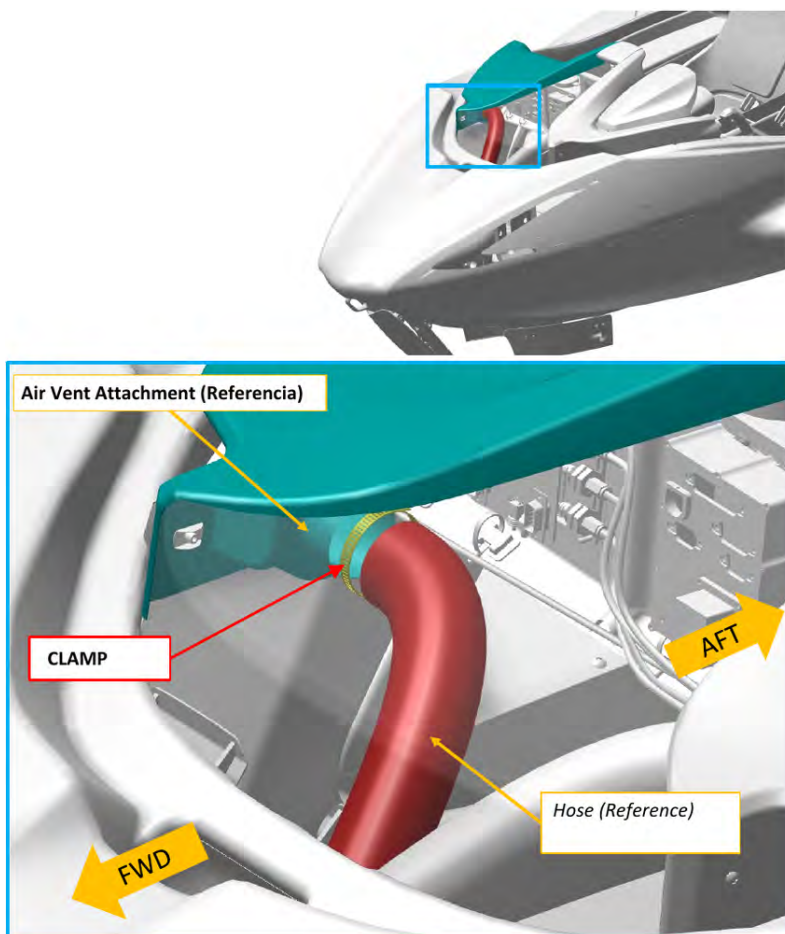


FIGURE 9-12
LH SIDE IP TOP

NOTE: *Hand tighten the clamp so as to ensure retention of hose but not crush IP Top.*

3. Install the RH side IP Top into position over the RH crossbeam.
4. With the RH side IP top still loose, connect the previously installed vent hose to the forward side of the RH side IP top and secure with the clamp. Cut the hose to length as needed.



NOTE: Hand tighten the clamp so as to ensure retention of hose but not crush IP Top.

NOTE: Center spine is not shown for clarity but should already be installed.

FIGURE 9-13
RH SIDE IP TOP

5. Using isopropyl alcohol, clean surfaces where lubricant will be applied.
6. Apply lubricant liberally to the threads and shanks of screws.
7. Secure RH IP top into place with hardware. Secure LH IP top into place with hardware. Insert the IP top flange into the Garmin G3X Bezel clip.

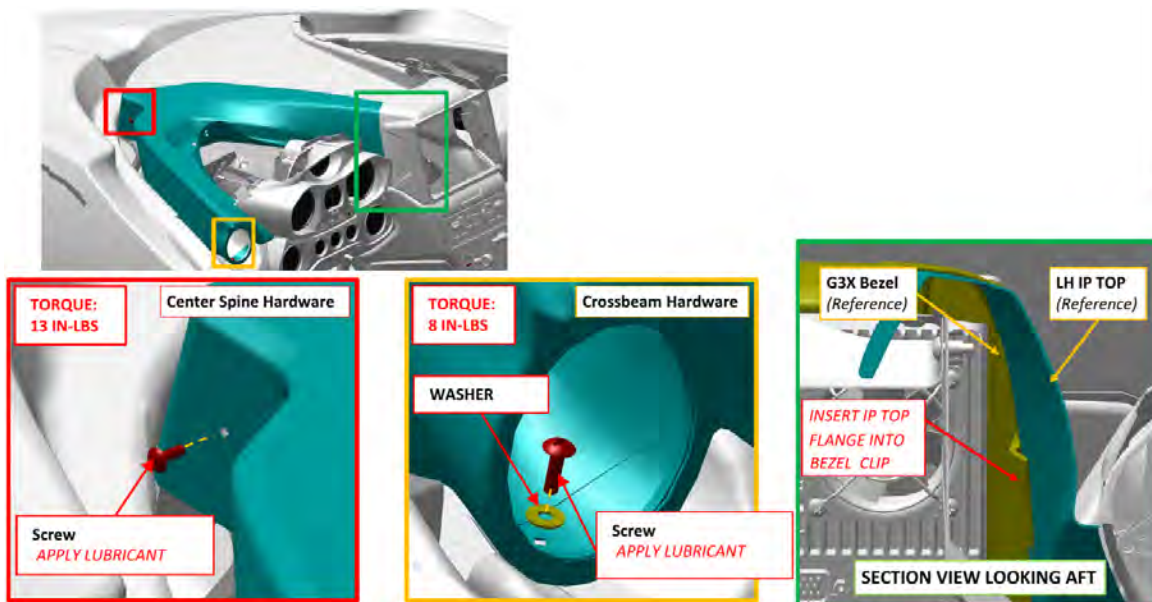


FIGURE 9-14
LH IP TOP

8. Install the air valve into RH IP top using installation tool ITL001563. Hand tighten air valve until snug.

VERIFICATION METHOD:

Verify air valve is not loose and does not loosen easily.

RELATED INFORMATION:

"Instrument Panel Top Panel Removal" on page 9-23

"Install IP Center Spine" on page 14-115

9.2.14 Instrument Panel Center Spine Removal and Installation

Use the following procedure to remove and install the instrument panel center spine. This task is applicable to the Garmin 796 configuration only. For the Garmin G3X see "Garmin G3X and Autopilot Bezel Removal" on page 1-40, "Garmin G3X and Autopilot Bezel Installation" on page 1-41, "Remove IP Center Spine" on page 14-114, and "Install IP Center Spine" on page 14-115.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-20.)
2. Remove right instrument panel top panel. (See “Right Instrument Panel Top Panel Removal” on page 9-17.)
3. Remove 4x screws securing handhold from top of center console. Retain for reinstallation.

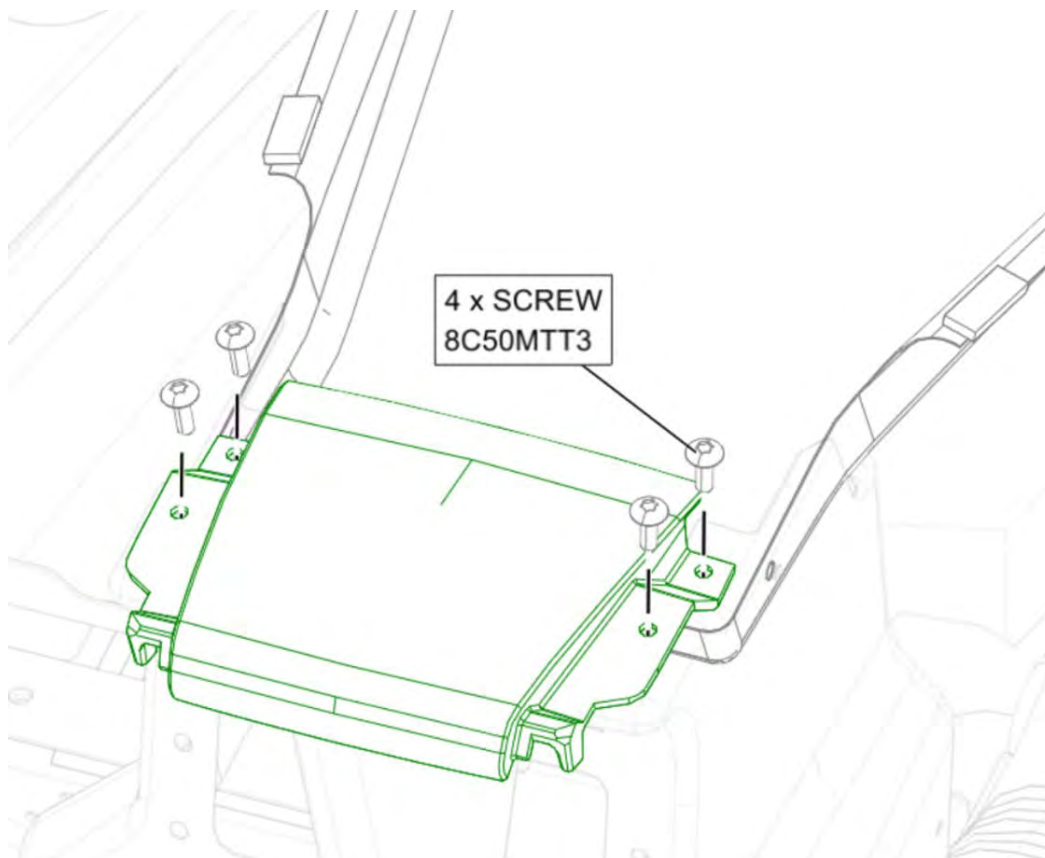


FIGURE 9-15
REMOVE HANDHOLD SCREWS

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.

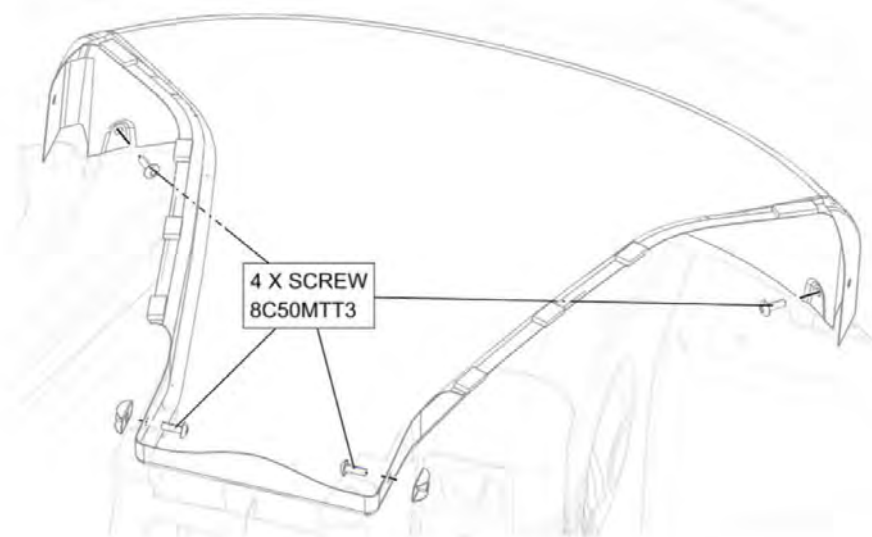


FIGURE 9-16
REMOVE CENTER SPINE SCREWS

5. Install center spine using four screws as shown in Figure 9-16, torque screws to 13 in-lbs.
6. Install Handhold using four screws as shown in Figure 9-15, torque screws to 13 in-lbs.
7. Install right instrument panel top panel. (See "Right Instrument Panel Top Panel Installation" on page 9-19.)
8. Install left instrument panel top panel. (See "Left Instrument Panel Top Panel Installation" on page 9-21.)

VERIFICATION METHOD:

Task is complete when the center spine has been installed.

9.2.15 Remove G3X Center Stack Bezel

Use the following procedure to remove the G3X center stack bezel.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

05 – Equipment and Furnishings

Consumables

None

TASK INSTRUCTIONS:

1. Remove G3X display unit.
 - a. Remove 4x 7/64 hex screws.
 - b. Disconnect Garmin wiring harness D9149P.
 - c. Remove Garmin display unit.
 2. Remove Center Stack
 - a. Remove the center console bucket and throttle bezel if necessary. (See “Center Console Bucket Removal” on page 9-5.) (See “Throttle Handle and Bezel Removal” on page 9-10.)
 - b. Remove 6x Torx 6-32 screws on center stack bottom of center stack, sides of center stack, and top of center stack that connect the center stack to the G3X housing.
 - c. Disconnect D9011J
 - d. If AP controller is installed, disconnect TB9010.
 - e. Remove center stack.
-

VERIFICATION METHOD:

Procedure is complete when center stack bezel has been removed.

9.2.16 Install G3X Center Stack Bezel

Use the following procedure to install the G3X center stack bezel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014800 (BEZEL PAD PRINTED ASSY, CENTER STACK, G3X)

Aircraft System and Number

05 – Equipment and Furnishings

Consumables

None

TASK INSTRUCTIONS:

1. Connect electrical connector D9011J.
 2. If AP controller is installed, connect TB9010.
 3. Install 6x Torx 6-32 screws on center stack bottom of center stack, sides of center stack, and top of center stack that connect the center stack to the G3X housing. Torque to 13 in-lbs.
-

VERIFICATION METHOD:

Confirm center stack and all components are secure.

Turn on master switch. Confirm all switches are operating properly and activating their associated function.

Perform a transponder correspondence test. If the control unit was replaced, configure the transponder. See 190-01499-10 Garmin GTX 34R/45R Installation Manual and 190-01115-01 Garmin G3X/G3X Touch Installation Manual.

Ensure VHF radio header screen turns on and is operable. Test radio transmission and receiving with an external radio.

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10.1 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-B 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.

10.2 Diagram/Schematic

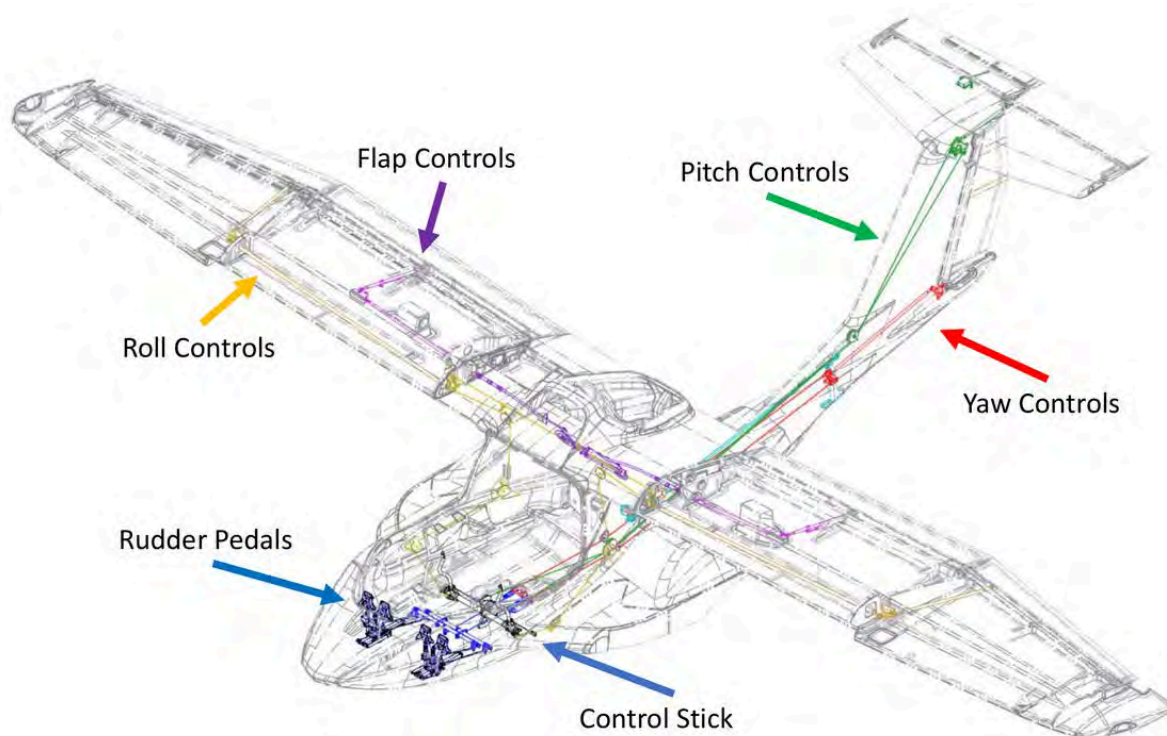


FIGURE 10-1
FLIGHT CONTROL DIAGRAM

10.3 Flight Control System General Maintenance

10.3.1 Inspect Rudder Pedal Adjustment Mechanism

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

06 – Flight Controls

Consumables

None

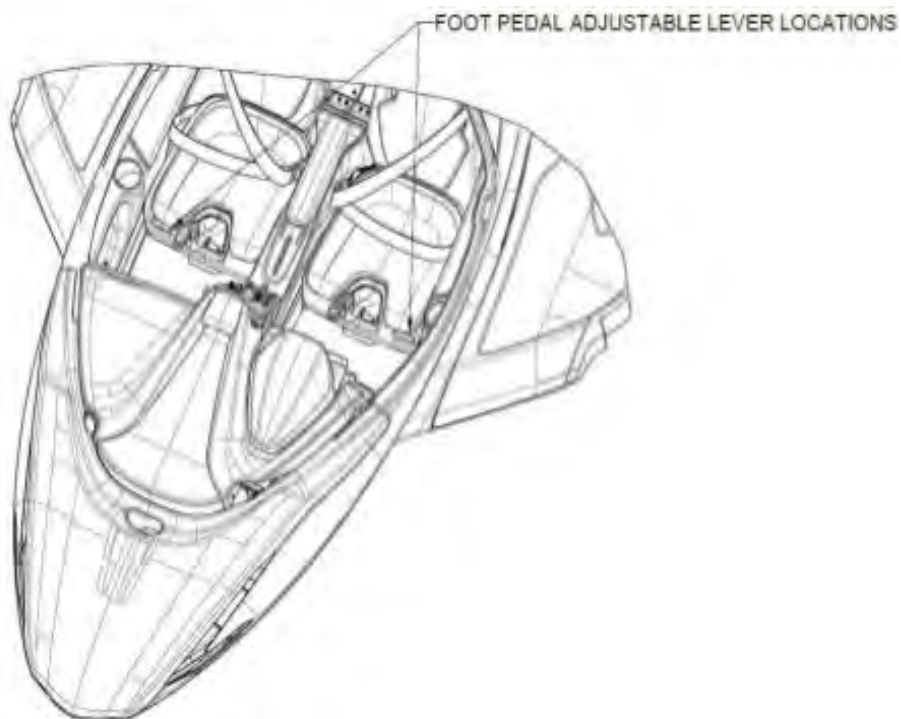


FIGURE 10-2
RUDDER PEDAL LATCH LOCATIONS UNDER PILOT AND CO-PILOT SEATS.

TASK INSTRUCTIONS:

1. Remove the floorboard immediately in front of the pilot seat. (See "Remove Cockpit Floorboard" on page 4-39.)
2. Pull the lever under the seat as shown

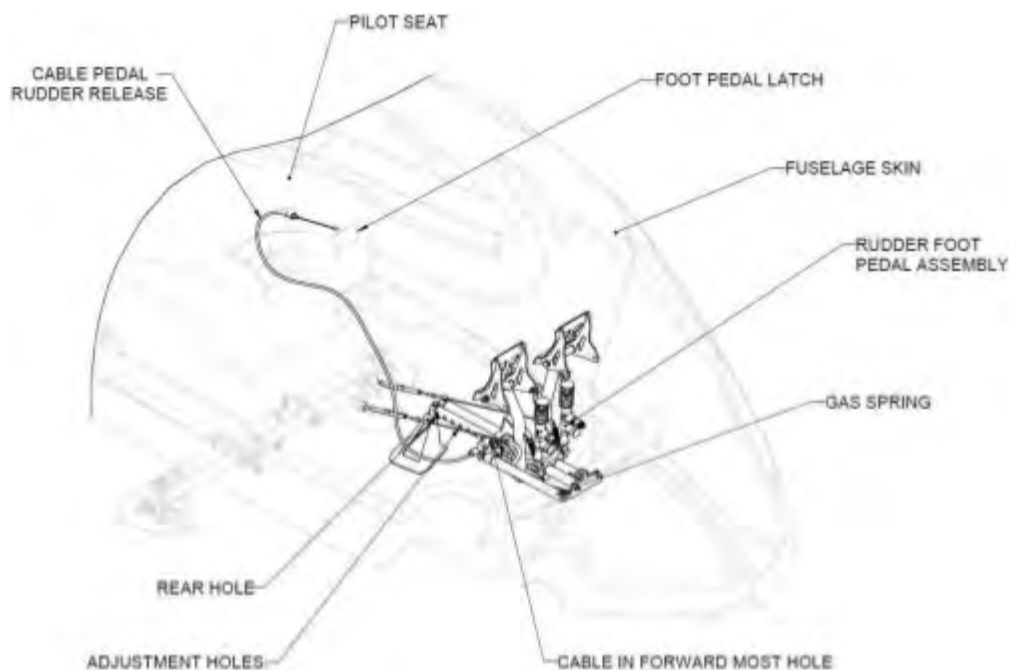


FIGURE 10-3
RUDDER PEDAL LATCH LOCATIONS UNDER PILOT AND CO-PILOT SEATS.

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.

NOTE: 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 "Install Cockpit Floorboard" on page 4-40.)
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 4-27

"Adjust Rudder Pedal Rigging" on page 10-102

"Rudder Pedals Remove and Redo" on page 10-104

10.3.2 Inspect Control Cables

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 10-4. 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 10-4 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.

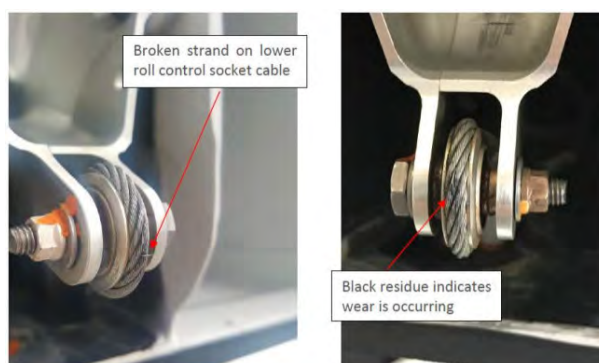


FIGURE 10-4
BROKEN STRAND AND BLACK RESIDUE INDICATING WEAR ON LOWER ROLL CONTROL CABLE.

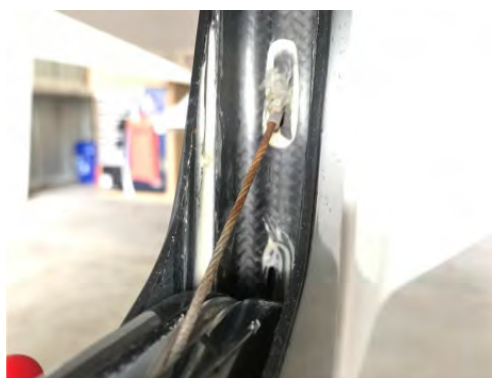


FIGURE 10-5
EXAMPLE OF CABLE SURFACE CORROSION.

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:

"Annual and 100-Hour Inspection – Forward Fuselage and Hull" on page 4-16

"Remove Roll Cables" on page 10-28

10.4 Roll Controls

10.4.1 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.

10.4.2 Roll Controls Diagram/Schematic

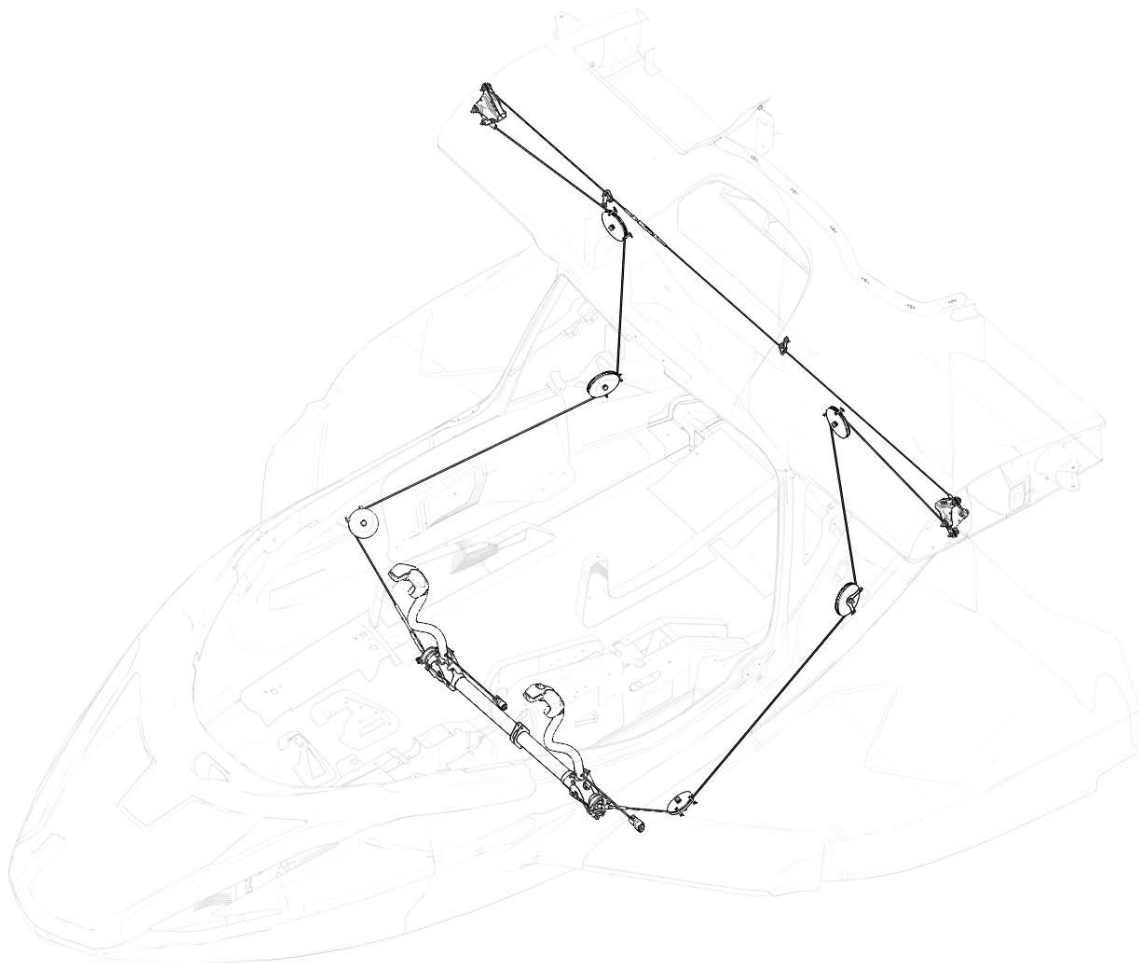


FIGURE 10-6
FUSELAGE ROLL SYSTEM

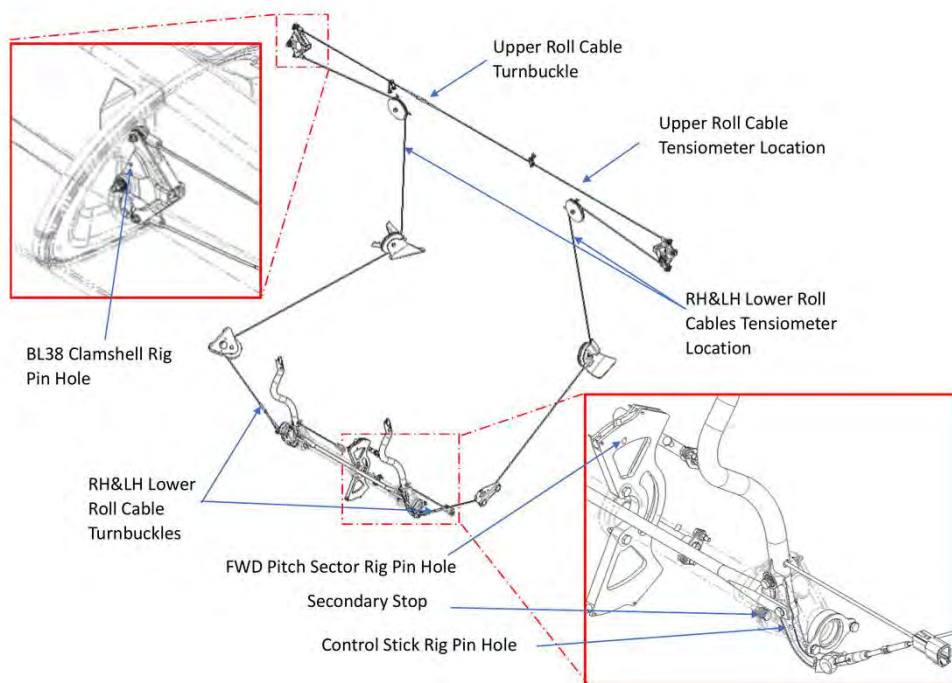


FIGURE 10-7
FUSELAGE ROLL SYSTEM DETAILED VIEW

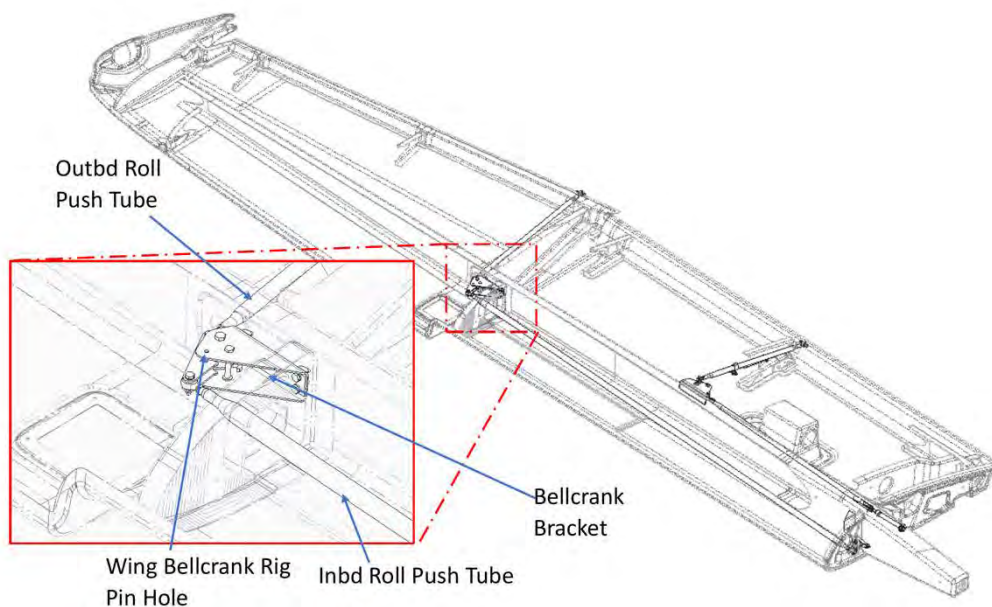


FIGURE 10-8
WING ROLL SYSTEM OVERVIEW

10.4.3 Inspection Instructions

10.4.3.1 Inspect Roll Cable Tension

This section contains instructions to check roll cables for correct tensions.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 “Remove Cockpit Floorboard” on page 4-39.)
2. Remove seat back and seat pan, if required. (See “Remove Seat Back” on page 4-43.) (See “Seat Pan Removal” on page 4-45.) Retain all fastening hardware.
3. Remove the baggage floor boards. (See “Baggage Floor Removal” on page 4-34.) 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 4-36.) (See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.) (See “Remove Seat Back” on page 4-43.) 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 10-9.

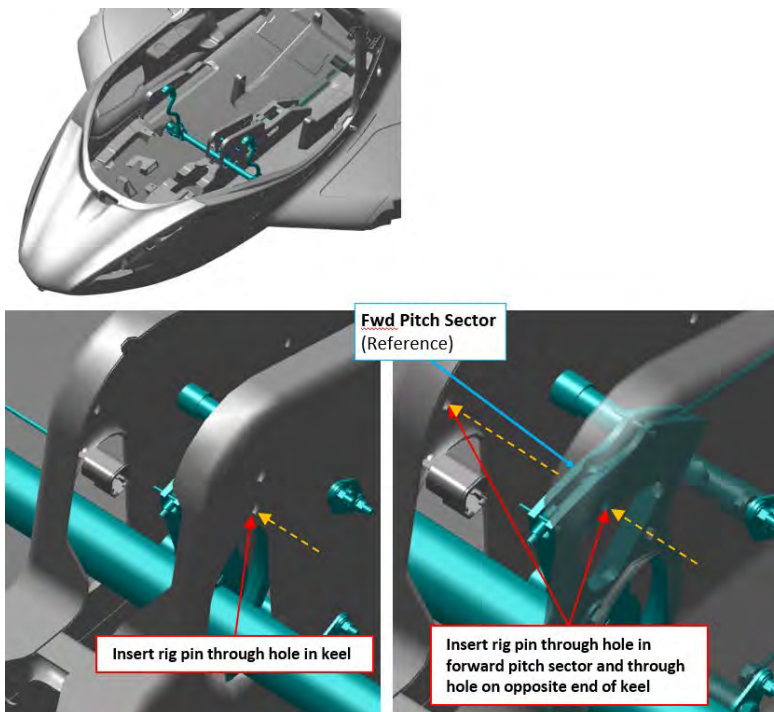


FIGURE 10-9
PITCH SECTOR RIG PIN LOCATION

6. Install .1875 in diameter rig pin through the control stick rig pin hole. See Figure 10-10.

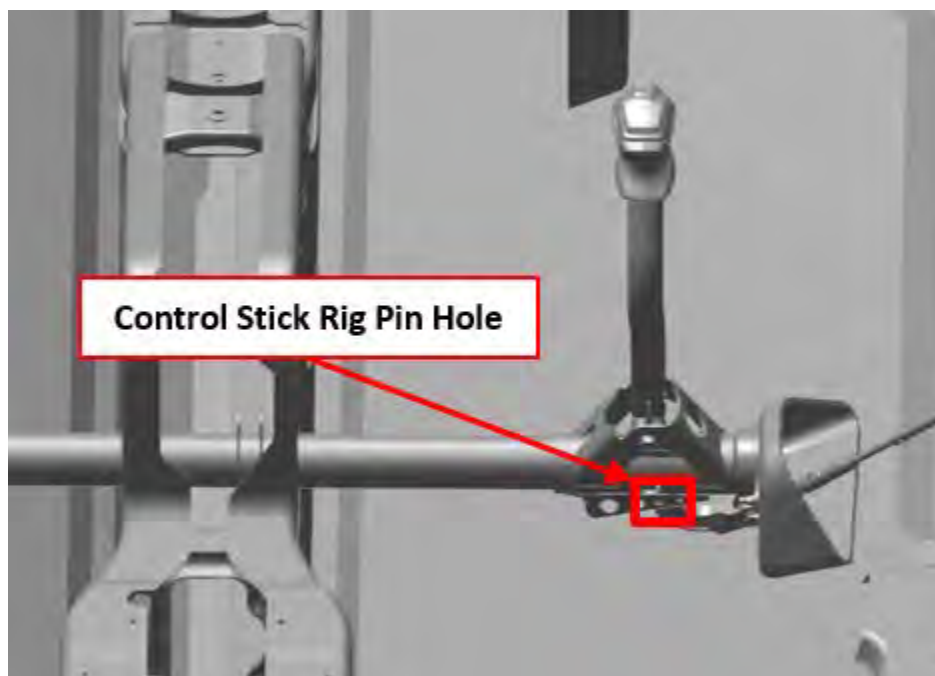


FIGURE 10-10
CONTROL STICK RIG PIN LOCATION

7. Fold both aircraft wings and install a .1875in diameter rig pins at both of the wing socket bellcrank. See Figure 10-11.



FIGURE 10-11
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 10-12. 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.

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*



FIGURE 10-12
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 4-33.) (See "Baggage Sidewall Panel Installation" on page 4-38.) (See "Headliner Installation" on page 4-31.) (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)
11. Install baggage floor boards using hardware retained during removal. (See "Baggage Floor Installation" on page 4-35.)
12. Install seat back and seat pan using hardware retained during removal, if required. (See "Install Seat Back" on page 4-44.) (See "Seat Pan Installation" on page 4-47.)
13. Install cockpit floor boards. (See "Install Cockpit Floorboard" on page 4-40.)

VERIFICATION METHOD:

Record results and check against requirement. If requirement is not met complete aileron rigging. (See "Rigging Roll Controls" on page 10-20.)

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Forward Fuselage and Hull" on page 4-16
"Rigging Roll Controls" on page 10-20
"Remove Cockpit Floorboard" on page 4-39
"Install Cockpit Floorboard" on page 4-40
"Remove Seat Back" on page 4-43
"Install Seat Back" on page 4-44
"Seat Pan Removal" on page 4-45
"Seat Pan Installation" on page 4-47
"Baggage Floor Removal" on page 4-34
"Baggage Floor Installation" on page 4-35
"Seat Belt Inertia Reel Removal" on page 4-32
"Seat Belt Inertia Reel Installation" on page 4-33
"Baggage Sidewall Panel Removal" on page 4-36
"Baggage Sidewall Panel Installation" on page 4-38
"Headliner Removal" on page 4-30
"Headliner Installation" on page 4-31
"Inspect Roll Rigging" on page 10-17
"Removal and Installation of Inspection Panels and Fairings" on page 4-27
"Cockpit Panels Removal and Installation" on page 4-29

10.4.3.2 Inspect Roll Rigging

The following section contains the information required to perform a rigging check on the roll control system.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 ± 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 10-13) 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) contacts prior to the RH secondary stop at the control stick.

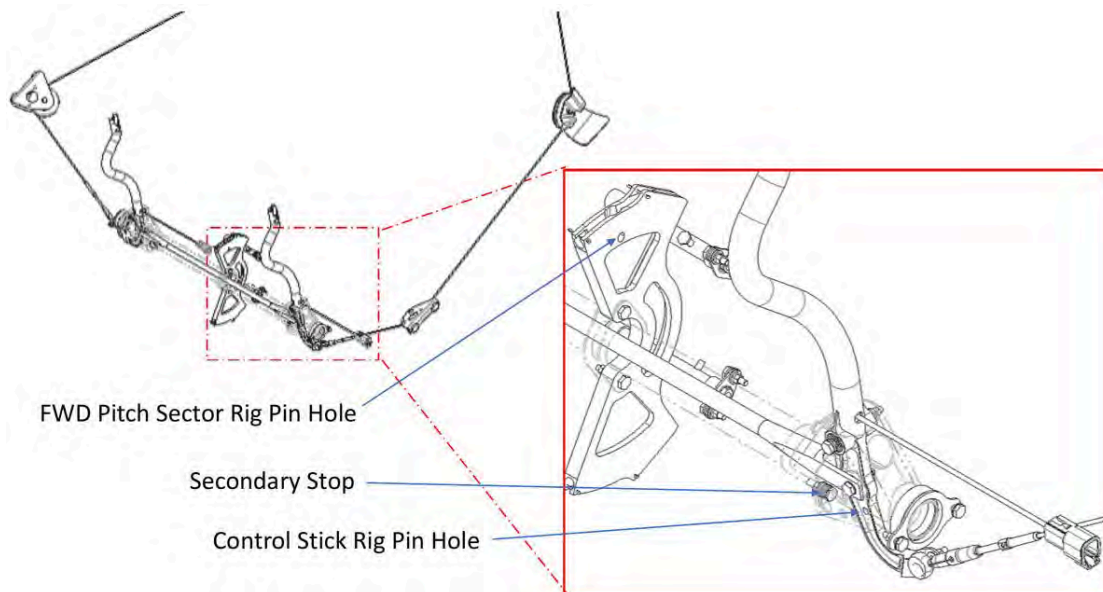


FIGURE 10-13
LOCATION OF SECONDARY ROLL STOP

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 ± 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:

- "Annual and 100-Hour Inspection – Wings" on page 4-11
- "Exterior/Interior Wing Control Surfaces" on page 18-5
- "Rigging Roll Controls" on page 10-20
- "Inspect Roll Cable Tension" on page 10-13
- "Rigging Yaw Controls" on page 10-88
- "Rigging Pitch Controls" on page 10-47

10.4.4 Maintenance Instructions

10.4.4.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 “Remove Cockpit Floorboard” on page 4-39.)
2. Remove seat back and seat pan. (See “Remove Seat Back” on page 4-43.)(See “Seat Pan Removal” on page 4-45.) Retain all fastening hardware.
3. Remove baggage floor boards. (See “Baggage Floor Removal” on page 4-34.) Retain all fastening hardware.
4. Remove seatbelt reel cover, left hand and right hand baggage sidewalls, and baggage headliner. (See “Headliner Removal” on page 4-30.) 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 4-27.) 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 10-14.

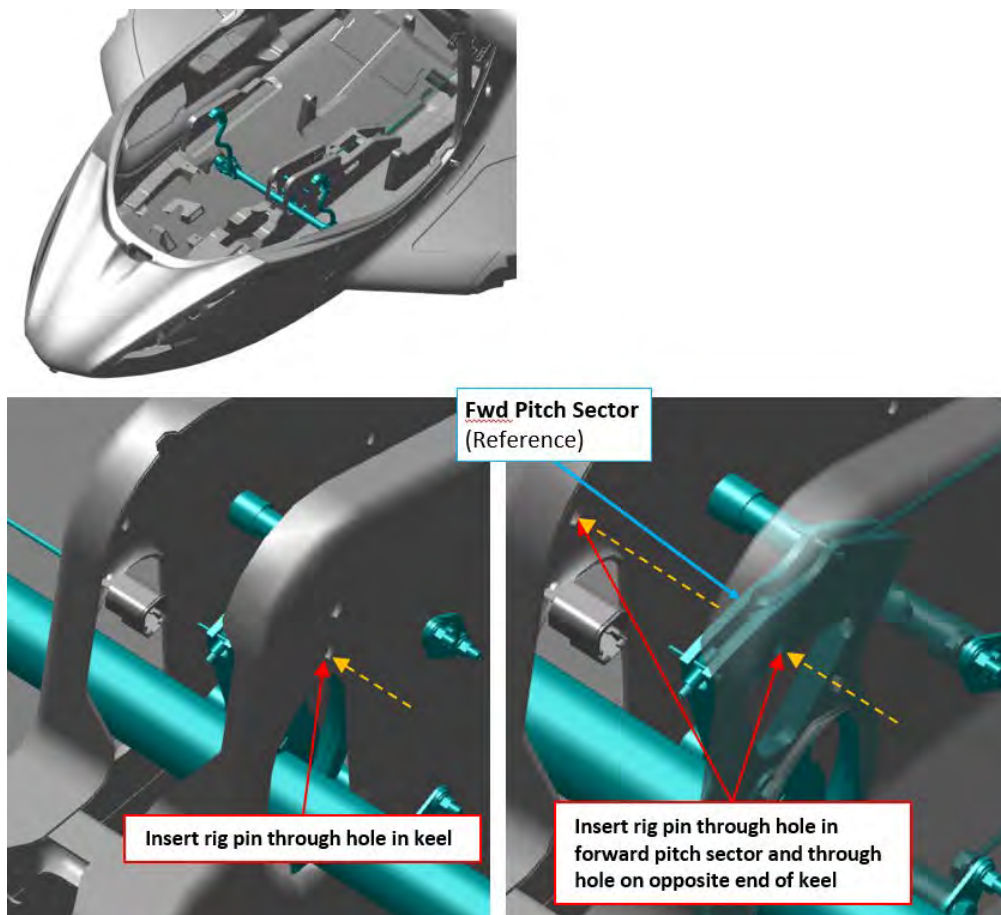


FIGURE 10-14
FWD PITCH SECTOR PIN LOCATIONS

8. Install .1875 in diameter rig pin through the control stick rig pin hole. See Figure 10-15.

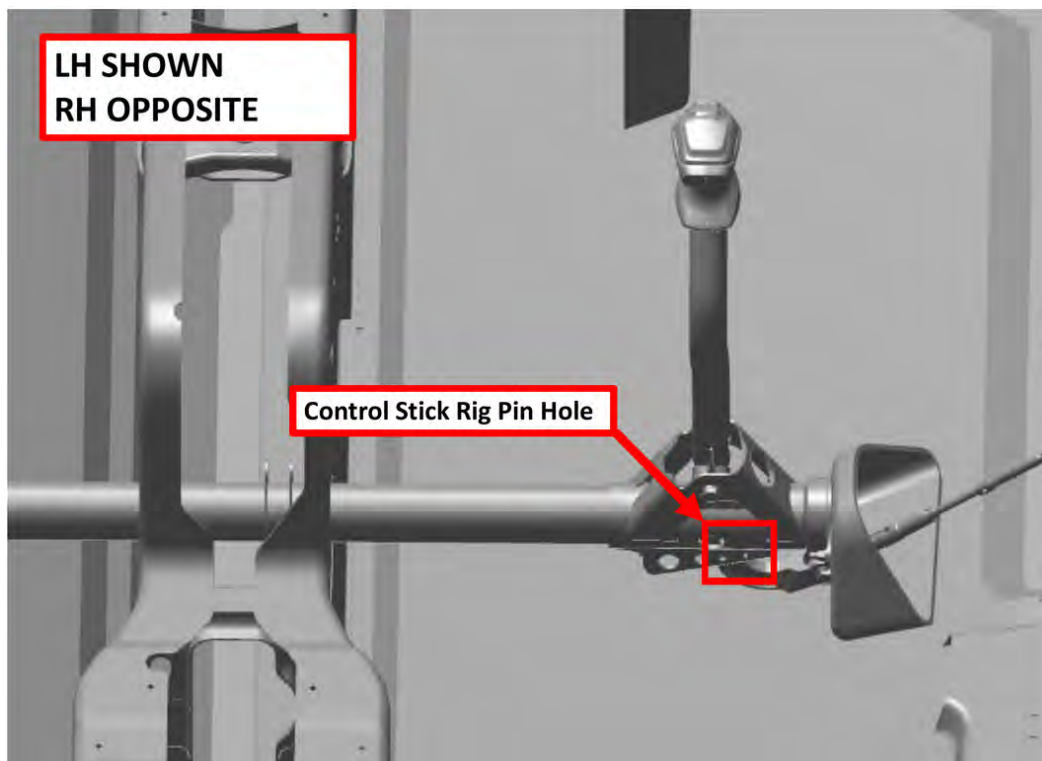


FIGURE 10-15
RIG PIN LOCATIONS – CONTROL STICK RIG PIN HOLE

9. Fold both aircraft wings and install 2X .1875 in diameter rig pins at both of the wing socket bell-crank. See Figure 10-16.

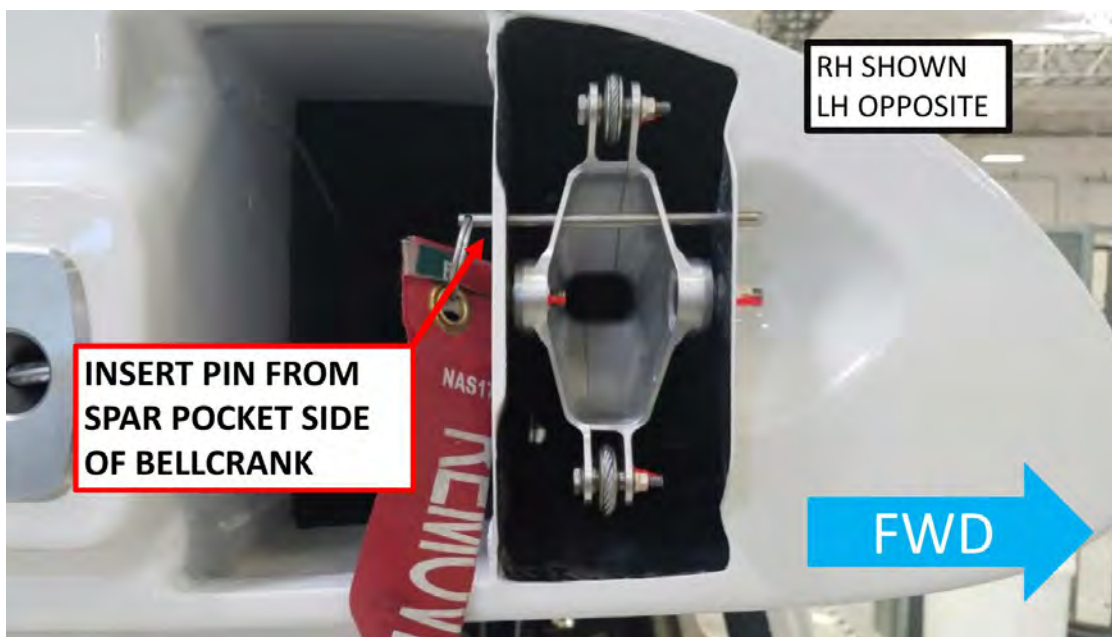


FIGURE 10-16
RIG PIN LOCATIONS

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 10-17:
 - a. Adjust turnbuckles to set cable tension on all 3 cables to 25-30 lbs.

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*
 - 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.

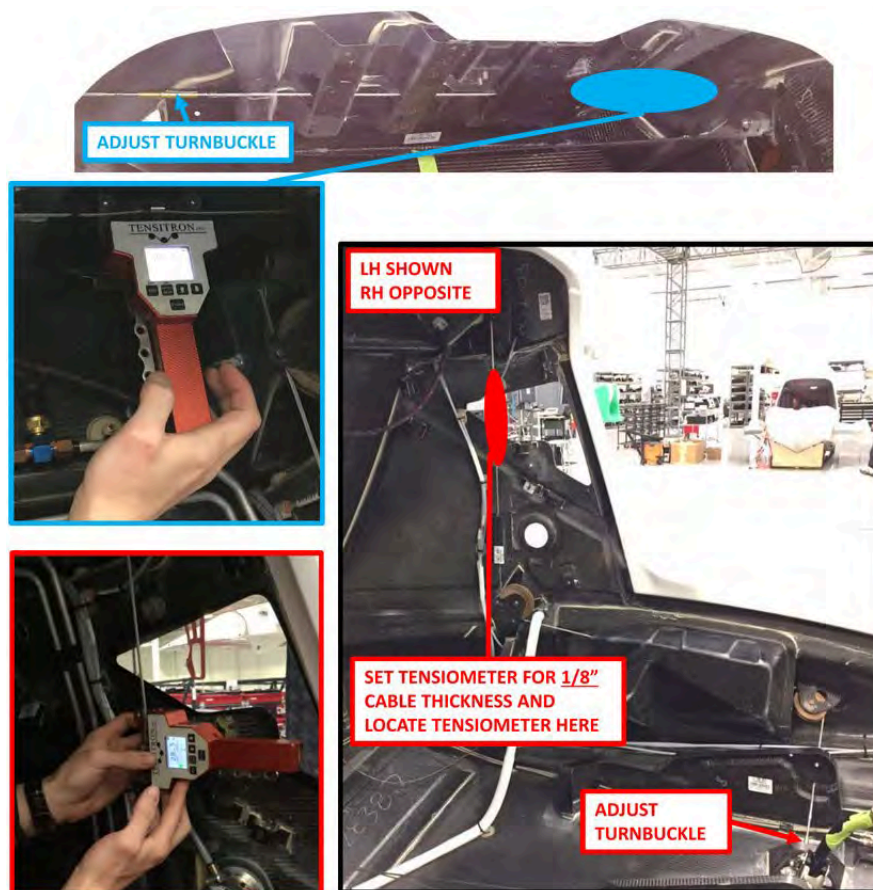


FIGURE 10-17
TENSIONER AND CABLE ADJUSTMENT LOCATIONS

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 in-lbs. Torque through bolt and locking nut to 20 in-lbs. See Figure 10-18.

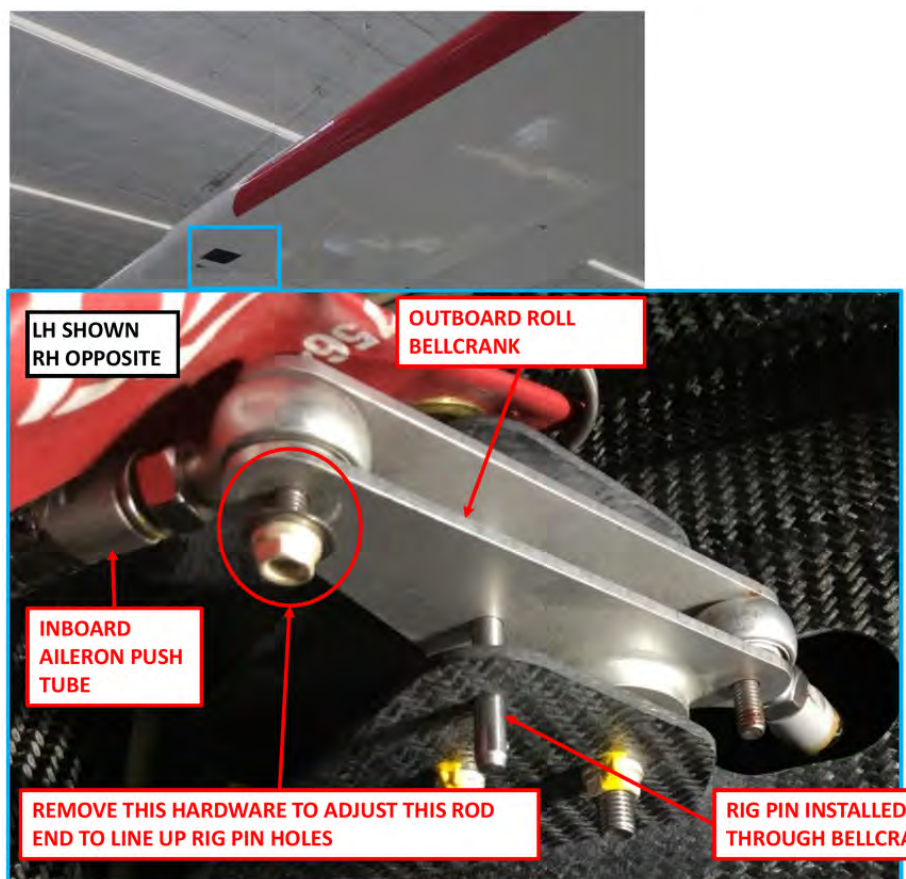


FIGURE 10-18
OUTBOARD ROLL BELLCRANK RIG PIN

14. Ensure flap has been rigged correctly. (See “Inspect Roll Rigging” on page 10-17.)
15. Adjust outboard push tube rod ends equally to align aileron trailing edge with flap trailing edge within 0+/-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 10-19.



FIGURE 10-19
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 10-17. Step 4.)
20. Remove FWD pitch sector rig pin.

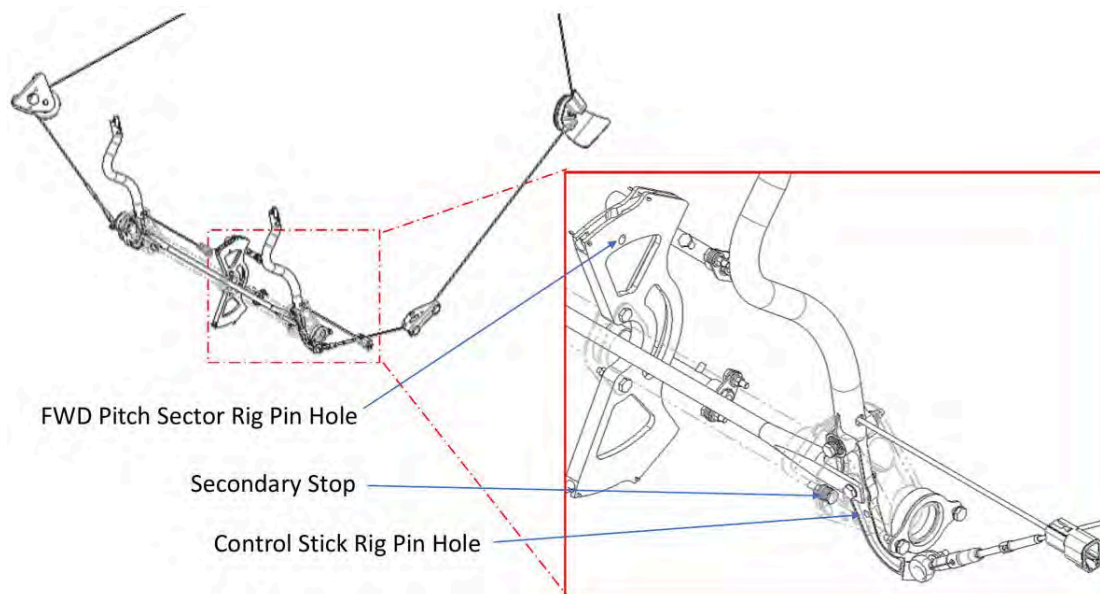


FIGURE 10-20
LOCATION OF SECONDARY ROLL STOP

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 4-35.)
23. Install seat back and seat pan using hardware retained during removal. (See "Install Seat Back" on page 4-44.) (See "Seat Pan Installation" on page 4-47.)
24. Install cockpit floor boards. (See "Install Cockpit Floorboard" on page 4-40.)
25. Install aileron access panel using retained fastening hardware.

VERIFICATION METHOD:

Conduct the Inspect Roll Rigging procedure (See "Inspect Roll Rigging" on page 10-17.) to verify proper rigging.

RELATED INFORMATION:

"Inspect Roll Cable Tension" on page 10-13
 "Remove Cockpit Floorboard" on page 4-39
 "Install Cockpit Floorboard" on page 4-40
 "Remove Seat Back" on page 4-43
 "Install Seat Back" on page 4-44
 "Seat Pan Removal" on page 4-45
 "Seat Pan Installation" on page 4-47
 "Baggage Floor Removal" on page 4-34
 "Baggage Floor Installation" on page 4-35
 "Seat Belt Inertia Reel Removal" on page 4-32
 "Seat Belt Inertia Reel Installation" on page 4-33
 "Baggage Sidewall Panel Removal" on page 4-36
 "Baggage Sidewall Panel Installation" on page 4-38
 "Headliner Removal" on page 4-30
 "Headliner Installation" on page 4-31
 "Inspect Roll Rigging" on page 10-17
 "Removal and Installation of Inspection Panels and Fairings" on page 4-27
 "Cockpit Panels Removal and Installation" on page 4-29

10.4.4.2 Remove Roll Cables

Use the following task to remove any upper or lower control cables that fall outside of the acceptable conditions.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

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Consumables

None

See "Inspect Control Cables" on page 10-8.

TASK INSTRUCTIONS:

1. Remove (See “Baggage Floor Removal” on page 4-34.) Retain all fastening hardware.
2. Remove seat backs and seat pans. (See “Remove Seat Back” on page 4-43.)(See “Seat Pan Removal” on page 4-45.) Retain all fastening hardware.
3. Remove cockpit interior side panels. (See “Remove Cockpit Floorboard” on page 4-39.)
4. Remove baggage side panels. (See “Baggage Sidewall Panel Removal” on page 4-36.)
5. Remove headliner. (See “Headliner Removal” on page 4-30.)
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 10-21 below.

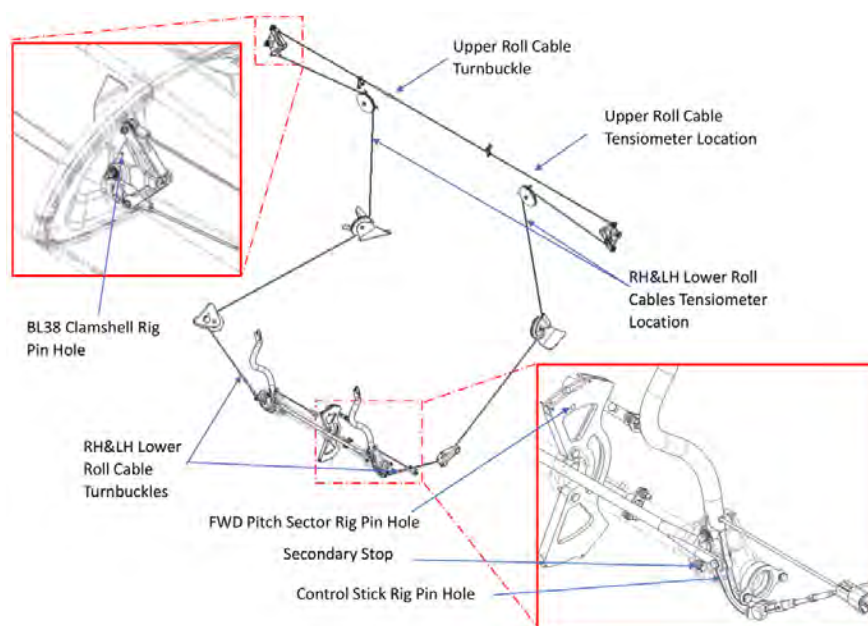


FIGURE 10-21
ROLL CONTROL SYSTEM OVERVIEW

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.

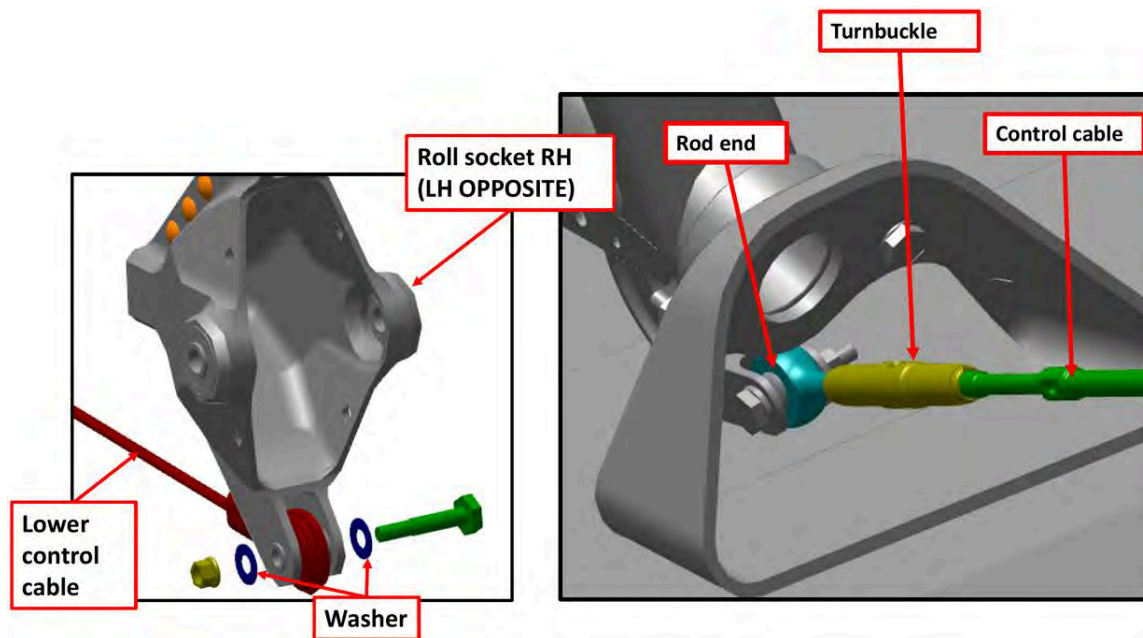


FIGURE 10-22
ROLL SOCKET AND TORQUE TUBE CONNECTION POINTS

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.

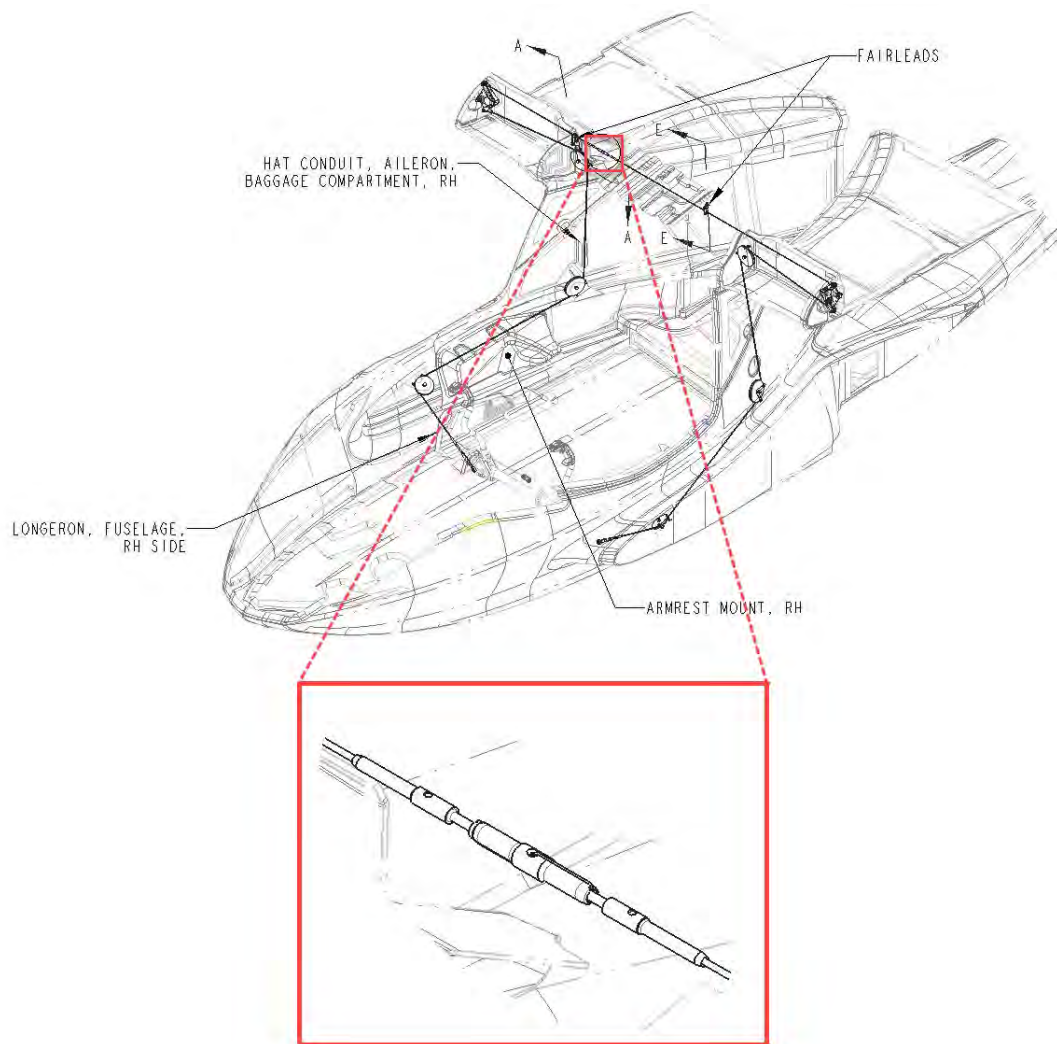


FIGURE 10-23
LOCATION OF UPPER ROLL CABLE TURNBUCKLE

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 4-34
- "Remove Seat Back" on page 4-43
- "Seat Pan Removal" on page 4-45
- "Remove Cockpit Floorboard" on page 4-39
- "Baggage Sidewall Panel Removal" on page 4-36
- "Headliner Removal" on page 4-30
- "Inspect Control Cables" on page 10-8

10.4.4.3 Install Roll Cables

Use the following task to install the upper and lower control cables.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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:

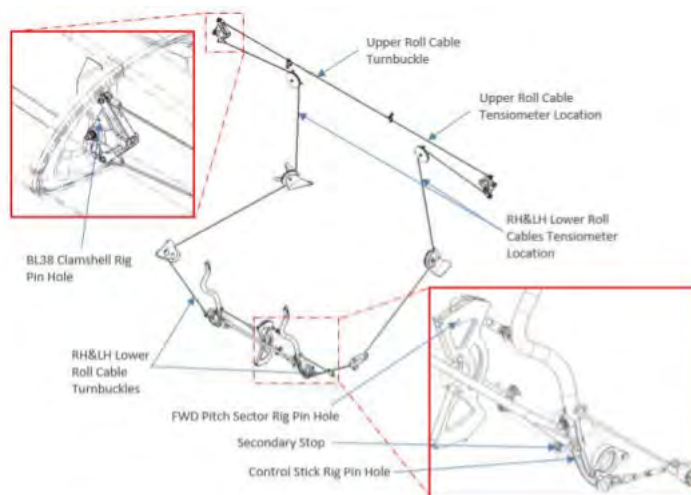


FIGURE 10-24
FUSELAGE ROLL CONTROL SYSTEM

TASK INSTRUCTIONS:

1. Remove lower control cable. (See “Remove Roll Cables” on page 10-28.)
2. Starting from the center wing loosely route new lower roll cable from the roll socket to the torque tube bearing. Use Figure 10-22 for routing path. (See “Roll Socket and Torque Tube Connection Points” on page 10-30.)
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. (Figure 10-25)

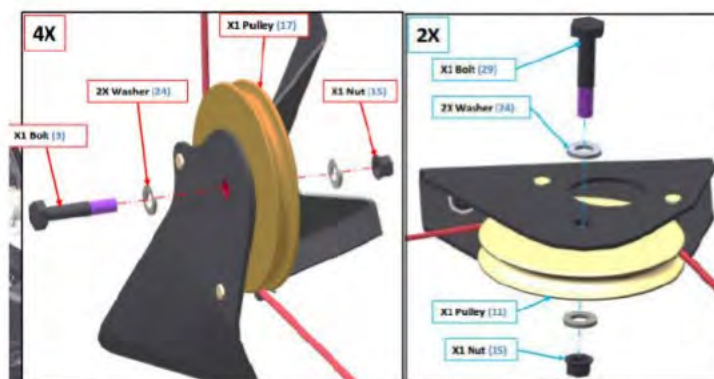


FIGURE 10-25
ROLL PULLEY EXPLODED VIEWS

4. Connect the lower roll cable to the lower roll socket attachment point, with the bolts inserted from front to back, 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 10-28.)
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 10-26.) Careful not to damage any electrical wires while routing the cable. Snaking the cable is permissible.

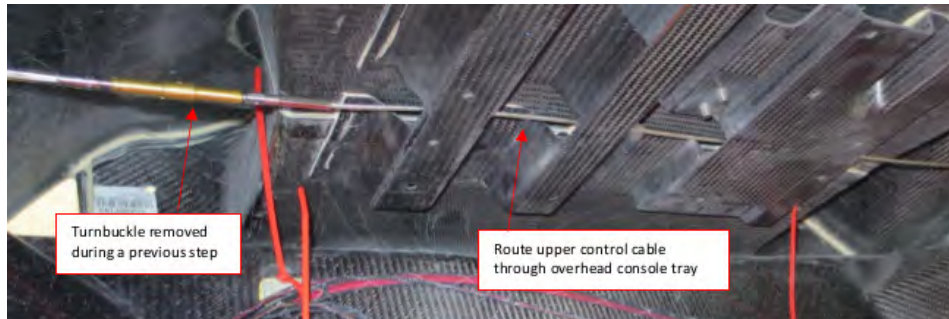


FIGURE 10-26
ROUTING UPPER CONTROL CABLE

9. Connect the upper control cable at the upper attachment point of the roll socket, with the bolts inserted from front to back, 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 10-20.)

VERIFICATION METHOD:

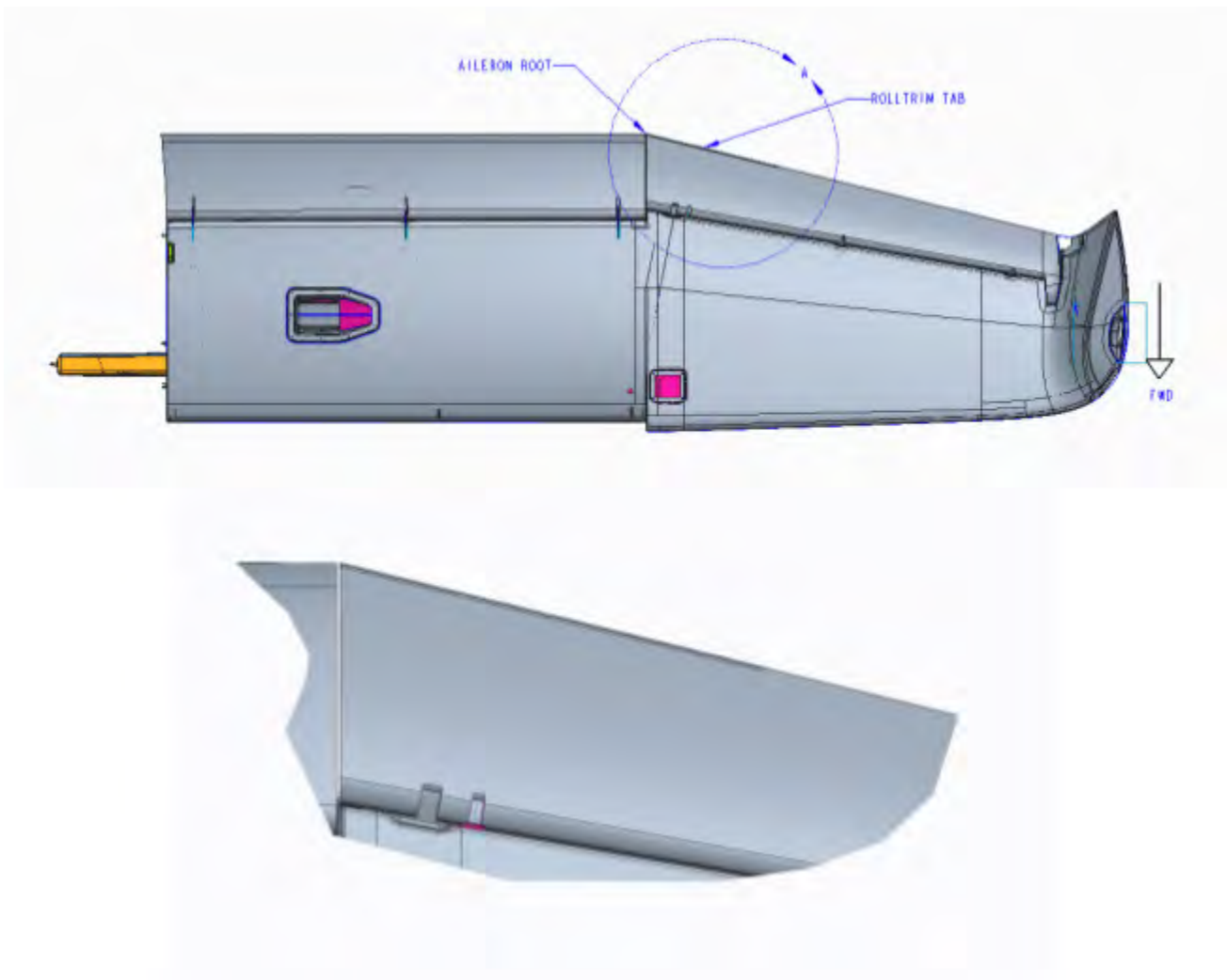
The cables should be re-installed, and hardware torqued to the appropriate spec prior to rigging the system. Tensions should meet the requirements of the rigging section.

10.5 Roll Trim Tab

10.5.1 Roll Trim Tab Description

The Roll Trim Tab enables the A5-B 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.

10.5.2 Roll Trim Tab Diagram/Schematic



10.5.3 Inspection Instructions

10.5.3.1 Determine Roll Trim Tab Length

Use these instructions to determine the roll trim tab length required for straight and level flight.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 10-37.)
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 10-37

10.5.4 Maintenance Instructions

10.5.4.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 tab 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 10-38

"Determine Roll Trim Tab Length" on page 10-36

10.5.4.2 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 10-37.)
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.

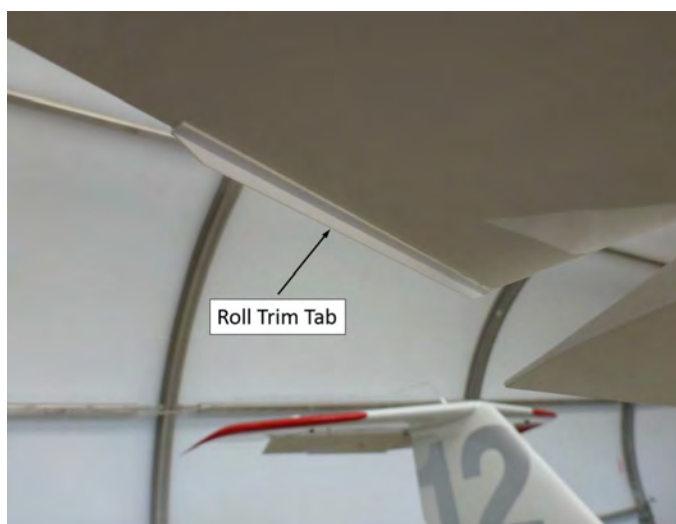


FIGURE 10-27
RIGHT AILERON SHOWN

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 10-37

10.6 Pitch Controls

10.6.1 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.

10.6.2 Pitch Control Diagram/Schematic

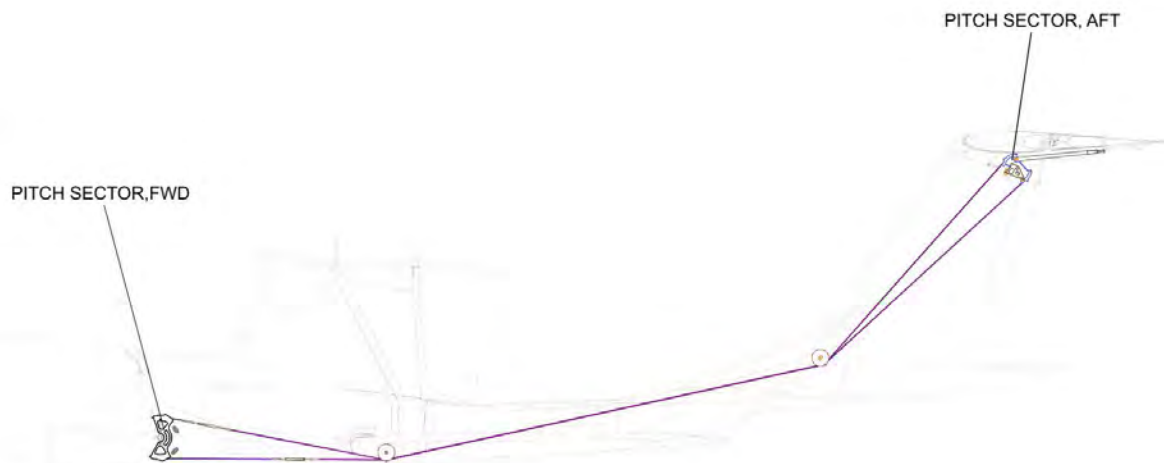


FIGURE 10-28
PITCH CONTROL SYSTEM OVERVIEW

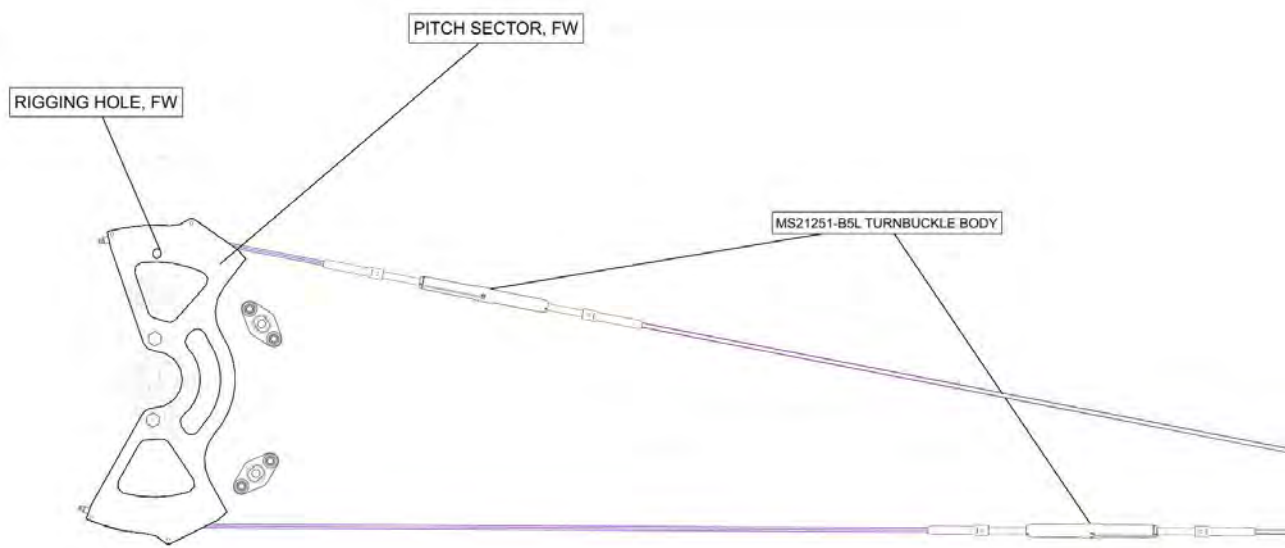


FIGURE 10-29
PITCH SECTOR, FWD DETAIL

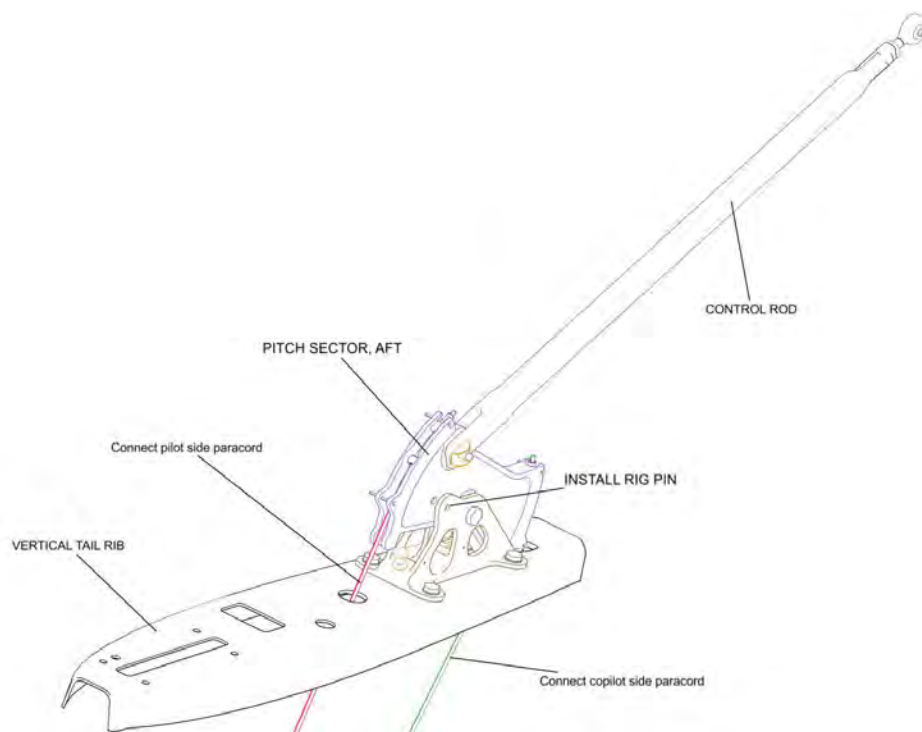


FIGURE 10-30
PITCH SECTOR, FWD DETAIL

10.6.3 Inspection Instructions

10.6.3.1 Inspect Pitch Cable Tension

This section contains instructions to check elevator cables for correction tensions.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 “Remove Cockpit Floorboard” on page 4-39.)
2. Remove AFT bulkhead baggage panel. (See “Baggage Sidewall Panel Removal” on page 4-36.) Retain all fastening hardware.
3. Install .250 in diameter rig pin through the center console and forward pitch sector. (Figure 10-31)

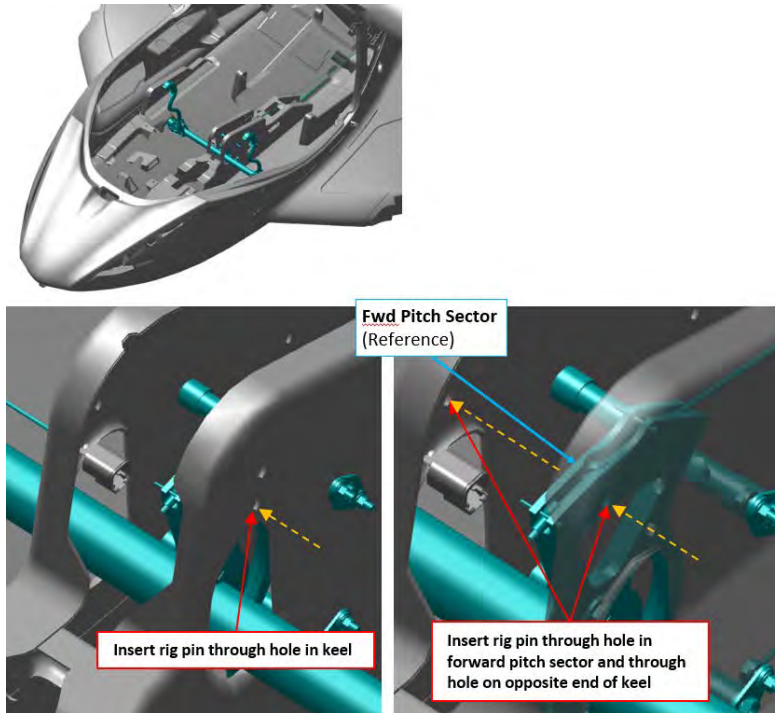


FIGURE 10-31
RIG PIN LOCATION

4. From within the AFT bulkhead baggage access window, use a tensiometer (cable thickness = 1/8 in) to measure elevator cable tension. (Figure 10-32) Ensure they are within 20-35 lb_f of tension. Refer to the manufacturers' calibration card to correctly read cable tension for the cable diameter.

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*

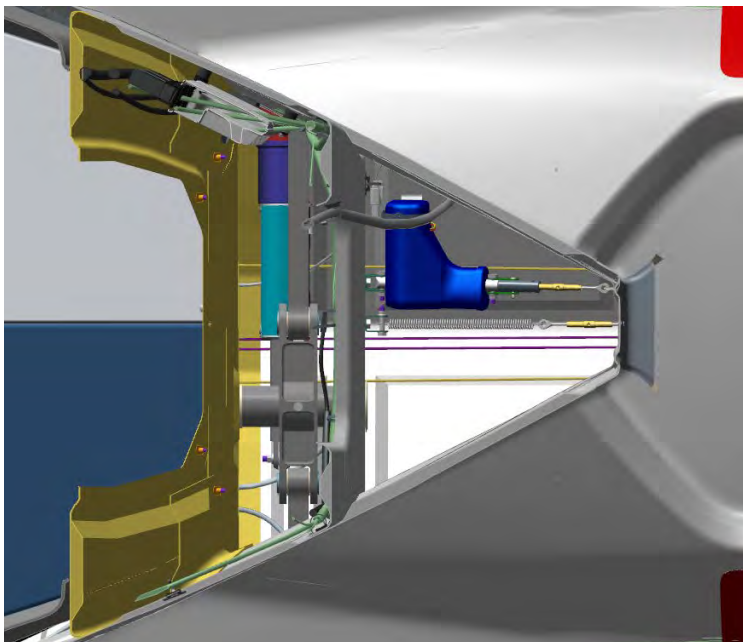


FIGURE 10-32
ELEVATOR CABLE TENSION CHECK LOCATION. VIEW IS LOOKING DOWN WITHIN THE ACCESS HOLE.

VERIFICATION METHOD:

Refer to the manufacturers' calibration card to correctly read cable tension for the cable diameter.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Aft Fuselage and Empennage" on page 4-19

10.6.3.2 Inspect Pitch Rigging

The following section contains the information required to perform the A5 maintenance inspection on the elevator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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_f) 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:

"Annual and 100-Hour Inspection – Aft Fuselage and Empennage" on page 4-19

10.6.4 Maintenance Instructions

10.6.4.1 Rigging Pitch Controls

Use the following procedure for elevator rigging.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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

Safety Equipment

As Needed

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 4-27.) (See “Baggage Sidewall Panel Removal” on page 4-36.)

2. Remove left hand and right hand forward and main cockpit floor boards.(See “Remove Cockpit Floorboard” on page 4-39.)
3. Remove baggage floor boards. (See “Baggage Floor Removal” on page 4-34.) Retain all fastening hardware.
4. Remove fuel tank. (See “Remove Fuel Tank Assembly” on page 11-12.) Retain all fastening hardware.
5. Remove center console bucket and throttle bezel. (See “Center Console Bucket Removal” on page 9-5.)(See “Throttle Handle and Bezel Removal” on page 9-10.) Retain all fastening hardware.
6. Remove Horizontal Tail. (See “Horizontal Tail Removal” on page 13-14.) Retain all fastening hardware.
7. Inspect all components within the pitch circuit for excessive wear. Any components that show excessive wear or damage must be replaced with new components.
8. Install .250 in diameter rig pin through the center console and forward pitch sector. See Figure 10-33.
9. Install .1875 in diameter rig pin through the aft pitch sector in the vertical tail. See Figure 10-33.

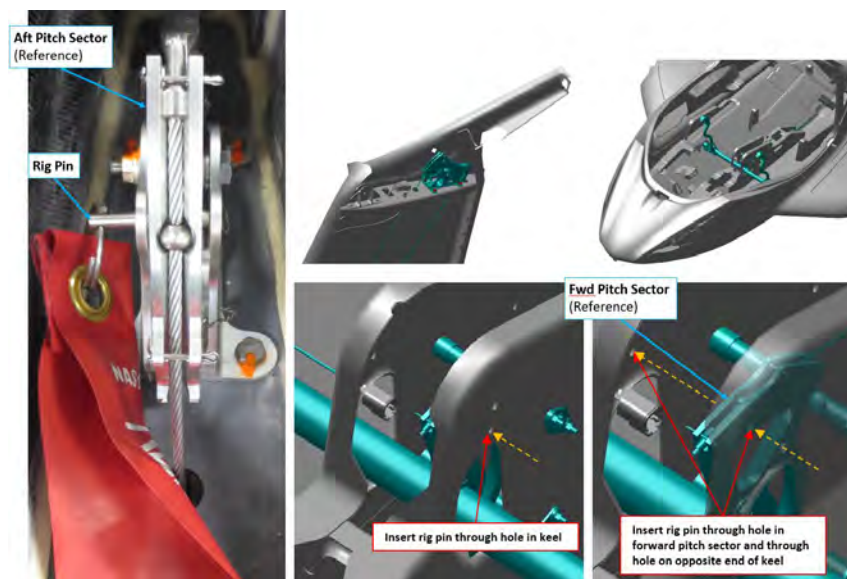


FIGURE 10-33
PITCH SYSTEM RIG PINS

10. 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 10-34. Operate tensiometer per its manufacturer's instructions.

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*

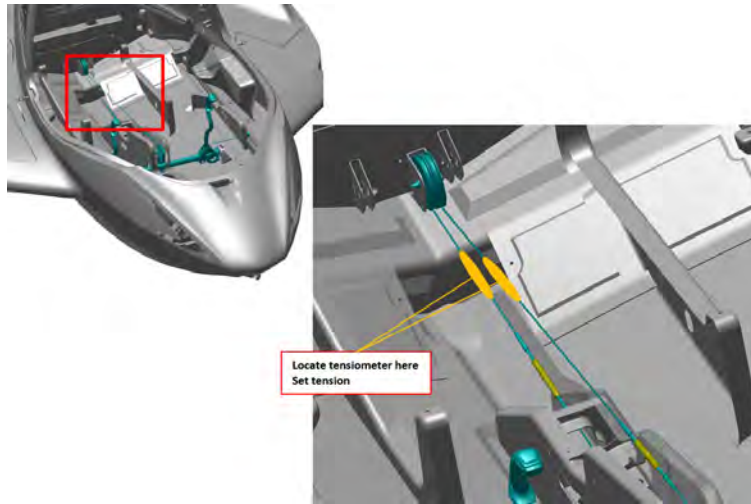


FIGURE 10-34
PITCH CIRCUIT TENSIONING

11. Install locking clips in each turnbuckle. See Figure 10-35.



FIGURE 10-35
LOCKING CLIP LOCATIONS

12. Remove rig pin in the aft pitch sector in vertical tail. See Figure 10-33.
13. Install horizontal tail and removable HT tips. (See "Horizontal Tail Removal and Installation" on page 13-5.) (See "Horizontal Tail Tip Pin" on page 13-26.)
14. Ensure the rig pin in the FWD pitch sector is still installed.
15. If installed, remove the hardware which secures the elevator push rod to the elevator control horn. See Figure 10-36.

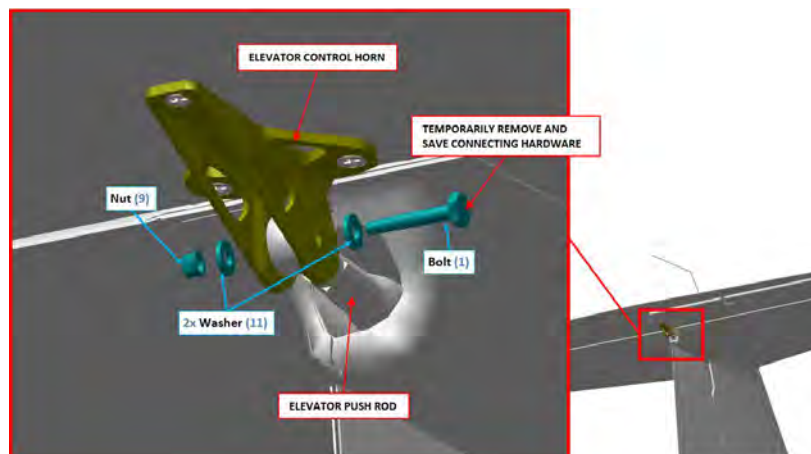


FIGURE 10-36
CONTROL HORN HARDWARE INSTALLATION

16. 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.
17. After setting the zero position of the elevator, lower the elevator into the -2° position.
18. 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 10-37.

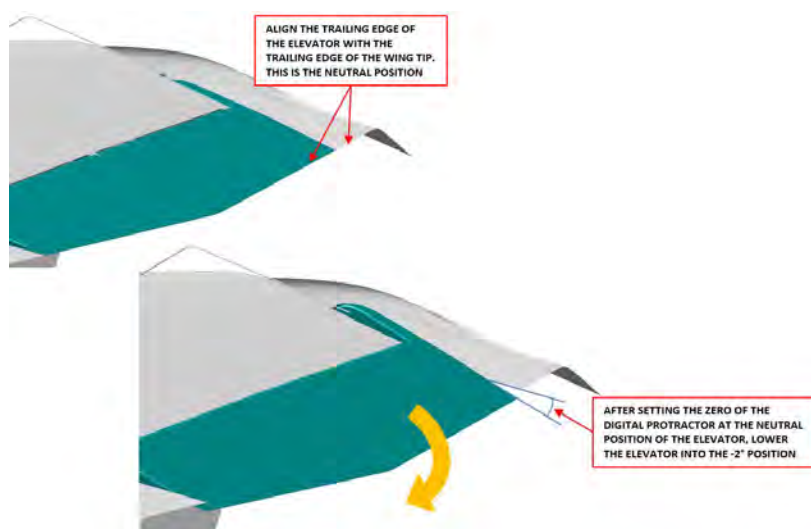


FIGURE 10-37
ELEVATOR RIGGING

19. Temporarily install the hardware which secures the elevator push rod to the elevator control horn. See Figure 10-36.
20. Remove the FWD pitch sector rig pin. See Figure 10-33.
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. $19^{\circ} \pm 1^{\circ}$ upward deflection
 - b. $21^{\circ} \pm 2^{\circ}$ downward deflection

22. Check the FWD and AFT pitch secondary stop:
 - a. Apply 16 ± 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 keel, below center console) at the specified force.
 - c. Verifying that the primary pitch stops (located in vertical tail) contacts prior to the secondary stops. See Figure 10-38.
23. Adjust the bolt on the secondary stops as needed to achieve contact when specified force is applied. See Figure 10-38. 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.

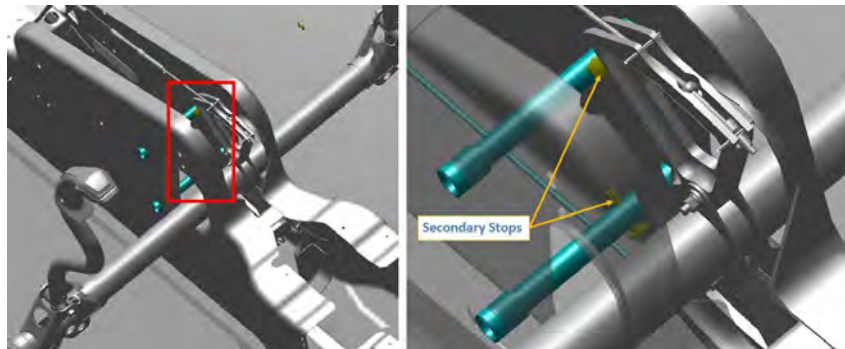


FIGURE 10-38
SECONDARY STOPS LOCATION

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 in-lbs. Torque the bolt to 20 in-lbs.
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 13-16.)
27. Install center console bucket and throttle bezel. (See “Center Console Bucket Installation” on page 9-8.) (See “Throttle Handle and Bezel Installation” on page 9-13.)
28. Install fuel tank. (See “Install Fuel Tank Assembly” on page 11-16.)
29. Install baggage floor boards. (See “Baggage Floor Installation” on page 4-35.)
30. Install seat back and seat pan. (See “Install Seat Back” on page 4-44.) (See “Seat Pan Installation” on page 4-47.)
31. Install left hand and right hand forward and main cockpit floor boards. (See “Install Cockpit Floor-board” on page 4-40.)

VERIFICATION METHOD:

Conduct the Check Elevator Rigging Procedure to verify proper rigging. (See “Inspect Pitch Rigging” on page 10-45.)

RELATED INFORMATION:

- "Remove Cockpit Floorboard" on page 4-39
- "Install Cockpit Floorboard" on page 4-40
- "Remove Seat Back" on page 4-43
- "Install Seat Back" on page 4-44
- "Seat Pan Removal" on page 4-45
- "Seat Pan Installation" on page 4-47
- "Baggage Floor Removal" on page 4-34
- "Baggage Floor Installation" on page 4-35
- "Seat Belt Inertia Reel Removal" on page 4-32
- "Seat Belt Inertia Reel Installation" on page 4-33
- "Baggage Sidewall Panel Removal" on page 4-36
- "Baggage Sidewall Panel Installation" on page 4-38
- "Headliner Removal" on page 4-30
- "Headliner Installation" on page 4-31
- "Inspect Roll Rigging" on page 10-17
- "Removal and Installation of Inspection Panels and Fairings" on page 4-27
- "Cockpit Panels Removal and Installation" on page 4-29
- "Remove Fuel Tank Assembly" on page 11-12
- "Install Fuel Tank Assembly" on page 11-16
- "Horizontal Tail Removal" on page 13-14
- "Horizontal Tail Installation" on page 13-16
- "Center Console Bucket Removal" on page 9-5
- "Center Console Bucket Installation" on page 9-8
- "Throttle Handle and Bezel Removal" on page 9-10
- "Throttle Handle and Bezel Installation" on page 9-13

10.7 Pitch Trim Actuator

10.7.1 Pitch Trim Actuator Description

The pitch trim actuator is a linear actuator. It moves a pushrod connected to the pitch trim tab.

10.7.2 Pitch Trim Actuator Diagram/Schematic

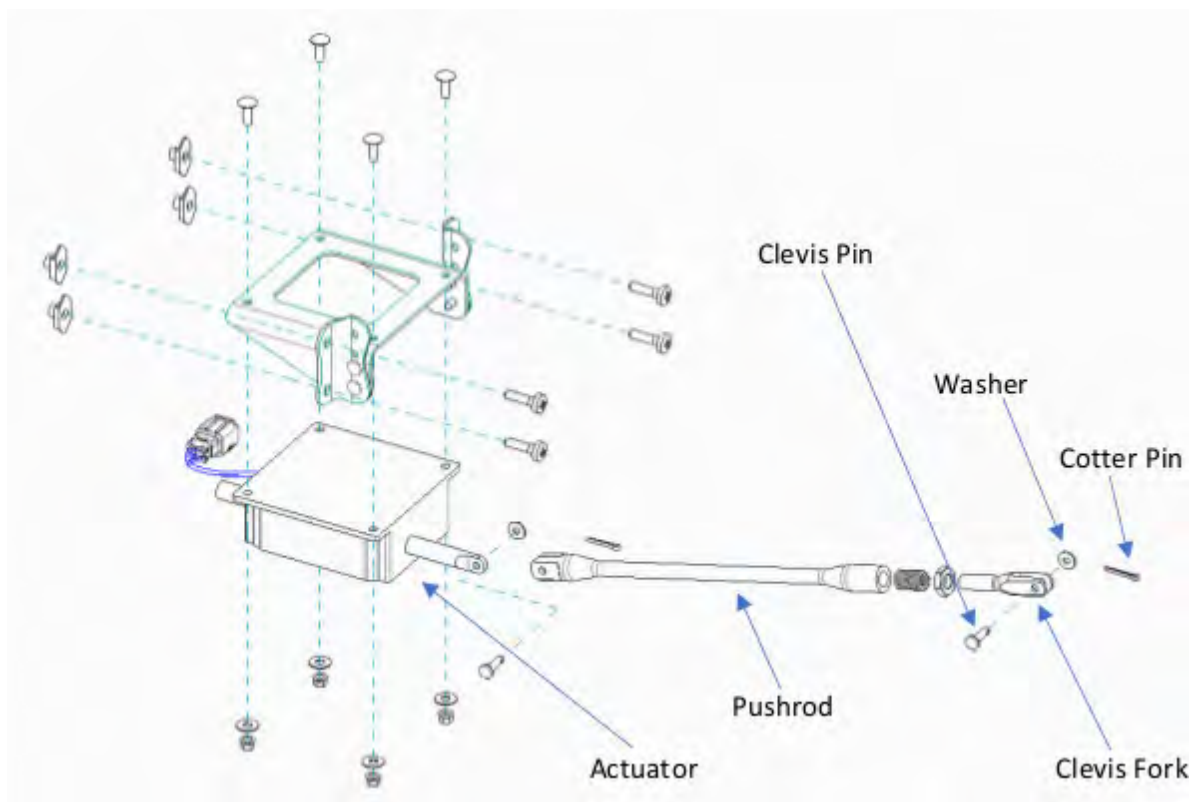


FIGURE 10-39
PITCH TRIM ACTUATOR ASSEMBLY

10.7.3 Maintenance Instructions

10.7.3.1 Remove Pitch Trim Actuator

The pitch trim actuator removal procedure is needed as part of the process of replacing the actuator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 hori-

zontal 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.

10.7.3.2 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA006821 TRIM ACTUATOR

Aircraft System and Number

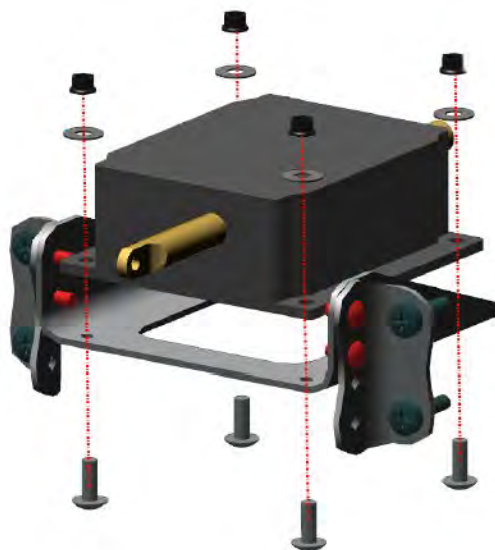
06 – Flight Controls

Consumables

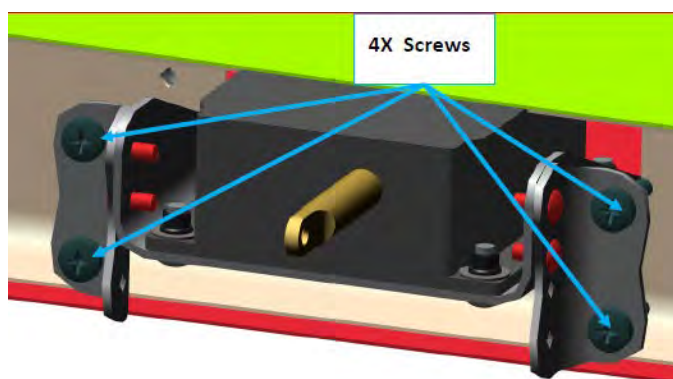
Tef-Gel®

TASK INSTRUCTIONS:

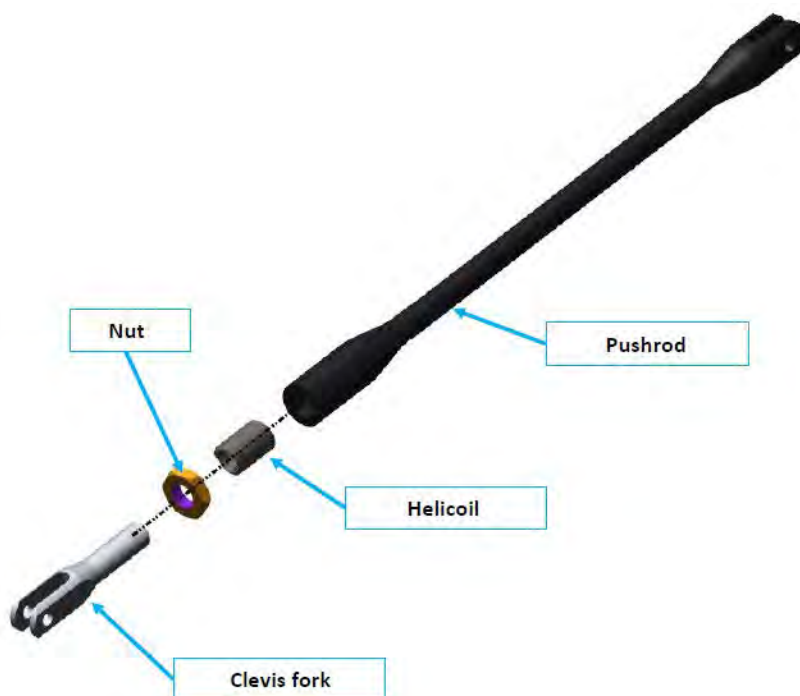
1. Mount new ICA006821 trim actuator to the pitch trim bracket by installing the four mounting cross head screws, washers, and nuts previously removed as shown.



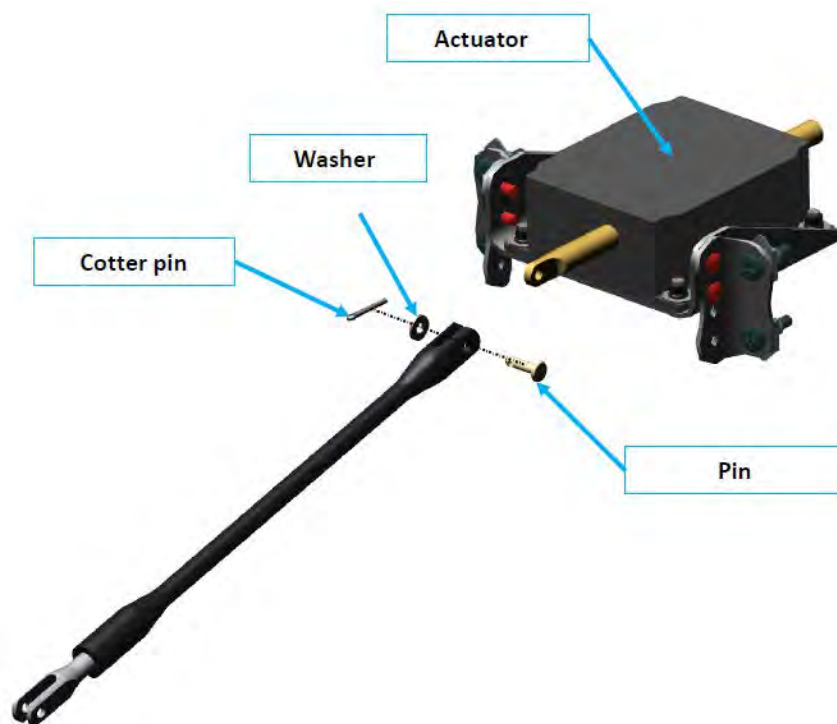
2. Install actuator and bracket back into the horizontal tail by first connecting the D9017J connector to the D9017P connector in the horizontal tail and installing the four cross head screws as shown. Torque to 14 in-lb_f.



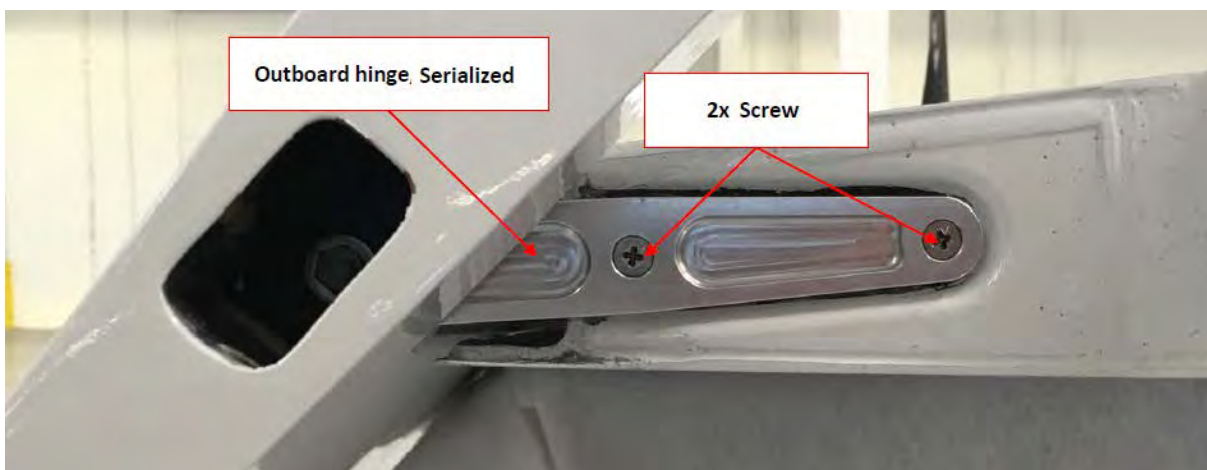
3. If pushrod needs to be replaced for wear, assemble the pushrod (ICA013758), helical coil (1191-4CN500), jam nut (AN316C4R), and fork (ICA008302) as shown.



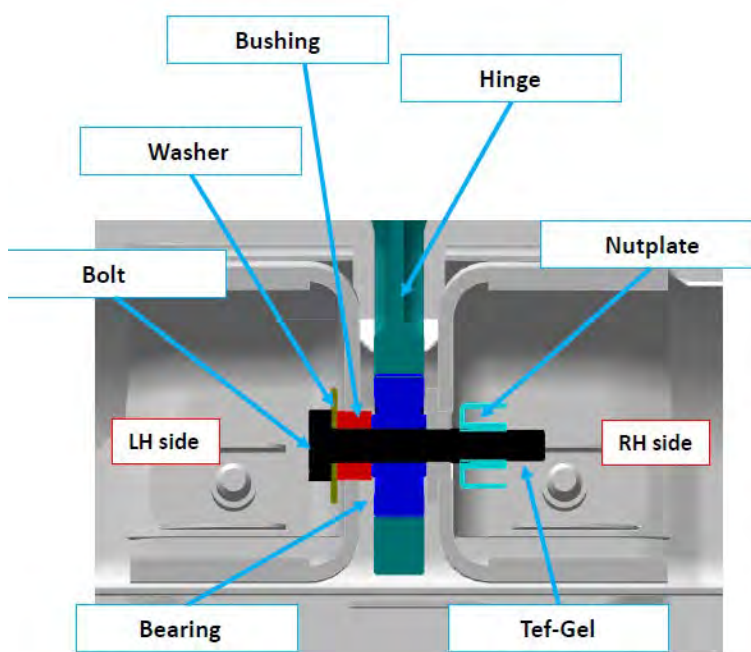
4. Install push rod assembly on actuator by installing clevis pin (MS20392-1R11), washer (NAS1149CN432R), and cotter pin (MS24665-151) as shown.



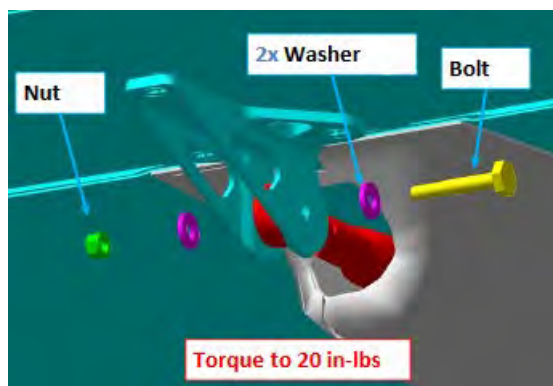
5. Install the elevator by carefully guiding the elevator trim tab pushrod through the elevator and securing the elevator outboard hinges with four screws, (right side shown, repeat for left side). Torque screws to 26 in-lb_f.



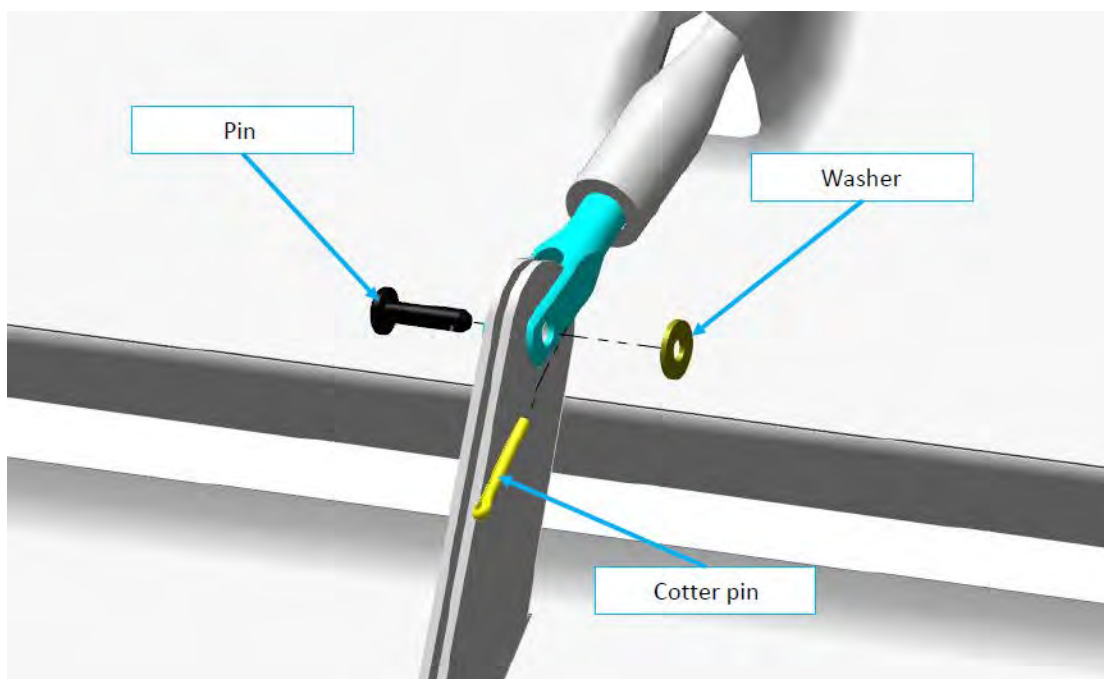
6. Install elevator center hinge bolt and washer as shown. Apply Tef-Gel[®] prior to installing and torque to 26 in-lb_f.



7. Install the elevator push tube rod end hardware as shown and torque to 20 in-lb_f.



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 10-62.)

RELATED INFORMATION:

"Inspect Pitch Trim Tab Rigging" on page 10-62

10.8 Pitch Trim Tab

10.8.1 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.

10.8.2 Pitch Trim Tab Diagram/Schematic



FIGURE 10-40
PITCH TRIM TAB AND VERTICAL TAIL

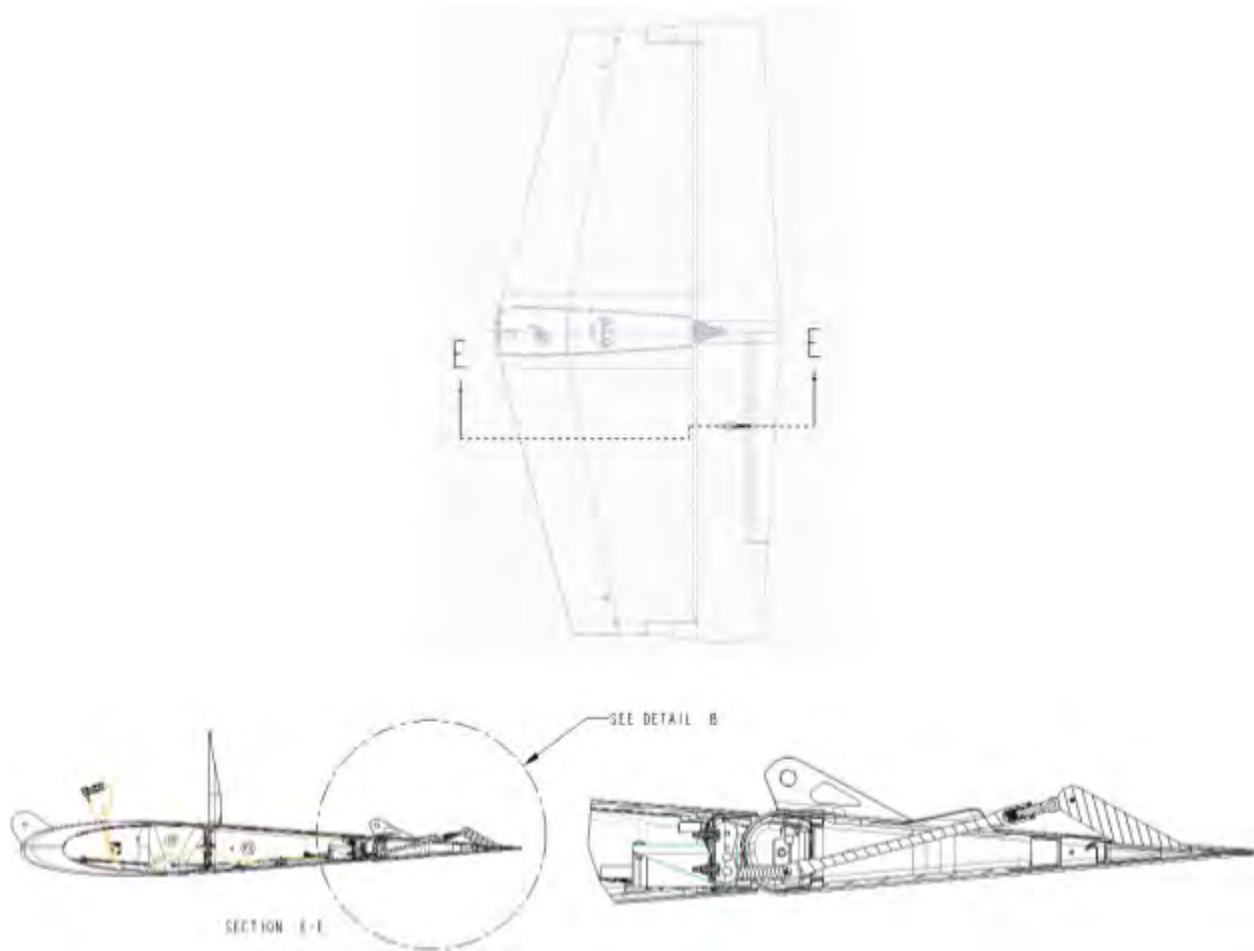


FIGURE 10-41
PUSHROD AND PITCH TRIM TAB SECTION VIEW

10.8.3 Inspection Instructions

10.8.3.1 Inspect Pitch Trim Tab Rigging

The following section contains the information required to perform an inspection of the pitch trim tab rigging.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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_f 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 10-56

10.8.3.2 Measure Pitch Trim Tab Wear

Use the following procedure to measure wear of the pitch trim tab.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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. If the flight surface throw readings are out of tolerance, inspect the maximum diameter of the pitch trim tab control horn hole.
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

10.9 Flap Controls

10.9.1 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.

10.9.2 Flap Controls Diagram/Schematic

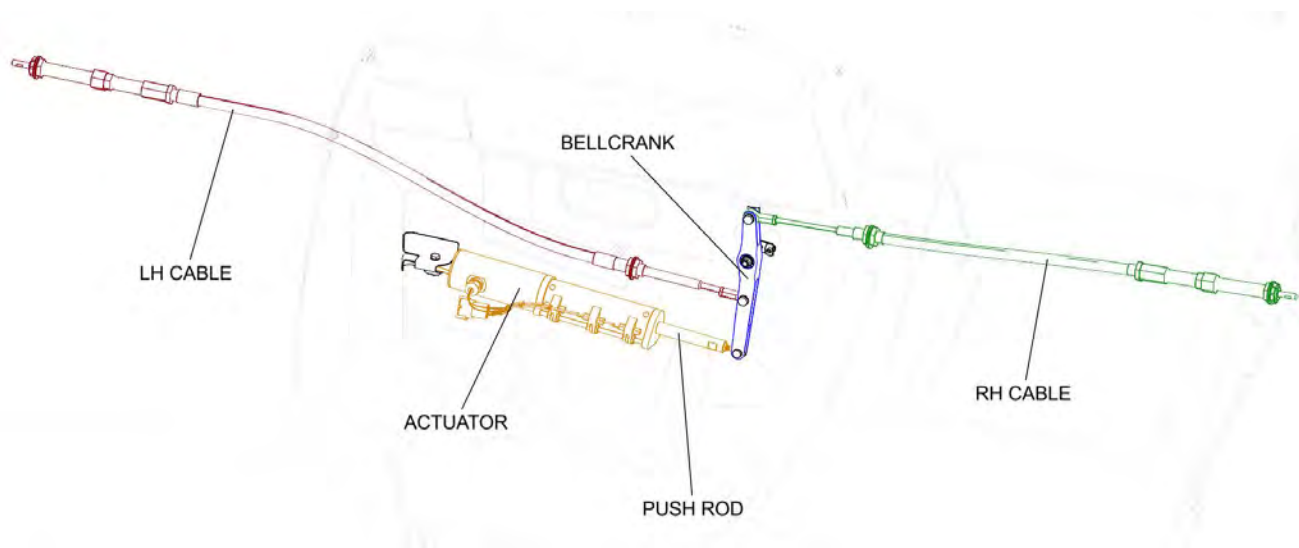


FIGURE 10-42
FLAP CONTROLS OVERVIEW

10.9.3 Inspection Instructions

10.9.3.1 Inspect Flap Rigging

Perform ground rigging inspection check on A5-B flaps.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Annual and 100-Hour Inspection – Wings" on page 4-11
 "Exterior/Interior Wing Control Surfaces" on page 18-5
 "Remove Flap Actuator" on page 10-72
 "Install Flap Gas Strut" on page 10-78
 "Install Flap Actuator" on page 10-75
 "Flap Hinge Repair Procedure" on page 18-25
 "Main Landing Gear (MLG) Removal" on page 15-39
 "Main Landing Gear (MLG) Installation" on page 15-42
 "Flap Surface Installation" on page 18-23
 "Rigging Flap Controls" on page 10-68

10.9.3.2 Rigging Flap Controls

Use the following procedure for flap rigging.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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
ME001018	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 4-27.)
2. Clean the noted damage area as required in accordance with ICA010822: STRUCTURAL REPAIR MANUAL, ICON A5, Section 10.1.

WARNING: Wear safety glasses when installing helicoils. Parts outside the aircraft, inside the aircraft installation orientation might be different. Figure 10-43

3. Flap System Rigging Process. See Figure 10-43.
 - a. Set wings to the folded configuration per POH wing fold operation.
 - b. Adjust fuselage flap pin to achieve .200+/.030/-0.000 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.

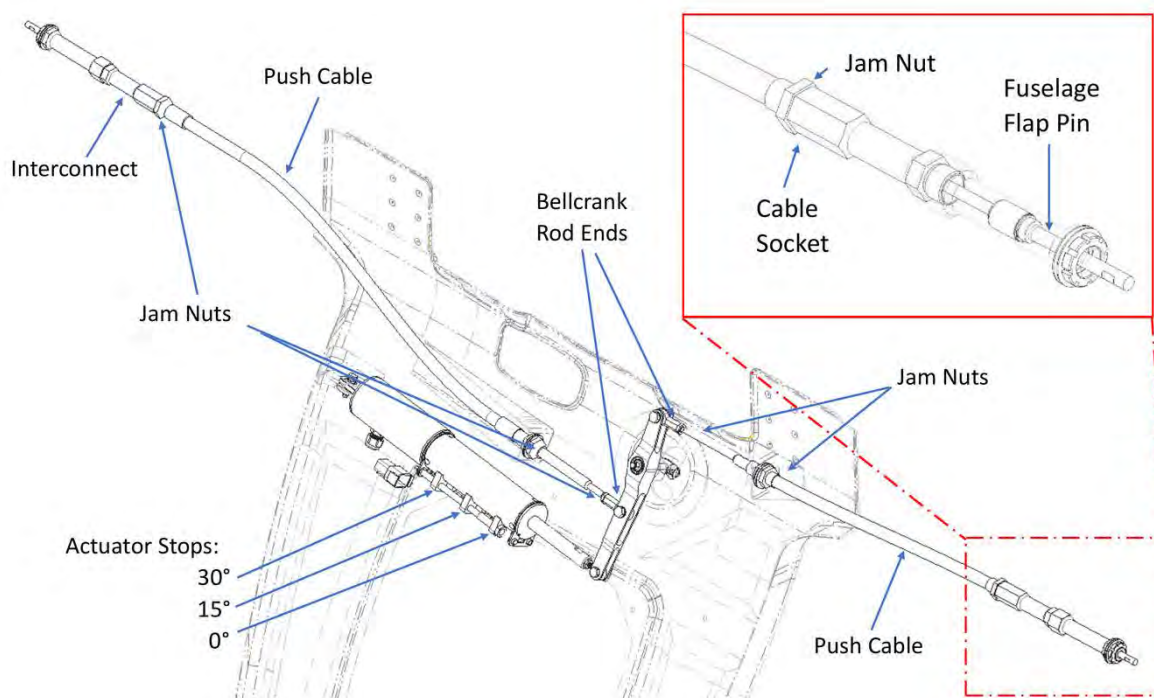


FIGURE 10-43
FLAP RIGGING DIAGRAM

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 10-44. Refer to Figure 10-43 for actuator location.

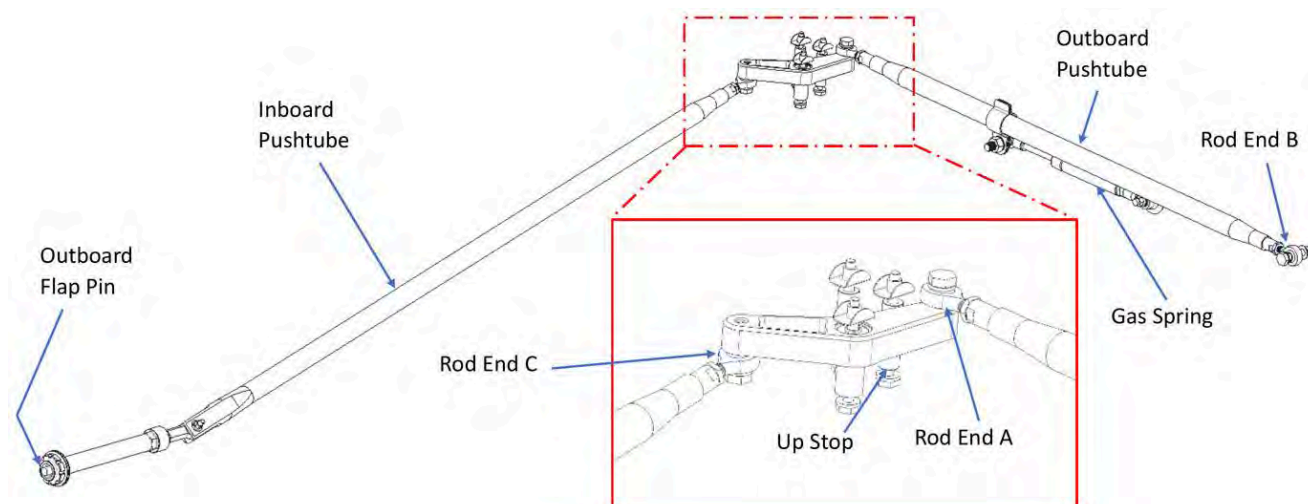


FIGURE 10-44
WING FLAP SYSTEM OVERVIEW

Flap	
Nominal Position	Definition/Tolerance
0°	In line with center wing trailing edge ± 0.02 "
15°	$15^\circ \pm 3^\circ$ relative to 0° position
30°	$30^\circ \pm 3^\circ$ relative to 0° position

FIGURE 10-45
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 10-45 above.
 - c. See Figure 10-43 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 10-45.
6. Install AFT baggage panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)

VERIFICATION METHOD:

Conduct the Check Flap Rigging Procedure (See "Inspect Flap Rigging" on page 10-66.) to verify proper rigging.

RELATED INFORMATION:

- "Removal and Installation of Inspection Panels and Fairings" on page 4-27
- "Inspect Flap Rigging" on page 10-66
- "Install Flap Actuator" on page 10-75

10.9.4 Maintenance Instructions

10.9.4.1 Remove Flap Actuator

Use these instructions to remove the flap actuator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

06 – Flight Controls

Consumables

None

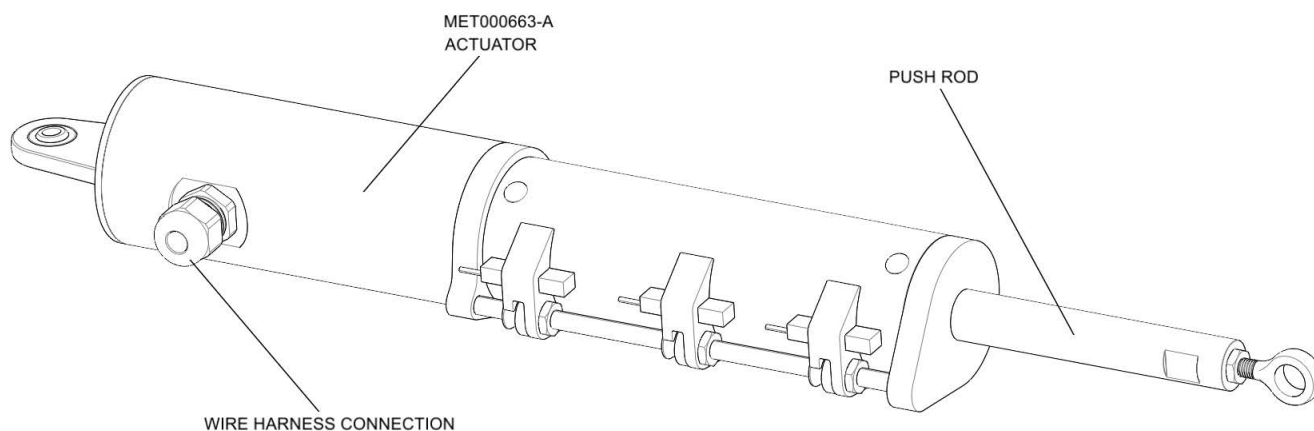


FIGURE 10-46
FLAP ACTUATOR DIAGRAM

TASK INSTRUCTIONS:

1. Remove main bulkhead panel. (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)
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.

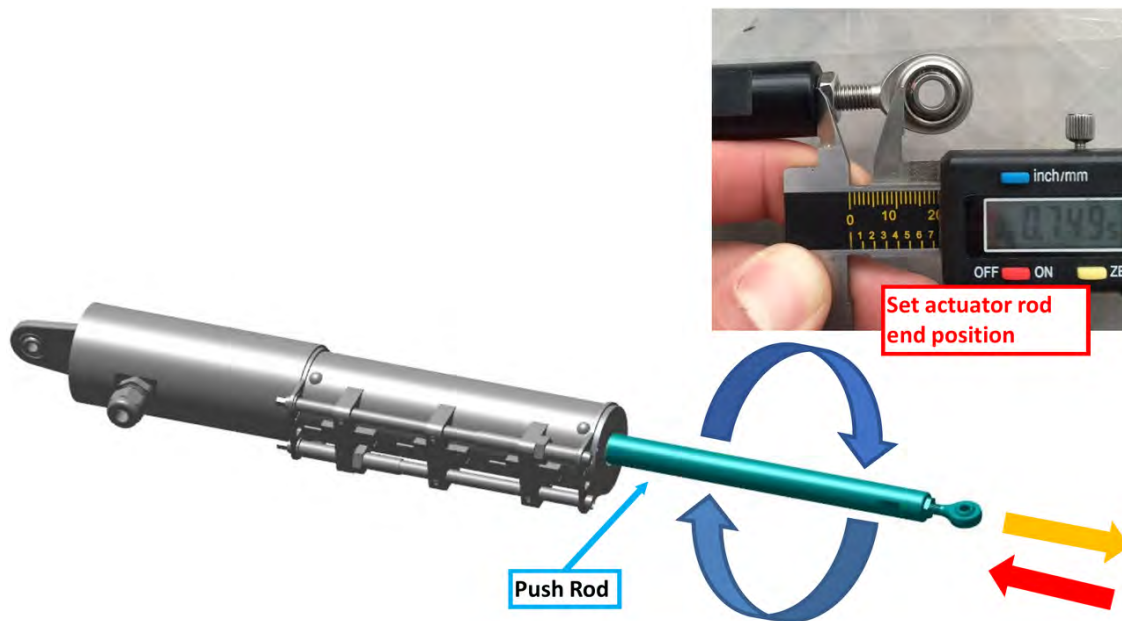


FIGURE 10-47
SET ACTUATOR ROD END POSITION

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 4-27.)

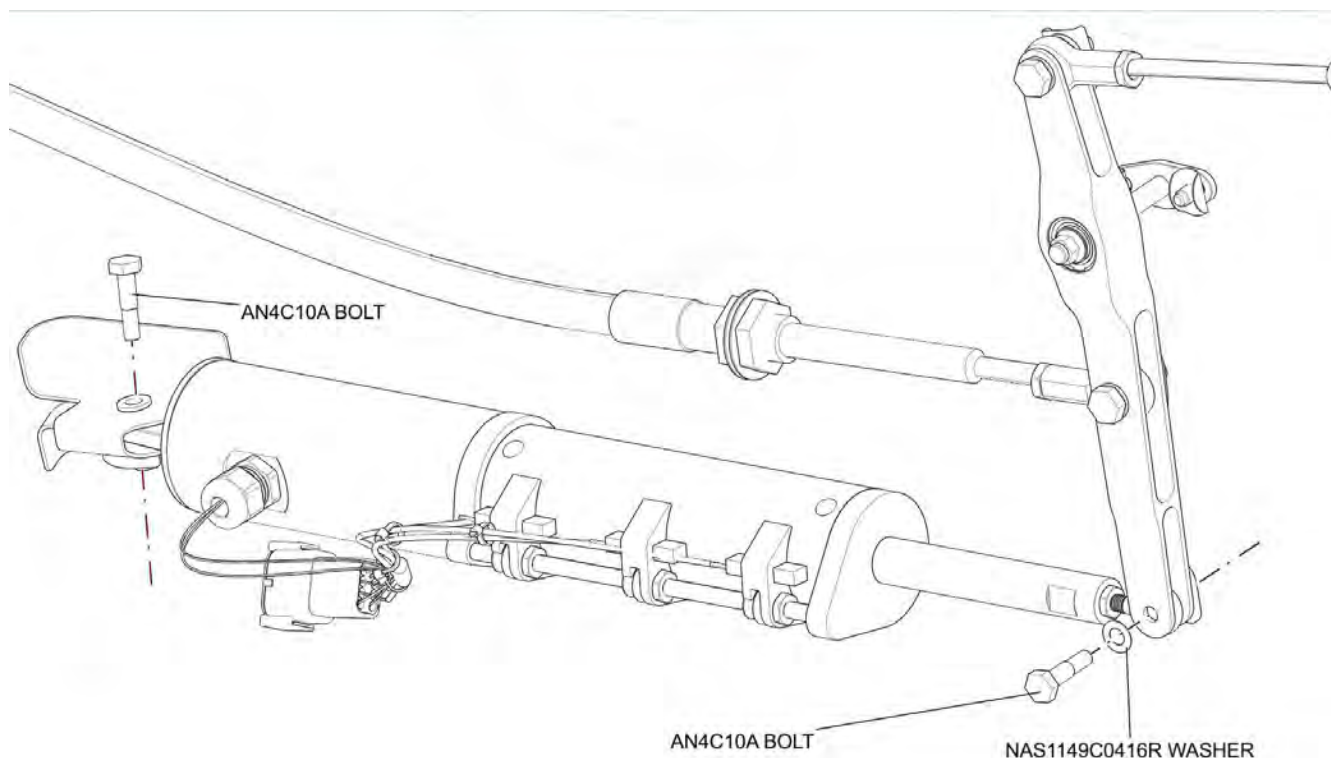


FIGURE 10-48
REMOVE FLAP ACTUATOR

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 10-66

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Install Flap Actuator" on page 10-75

10.9.4.2 Install Flap Actuator

These instructions should be used to install the flap actuator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME001018-FLAP 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 10-48 for installation reference.
 2. Connect flap actuator rod end to the flap bellcrank using the retained AN4C10A bolt and NAS1149C0416R washer.
NOTE: See Figure 10-48 for installation reference.
 3. Connect the flap actuator to the wire harness.
 4. Set actuator limit switches. (See “Rigging Flap Controls” on page 10-68.)
 5. Reinstall the bulkhead panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.)
-

VERIFICATION METHOD:

Verify actuator limit switches against Flaps Rigging. (See “Inspect Flap Rigging” on page 10-66.)

RELATED INFORMATION:

"Inspect Flap Rigging" on page 10-66

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Remove Flap Actuator" on page 10-72

"Rigging Flap Controls" on page 10-68

10.9.4.3 Remove Flap Gas Strut

Use the following instructions to remove the gas strut from the flap system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.)
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 4-27

10.9.4.4 Install Flap Gas Strut

Use the following instructions to install the gas strut on the flap system.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

06 – Flight Controls

Safety Equipment

As Needed

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_f.

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 10-49.

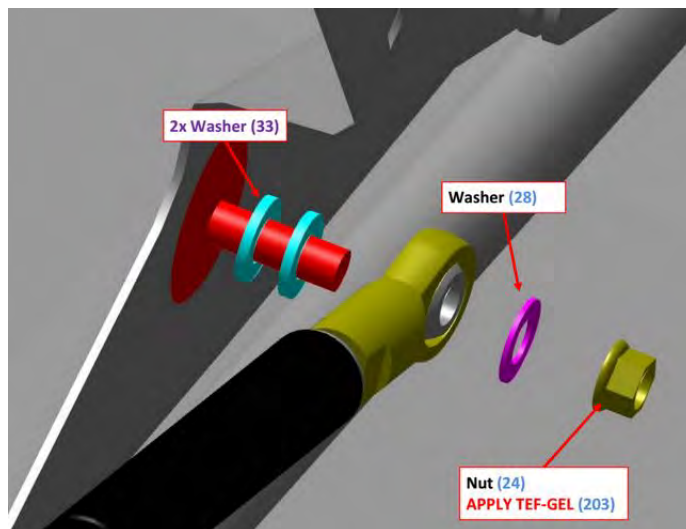


FIGURE 10-49
LEFT FLAP ASSEMBLY

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_f.
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 10-66.) Install the wing fold access panel.

VERIFICATION METHOD:

To verify, check the flap rigging. (See "Install Flap Gas Strut" on page 10-78.) 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 4-27
"Inspect Flap Rigging" on page 10-66

10.10 Yaw Controls

10.10.1 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.

10.10.2 Yaw Controls Diagram/Schematic

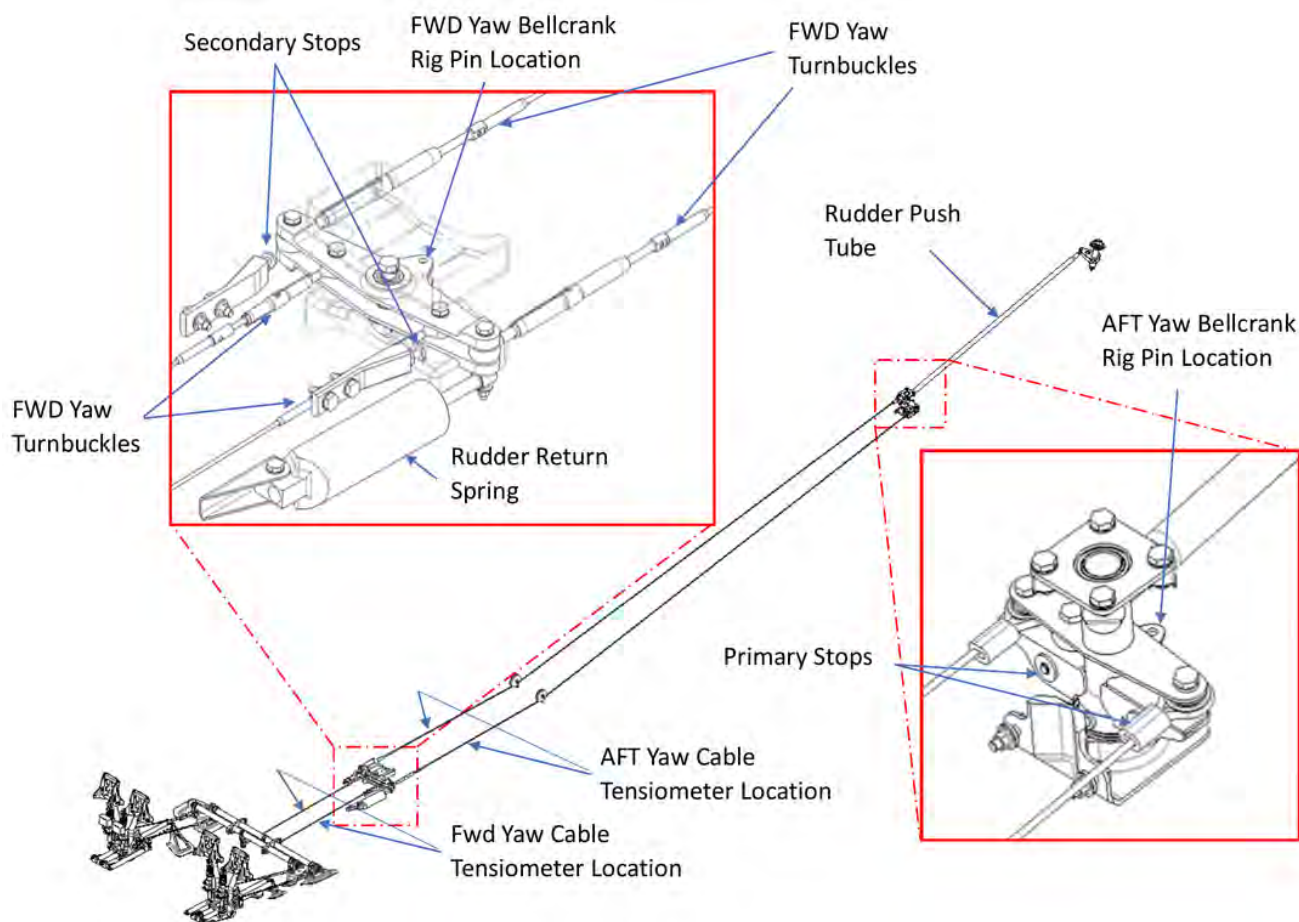


FIGURE 10-50
YAW CONTROLS OVERVIEW

10.10.3 Inspection Instructions

10.10.3.1 Inspect Yaw Cable Tension

This section contains instructions to check rudder cables for correction tensions.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-36.) Retain all fastening hardware.
2. Remove the Water Access Panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.) Retain all fastening hardware.
3. Remove the Center Console Bucket. (See “Center Console Bucket Removal” on page 9-5.) 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 10-51.

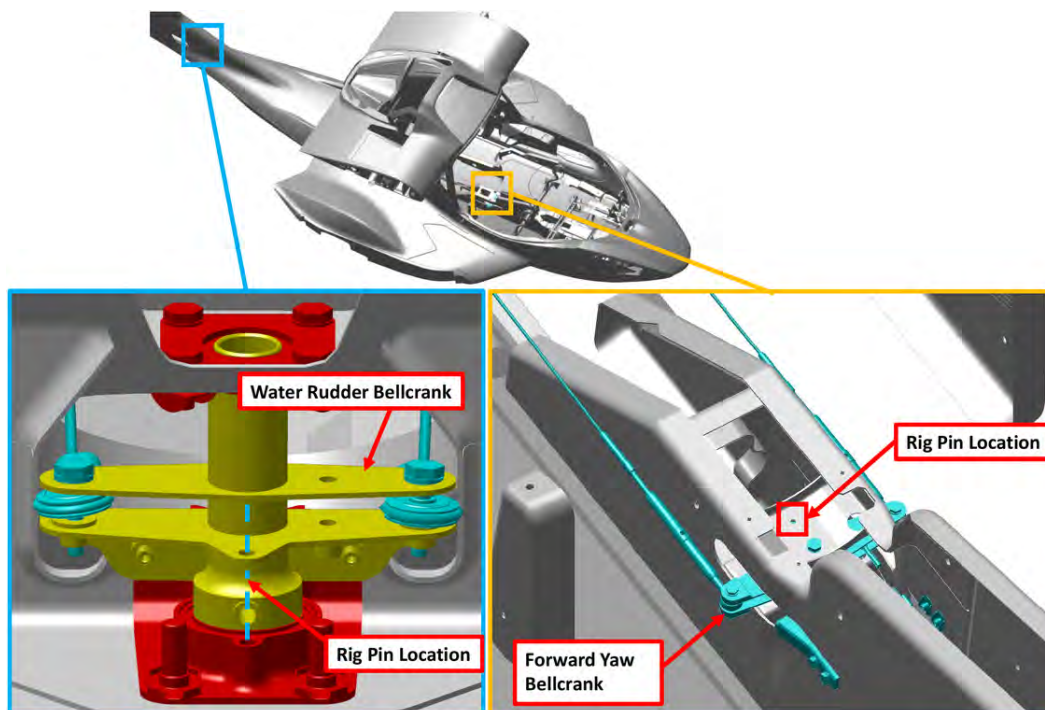
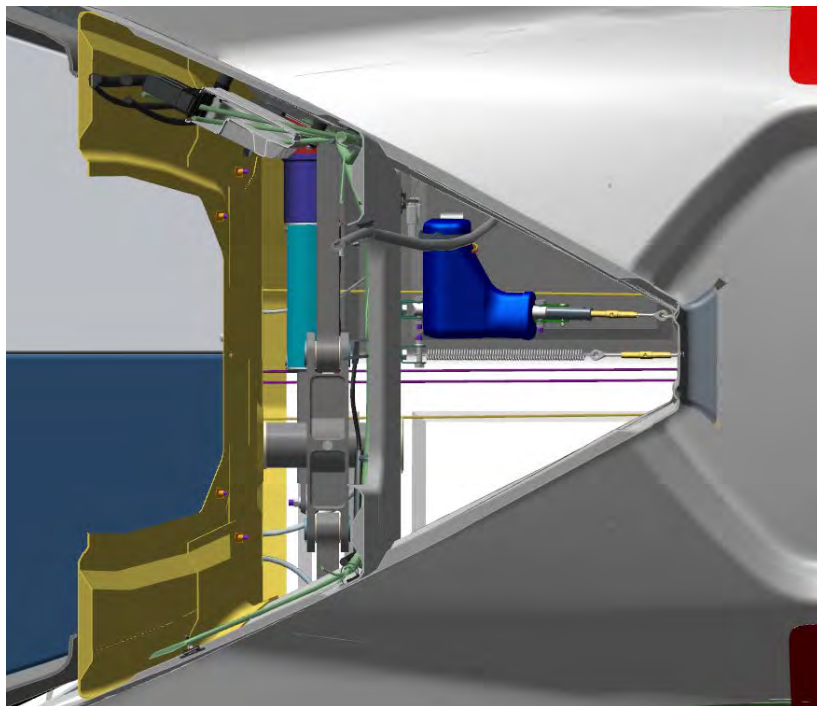


FIGURE 10-51
FWD YAW BELLCRANK AND WATER RUDDER RIG PIN LOCATIONS

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 10-52. Ensure they all are within 18-22 lb_f of tension. Refer to the manufacturers' calibration card to correctly read cable tension for the cable diameter.

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*

**FIGURE 10-52**

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 9-8.)
8. Install the Water Rudder Access Panel using retained hardware during removal. (See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.)
9. Install AFT Bulkhead Baggage Panel using retained hardware during removal. (See “Baggage Sidewall Panel Installation” on page 4-38.)

VERIFICATION METHOD:

Record results and check against requirement. If requirement is not met complete rudder rigging. (See “Inspect Yaw Rigging” on page 10-86.)

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Aft Fuselage and Empennage" on page 4-19

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Center Console Bucket Removal" on page 9-5

"Center Console Bucket Installation" on page 9-8

10.10.3.2 Inspect Rudder Pedal Rigging

Use task to inspect the rigging of the rudder pedals to the rudder rails.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Protractor or inclinometer

Parts Required

None

Aircraft System and Number

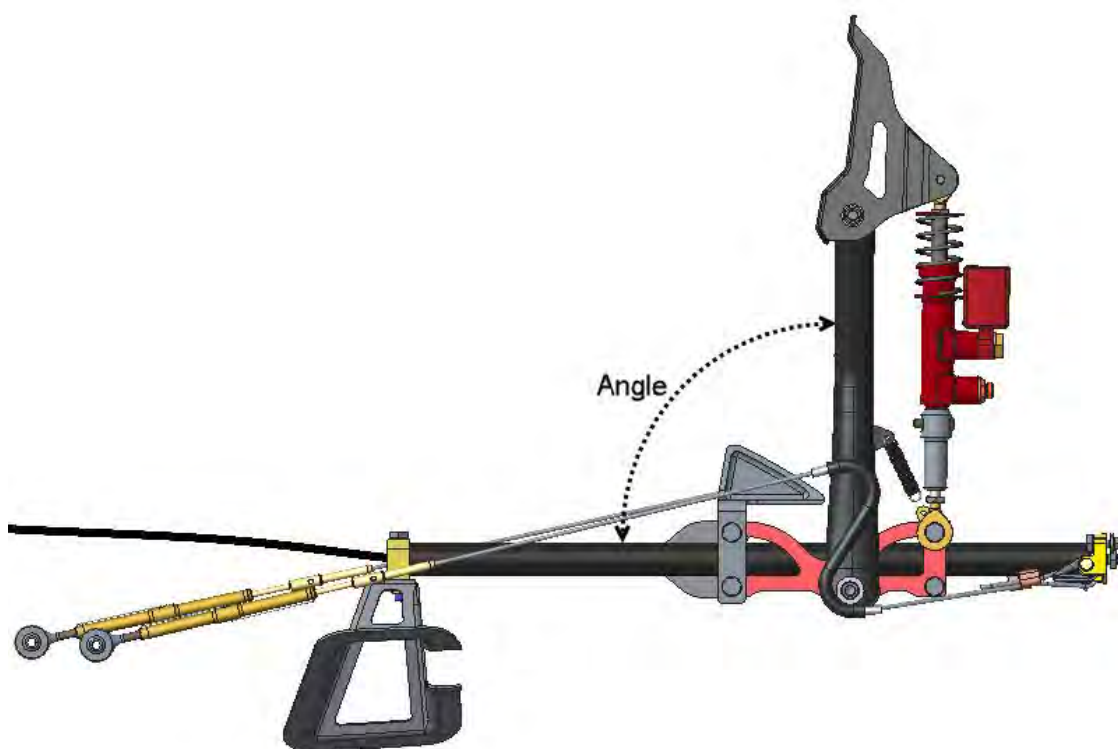
06 – Flight Controls

Consumables

None

TASK INSTRUCTIONS:

1. Remove the floorboard panels from the aircraft by pulling upward on them. (See “Remove Cockpit Floorboard” on page 4-39.)
 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 rudder pedal rigging adjustment procedure. (See “Rudder Pedals Remove and Redo” on page 10-104.)

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Landing Gear" on page 4-14

"Rudder Pedals Remove and Redo" on page 10-104

10.10.3.3 Inspect Yaw Rigging

The following section contains the information required to perform the A5 maintenance inspection on the rudder.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 10-53, 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.

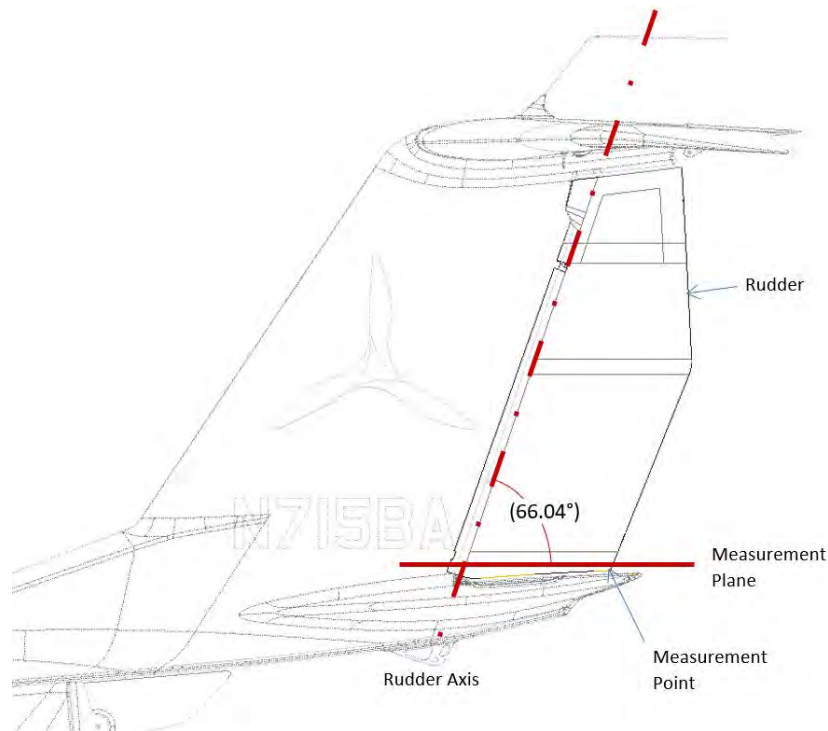


FIGURE 10-53
RUDDER MEASUREMENT PLANE

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 10-54.
 - a. Trailing Edge Left: $11^{\circ} \pm 1^{\circ}$
 - b. Trailing Edge Right: $14^{\circ} \pm 1^{\circ}$

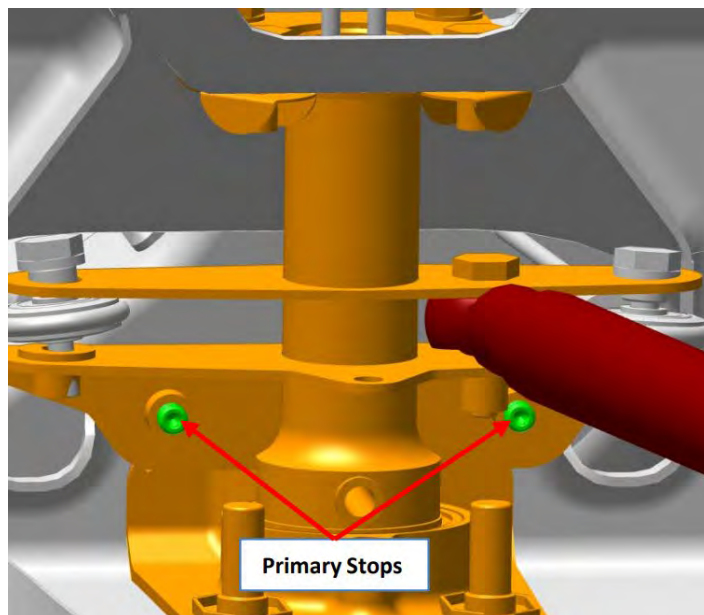


FIGURE 10-54
PRIMARY STOP LOCATIONS

VERIFICATION METHOD:

Record results and check against requirements.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Aft Fuselage and Empennage" on page 4-19

"Rudder Pedals Remove and Redo" on page 10-104

"Adjust Yaw Rigging" on page 10-100

10.10.4 Maintenance Instructions

10.10.4.1 Rigging Yaw Controls

Use the following procedure for rudder rigging.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.) (See “Baggage Floor Removal” on page 4-34.)
2. Check cable tension. (See “Inspect Yaw Cable Tension” on page 10-81.)
3. Remove left hand and right hand FWD and Main Cockpit Floor Bards. (See “Remove Cockpit Floorboard” on page 4-39.)
4. Remove Seat Back and Seat Pan. (See “Remove Seat Back” on page 4-43.) (See “Seat Pan Removal” on page 4-45.) Retain all fastening hardware.
5. Remove Baggage Floor Boards. (See “Baggage Floor Removal” on page 4-34.) 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 4-32.) (See “Baggage Sidewall Panel Removal” on page 4-36.) (See “Headliner Removal” on page 4-30.)
7. (Optional) Remove fuel tank if needed. (See “Remove Fuel Tank Assembly” on page 11-12.) Retain all fastening hardware.
8. Remove Center Console Bucket and Throttle Bezel. (See “Center Console Bucket Removal” on page 9-5.) (See “Throttle Handle and Bezel Removal” on page 9-10.) 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 10-55.

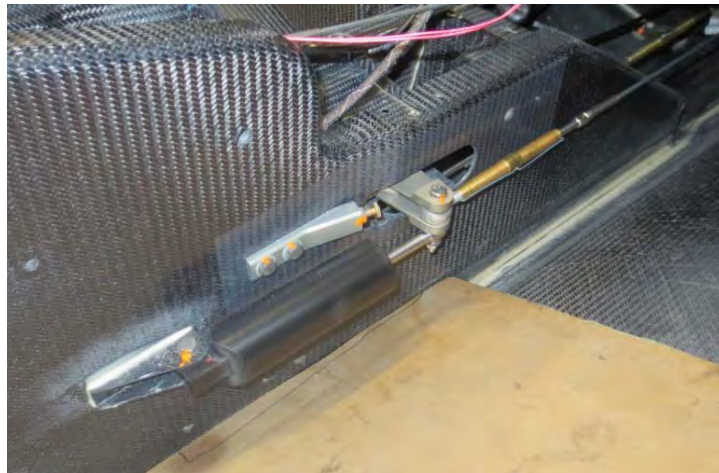
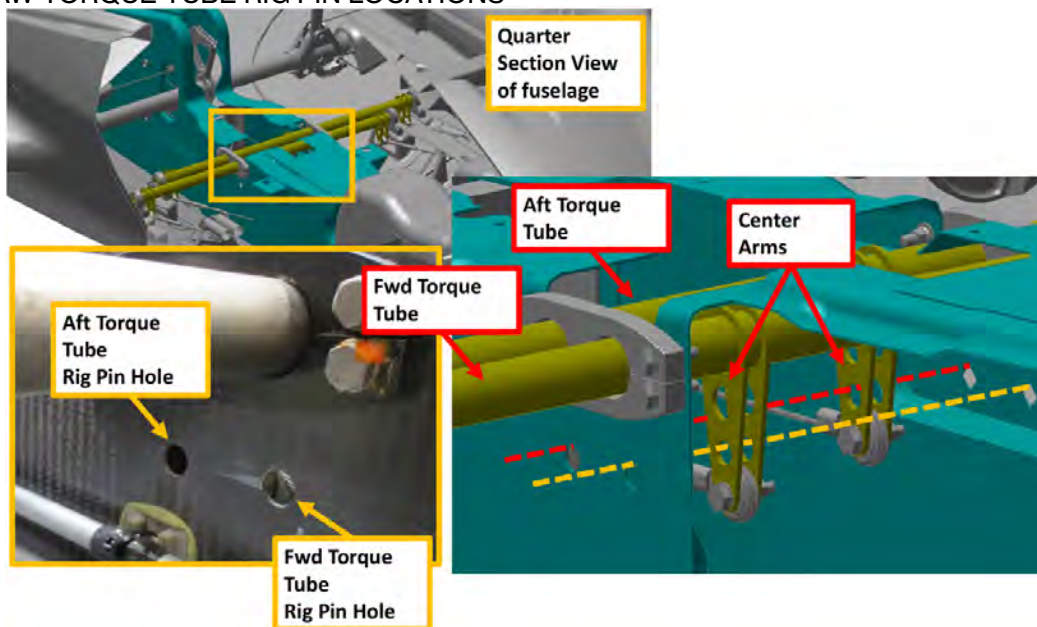


FIGURE 10-55
RUDDER RETURN SPRING

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.

YAW TORQUE TUBE RIG PIN LOCATIONS



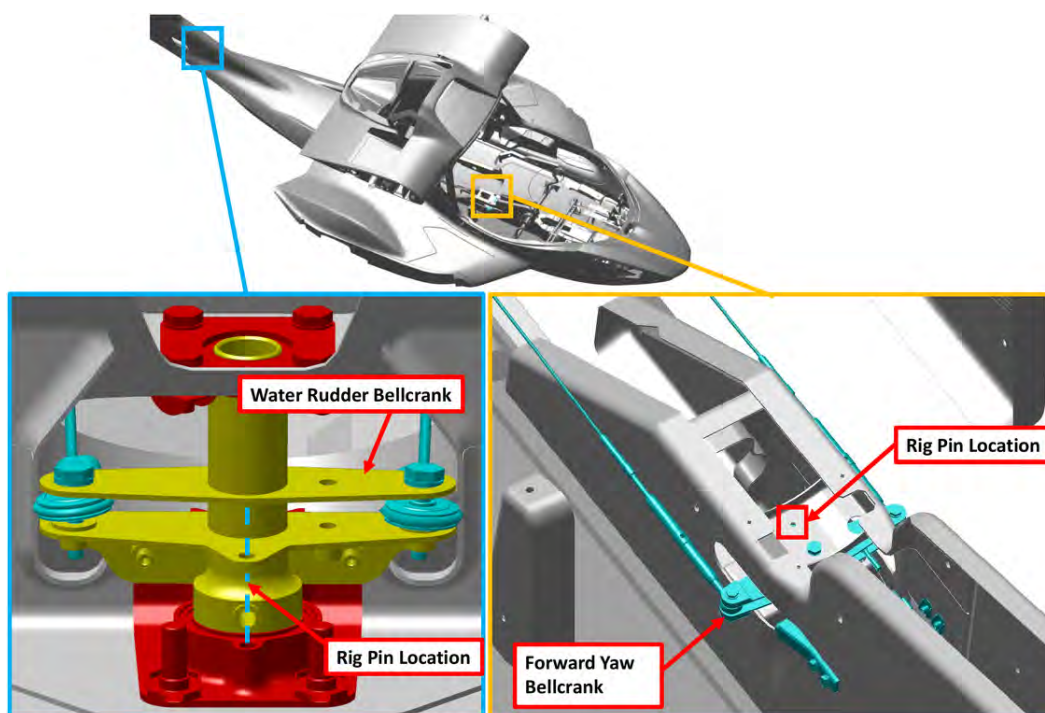


FIGURE 10-56
FWD YAW BELLCRANK AND WATER RUDDER RIG PIN LOCATIONS

12. Use a tensiometer (cable thickness = 3/32 in) to rig both middle yaw control cables. To achieve the following, refer to Figure 10-57:
 - 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

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*

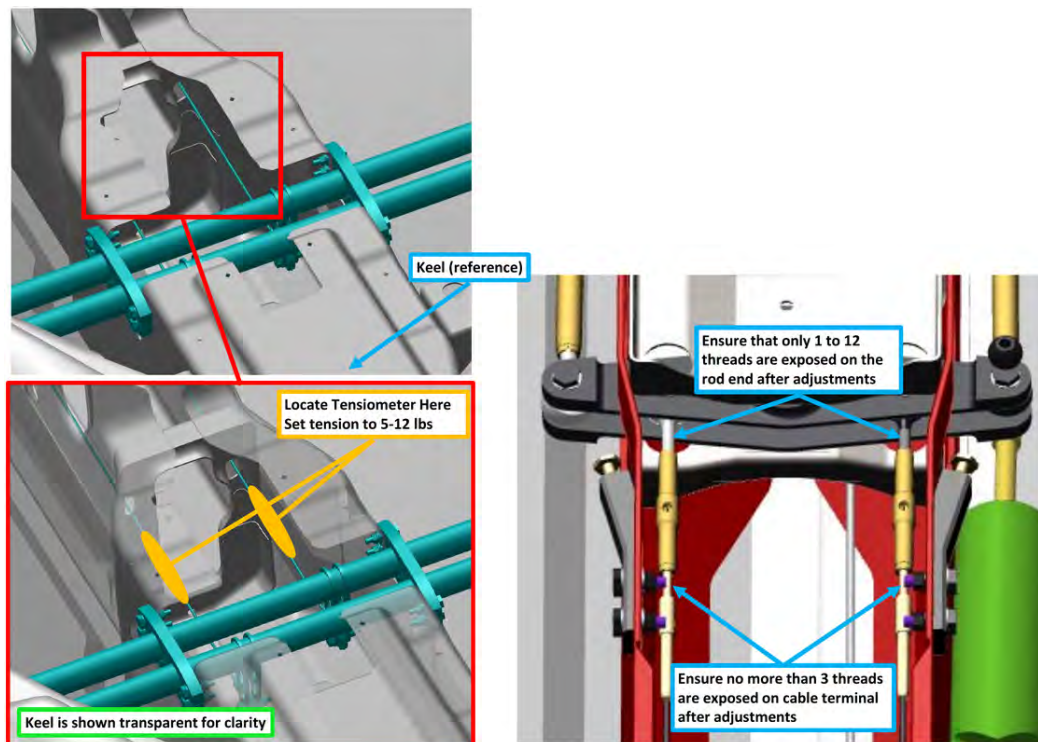


FIGURE 10-57
MIDDLE YAW CIRCUIT

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 10-58:
 - 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

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*

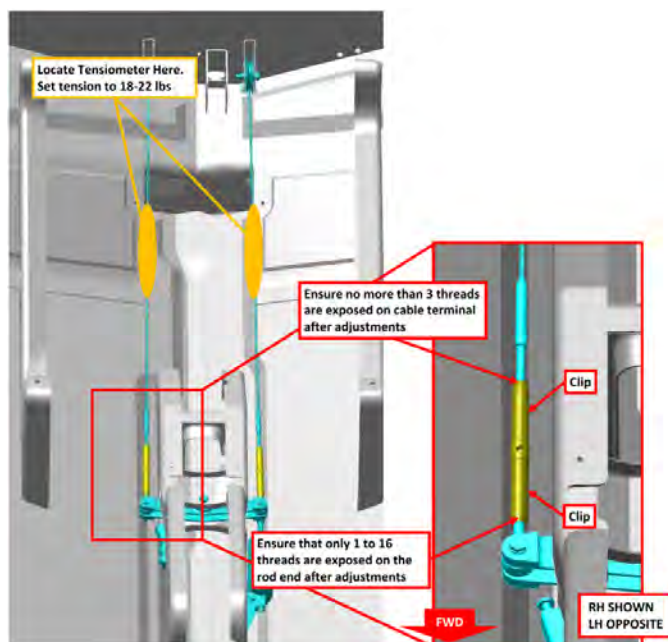


FIGURE 10-58
AFT YAW CIRCUIT TENSIONING

14. Install the forward end of centering spring onto the LH side of the keel using LOCTITE® 243™ and the noted hardware. Torque hardware to 10-13 in-lbs. See Figure 10-59.

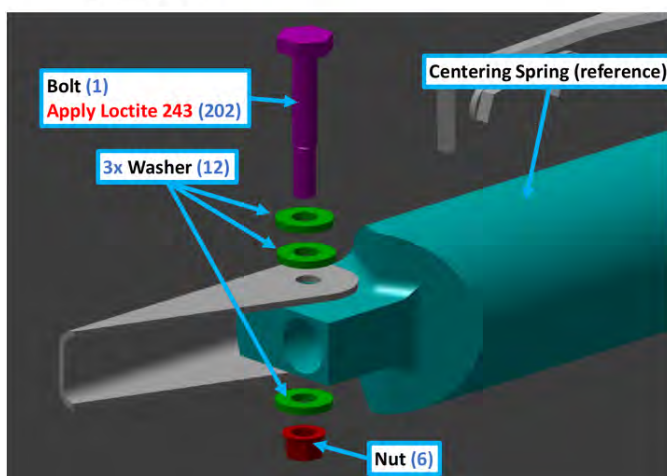
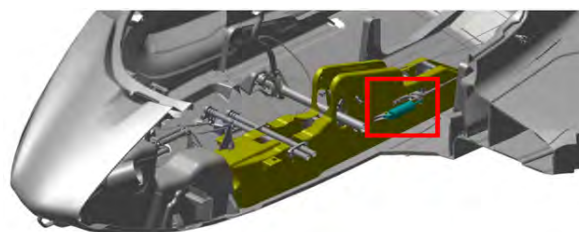


FIGURE 10-59
CENTERING SPRING INSTALL

15. Lock all turnbuckle clips (2 per turnbuckle) in place, refer to Figure 10-60:
 - 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

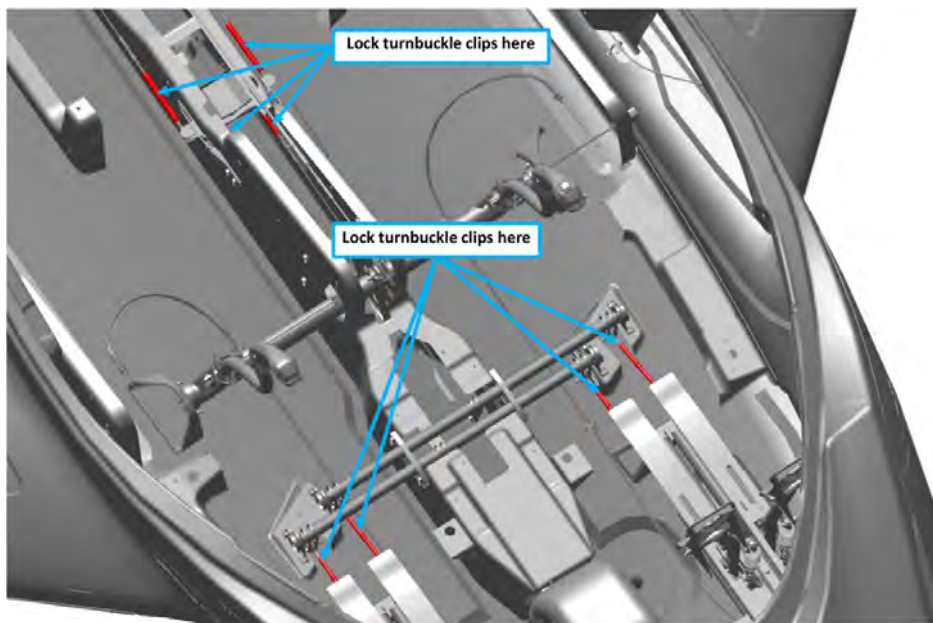


FIGURE 10-60
TURNBUCKLE LOCATION

16. Position the rudder rigging template (ICA013055) or a protractor as shown in Figure 10-61, Center the 0° indication of the rigging template or protractor with respect to the center of the tail section under the rudder.

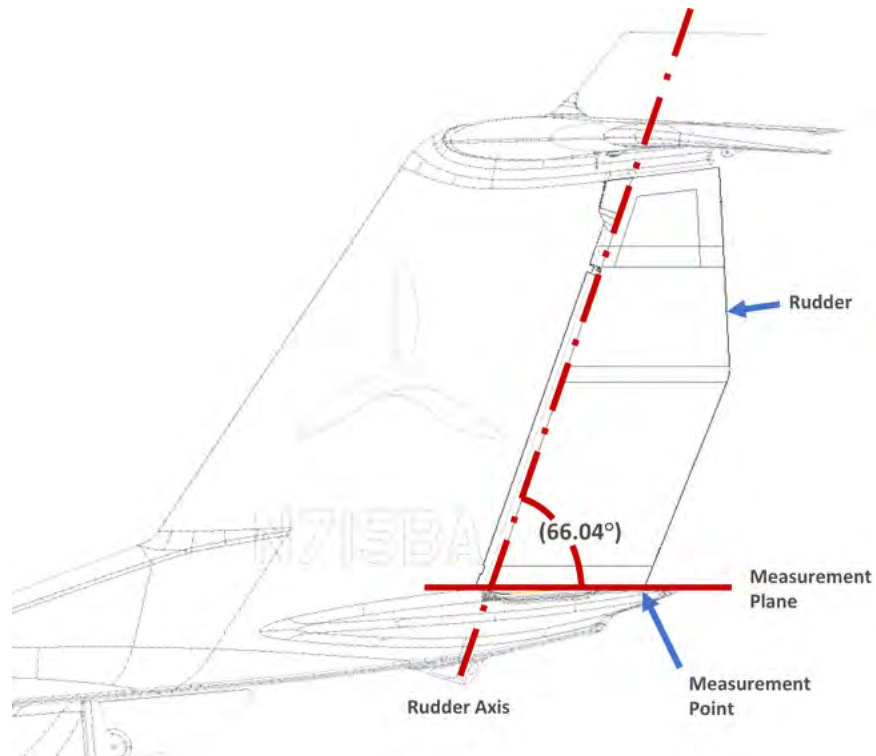


FIGURE 10-61
RUDDER MEASUREMENT PLANE

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 10-62.

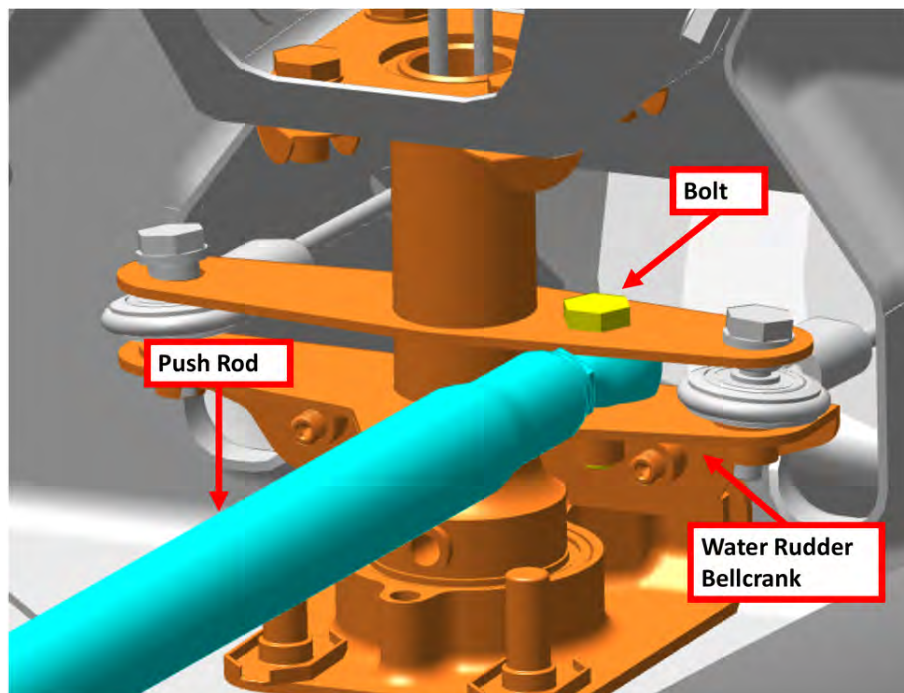


FIGURE 10-62
RUDDER PUSH TUBE ADJUSTMENT

18. Repeat step 17 for the LH pedal.

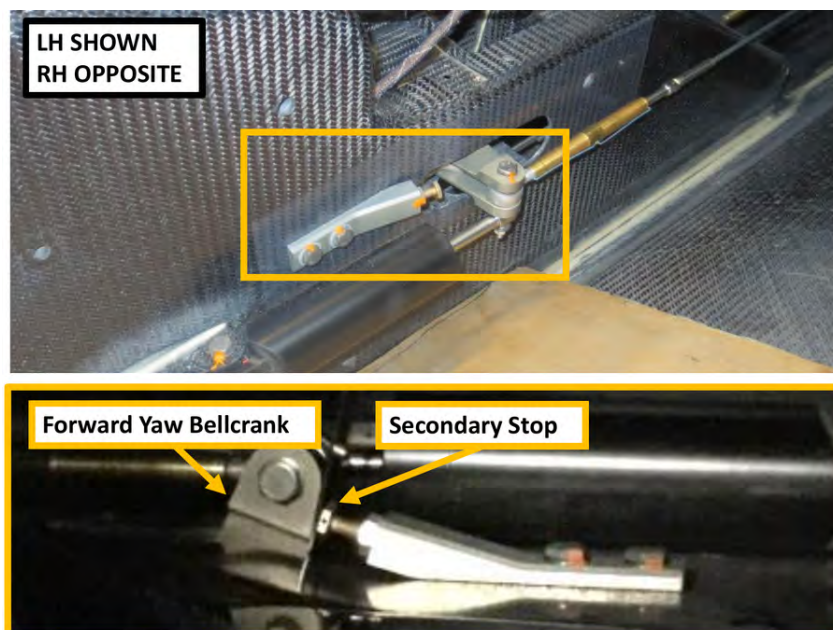


FIGURE 10-63
SECONDARY STOP ADJUSTMENT

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_f) 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 10-64.
 - a. Trailing Edge Left: 11°+/-1°
 - b. Trailing Edge Right: 14°+/-1°

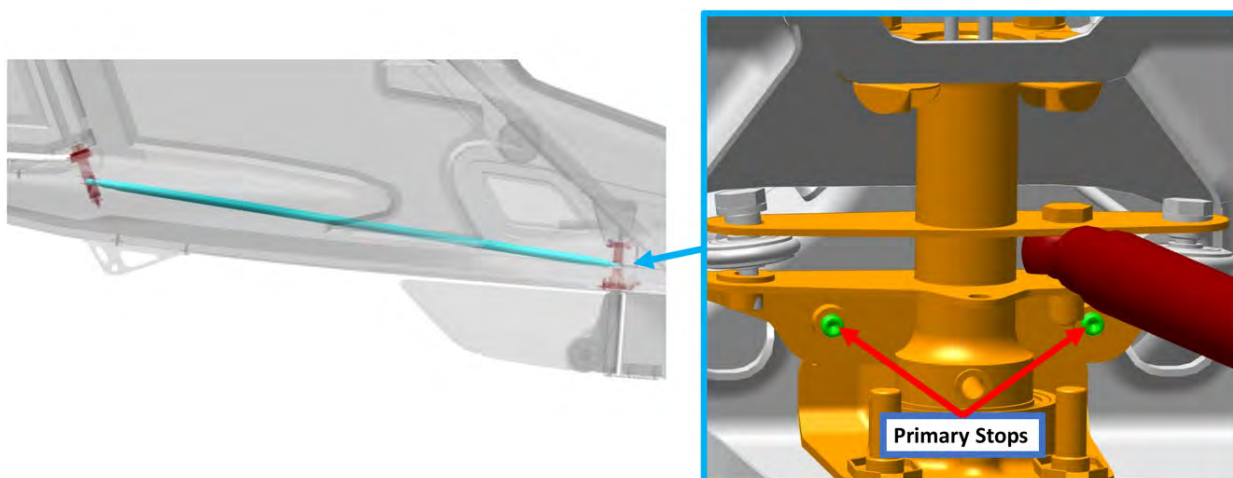


FIGURE 10-64
PRIMARY STOP LOCATIONS

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 10-63.
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 4-27.)(See "Baggage Floor Installation" on page 4-35.)
27. Install left hand and right hand forward and Main Cockpit Floor Boards. (See "Install Cockpit Floorboard" on page 4-40.)
28. Install Seat Back and Seat Pan. (See "Install Seat Back" on page 4-44.)(See "Seat Pan Installation" on page 4-47.)
29. Install Baggage Floor Boards. (See "Baggage Floor Installation" on page 4-35.)

30. Install Seatbelt Reel Cover, left hand and right hand baggage sidewalls, and Baggage Headliner. (See "Seat Belt Inertia Reel Installation" on page 4-33.) (See "Baggage Sidewall Panel Installation" on page 4-38.) (See "Headliner Installation" on page 4-31.)
31. If fuel tank was removed, install fuel tank. (See "Install Fuel Tank Assembly" on page 11-16.)
32. Install Center Console Bucket and Throttle Bezel. (See "Center Console Bucket Installation" on page 9-8.) (See "Throttle Handle and Bezel Installation" on page 9-13.)

VERIFICATION METHOD:

Conduct the Check Rudder Rigging procedure (See "Inspect Yaw Rigging" on page 10-86.) to verify proper rigging.

RELATED INFORMATION:

"Remove Cockpit Floorboard" on page 4-39
 "Install Cockpit Floorboard" on page 4-40
 "Remove Seat Back" on page 4-43
 "Install Seat Back" on page 4-44
 "Seat Pan Removal" on page 4-45
 "Seat Pan Installation" on page 4-47
 "Baggage Floor Removal" on page 4-34
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 "Headliner Removal" on page 4-30
 "Headliner Installation" on page 4-31
 "Inspect Roll Rigging" on page 10-17
 "Removal and Installation of Inspection Panels and Fairings" on page 4-27
 "Cockpit Panels Removal and Installation" on page 4-29
 "Center Console Bucket Removal" on page 9-5
 "Center Console Bucket Installation" on page 9-8
 "Throttle Handle and Bezel Removal" on page 9-10
 "Throttle Handle and Bezel Installation" on page 9-13

10.10.4.2 Adjust Yaw Rigging

Adjust the rigging to prevent slight yaw tendency.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.)
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 10-86.)

7. Reassemble AFT tail access panel. (See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.)
-

VERIFICATION METHOD:

Verify rigging matches rudder travel and deflection limits. (See “Inspect Yaw Rigging” on page 10-86.)
A functional test flight should be done to ensure proper operation and minimized yawing effect.

RELATED INFORMATION:

"Inspect Yaw Rigging" on page 10-86

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

10.10.4.3 Adjust Rudder Pedal Rigging

Use this task to adjust the rudder pedal rigging.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 "Rudder Pedals Remove and Redo" on page 10-104.)

RELATED INFORMATION:

"Inspect Rudder Pedal Adjustment Mechanism" on page 10-5

"Adjust Rudder Pedal Rigging" on page 10-102

"Rudder Pedals Remove and Redo" on page 10-104

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

10.10.4.4 Rudder Pedals Remove and Redo

Use this task to remove and redo the rudder pedal rigging.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

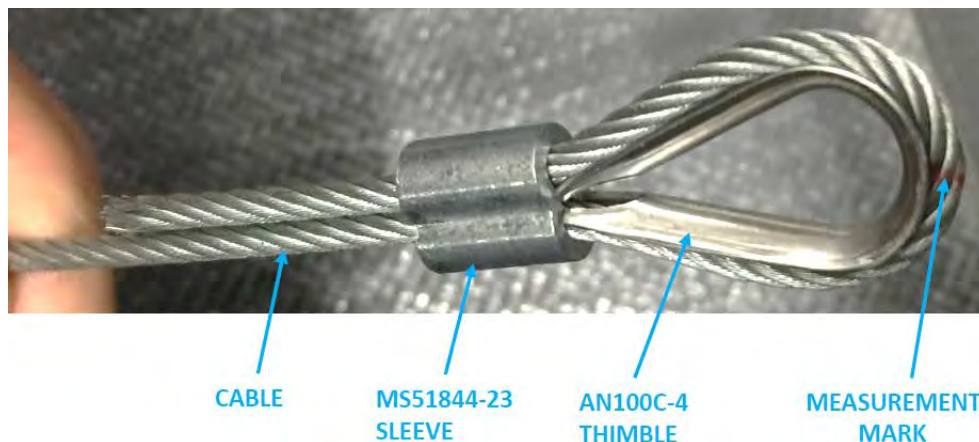


FIGURE 10-65
RUDDER PEDAL CABLE SWAGE

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.

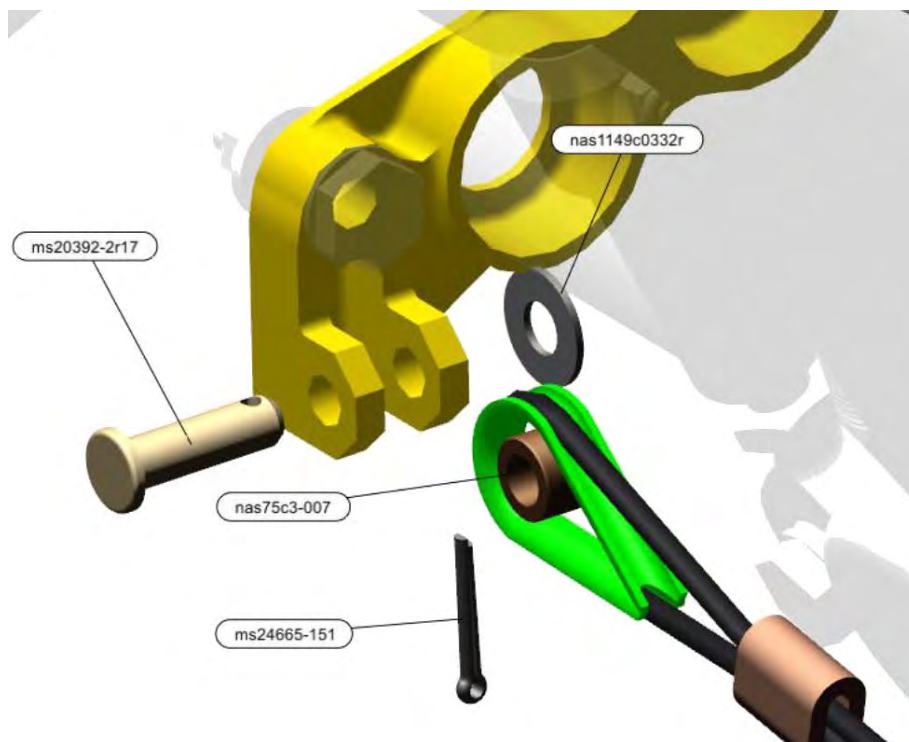


FIGURE 10-66
RUDDER PEDAL FWD MOUNT CABLE INSTALLATION

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 10-84.)

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 10-86.) (See "Check Water Rudder Rigging" on page 12-16.)

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 10-84
- "Inspect Rudder Pedal Adjustment Mechanism" on page 10-5
- "Adjust Rudder Pedal Rigging" on page 10-102
- "Rudder Pedals Remove and Redo" on page 10-104
- "Removal and Installation of Inspection Panels and Fairings" on page 4-27
- "Inspect Yaw Rigging" on page 10-86
- "Check Water Rudder Rigging" on page 12-16

Chapter 11

FUEL SYSTEM

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11.1 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.

11.2 Troubleshooting

11.2.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

No

Parts Required

None

Aircraft System and Number

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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 4-34.)
 - b. Remove the right seat back. (See “Remove Seat Back” on page 4-43.)
 - 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.

11.2.2 Fuel Pressure Diagnostic

Use Table 1-1 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 14-29.

Table 11-1: 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 Tank Assembly” on page 11-12.)
	Clogged coarse fuel filter.	Clean coarse fuel filter. (See “Clean Coarse Fuel Filter” on page 11-34.)
	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 Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series leak tests section from Rotax®. Tighten fitting or replace damaged lines as necessary. Inspect tank for damage and leaks. (See “Fuel Tank Assembly” on page 11-12.)
	Fuel pressure regulator malfunction.	Inspect fuel pressure regulator. Replace fuel pressure regulator as necessary. See the Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i 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 Maintenance) for Rotax Engine Type 912 i Series fuel system section from Rotax®.
	Plugged fuel tank vent line.	Clear fuel tank vent line. (See “Clear Fuel Tank Vent Line” on page 11-42.)

Table 11-1: Fuel Pressure Diagnostic Table (Continued)

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 11-37.)
	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 Maintenance) for Rotax Engine Type 912 i 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 Maintenance) for Rotax Engine Type 912 i Series from Rotax®.

11.3 Fuel System General Maintenance

11.3.1 Sump Fuel Tank

Instructions to sump the fuel tank and check for water or debris.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

ME001052 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.
NOTE: 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.

NOTE: *The latch on the fuel cap should swing downward when properly aligned.*

VERIFICATION METHOD:

Fuel tank sump is visually clear of water or debris.

11.3.2 Pump Usable Fuel From Fuel Tank

Use this procedure when it is necessary to pump the usable fuel from the fuel tank.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-14.)
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 11-1). Catch any fuel that drips out.

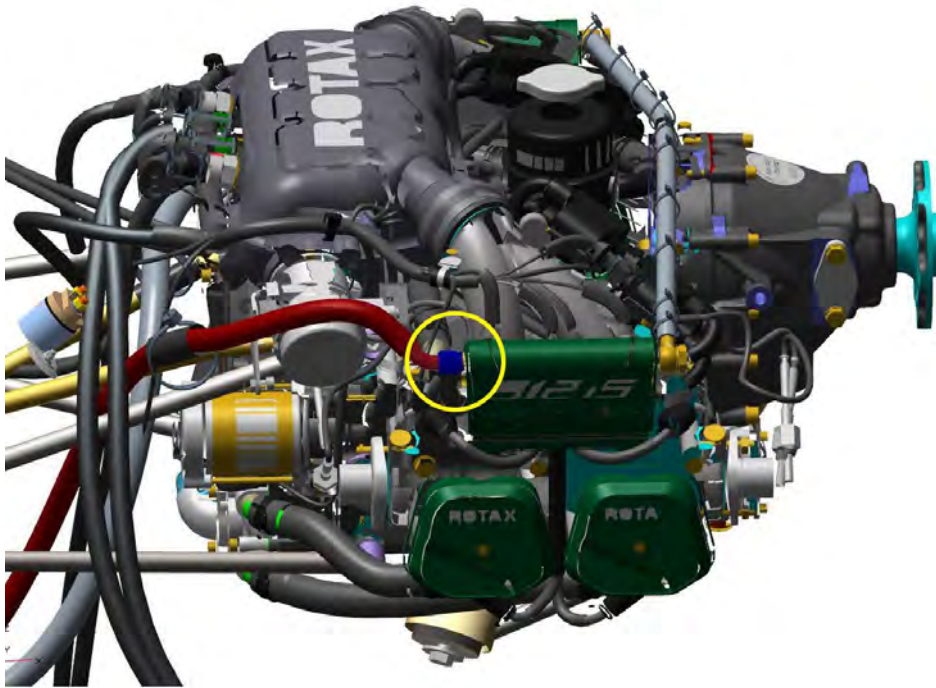


FIGURE 11-1
FUEL SUPPLY HOSE AT THE FUEL RAIL

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 cowl. (See “Install Engine Cowlings” on page 17-19.)

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 2-23

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

"Remove Fuel Tank Assembly" on page 11-12

11.3.3 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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:

"Annual and 100-Hour Inspection – Fuel Systems" on page 4-13

11.4 Fuel Tank Assembly

11.4.1 Maintenance Instructions

11.4.1.1 Remove Fuel Tank Assembly

Use the following procedure to remove the fuel tank.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-30.)
2. Remove baggage floor. (See “Baggage Floor Removal” on page 4-34.)
3. Remove baggage sidewall panels. (See “Baggage Sidewall Panel Removal” on page 4-36.)
4. Remove seat backs. (See “Remove Seat Back” on page 4-43.)
5. Pump all fuel from tank. (See “Pump Usable Fuel From Fuel Tank” on page 11-9.)
6. Disconnect the optical switch connector from D9038P. (See Figure 11-2.)

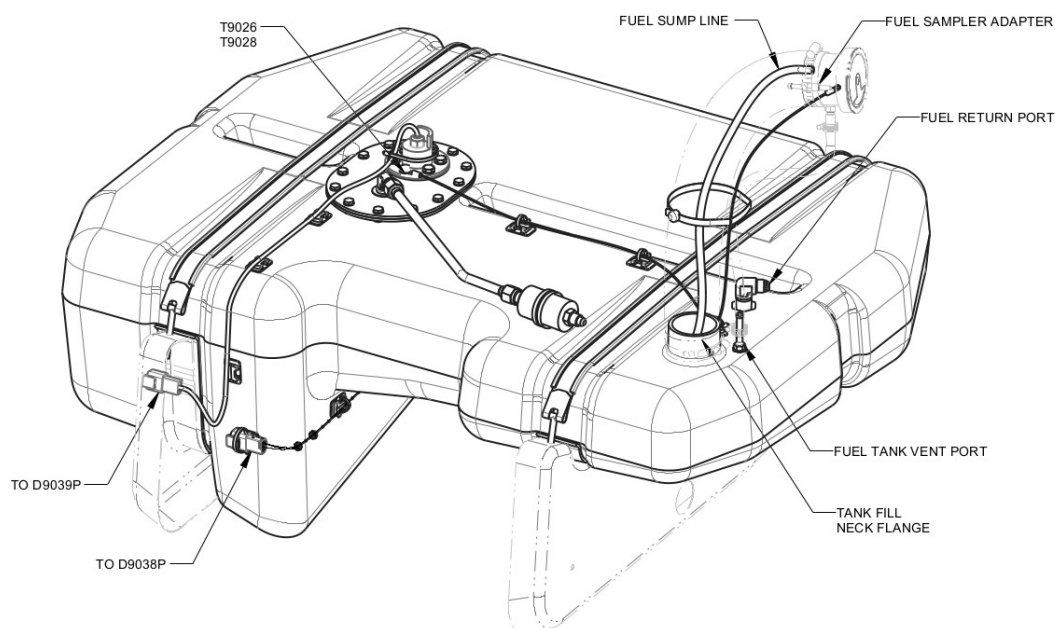


FIGURE 11-2
FUEL SUMP LINE AND ELECTRICAL CONNECTIONS (T9028 WIRE HARNESS NOT SHOWN)

7. Disconnect the fuel level sensor connector from D9039P. (See Figure 11-2.)
8. Use a 7/16 wrench to remove bolt, washer, and T9028 terminal on fuel level sensor plate. (See Figure 11-2.)
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 11-3.)

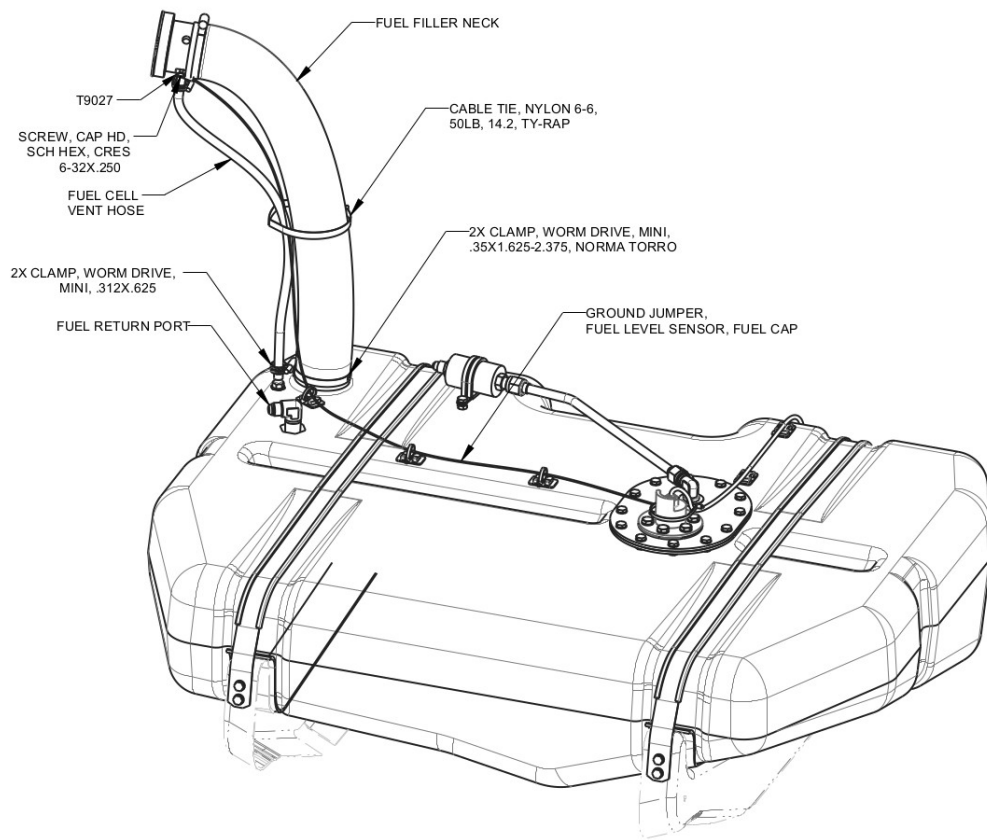


FIGURE 11-3
FUEL FILLER NECK INSTALL AND ELECTRICAL CONNECTIONS

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 11-3.)
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 11-3.)
16. Remove the fuel filler neck from fuel cap adapter and fuel tank opening flange to expose fuel sump hose. (See Figure 11-2.)
17. Disconnect fuel sump hose by prying off its clamp and pulling the hose off the barb. (See Figure 11-3.) Remove fuel filler hose completely.
18. Remove self-locking nut from both T-bolt shanks located at FWD end of fuel tank. (See Figure 11-4. Detail A.)

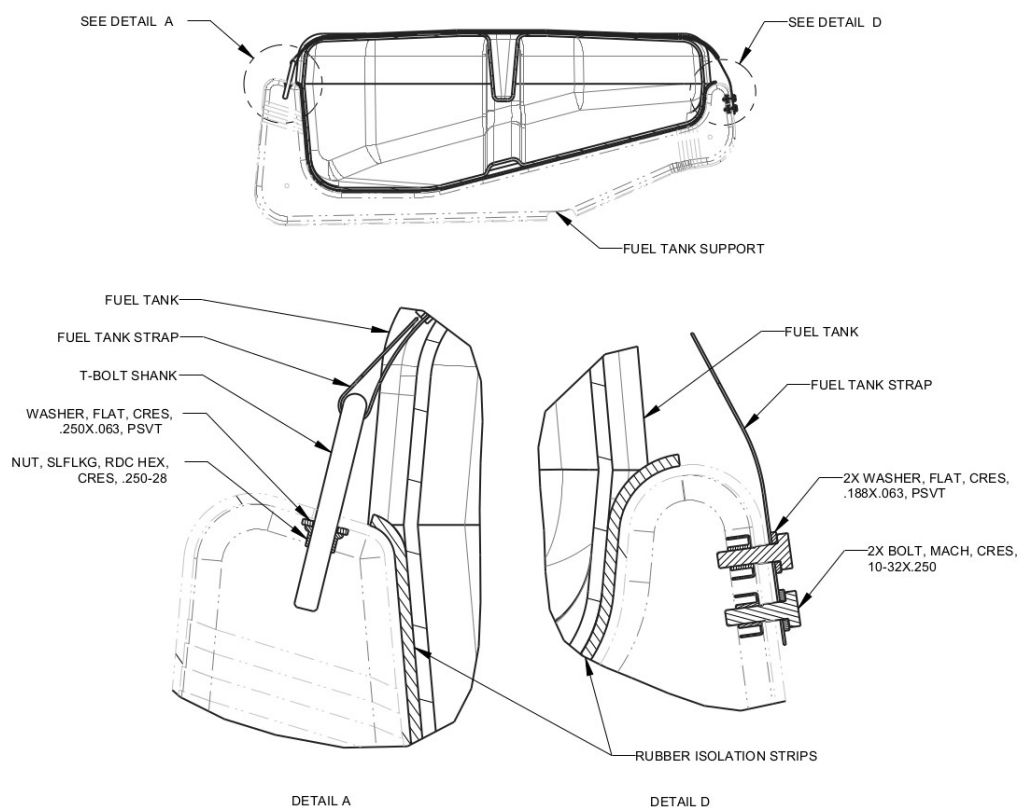


FIGURE 11-4
FUEL TANK STRAP INSTALLATION

19. Remove two bolts and washers securing the fuel tank straps to the aft end of fuel tank. (See Figure 11-4. 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:

"Rigging Pitch Controls" on page 10-47
"Baggage Floor Removal" on page 4-34
"Headliner Removal" on page 4-30
"Remove Seat Back" on page 4-43
"Pump Usable Fuel From Fuel Tank" on page 11-9

11.4.1.2 Install Fuel Tank Assembly

Use the following procedure to install the fuel tank.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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

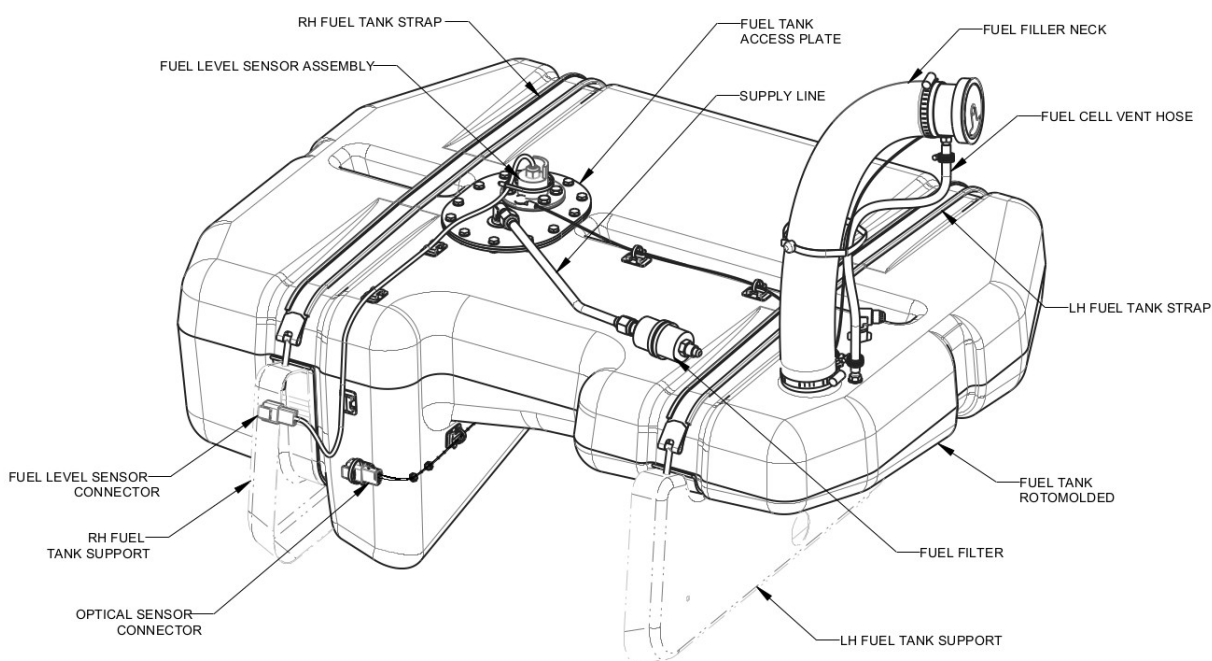


FIGURE 11-5
FUEL TANK INSTALLATION

TASK INSTRUCTIONS:

1. Confirm isolation strip is installed. If not, See “Install Isolation Strip on Fuel Tank Support” on page 1-31. If isolation strip is installed, proceed to Step 2.
2. Ensure isolation strips are properly aligned on fuel tank support structure. See Figure 11-6.

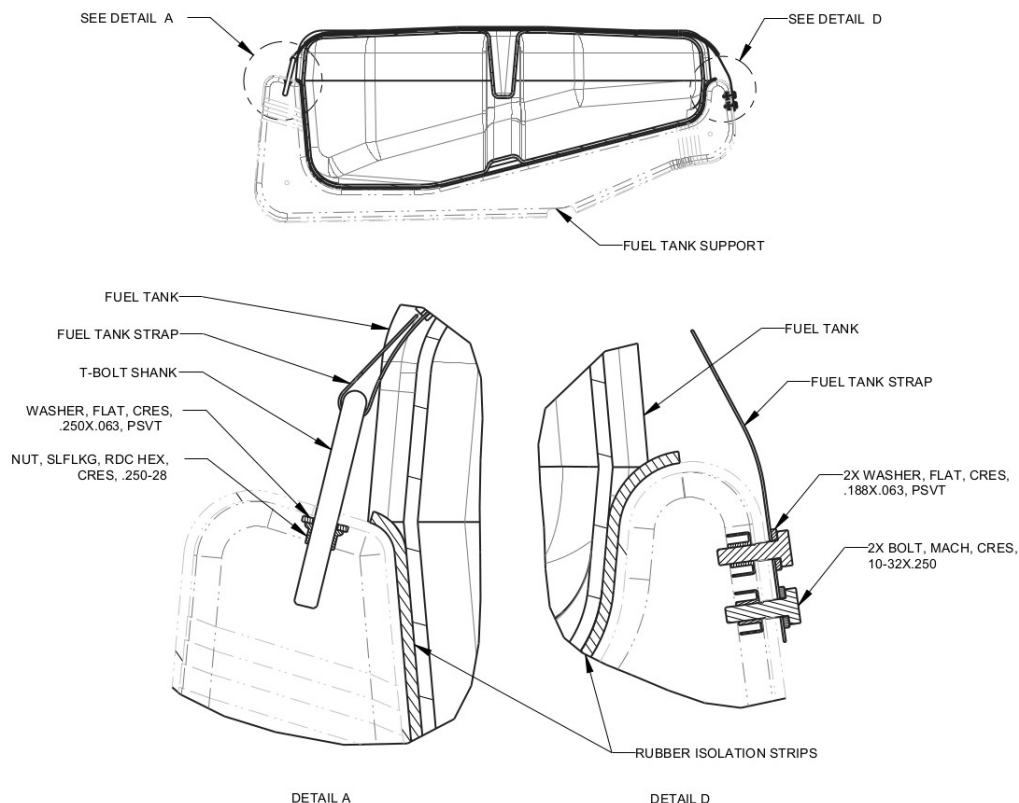


FIGURE 11-6
FUEL TANK STRAP INSTALLATION

3. Install the fuel tank subassembly into the aircraft fuel tank support structure.
4. Attach the fuel tank strap subassemblies to AFT end of fuel tank support brackets using LUBRICANT and hardware. See Figure 11-6. (Detail D.) Torque bolts to 26 in-lb.
5. Loosely secure the forward ends of the fuel tank straps to the fuel tank brackets using LUBRICANT and hardware. See Figure 11-6. (Detail A.)
6. 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-lbs.
7. 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 11-7.

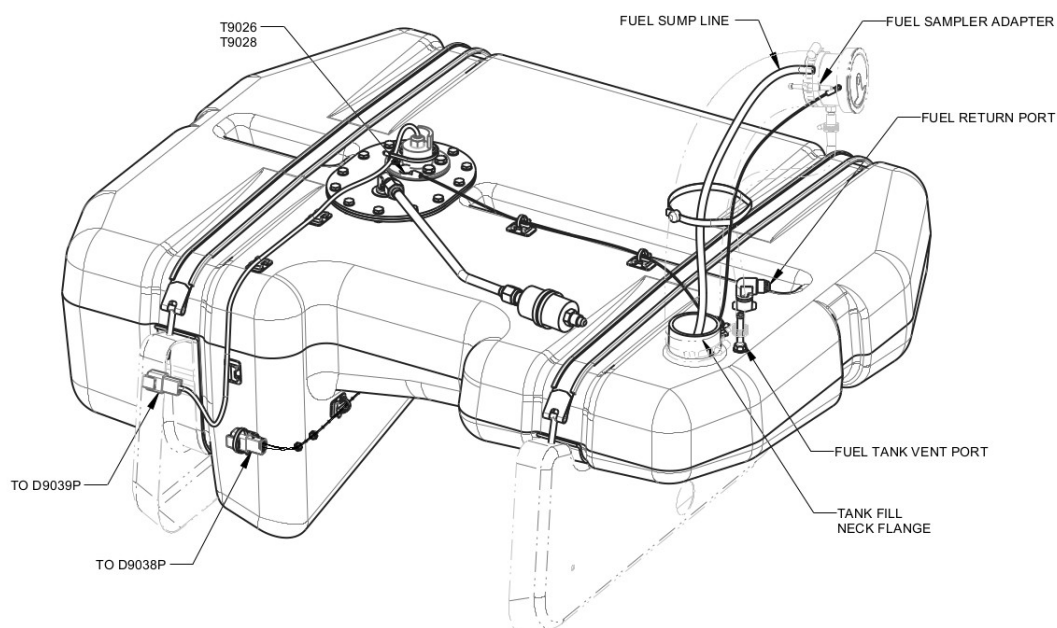


FIGURE 11-7
FUEL SUMP LINE AND ELECTRICAL CONNECTIONS

8. 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 11-8.

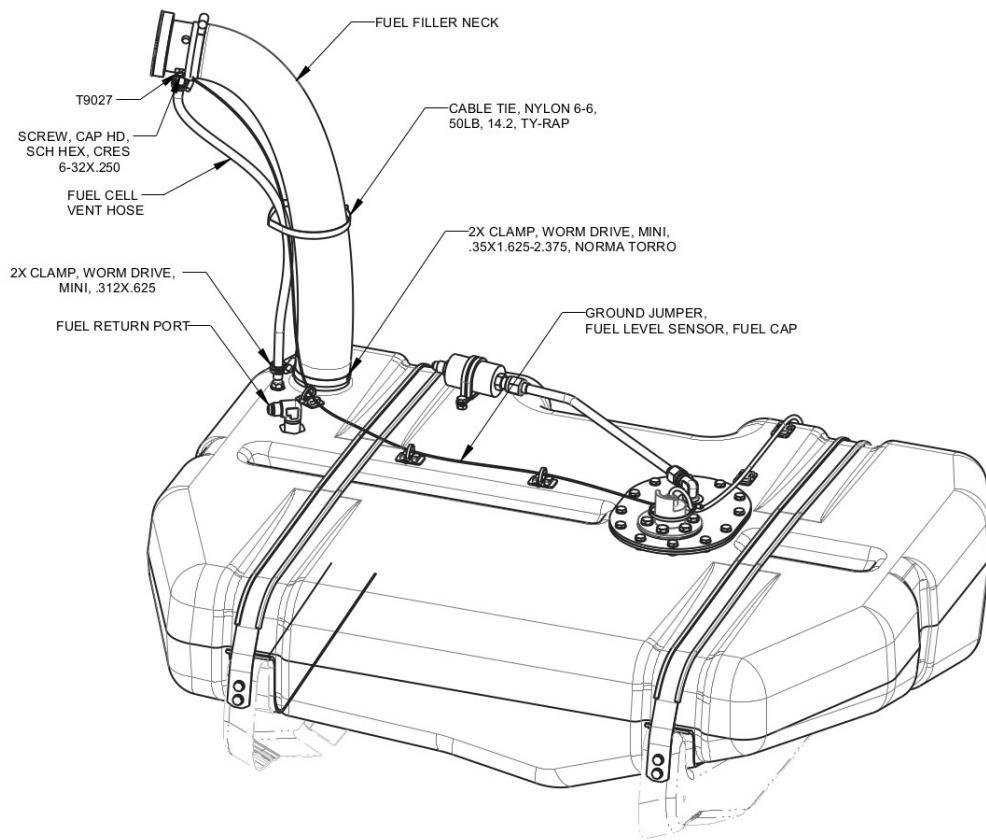


FIGURE 11-8
FUEL FILLER NECK INSTALL AND ELECTRICAL CONNECTIONS

9. Secure both ends of the fuel filler neck using worm drive clamps. See Figure 11-8. 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.
10. Torque both clamps to 10-13 in-lb.
11. Connect fuel cell vent hose to hose barb in fuel cap adapter using the mini worm drive clamp. See Figure 11-8. Torque to 10-13 in-lb.
12. 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 11-8.
13. Connect fuel line from fuel pump to coarse fuel filter. Torque fittings to 110-130 in-lb with a 11/16 wrench.
14. 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 11-8.
15. Secure fuel filler neck, ground wire, and fuel vent hose with CABLE TIE, NYLON 6-6, 50 LB. See Figure 11-8.

CAUTION: Do not over tension cable tie and create a blockage or kink in fuel vent hose.

16. Connect the optical switch connector to D9038P from fuselage wire harness. See Figure 11-7.
17. Connect the fuel level sensor connector to D9038P from fuselage wire harness. See Figure 11-7.

18. 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 11-7.
 - b. Apply LOCTITE 243 to bolt threads and install T9028 ring terminal beneath the washer.
 - c. Torque bolt to 40-45 in-lb.
19. Secure T9028 ring terminal wire harness and fuel level sensor wire harness to fuel tank with three CABLE-TIE, NYLON 6-6, 30LB.
20. Fill the tank with fuel and check for leaks.
21. Run the engine and check for line leaks.
22. Install the seat backs. (See "Install Seat Back" on page 4-44.)
23. Install the baggage sidewall panels. (See "Baggage Sidewall Panel Installation" on page 4-38.)
24. Install baggage floor. (See "Baggage Floor Installation" on page 4-35.)
25. Install headliner. (See "Headliner Installation" on page 4-31.)

VERIFICATION METHOD:

The procedure is complete when the fuel tank is installed with no leak.

RELATED INFORMATION:

- "Rigging Pitch Controls" on page 10-47
- "Headliner Installation" on page 4-31
- "Baggage Floor Installation" on page 4-35
- "Install Seat Back" on page 4-44

11.5 Fuel Tank

11.5.1 Maintenance Instructions

11.5.1.1 Remove Fuel Tank

Use this procedure to remove Fuel Tank Components.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA10399 (TANK, FUEL, ROTOMOLDED)

CB9120V5 (MOUNT, CABLE TIE ANCHOR)

AN822-6-6D (FITTING, ELBOW, 3/8 FLARED TUBE & 3/8 NPT)

AN840-4D (COUPLING, BARB-PIPE THREAD, .250X.125NPT)

Aircraft System and Number

07 – Fuel System

Consumables

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

MA830 (ADHESIVE, METHACRYLATE, 2-PART, PLEXUS MA830)

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

TASK INSTRUCTIONS:

1. Remove the Fuel Tank Assembly. (See “Remove Fuel Tank Assembly” on page 11-12.)
2. Remove the Coarse Fuel Filter. (See “Clean Coarse Fuel Filter” on page 11-34.)

3. Remove the Fuel Level Sensor. (See "Remove Fuel Level Sensor" on page 14-207.)
 4. Remove the Low Fuel Level Sensor. (See "Remove Low Fuel Level Sensor" on page 14-217.)
-

VERIFICATION METHOD:

Install new Fuel Tank. (See "Install Fuel Tank" on page 11-23.)

11.5.1.2 Install Fuel Tank

Use this procedure to install Fuel Tank Components.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA010399 (TANK, FUEL, ROTOMOLDED)

CB9120V5 (MOUNT, CABLE TIE ANCHOR)

AN822-6-6D (FITTING, ELBOW, 3/8 FLARED TUBE & 3/8 NPT)

AN840-4D (COUPLING, BARB-PIPE THREAD, .250X.125NPT)

Aircraft System and Number

07 – Fuel System

Consumables

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

MA830 (ADHESIVE, METHACRYLATE, 2-PART, PLEXUS MA830)

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

TASK INSTRUCTIONS:

1. Inspect the new FUEL TANK for any damage. Remove all FOD before assembly.

2. Bond a CABLE TIE ANCHOR MOUNT inside the Fuel Tank as follows:
 - a. Mark the location of the CABLE TIE ANCHOR MOUNT as shown in Figure 11-9 in a similar orientation as the ITL tool.
 - b. Prep bonding surface by abrading with 80 grit sandpaper and cleaning with ISOPROPYL ALCOHOL.
 - c. Remove all FOD inside the Fuel Tank after prepping surface for bonding.
 - d. Bond CABLE TIE ANCHOR MOUNT with PLEXUS MA830
 - e. Set time is 30 minutes. Do not remove the plastic bonding fixture yet.
3. Bond the next 9 CABLE TIE ANCHOR MOUNTs as on the Fuel Tank as follows:
 - a. Mark the location and orientation of the CABLE TIE ANCHOR MOUNTs as shown in Figure 11-10-Figure 11-14.
 - b. Prep bonding surface by abrading with 80 grit sandpaper and cleaning with ISOPROPYL ALCOHOL.
 - c. Bond CABLE TIE ANCHOR MOUNTs with PLEXUS MA830.
 - d. Set time is 30 minutes. Remove the plastic bonding fixture after a minimum of 30 minutes has elapsed.

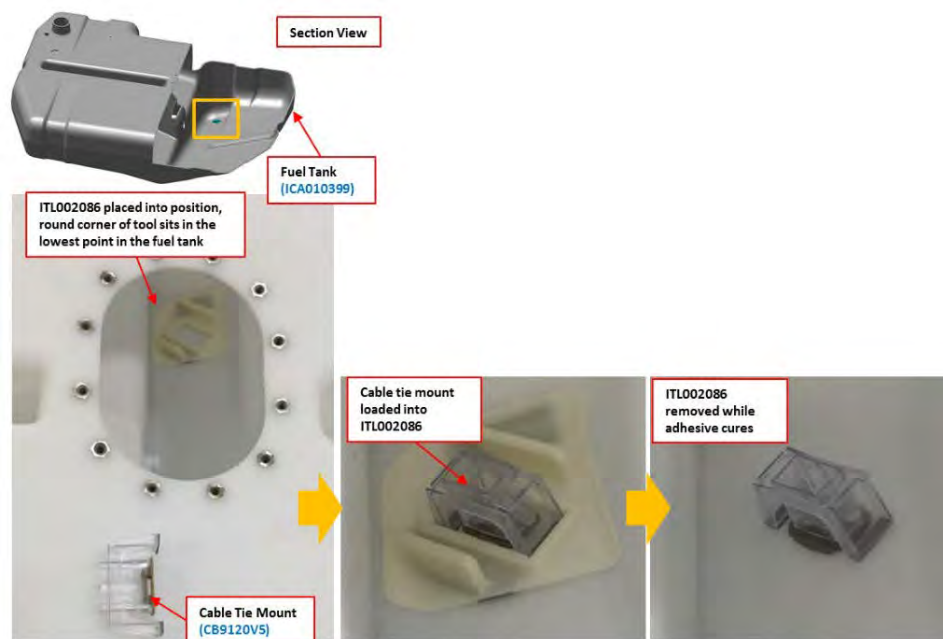


FIGURE 11-9
CABLE TIE ANCHOR MOUNT LOCATION INSIDE FUEL TANK

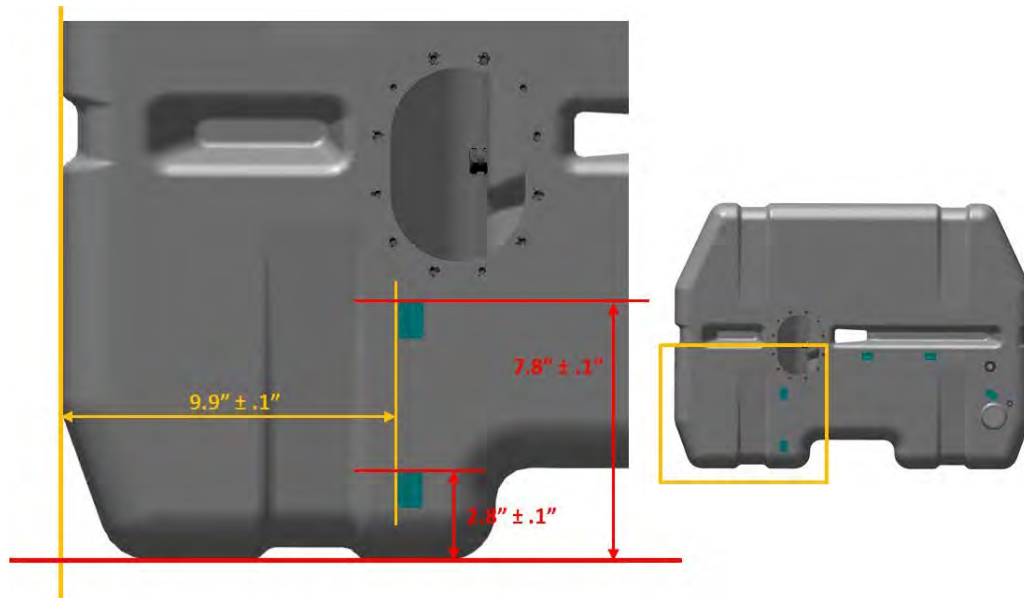


FIGURE 11-10
CABLE TIE ANCHOR MOUNT EXTERIOR LOCATIONS 1 & 2

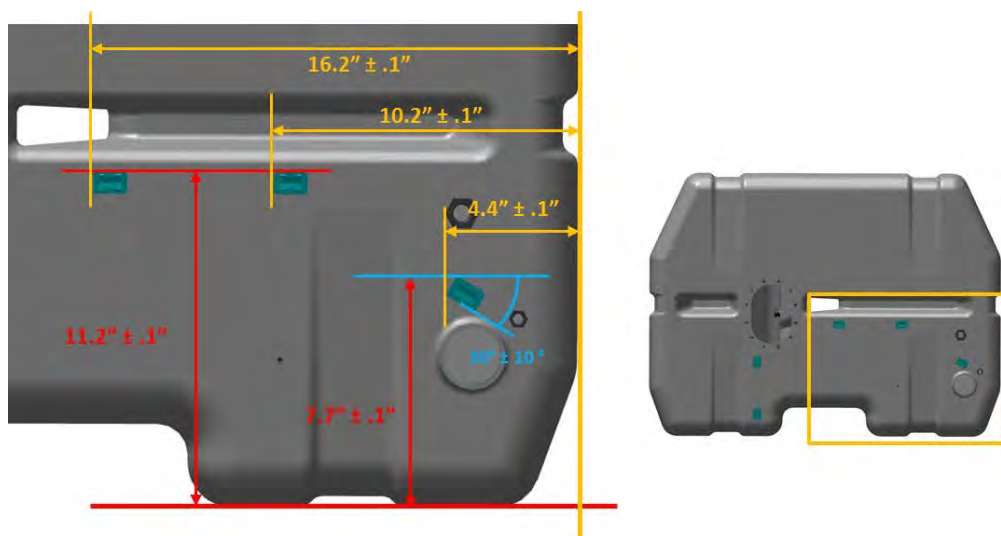


FIGURE 11-11
CABLE TIE ANCHOR MOUNT EXTERIOR LOCATIONS 3-5

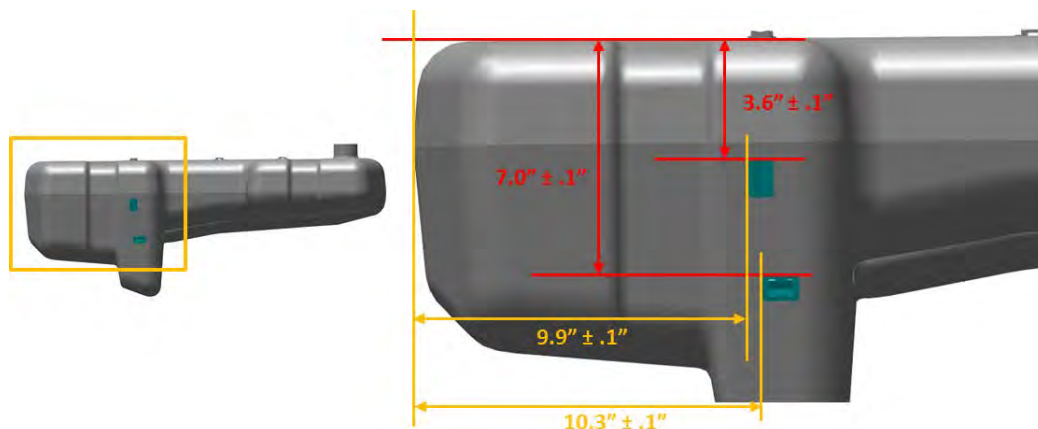


FIGURE 11-12
CABLE TIE ANCHOR MOUNT EXTERIOR LOCATIONS 6&7

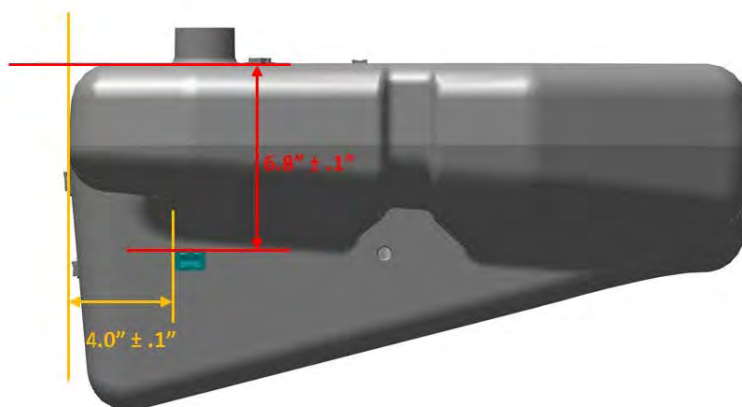


FIGURE 11-13
CABLE TIE ANCHOR MOUNT EXTERIOR LOCATION 8.

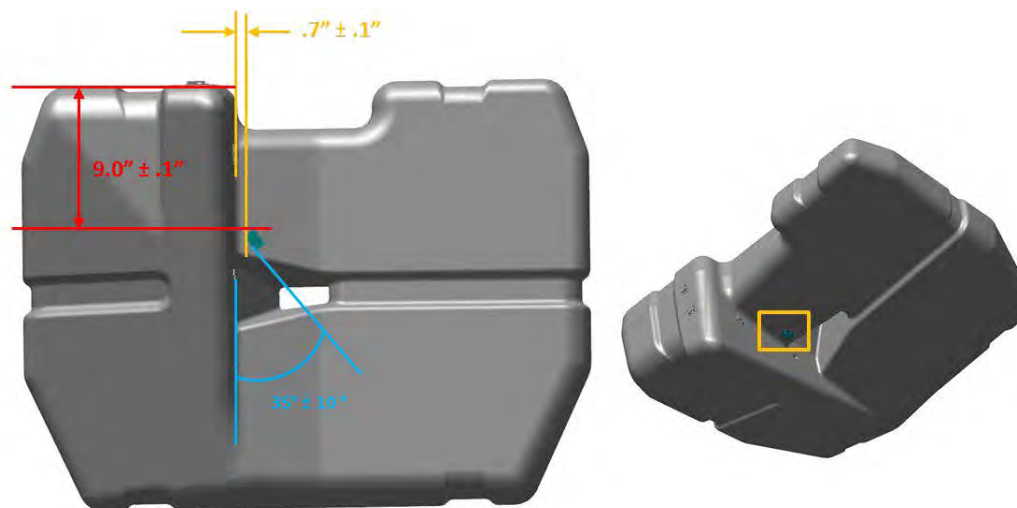


FIGURE 11-14
CABLE TIE ANCHOR MOUNT EXTERIOR LOCATION 9.

4. Proof load test the Cable Tie Anchor Mount installed on the interior of the Fuel Tank after at least 30 minutes has elapsed. See Figure 11-15.
 - a. Remove the plastic bonding fixture.
 - b. Secure metal wire around Cable Tie Anchor Mount and end of force gauge.
 - c. Slowly, pull upwards on force gauge as perpendicular to bonded surface as possible until force of 10 ± 2.5 lbs. is applied.
 - d. If Cable Tie Anchor Mount bond fails (disbonds), disassemble and re-work the bond as required from Step 3. Re-check proof load test after cure times.
 - e. If proof load test passes, disconnect wire from Cable Tie Anchor Mount and remove FOD from inside the Fuel Tank.

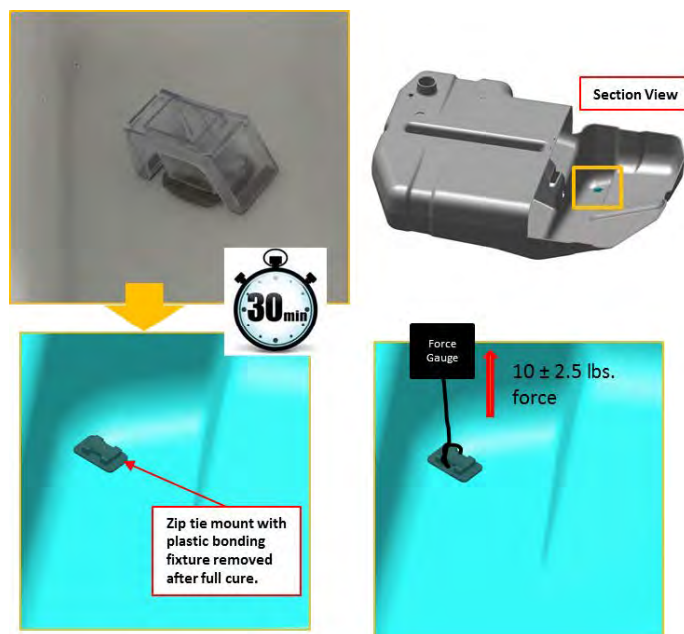


FIGURE 11-15
PROOF LOAD TEST

5. Install the 3/8 FLARED TUBE ELBOW FITTING into the Fuel Tank as shown in Figure 11-16 and as follows:
 - a. Apply THREADLOCKER as a 360° bead to the leading threads of the Elbow Fitting.
 - b. Install Elbow Fitting into fuel tank. Wrench tighten a minimum of 1/2 turns from finger tight, then continue tightening to orient fitting as shown, adding no more than 1 additional turn.

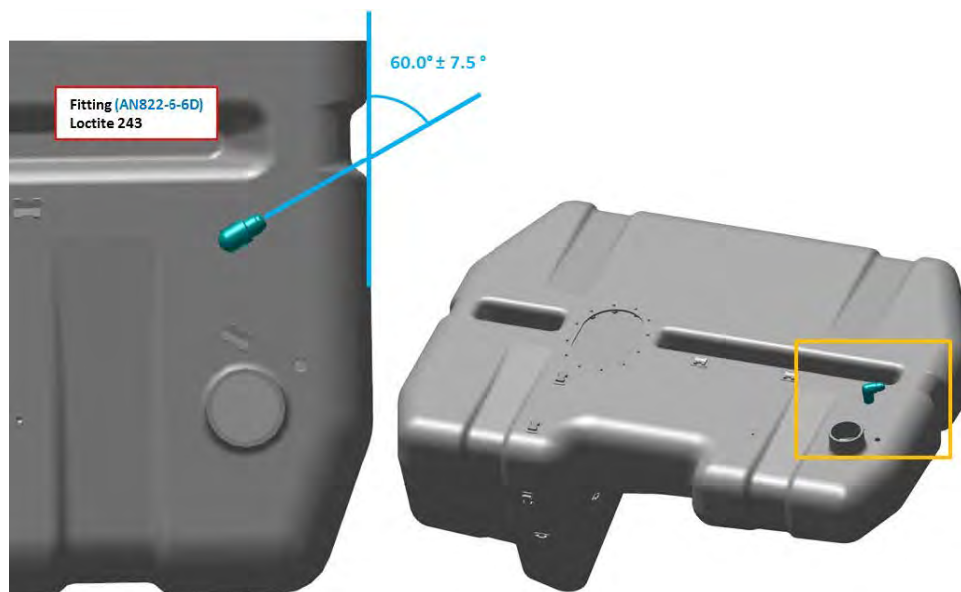


FIGURE 11-16
3/8 FLARED TUBE ELBOW FITTING INSTALLATION

CAUTION: Do not exceed 200 in-lbs while torqueing and do not loosen to achieve alignment.

6. Apply THREADLOCKER as a 360° bead to the leading threads of BARB-PIPE THREAD COUPLING and install into fuel tank as shown in Figure 11-17. Wrench tighten 2-3 turns past finger light.

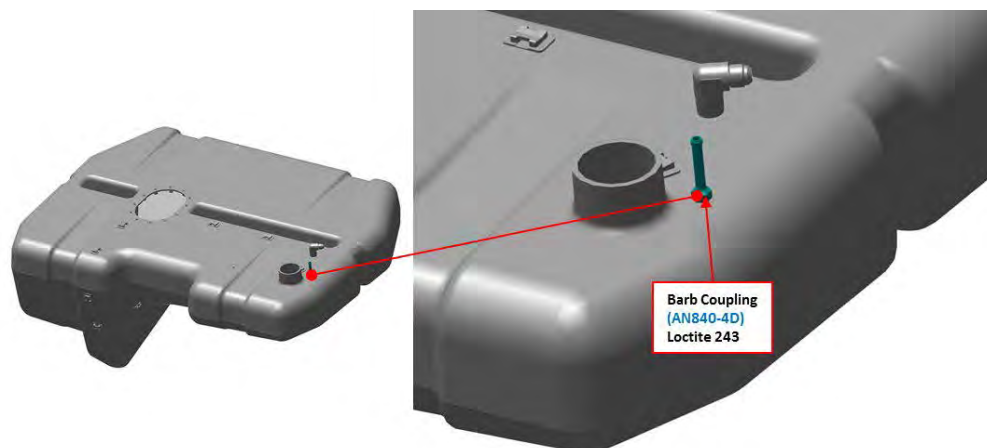


FIGURE 11-17
BARB-PIPE THREAD COUPLING INSTALLATION

7. Install the Low Fuel Level Sensor. (See "Install Low Fuel Level Sensor" on page 14-218.)
8. Install the Fuel Level Sensor. (See "Install Fuel Level Sensor" on page 14-212.)
9. Install the Coarse Fuel Filter. (See "Clean Coarse Fuel Filter" on page 11-34.)
10. Install the Fuel Tank Assembly into the aircraft. (See "Install Fuel Tank Assembly" on page 11-16.)

VERIFICATION METHOD:

Complete the Engine Test Run and check for leaks. (See "Engine Test Run" on page 17-7.)

11.6 Fuel Pump

11.6.1 Maintenance Instructions

11.6.1.1 Remove Fuel Pump

Use this procedure to remove the Fuel Pump.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

07 – Fuel System

Consumables

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

TASK INSTRUCTIONS:

1. Remove the Baggage Floor. (See “Baggage Floor Removal” on page 4-34.)
2. Remove the LHS Baggage Sidewall Panel. (See “Baggage Sidewall Panel Removal” on page 4-36.)
3. Remove the Fuel Filler Cover Panel.
4. Remove LHS Seat Back. (See “Remove Seat Back” on page 4-43.)
5. Ensure the Fuel Shutoff Valve is closed.
6. Disconnect connector D9100P from Auxiliary Fuel Pump.

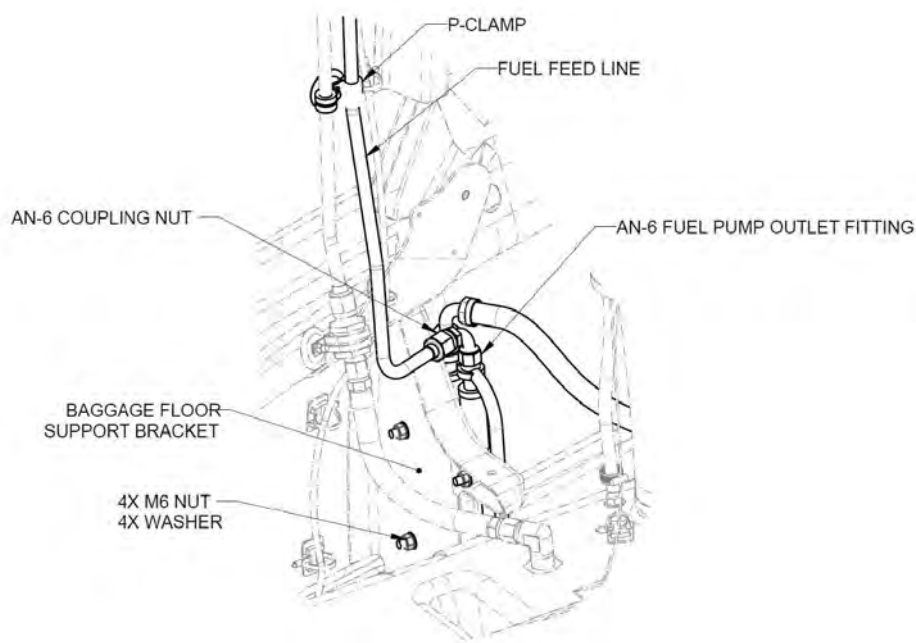


FIGURE 11-18
FUEL PUMP LOOKING AFT, RHS

7. Disconnect connector D9087P from Main Fuel Pump.
8. Loosen the AN-6 Coupling Nut from the Fuel Feed Line at the top of the elbow located at the Fuel Pump Outlet. Use a rag to catch any fuel. Separate fuel line and elbow.
NOTE: If necessary, loosen the P-clamp to separate the fuel line.
9. Loosen the AN-6 Fitting to remove the elbow from the Fuel Pump Outlet. Cap and plug open lines throughout.
10. Loosen the AN-6 Fitting to remove the fuel line from Fuel Pump Inlet.
11. Remove the four nuts and washers securing the Fuel Pump to the Baggage Floor Support. Save hardware for re-installation.
NOTE: New Fuel Pump is supplied with M6 nuts only which should not be used.
12. Remove the Fuel Pump from the aircraft.

VERIFICATION METHOD:

Install the new Fuel Pump. (See "Install Fuel Pump" on page 11-32.)

11.6.1.2 Install Fuel Pump

Use this procedure to install the Fuel Pump.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

NAS149C0432R (WASHER, FLAT, CRES, .250X.032, PSVT)

ME000655 (FUEL PUMP, ROTAX, ALTERED)

Aircraft System and Number

07 – Fuel System

Consumables

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

TASK INSTRUCTIONS:

1. Install the Fuel Pump onto Baggage Floor Support Bracket. (See Figure 11-18.)
2. Apply the THREADLOCKER to Fuel Pump studs and install 4x WASHER and 4x M6 nuts previously removed. (See Figure 11-19.) Torque to 30-35 in-lbs.

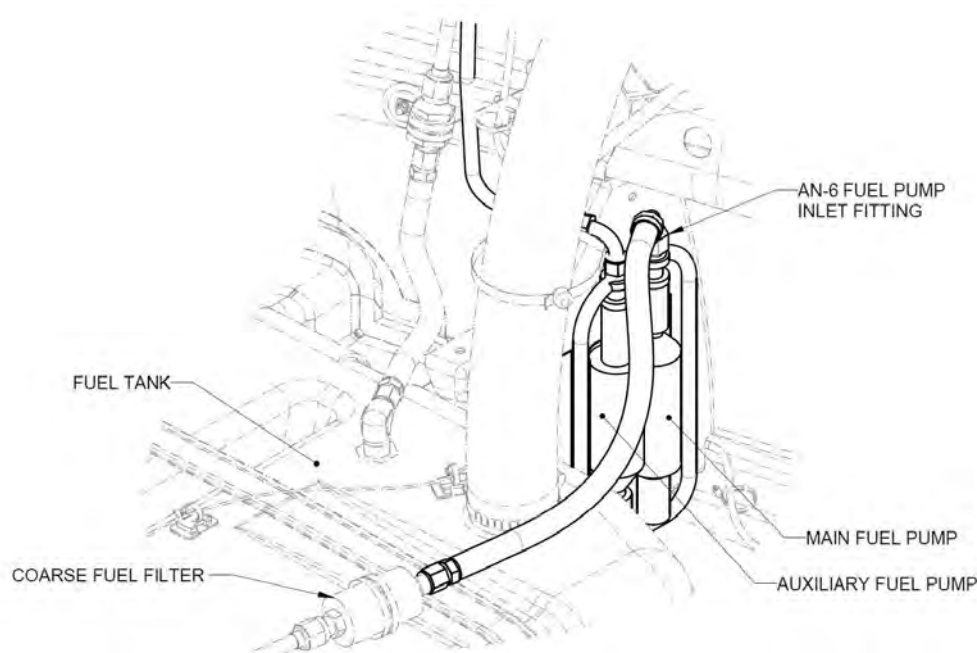


FIGURE 11-19
FUEL PUMP LOOKING FWD, LHS

NOTE: *New Fuel Pump is supplied with M6 nuts only and should not be used.*

3. Ensure threads on the fuel lines are clean. Remove any plugs.
4. Connect the AN-6 Fuel Pump Inlet Fitting onto the Fuel Pump Inlet. (See Figure 11-19.) Torque fitting to 110-130 in-lbs.
5. Connect the AN-6 Fuel Pump Outlet Fitting onto the Fuel Pump Outlet. Connect fitting to Feed Line. Torque both ends of fitting to 110-130 in-lbs.
6. Connect D9087P connector to Main Fuel Pump.
7. Connect D9100P connector to Auxiliary Fuel Pump Connector.
8. Turn off Fuel Shutoff Valve and Aircraft Master Switch. Turn ignition key to position-A to verify that the Main Fuel Pump is running. Turn ignition key to position-B to verify that the Auxiliary Pump is running.
9. Check for leaks.
10. Install the Seat Backs. (See "Install Seat Back" on page 4-44.)
11. Install the Fuel Filler Cover Panel.
12. Install the Baggage Sidewall Panels. (See "Baggage Sidewall Panel Installation" on page 4-38.)
13. Install the Baggage Floor. (See "Baggage Floor Installation" on page 4-35.)

VERIFICATION METHOD:

The procedure is complete when the Fuel Pump is installed and working with no leaks.

11.7 Coarse Fuel Filter

11.7.1 Coarse Fuel Filter Description

The coarse fuel filter is one of two filters in the fuel supply line. 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 11-34.)

11.7.2 Coarse Fuel Filter Diagram/Schematic

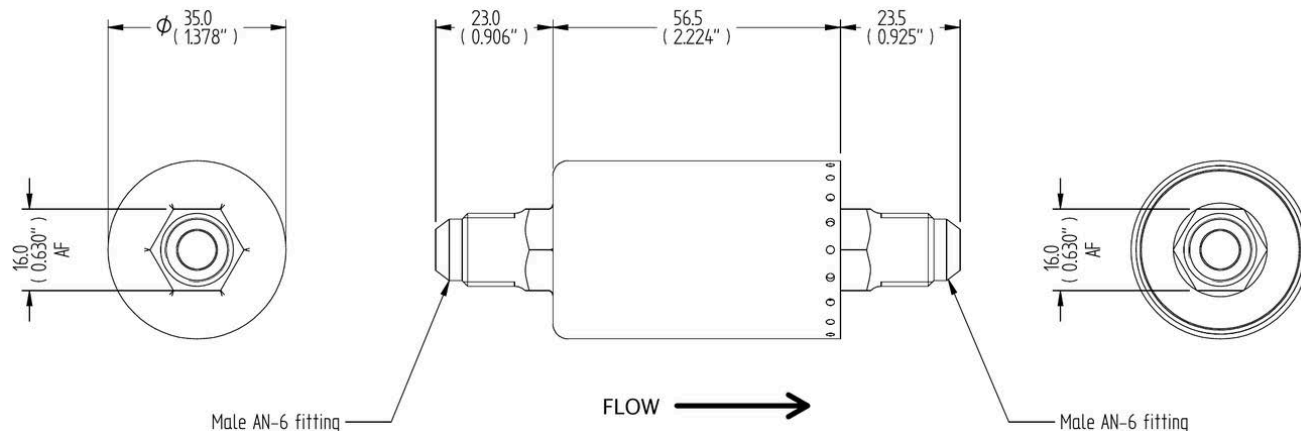


FIGURE 11-20
COARSE FUEL FILTER SCHEMATIC

11.7.3 Maintenance Instructions

11.7.3.1 Clean Coarse Fuel Filter

Use the following procedure to clean the coarse fuel filter on the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

FX375-M (FILTER, FUEL, CLEANABLE 62MICRON)

Aircraft System and Number

07 – Fuel System

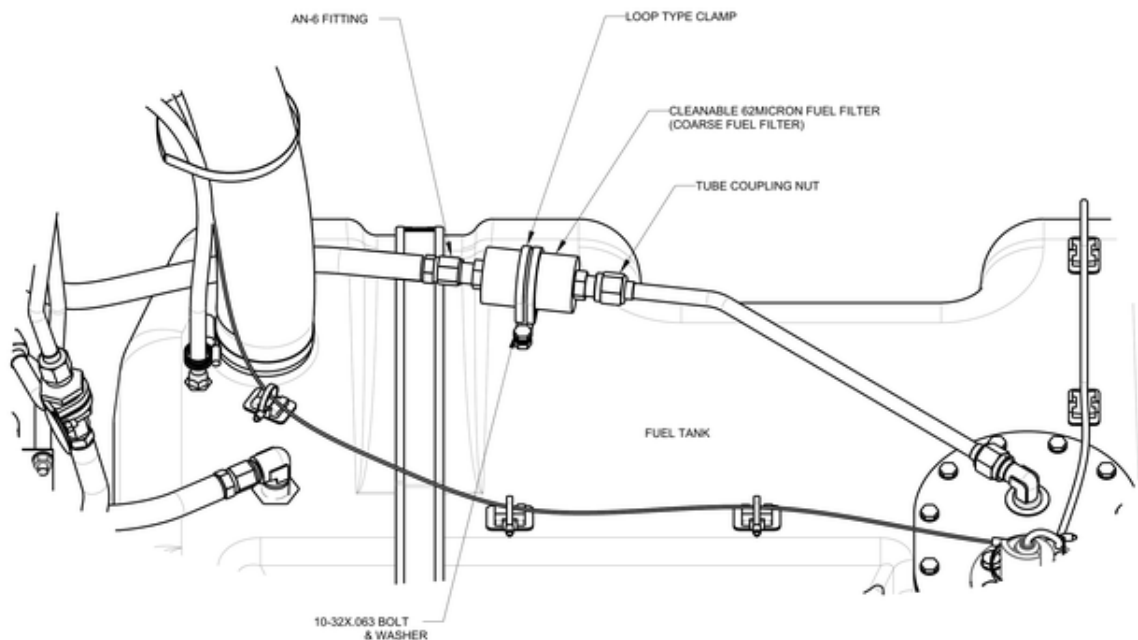
Consumables

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 4-34.)
NOTE: Seat backs may be removed for easier access. (See “Remove Seat Back” on page 4-43.)
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 with a 16mm wrench. Rotate the AN-6 connection fitting until completely free. (See Figure 11-21.)

**FIGURE 11-21**

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 3/8 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 62 MICRON 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 4-35.)
16. Install seat backs if previously removed. (See "Install Seat Back" on page 4-44.)

VERIFICATION METHOD:

Complete engine test run and check for leaks. (See "Engine Test Run" on page 17-7.)

11.8 Fine Fuel Filter

RELATED INFORMATION:

"Headliner Removal" on page 4-30

"Headliner Installation" on page 4-31

11.8.1 Maintenance Instructions

11.8.1.1 Remove Fine Fuel Filter

Use the following instruction to remove the fine fuel filter.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-30.)
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 11-22. Catch the fuel as it leaks from the joint.

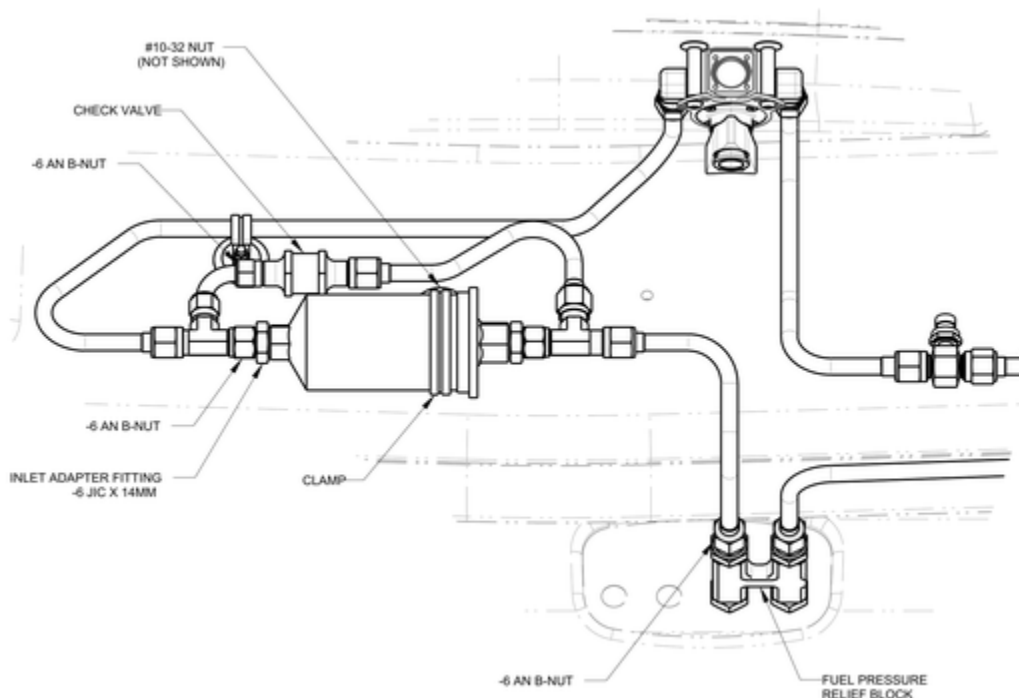


FIGURE 11-22
FINE FUEL FILTER ASSEMBLY

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 11-22.
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 11-23.

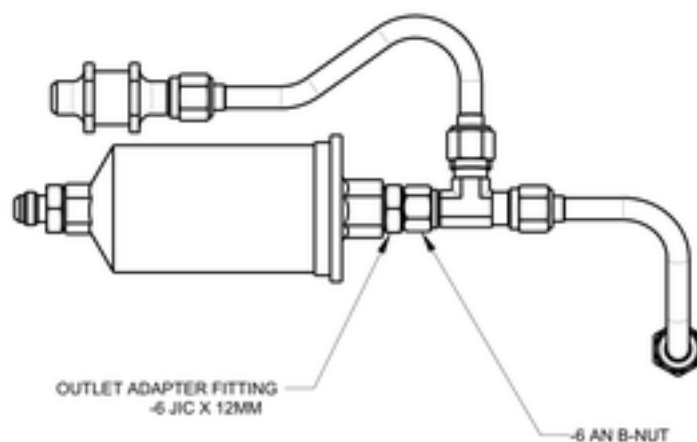


FIGURE 11-23
FINE FUEL FILTER AND ATTACHED PLUMBING

11. Use two 3/4 wrenches to remove the inlet adapter fitting from the old filter. Discard the 14mm washer. See Figure 11-24.

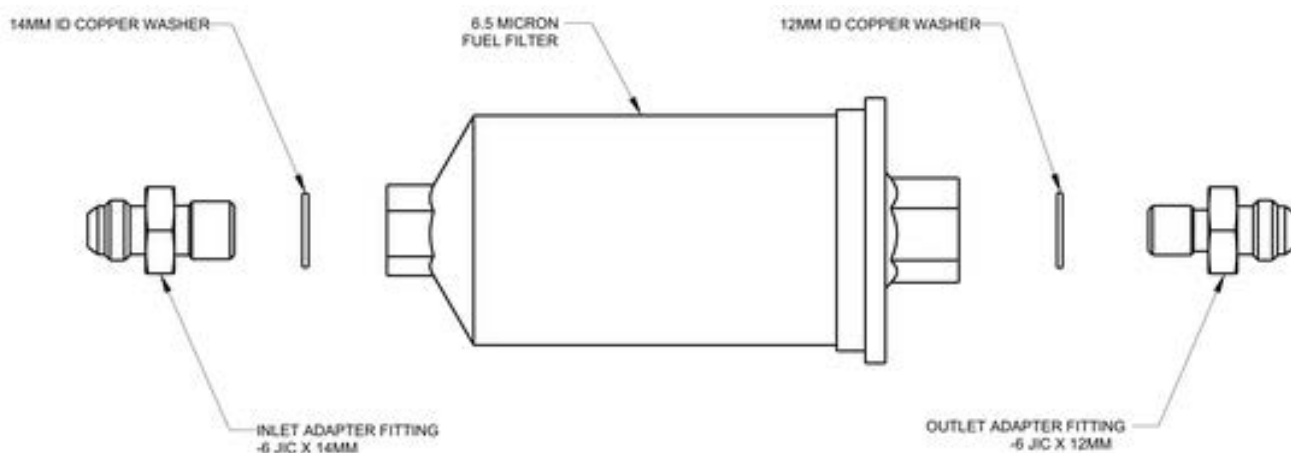


FIGURE 11-24
FINE FUEL FILTER EXPLODED VIEW LOOKING AFT

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 11-40

"Headliner Removal" on page 4-30

11.8.1.2 Install Fine Fuel Filter

Use the following instruction to install the fine fuel filter.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 11-24.
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 11-23.
4. Locate the fuel filter assembly in place on the aircraft and loosely thread on the -6 AN B-nuts. See Figure 11-22.
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 4-31.)

VERIFICATION METHOD:

Complete engine test run and check for leaks. (See "Engine Test Run" on page 17-7.)

RELATED INFORMATION:

"Remove Fine Fuel Filter" on page 11-37

"Headliner Installation" on page 4-31

"Engine Test Run" on page 17-7

11.9 Fuel Tank Vent Line

11.9.1 Maintenance Instructions

11.9.1.1 Clear Fuel Tank Vent Line

Use the following procedure to clear the fuel tank vent line.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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:

"Annual and 100-Hour Inspection – Fuel Systems" on page 4-13

11.10 Fuel Shutoff Valve

11.10.1 Maintenance Instructions

11.10.1.1 Remove Fuel Shutoff Valve

Use this procedure to remove the Fuel Shutoff Valve.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

07 – Fuel System

Consumables

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

TASK INSTRUCTIONS:

1. Remove Headliner and Overhead Console Bezel. (See “Headliner Removal” on page 4-30.)
2. Remove Overhead Console. (See “Overhead Console Component Replacement” on page 14-35.)
3. Have a rag or container available to contain any fuel that leaks from the fuel lines and Fuel Shutoff Valve.
4. Loosen the AN-6 B-nut at each end of the Fuel Shutoff Valve. (See Figure 11-25.)

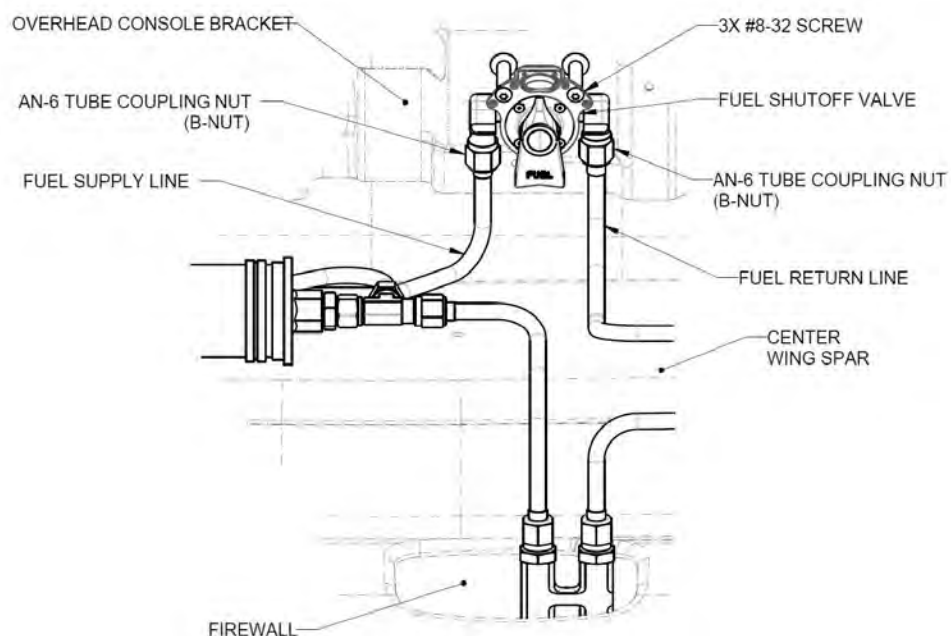


FIGURE 11-25
FUEL SHUTOFF VALVE LOCATION

5. Carefully remove the Fuel Supply Line and Fuel Return Line from the Fuel Shutoff Valve.
6. Remove the three #8-32 screws to remove the Fuel Shutoff Valve. Be careful not to lose the three washers that sit above the Fuel Shutoff Valve. (See Figure 11-26.)

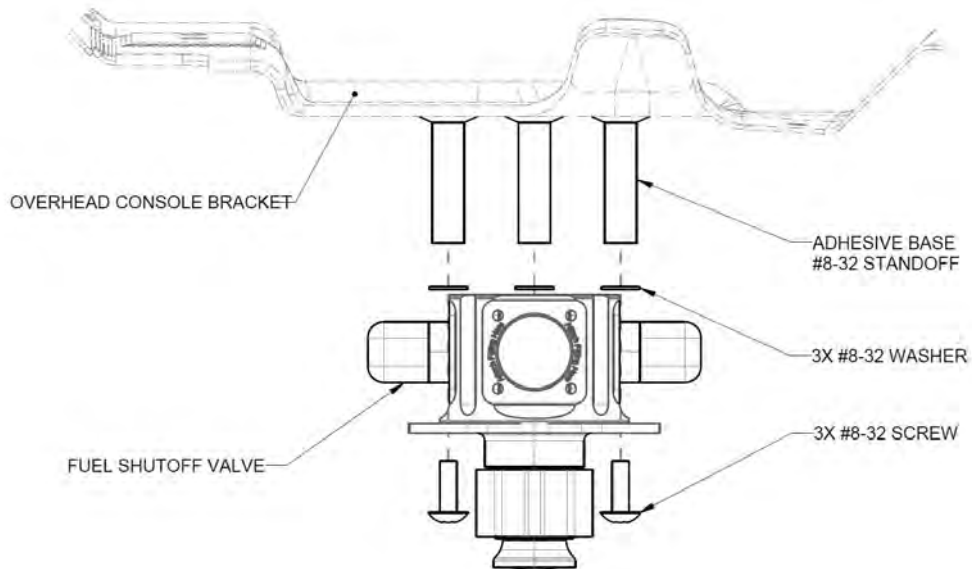


FIGURE 11-26
FUEL SHUTOFF VALVE HARDWARE

VERIFICATION METHOD:

Task is completed when fuel shutoff valve has been removed.

11.10.1.2 Install Fuel Shutoff Valve

Use this procedure to install the Fuel Shutoff Valve.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME000659 (FUEL SHUTOFF VALVE, SUBASSY)

Aircraft System and Number

07 – Fuel System

Consumables

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

TASK INSTRUCTIONS:

1. Install the new Fuel Shutoff Valve with applicable hardware. (See Figure 11-26.) Apply THREAD-LOCKER and torque screws to 13 in-lbs.
NOTE: The washers sit between the Fuel Shutoff Valve and the standoff.
 2. Position the Fuel Supply Line and Fuel Return Line onto the Fuel Shutoff Valve.
 3. Torque both AN-6 B-nuts to 110-130 in-lbs.
 4. Install Overhead Console. (See “Overhead Console Component Replacement” on page 14-35.)
 5. Turn on the Fuel Shutoff Valve, turn on master power, turn key to A position, and check for leaks.
 6. Install Headliner and Overhead Console Bezel. (See “Headliner Installation” on page 4-31.)
-

VERIFICATION METHOD:

Complete engine test run and check for leaks. (See “Engine Test Run” on page 17-7.)

11.11 Check Valves

11.11.1 Maintenance Instructions

11.11.1.1 Remove Lower Fuel Check Valve

Use this procedure to remove the Lower Fuel Check Valve.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

CK375-M (CHECK VALVE, AN6)

Aircraft System and Number

07 – Fuel System

Consumables

None

TASK INSTRUCTIONS:

1. Remove the Baggage Floor. (See “Baggage Floor Removal” on page 4-34.)
2. Remove the LHS Baggage Sidewall Panel. (See “Baggage Sidewall Panel Removal” on page 4-36.)
3. Remove the Fuel Filler Cover Panel.
4. Remove the LHS Seat Back. (See “Remove Seat Back” on page 4-43.)
5. Ensure the Fuel Shutoff Valve is closed.
6. Remove the #10-32 Self-Locking Nut from the P-Clamp. (See Figure 11-27.)

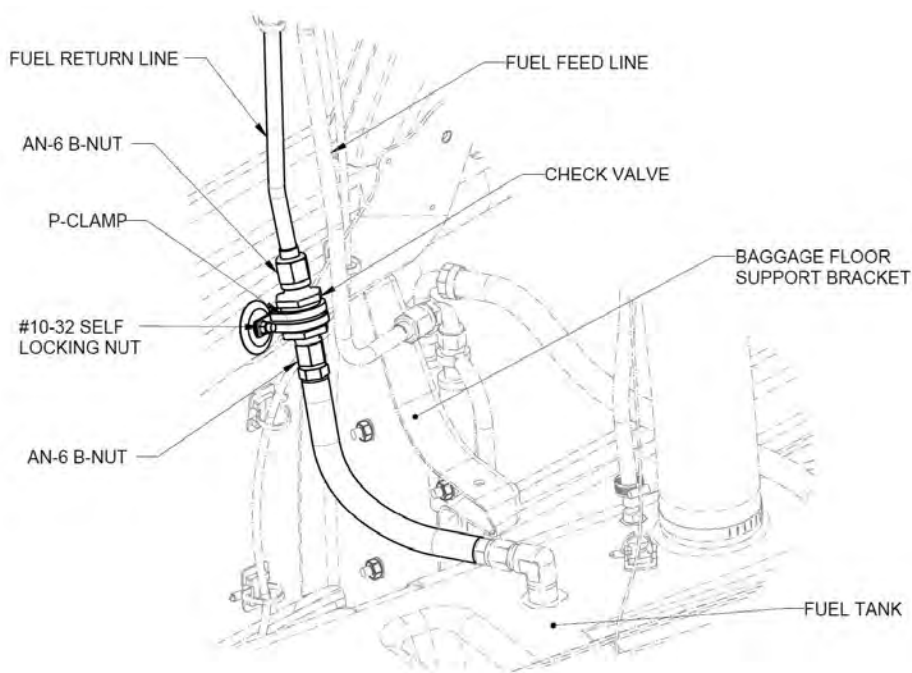


FIGURE 11-27
FUEL RETURN LINE ASSEMBLY LOOKING AFT, RHS

7. Remove the P-Clamp.
8. Loosen the AN-6 Nut on both ends of the Check Valve. Use a rag to catch any fuel. Remove the Check Valve.
9. Plug the open fuel lines in the aircraft.

NOTE: *Be careful not to introduce any foreign object debris when plugging the lines.*

10. Wipe away or clean any fuel which may have dripped inside the cabin.

VERIFICATION METHOD:

Install new Check Valve. (See "Install Lower Fuel Check Valve" on page 11-49.)

11.11.1.2 Install Lower Fuel Check Valve

Use this procedure to install the Lower Fuel Check Valve.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

CK375-M (CHECK VALVE, AN6)

Aircraft System and Number

07 – Fuel System

Consumables

None

TASK INSTRUCTIONS:

1. Ensure threads on the Fuel Return Line are clean. Remove any plugs
 2. Install the new Check Valve into the Fuel Return Line. Orient the Check Valve so that the flow direction arrow points down towards the Fuel Tank.
CAUTION: *Improper installation can result in damage to the fuel system.*
 3. Torque AN-6 B-nuts on both ends of the Check Valve to 110-130 in-lbs.
 4. Install the P-Clamp over the Check Valve.
 5. Secure the P-Clamp with a #10-32 Self-Locking Nut. (See Figure 11-27.) Torque to 20 in-lbs.
 6. Turn on the Fuel Shutoff Valve, turn on master power, turn key to A position, and check for leaks.
 7. Install the Seat Backs. (See “Install Seat Back” on page 4-44.)
 8. Install the Fuel Filler Cover.
 9. Install the Baggage Sidewall Panels. (See “Baggage Sidewall Panel Installation” on page 4-38.)
 10. Install Baggage Floor. (See “Baggage Floor Installation” on page 4-35.)
-

VERIFICATION METHOD:

Complete engine test run and check for leaks. (See “Engine Test Run” on page 17-7.)

11.11.1.3 Remove Upper Fuel Check Valve

Use this procedure to remove the Upper Fuel Check Valve.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

CK375-MM-14-BRP (CHECK VALVE, .8-1.2 BAR, AN6)

Aircraft System and Number

07 – Fuel System

Consumables

None

TASK INSTRUCTIONS:

1. Remove the Headliner. (See “Headliner Removal” on page 4-30.)
2. Ensure the Fuel Shutoff Valve is closed.
3. Have a rag or container available to contain any fuel that leaks from the fuel lines and filter.
4. Loosen the AN-6 B-nut at the top of both T Fittings. (See Figure 11-28.) Catch the fuel as it leaks from the joint.

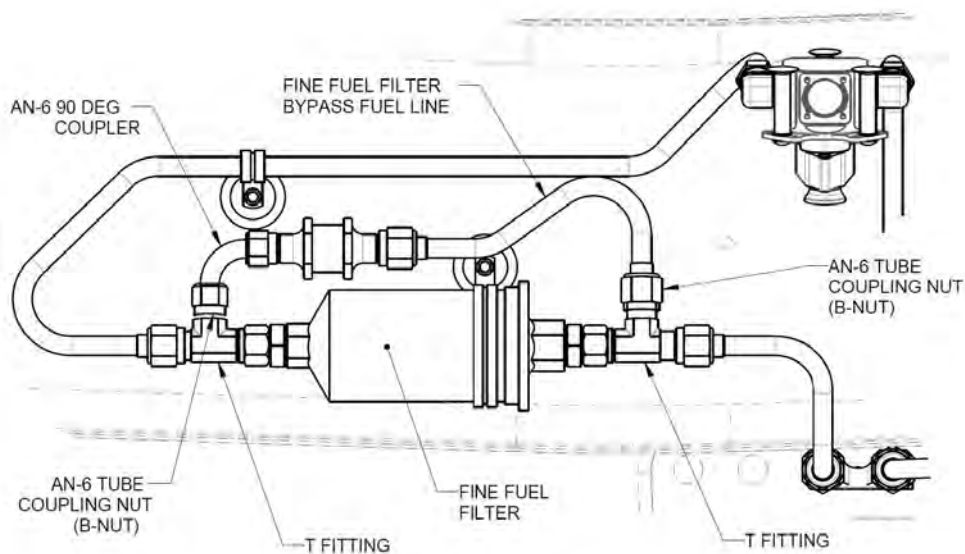


FIGURE 11-28
UPPER FUEL LINE INSTALLATION

5. Remove the Check Valve and attached tubing and place on a clean work surface.
6. Plug the open Fuel Return Line in the aircraft. Wipe away or clean any fuel which may have dripped inside the cabin.
7. Loosen the AN-6 B-nut on each end of the Check Valve. (See Figure 11-29.)

NOTE: The AN-6 90° Coupling is not symmetrical.

8. Remove the Check Valve.

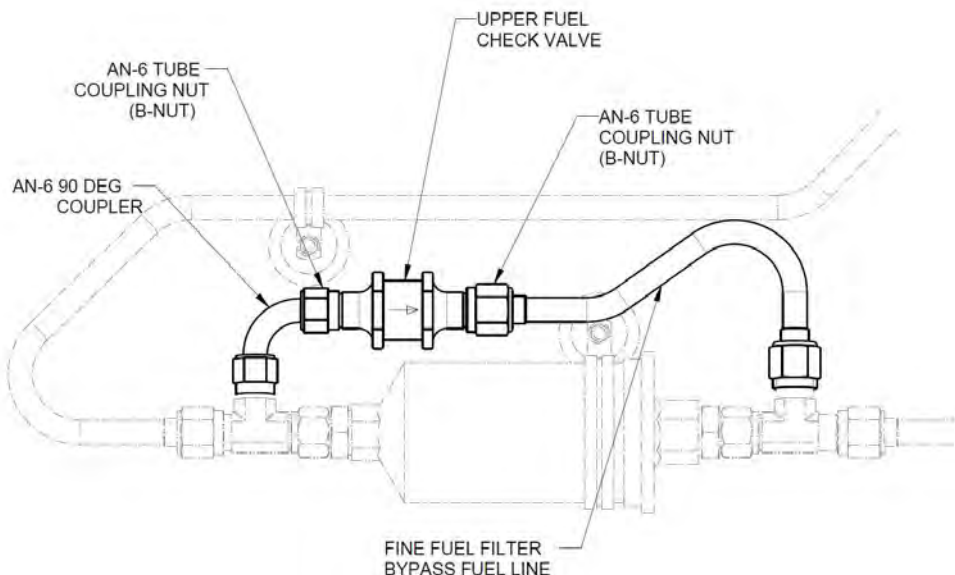


FIGURE 11-29
UPPER FUEL CHECK VALVE SUBASSEMBLY

VERIFICATION METHOD:

Install the new Upper Fuel Check Valve. (See “Install Upper Fuel Check Valve” on page 11-53.)

11.11.1.4 Install Upper Fuel Check Valve

Use this procedure to install the Upper Fuel Check Valve.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

CK375-MM-14-BRP (CHECK VALVE, .8-1.2 BAR, AN6)

Aircraft System and Number

07 – Fuel System

Consumables

None

TASK INSTRUCTIONS:

1. Ensure threads on the Fuel Return Line are clean. Remove any plugs.
 2. Install the Fine Fuel Filter Bypass Fuel Line onto the new Check Valve.
NOTE: See the fuel flow direction in Figure 11-29.
NOTE: Do not torque AN-6 B-nut.
 3. Install the AN-6 90° Coupler. (See Figure 11-29.)
NOTE: Do not torque AN-6 B-nut.
CAUTION: *The longer end of the coupler goes to the Check Valve. Fuel lines can be damaged if installed incorrectly.*
 4. Install the Upper Fuel Check Valve Subassembly into the aircraft. (See Figure 11-28.)
 5. Torque all four AN-6 B-nuts to 110-130 in-lbs.
 6. Turn on the Fuel Shutoff Valve, turn on master power, turn key to A position, and check for leaks.
 7. Install Headliner. (See “Headliner Installation” on page 4-31.)
-

VERIFICATION METHOD:

Complete Engine Test Run and check for leaks. (See “Engine Test Run” on page 17-7.)

Chapter 12

FUSELAGE AND VERTICAL TAIL

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12.1 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.

12.2 Fuselage and Vertical Tail General Maintenance

12.2.1 Canopy Removal

Use the following procedure to remove the canopy.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 12-1.

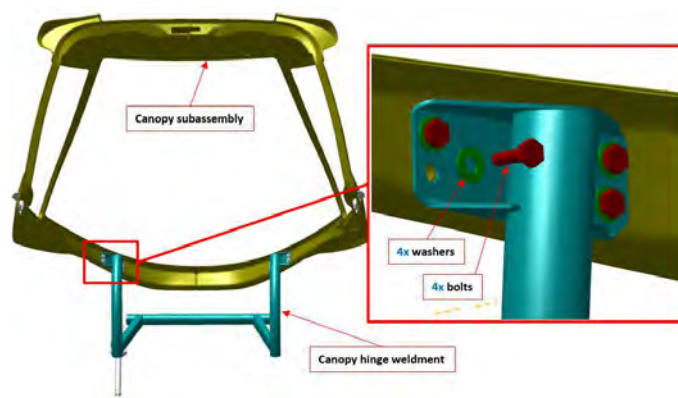


FIGURE 12-1
BLIND NUTPLATES

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 9-20
- "Right Instrument Panel Top Panel Removal" on page 9-17
- "Left Instrument Panel Top Panel Installation" on page 9-21
- "Right Instrument Panel Top Panel Installation" on page 9-19

12.2.2 Canopy Installation

Use the following procedure to install the canopy.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

8X AN4C6A (BOLTS)

8X 9150A029 (WASHERS)
ICA005811 (CANOPY HINGE)
ICA014455 (CANOPY FRAME ASSY)

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 9-20.)(See “Right Instrument Panel Top Panel Removal” on page 9-17.)
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® 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_f using the sequence shown in Figure 12-2.



FIGURE 12-2
TORQUE ATTACHMENT BOLTS

9. Install left and right instrument panel top panels. (See “Left Instrument Panel Top Panel Installation” on page 9-21.)(See “Right Instrument Panel Top Panel Installation” on page 9-19.)

VERIFICATION METHOD:

Open and close the canopy several times, ensuring correct operation and fitment.

RELATED INFORMATION:

- "Left Instrument Panel Top Panel Removal" on page 9-20
- "Right Instrument Panel Top Panel Removal" on page 9-17
- "Left Instrument Panel Top Panel Installation" on page 9-21
- "Right Instrument Panel Top Panel Installation" on page 9-19

12.3 Seawings™

12.3.1 Maintenance Instructions

12.3.1.1 Remove Seawings™ Platform Tip

Remove Seawings™ platform tip. The tips are designed to be readily replaced in case of damage.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

08 – Fuselage and Vertical Tail

Consumables

None

TASK INSTRUCTIONS:

1. Use a 3/8 wrench to remove the single AN3C5A attachment bolt and two NAS1149C0363R washers from inside the wheel well. Retain hardware for installation. (See “Install Seawings™ Platform Tip” on page 12-8.)
2. Remove the Seawings™ Tip by applying pressure in the aft direction and rotating up and away from the bottom Seawings™ skin. There are four pins and sockets – two forward and two aft – that will slide apart as the Seawings™ tip is removed. If necessary, use plastic soft scrapers to loosen sealant.

3. Remove the sealant by peeling away from the Seawings™ skin or tip.
 4. Inspect the four pins on the Seawings™, verifying that all are securely bonded.
-

VERIFICATION METHOD:

Install new Seawings™ Platform Tip.

RELATED INFORMATION:

"Description" on page 21-2

"Repair of Seawings™ Tip Attach Pins and Bushings" on page 12-12

"Install Seawings™ Platform Tip" on page 12-8

12.3.1.2 Install Seawings™ Platform Tip

Install a Seawings™ platform tip. The tips are designed to be readily replaced in case of damage.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA008108 (RH Seawings™ Tip)

ICA008109 (LH Seawings™ Tip)

Aircraft System and Number

08 – Fuselage and Vertical Tail

Consumables

Isopropyl Alcohol

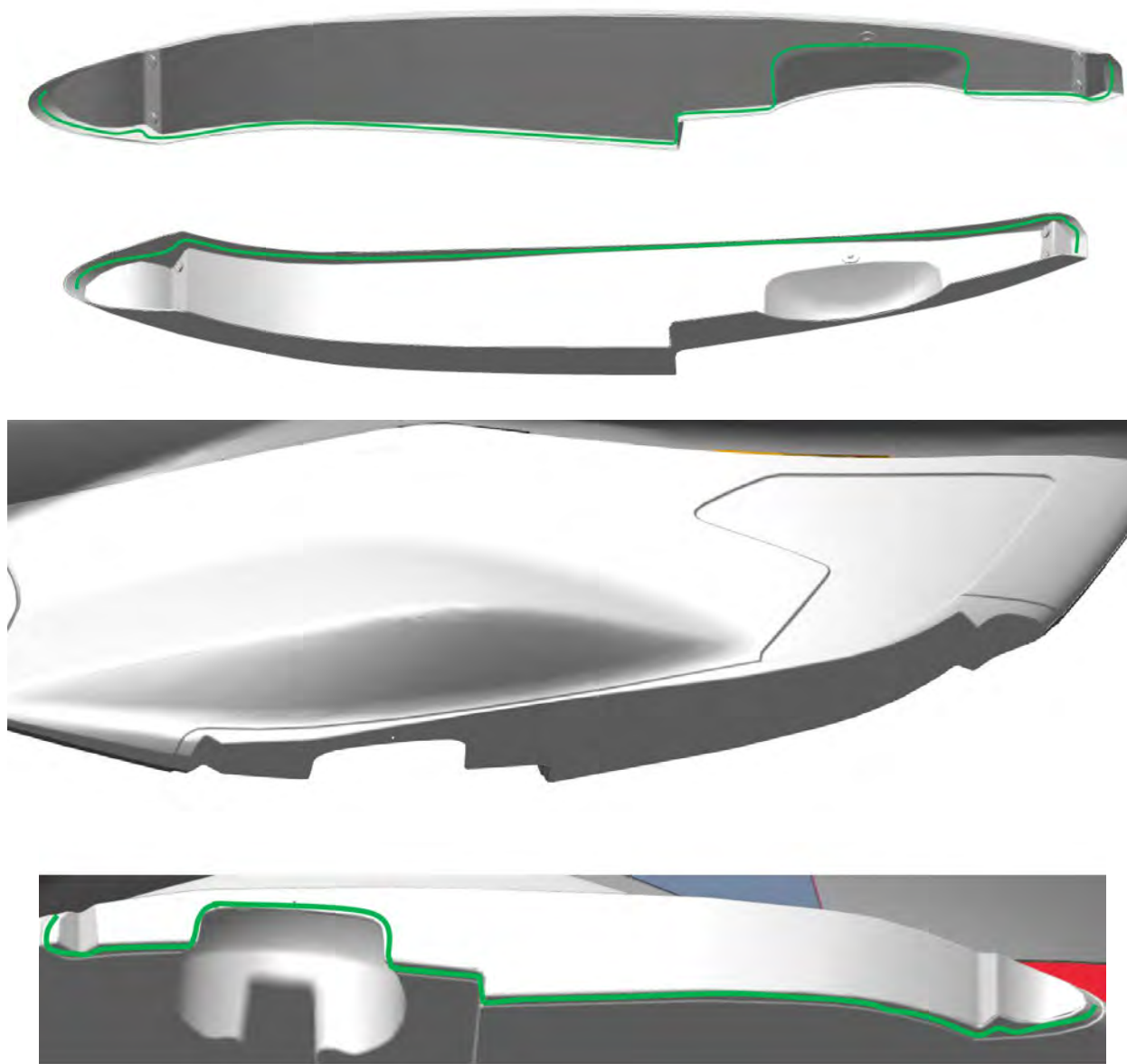
Carnauba Wax

AC-251 Black Class B Aerospace Sealant

Torque Stripe

TASK INSTRUCTIONS:

1. 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
2. Clean Seawings™ tip and Seawings™ skin with isopropyl alcohol. Allow to dry completely prior to proceeding with installation.
3. Apply carnauba paste wax onto the RH mating surfaces of the entire top and bottom interfaces of the fuselage and Seawings™ tip. Allow 5 minutes for the wax to flash off. Wipe carnauba wax off using a lint free cloth to leave thin film of residue on the mating surface. Repeat step a total of 3 times. Repeat process for LH side.



NOTE: *Ensure that the work area is ready for the adhesive to be applied and that all tools, consumables, PPE, etc. are quickly within reach.*

AC-251 B-1/2 adhesive has a minimum application life of 30 minutes at 77° with a relative humidity of 50%. The application life is dependent on the temperature and humidity of the work environment.

4. Mix AC-251 adhesive per manufacture instructions.
 - a. Holding the cartridge, grasp the dasher rod and pull back approximately one inch.
 - b. Insert the ramrod into the hollow of the dasher rod break the piston loose, and inject about 1/3 of the contents into the cartridge. Do not inject all of the catalyst in one location. Distribute evenly throughout the base material.
 - c. Repeat steps 1 and 2 until all the contents of the rod are emptied into the cartridge. Remove the ramrod.
 - d. Mix for the required number of strokes (hand mix: 50-75 strokes) or for the required amount of time (Machine mix: 37 strokes [1.5 minutes at 25 strokes/min])
 - e. When mixing is complete, remove bottom cap.
 - f. Pull the dasher rod back to the neck of the cartridge, grasp the cartridge firmly at the neck, unscrew the dasher rod and remove.
 - g. Screw the nozzle into the cartridge, insert into the extrusion gun and use as required. For hand extrusion, press the used dasher rod against the plunger to force the material from the cartridge.

NOTE: *Mix the cartridges of AC-251 adhesive one by one as they are needed. Do not mix all the adhesive at once.*

5. Apply a 1/8" to 1/4" diameter continuous bead of adhesive approximately centered along indicated (highlighted in red) curve. Repeat process for LH side.

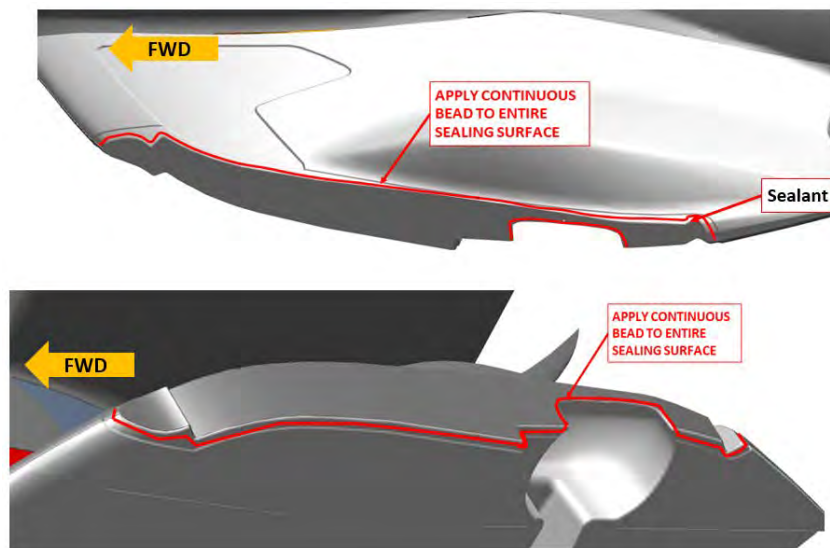


FIGURE 12-3
SEALANT APPLICATION TO SEAWINGS™

6. Place RH Seawings™ tip on to 4x studs (previously installed) on the fuselage. Repeat for LH side.

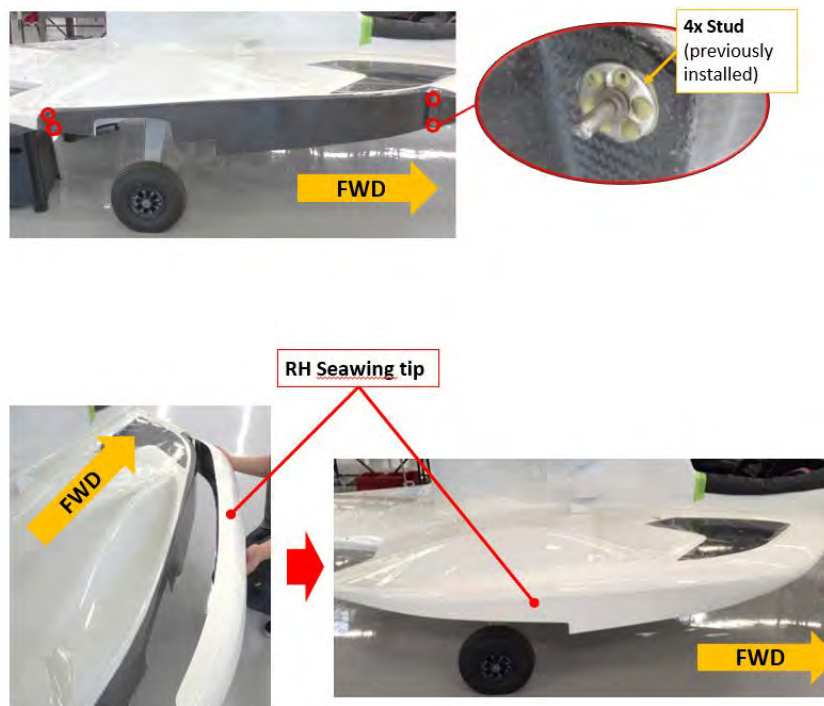


FIGURE 12-4
SEAWINGS™ TIP INSTALLATION

7. Attach Seawings™ tip to the fuselage using AN3-C5A bolt with 2ea NAS1149C0363R washers into existing nutplate.

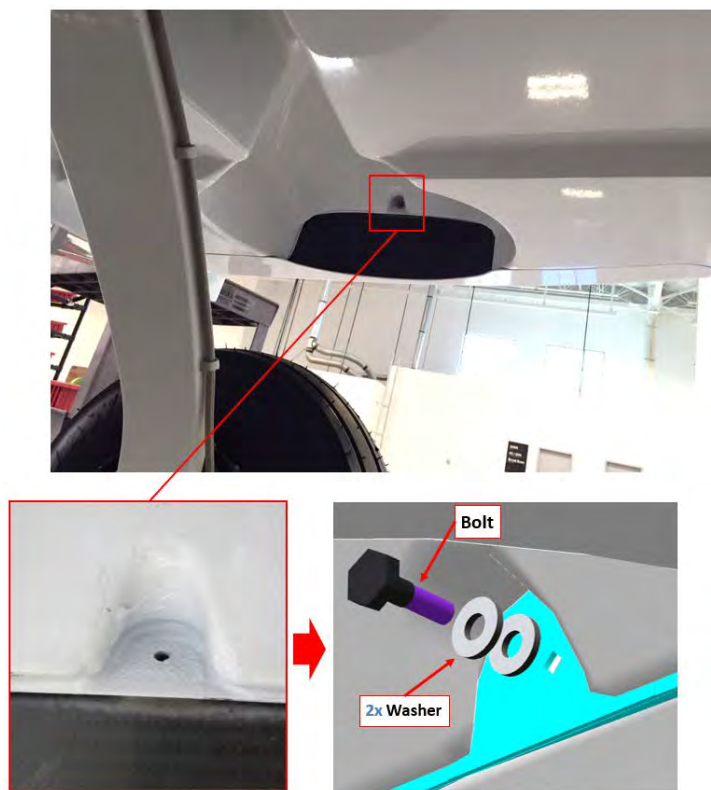


FIGURE 12-5
SEAWINGS™ ATTACHMENT HARDWARE

8. Torque bolt to 26 in-lbs. Apply Torque Stripe.

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:

"Remove Seawings™ Platform Tip" on page 12-7

"Repair of Seawings™ Tip Attach Pins and Bushings" on page 12-12

12.3.1.3 Repair of Seawings™ Tip Attach Pins and Bushings

Use the following procedure to repair the Seawings™ tip attach pins and bushings.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA013204 Bushing (NAS77C3-012 is obsolete for new installations)

SS-M4-RB23-4.75X13MM Pin

Aircraft System and Number

08 – Fuselage and Vertical Tail

Consumables

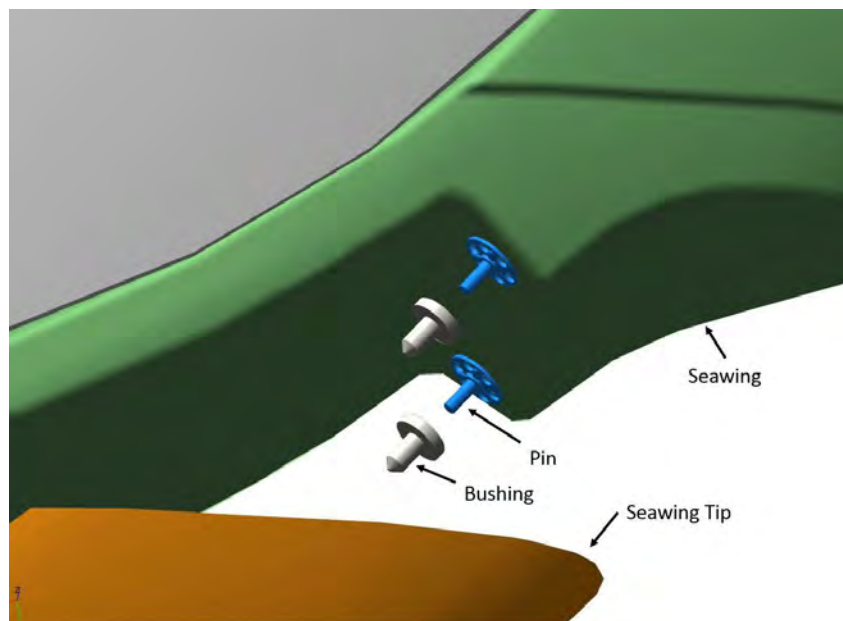
Isopropyl Alcohol

Hysol EA9394 Adhesive

TASK INSTRUCTIONS:

1. Remove the Seawings™ tip using the removal procedure. (See “Remove Seawings™ Platform Tip” on page 12-7.)
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 ICA013204 bushing in the Seawings™ tip, proceed as follows:
 - a. Use Hysol EA9394 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-RB23-4.75X13MM pin, proceed as follows:
 - a. Use Hysol EA9394 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 "Install Seawings™ Platform Tip" on page 12-8.) 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 "Remove Seawings™ Platform Tip" on page 12-7.)
 - 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 "Install Seawings™ Platform Tip" on page 12-8.)



VERIFICATION METHOD:

Procedure is complete when Seawings™ tip has been attached.

RELATED INFORMATION:

- "Remove Seawings™ Platform Tip" on page 12-7
- "Install Seawings™ Platform Tip" on page 12-8

12.4 Water Rudder

12.4.1 Inspection Instructions

12.4.1.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.)
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. 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. 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 12-19

"Installation of Water Rudder Cable" on page 12-21

12.4.1.2 Check Water Rudder Rigging

The following section contains the information required to perform the A5-B maintenance inspection on the water rudder.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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_f) 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_f) 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. Requirements are given in parenthesis in the table above.

RELATED INFORMATION:

"Rudder Pedals Remove and Redo" on page 10-104

"Installation of Water Rudder Cable" on page 12-21

12.4.2 Maintenance Instructions

12.4.2.1 Replace Water Rudder

The following should be used to replace the water rudder.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

M81934/2-05C012 Bushing

ICA008933 Cable

MS51844-22 Swage Fitting

AN100C-3 Thimble

ICA015576 (RUDDER ASSY, WATER)

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.

12.4.2.2 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.) 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 4-27

"Water Rudder Actuator and Cables" on page 12-15

12.4.2.3 Installation of Water Rudder Cable

The water rudder is actuated by cables. This task explains how to install the water rudder cables.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Cable Swaging Tool

Parts Required

ICA012033 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®

LOCTITE® 609™

LOCTITE® 243™

TASK INSTRUCTIONS:

1. Route a new cable (ICA012033, 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® 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[®] 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_f.
6. Reinstall the two M81934/2-05C012 bearings M81934/2-05C012 in water rudder using LOCTITE[®] 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[®] 243™ on the threads and torque to 20 in-lb_f.
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. Prepare the surface of the pivot tang (ICA009078) that mates with the fuselage skin, as well as the corresponding fuselage skin surface, for potting by doing the following:
 - a. Apply carnauba wax (ICA013211) onto mating surfaces on pivot tang and fuselage and on threads of screws retained from removal steps.
 - b. Wipe carnauba wax off using a lint free cloth.
 - c. Allow 5 minutes for the wax to flash off.
 - d. Repeat the previous steps 3x.
16. Using ICA012218 sealant, apply a thin void-free layer to the mating surfaces of the pivot tang, the fuselage, and both screws.

NOTE: Ensure no sealant is applied to the portion of the pivot tang that interfaces with the water rudder.

17. Fasten the prepped pivot tang to the fuselage with wet-installed screws. Torque the screws to 25-28 in-lbs.
18. Remove any sealant that may have been squeezed out from around the pivot tang and/or around the fasteners to create a clean fillet around the entire perimeter.

NOTE: Ensure no squeeze out is present that will interfere with the operation of the water rudder.

19. 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.

20. 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-.250" when finished.
 - f. Repeat steps c-e with the extension end of the cable.
21. 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.
22. 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.
23. 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.
24. Attach the extension turnbuckle assembly by slipping its forward eye onto the aft hook end of the extension spring.
25. Adjust the turnbuckles per rigging procedure. (See "Inspect Yaw Rigging" on page 10-86.)

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 12-21.) (See "Water Rudder Actuator and Cables" on page 12-15.)

RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Check Water Rudder Rigging" on page 12-16

"Water Rudder Actuator and Cables" on page 12-15

Chapter 13

HORIZONTAL TAIL

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13.1 Horizontal Tail Description

Horizontal tail includes the structure of the elevator control surface. Includes: skins, ribs, webs, hinges and counterbalance.

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

13.2 Horizontal Tail General Maintenance

13.2.1 Inspect Horizontal Tail

The following section contains the information required to check the horizontal tail for excessive mounting play.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

09 – Horizontal Tail

Consumables

None

TASK INSTRUCTIONS:

1. Remove horizontal tail tips.
 - a. Pull downward on the tip lock latch to remove it from the detent position and rotate the latch approximately 180°.
 - b. Grasp the tip and slide it away from main horizontal tail until the cylindrical spar clears the structure.

2. Check horizontal tail for binding or interference with vertical tail in forward-aft direction by applying 10-15 lbs of 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 binding or interference in up-down direction by applying 5-10 lbs of 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.
 - a. Grasp the tip and slide the cylindrical spar fully into the main horizontal tail taking care that the locating pin near the leading edge aligns properly. Ensure that the tip is fully engaged by pressing it firmly into position.
 - b. Rotate the latch back into the locked position ensuring that it snaps upward into the detent position.
 - c. With the master switch on, verify that the 'SECURE WING/TAIL' light on the annunciator panel has extinguished.

WARNING: *The latch for the removable horizontal tail tip must fully cover the red portion of the placard in order for the tail to be locked. An annunciator panel light in the cockpit will warn the pilot when either of the tips is unlocked or not installed correctly.*

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.

13.2.2 Inspect Empennage Skin

Use the following to inspect the Horizontal Tail Empennage skin for damage/delaminations.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

09 – Horizontal Tail

Consumables

None

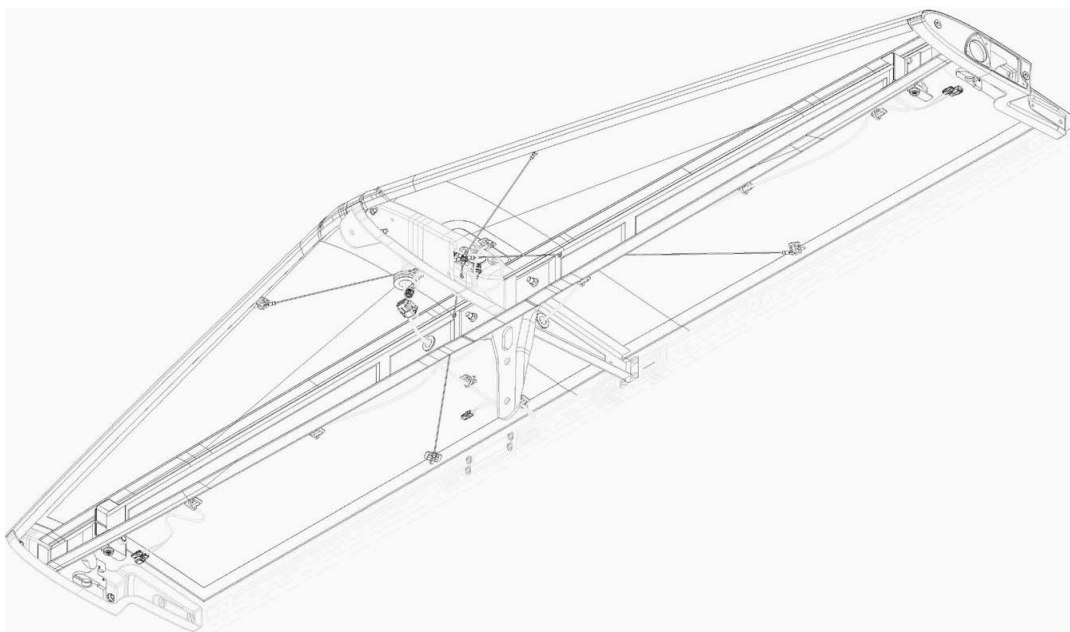


FIGURE 13-1
INTERNAL STRUCTURAL LAYOUT OF HT (LOWER SKIN REMOVED)

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 4-56.)
 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 4-56

13.2.3 Horizontal Tail Removal and Installation

Use the following procedures to remove and install the horizontal tail.

13.2.3.1 Remove Horizontal Tail Tip Lock Switches

Use the following procedure to remove the two horizontal tail tip lock switches.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

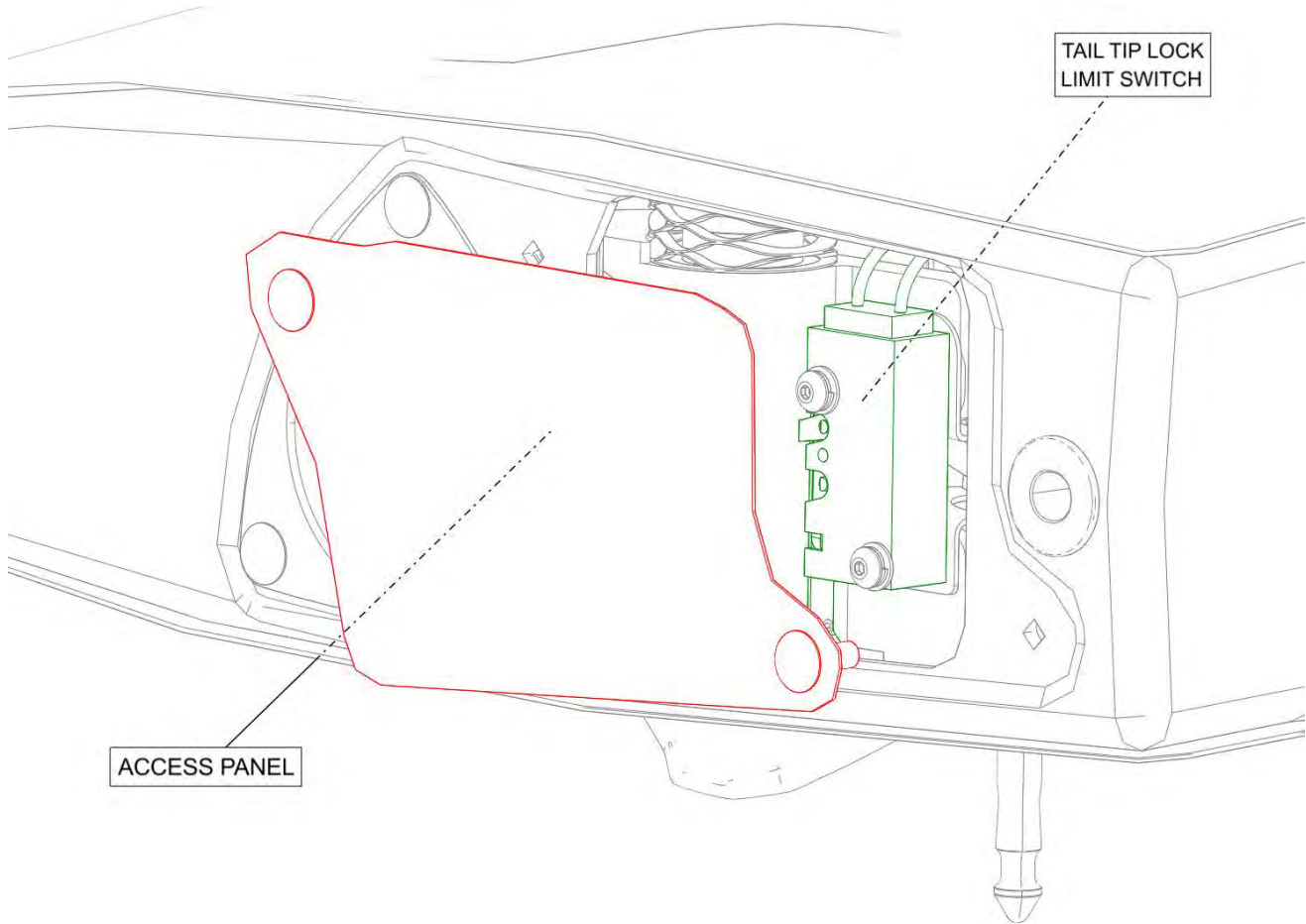
09 – Horizontal Tail

Consumables

None

TASK INSTRUCTIONS:

1. Remove horizontal tail tip access panel. Keep screws for reinstallation. (See Figure 13-2.)

**FIGURE 13-2**

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 13-3.)

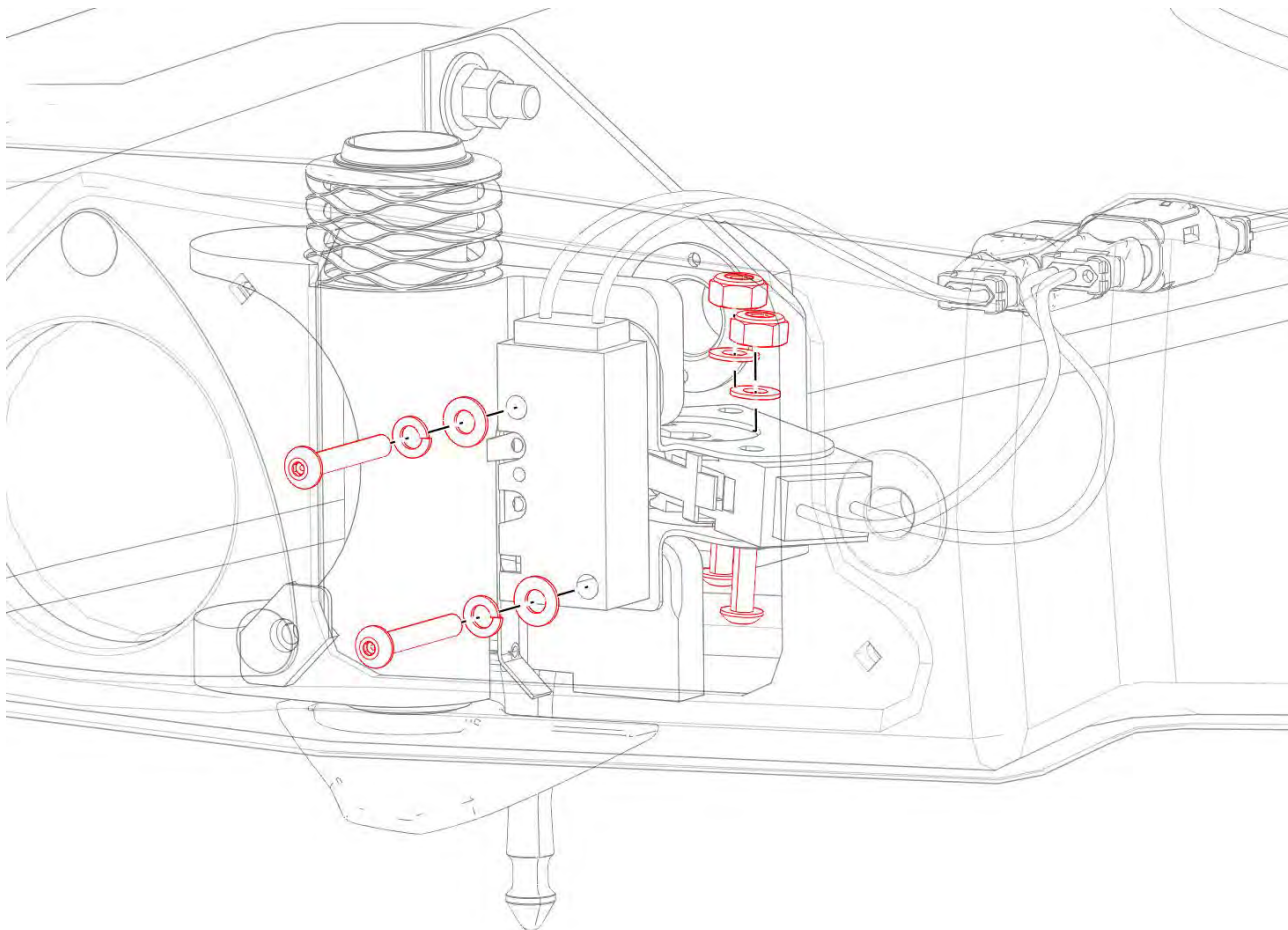


FIGURE 13-3
REMOVE SCREWS SECURING SWITCHES

3. Unplug and remove limit switches from wiring harness. (See Figure 13-4.)

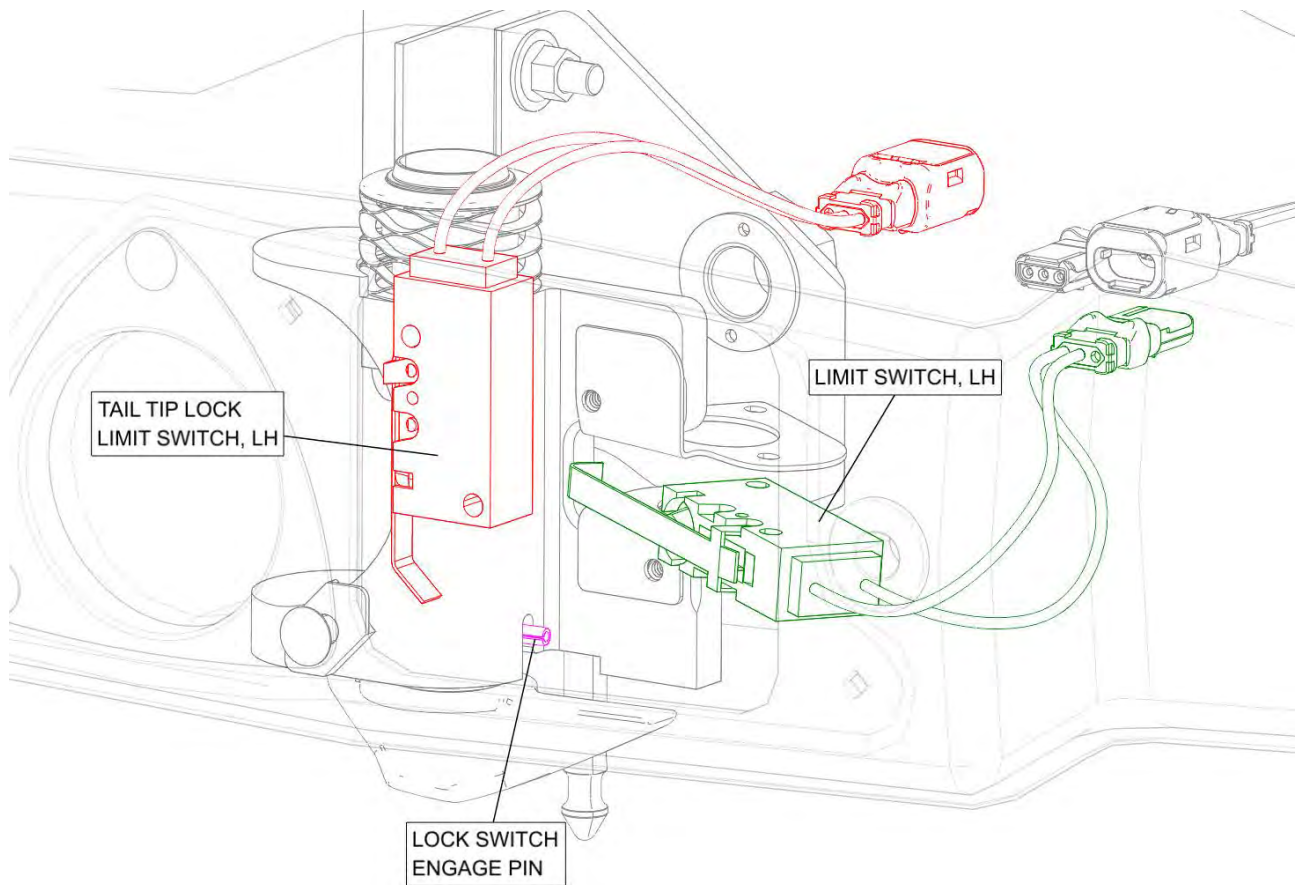


FIGURE 13-4
REMOVE SWITCHES FROM WIRING HARNESS

VERIFICATION METHOD:

Once the two limit switches are completely removed from horizontal tail, this task is complete.

RELATED INFORMATION:

"Horizontal Tail Removal" on page 13-14

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Install Horizontal Tail Tip Lock Switches" on page 13-21

13.2.3.2 Air Rudder Removal

Use these instructions to remove the air rudder.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 water rudder access panel. (below rudder; See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.)
2. Disconnect rudder pushrod from water rudder bell crank by removing the AN3C7A bolt.

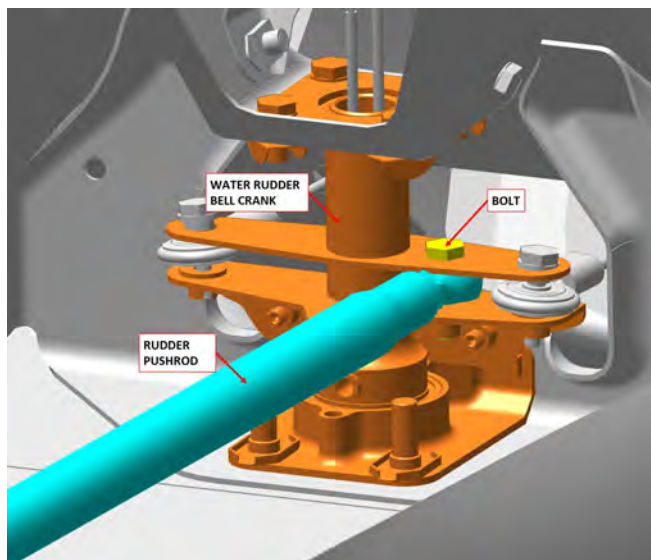


FIGURE 13-5
RUDDER PUSHROD

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.

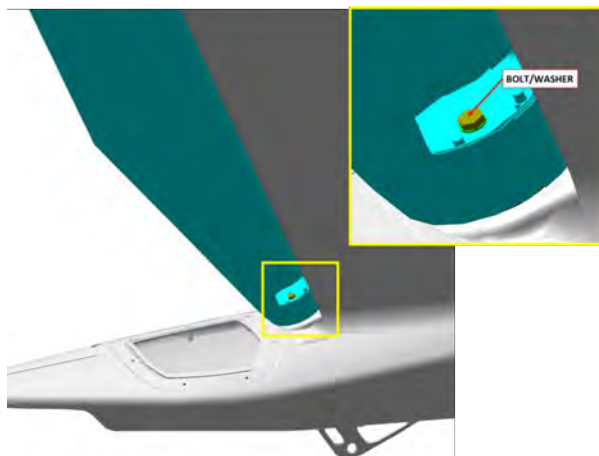


FIGURE 13-6
AN3C6A BOLT

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 13-14

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

13.2.3.3 Elevator Pushrod Removal

Use these instructions to remove the elevator pushrod.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 surface plug at the top right side of the VT tip.

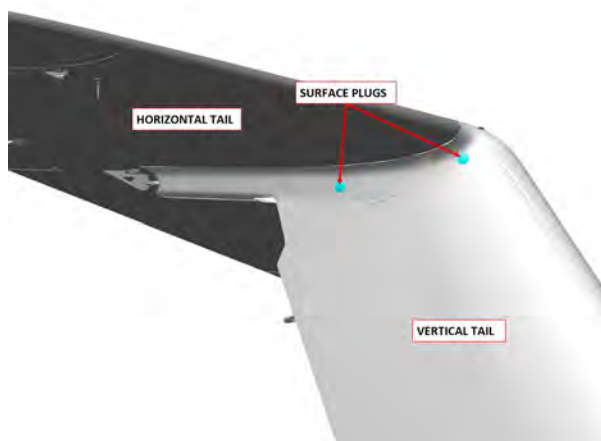


FIGURE 13-7
LOCATION OF SURFACE PLUGS

2. Remove the MS21043-3 nut, AN3C11A bolt, and NAS1149C0332R washers that attach the aft end of the pitch pushrod to the elevator horn.

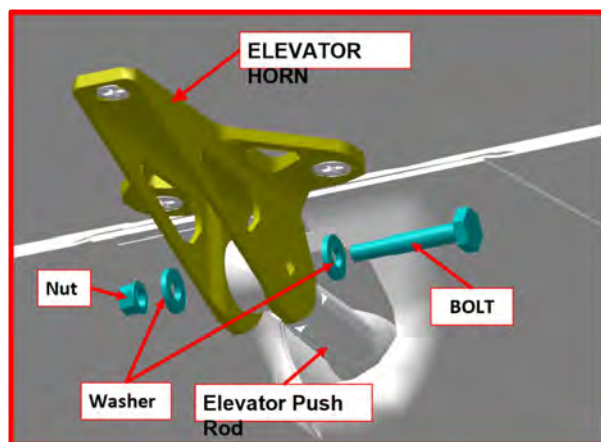


FIGURE 13-8
MS21043-3 NUT, AN3C11A BOLT, AND NAS1149C033R WASHER

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.

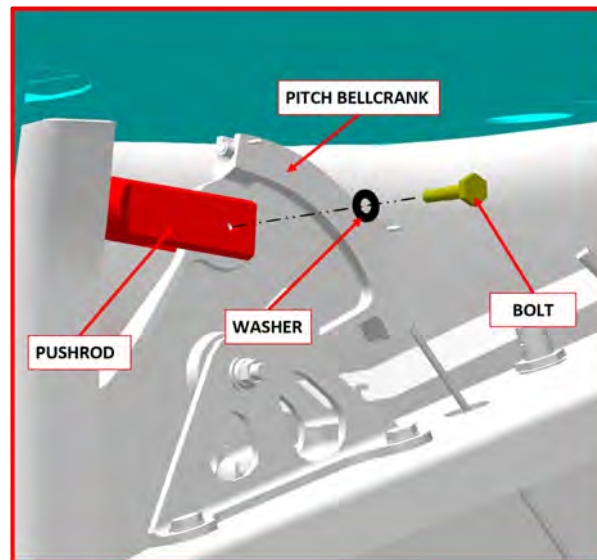


FIGURE 13-9
PITCH PUSHROD AND PITCH BELLCRANK

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.

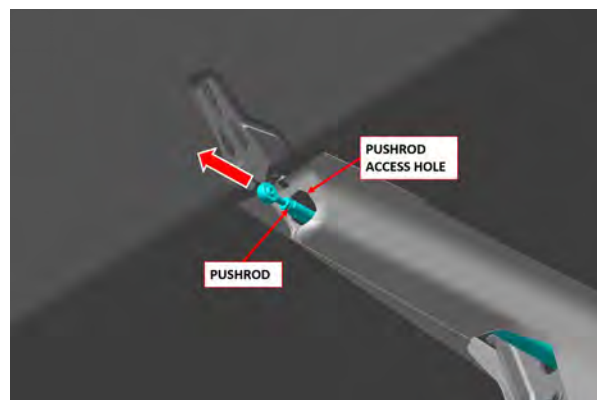


FIGURE 13-10
PITCH PUSHROD

VERIFICATION METHOD:

Once the elevator pushrod is completely detached from the aircraft, this task is complete.

RELATED INFORMATION:

"Horizontal Tail Removal" on page 13-14

13.2.3.4 Horizontal Tail Removal

Instructions for removing the Horizontal Tail.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 13-9.) (See "Elevator Pushrod Removal" on page 13-11.)

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 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.

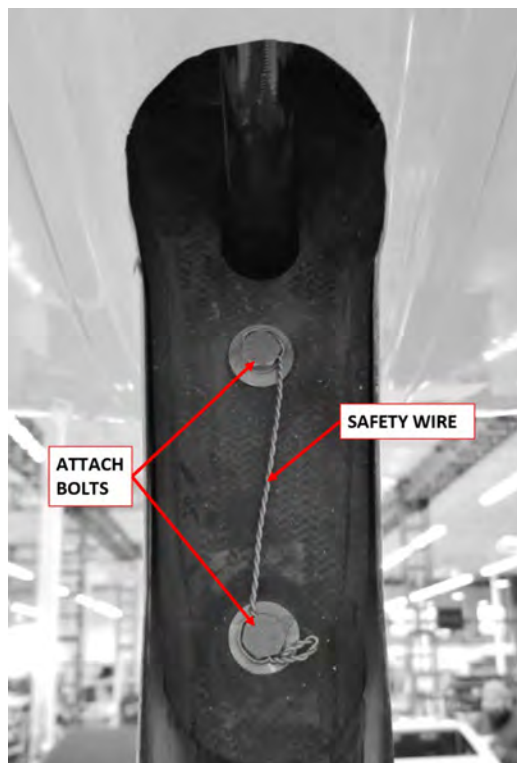


FIGURE 13-11
SAFETY WIRE

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.

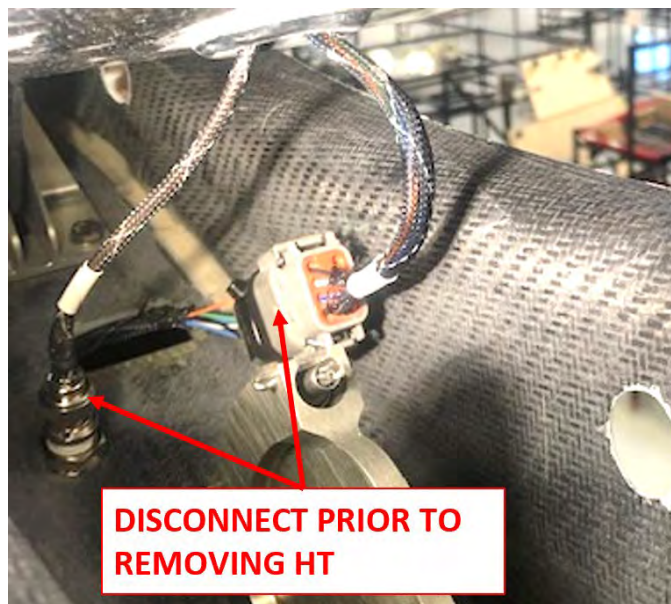


FIGURE 13-12
MULTI-PIN WIRE CONNECTOR AND COAXIAL CABLE CONNECTORS

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 4-27
- "Horizontal Tail Installation" on page 13-16
- "Elevator Pushrod Removal" on page 13-11
- "Air Rudder Removal" on page 13-9
- "Rigging Pitch Controls" on page 10-47
- "Remove Horizontal Tail Tip Lock Switches" on page 13-6
- "Install Horizontal Tail Tip Lock Switches" on page 13-21

13.2.3.5 Horizontal Tail Installation

Use these instructions to install the horizontal tail.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA011857 (HORIZ TAIL ASSY, STRUCTURAL *SERIALIZED*)

Aircraft System and Number

09 – Horizontal Tail

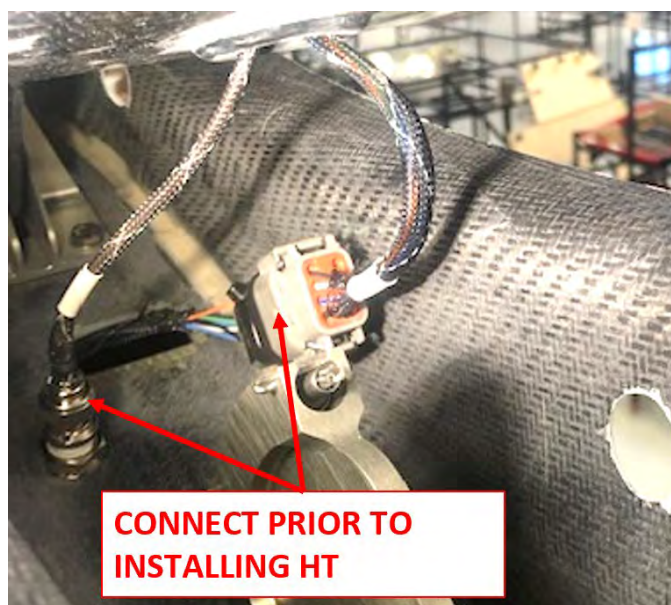
Consumables

None

For the steps involved in removing the horizontal tail, See “Horizontal Tail Removal” on page 13-14.

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.

**FIGURE 13-13**

MULT-PIN WIRE CONNECTOR AND COAXIAL CABLE CONNECTORS

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.

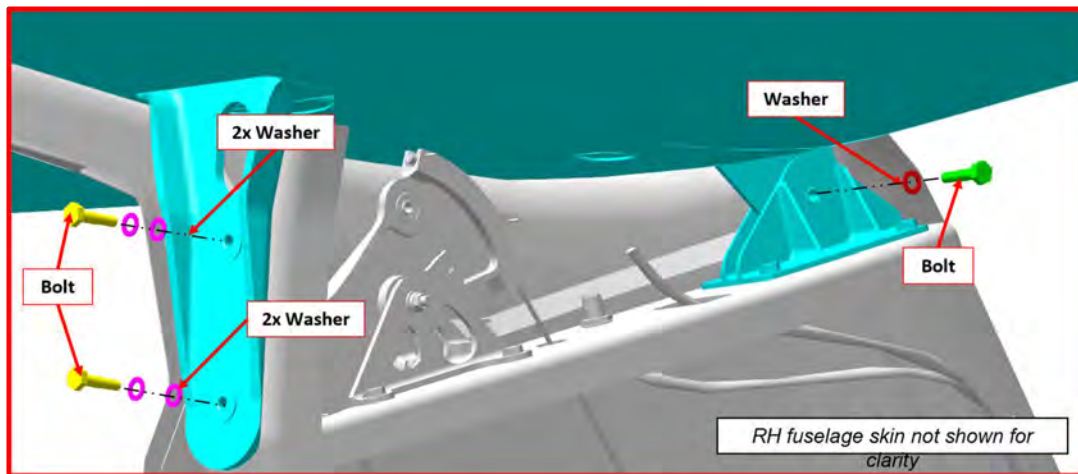


FIGURE 13-14
INSTALL BOLTS AND WASHERS UNDER THE HEAD

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 a 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 13-19.)

RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Horizontal Tail Removal" on page 13-14

"Elevator Pushrod Installation" on page 13-19

"Air Rudder Installation" on page 13-20

"Rigging Pitch Controls" on page 10-47

13.2.3.6 Elevator Pushrod Installation

Use these instructions to install the elevator pushrod after the horizontal tail has been installed.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA012054 (PUSHROD, ELEVATOR)

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 AN3C10A 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_f.
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 NAS1149C0363R washer under its head through the elevator horn, attaching it to the pushrod. Slide an NAS1149C0363R washer over the threaded end of the bolt, then install an MS21043-3 nut. Torque to 26 in-lb_f and check that hardware is secure.
6. Install 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 13-20.)

RELATED INFORMATION:

"Horizontal Tail Installation" on page 13-16

13.2.3.7 Air Rudder Installation

Use these instructions to install the air rudder after the elevator pushrod had been installed.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014897 (AIR RUDDER STRUCTURAL ASSY *SERIALIZED*)

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. Torque bolt to 25-28 in-lbs.
4. Connect rudder pushrod to water rudder bell crank with an NA1149C0363R washer and AN3C7A bolt. Torque to 16.4-19.4 in-lbs.
5. Install water rudder access panel. (below rudder; See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)

VERIFICATION METHOD:

Task is complete when air rudder is installed.

RELATED INFORMATION:

"Horizontal Tail Installation" on page 13-16

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

13.2.3.8 Install Horizontal Tail Tip Lock Switches

Use the following procedure to install the two horizontal tail tip lock switches.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 13-3.) 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 13-15.

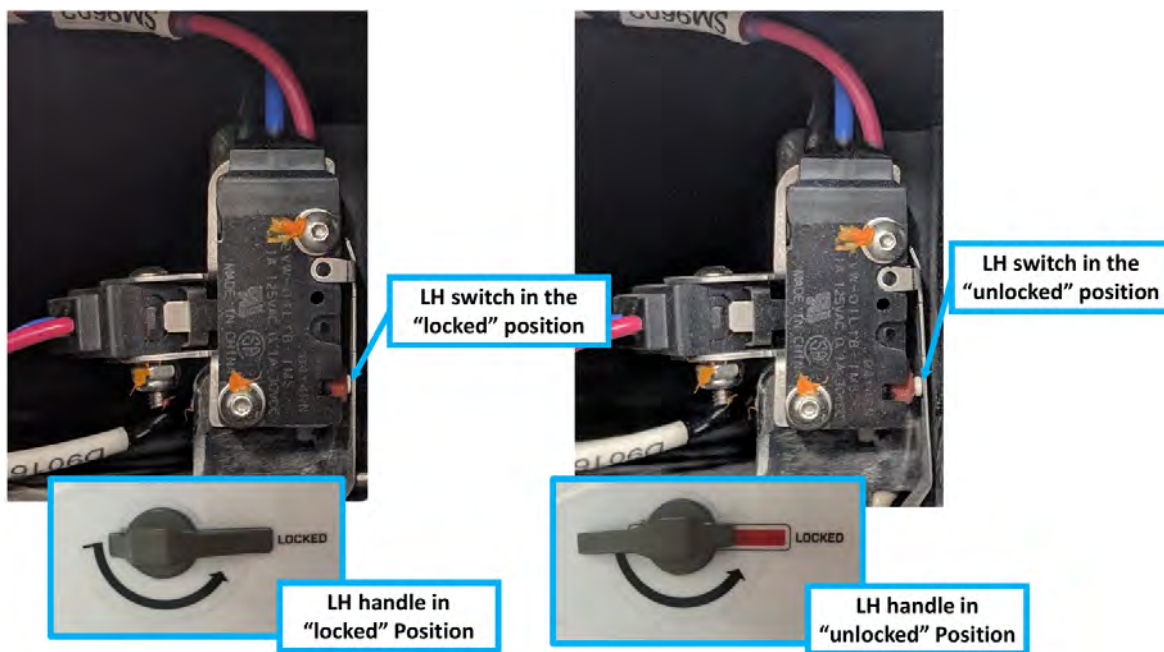


FIGURE 13-15
VERIFY SWITCH POSITION

4. Reinstall access panel. See Figure 13-2. 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 13-14

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Remove Horizontal Tail Tip Lock Switches" on page 13-6

13.2.4 Elevator Removal

The following instructions are used to remove the elevator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

06 – Flight Controls

Consumables

None

TASK INSTRUCTIONS:

1. Remove horizontal tips from horizontal tail.
2. Disconnect the trim tab push rod from the trim tab. (See "Remove Pitch Trim Actuator" on page 10-55. Step 8)
3. Remove elevator pushrod. (See "Elevator Pushrod Removal" on page 13-11.)
4. Remove elevator from horizontal tail.
 - a. Support elevator or have a second person available to prevent the elevator from dropping.
 - b. Remove bolt and washer from central hinge. Retain the bushing.
 - c. Remove the two screws on each outboard hinge. Retain all hardware.

VERIFICATION METHOD:

The elevator has been removed.

13.2.5 Elevator Installation

The following instructions are used to install the elevator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Digital level (inclinometer) with 0.1° resolution

Parts Required

None

Aircraft System and Number

06 – Flight Controls

Consumables

ICA012078 (GENERAL LUBRICANT)

TASK INSTRUCTIONS:

1. Install the elevator by carefully guiding the elevator trim tab push rod through the elevator and securing the elevator outboard hinges with four screws. Torque screws to 26 in-lbs. (See Figure 13-16.)



FIGURE 13-16
ELEVATOR INSTALL

2. Re-install the trim tab pushrod. (See See “Install Pitch Trim Actuator” on page 10-56.)
3. Install elevator center hinge bolt and washer. Apply lubricant prior to installing and torque to 26 in-lbs. See Figure 13-17.

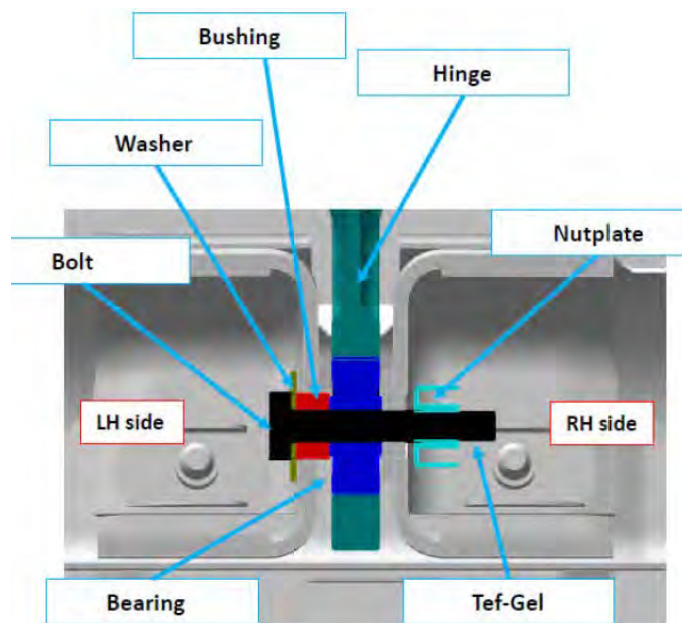


FIGURE 13-17
CENTER HINGE ATTACHMENT

4. Install the elevator push tube rod end. See “Elevator Pushrod Installation” on page 13-19.

VERIFICATION METHOD:

- 1) Use adhesive tape between elevator trailing edge and elevator tips to temporarily align the elevator to neutral deflection, in alignment with the horizontal tips.
- 2) Temporarily secure a digital inclinometer on top of the trim tab, aligned fore/aft with some double sided tape. Be sure the inclinometer does not interfere with tab operation then use the alternate-zero function of the inclinometer to set the display to zero.
- 3) Turn on the master switch.
- 4) Check full down travel indication position of the trim tab by actuating trim switch until the trim actuator stops in the full down position and measure the trim tab angle with respect to the elevator upper surface, check that it is $15^\circ \pm 2^\circ$ trailing edge up.
- 5) Check full up travel indication position of the trim tab by actuating the trim switch until the trim actuator stop in the full up position and measure the trim tab angle with respect to the elevator upper surface, check that it is $21^\circ \pm 2^\circ$ trailing edge down.
- 6) If these 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-lbs and bend the cotter pin on the fork.
- 7) Turn off the master switch.
- 8) Remove tape from elevator trailing edge.

13.3 Horizontal Tail Tip Pin

13.3.1 Inspection Instructions

13.3.1.1 Measure Horizontal Tail Tip Anti Rotation Pin Wear

Use the following to measure the horizontal tail tip anti rotation pin wear.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 and caliper.

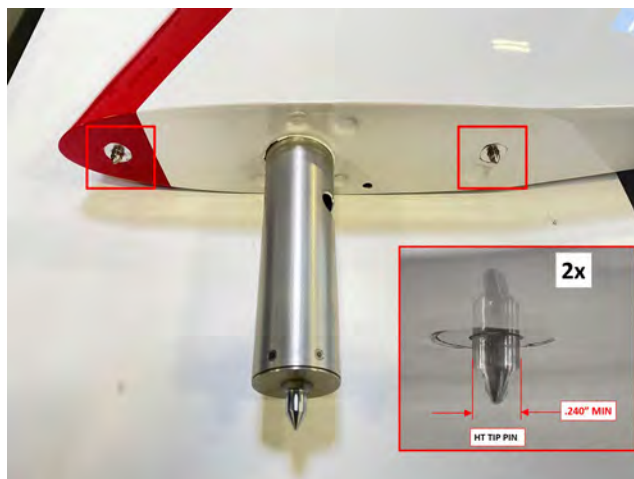


FIGURE 13-18
ANTI-ROTATION PINS

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 13-27.)

- Minimum pin diameter $\geq .240$ "

RELATED INFORMATION:

"Horizontal Tail Tip Pin" on page 13-27

"Annual and 100-Hour Inspection – Aft Fuselage and Empennage" on page 4-19

13.3.2 Maintenance Instructions

13.3.2.1 Horizontal Tail Tip Pin

Removing and replacing the horizontal tail tip pins.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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°.



FIGURE 13-19
TIP LOCK LATCH

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_f. 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.

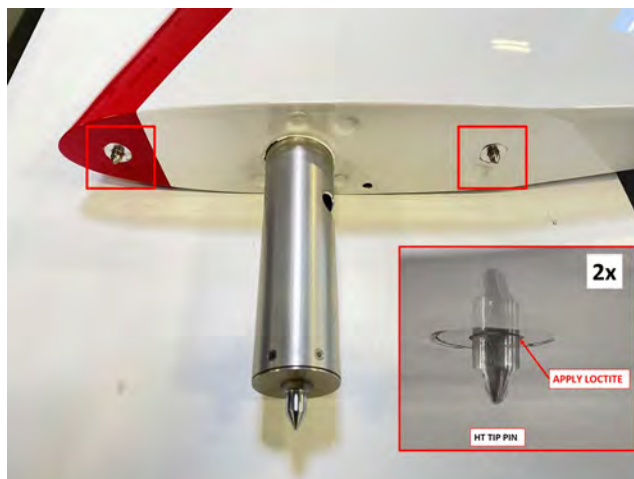


FIGURE 13-20
LOCTITE APPLICATION

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 13-26

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14.1 Instruments and Avionics Description

ICON's A5-B 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.

14.1.1 Instrument Panels

14.1.1.1 Overhead Console



FIGURE 14-1
OVERHEAD CONSOLE

Fuse Panel and Spare Fuses

The circuit protection system is comprised of eighteen fuses, one for each system, and a 30 A, manually reset circuit breaker (1). The fuse panel (2) contains the operational fuses for the electrical systems on the aircraft. The spare fuse area (3) contains readily accessible spare fuses for use as needed. There are four fuse ratings: 5 A, 7.5 A, 15 A and 20 A. A minimum of three spare fuses of each rating value are located in the spare fuse panel area (3).

1

100

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Interior Lighting

The interior of the A5-B aircraft is illuminated by an interior lighting system consisting of the following lights.

- Two red LEDs, located on the forward LH side of the overhead console (7), illuminate the instrument panel and center stack console, and are individually controlled by the two dimmers on the forward LH side of the overhead console labeled "INSTR" (8) and "CONSOLE" (9), respectively.
- Two red LEDs, located in the headset hangers in the baggage compartment, illuminate the overhead console and are controlled by a single dimmer labeled "OVERHEAD" (10) also located on the forward LH side of the overhead console.
- A single white LED, located on the forward RH side of the overhead console (11), illuminates the center stack console and is controlled by a dimmer labeled "CONSOLE" (12) on the forward RH side of the overhead console.
- A dome light, located on the center of the overhead console and consisting of a string of white LEDs (13), illuminates the cabin and baggage compartment and is controlled by a switch labeled "DOME" (13) located just aft of the light itself.

Stall Warning Horn

The stall warning horn is located on the forward side of the overhead console. The horn activates approximately three knots above stall speed (Mid-Yellow AOA) in unaccelerated flight. The horn is disabled below 33 knots to minimize horn activation when on land or water.

14.1.1.2 Center Console

14.1.1.2.1 Garmin Aera 796 Equipped Aircraft



FIGURE 14-2
CENTER CONSOLE

- (1) Trig TC90 VHF radio control unit
- (2) Trig TC20 Mode S transponder control unit
- (3) Landing gear control and position indicator
- (4) Flap control
- (5) Pitch trim position indicator with markings for DOWN, T/O and UP
- (6) Strobe light switch
- (7) Nav light switch
- (8) Taxi light switch
- (9) Landing light switch
- (10) Bilge pump switch with indicator light for ON
- (11) Heater control
- (12) Water rudder control with indicator light for EXT (water rudder extended)
- (13) Engine throttle control
- (not shown) Hour meter located beneath the center arm rest

14.1.1.2.2 G3X Equipped Aircraft



FIGURE 14-3
CENTER CONSOLE

- (1) Autopilot Control Panel**
- (2) Landing gear control position indicator**
- (3) Pitch trim position indicator** with markings for DOWN, T/O and UP
- (4) Flap control**
- (5) Strobe light switch**
- (6) Nav light switch**
- (7) Taxi light switch**
- (8) Landing light switch**
- (9) Bilge pump switch** with indicator light for ON
- (10) Heater control**
- (11) Water rudder control** with indicator light for EXT (water rudder extended)
- (12) Engine throttle control**
- (not shown) Hour meter** located beneath the center arm rest

14.1.1.3 Master Switch and Key

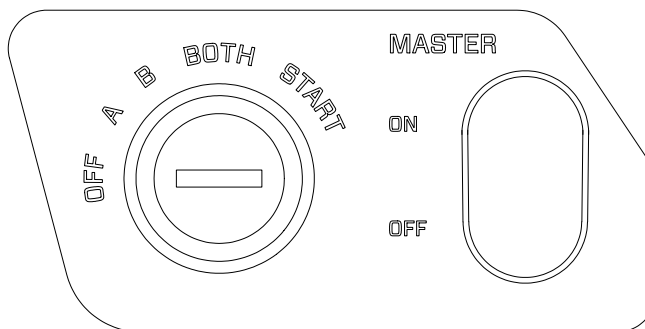


FIGURE 14-4
MASTER SWITCH AND KEY PANEL

The master switch and key panel is located to the lower left of the flight instrument cluster. It contains the key switch for selecting between 'A' and 'B' and 'BOTH' on the engine electrical and control systems as well as engaging the starter. The master switch is the main electrical switch for the entire aircraft electrical system.

NOTE: *In the event it becomes necessary to turn off the master switch in flight, the engine will continue to run.*

14.1.2 Instruments

14.1.2.1 General Information

14.1.2.1.1 Instrument Stack



FIGURE 14-5

NOTE: *Aesthetic differences of instruments such as font and line thickness are representative only.*

The flight, engine, and fuel instruments in the A5-B have been located according to their priority for controlling the aircraft. The most prominent instruments used for aircraft control form the Primary Cluster across the top of the instrument stack. These include the angle of attack (AOA) gauge (1), airspeed indicator (2), and altimeter (3). The AOA gauge collects data from ports located on the leading edge of the left wing. The face of the gauge incorporates a unique ICON design employing green, yellow, and red segments to clearly indicate available lift margin above stall at all times. The airspeed indicator and altimeter are standard analog gauges connected to the pitot-static system.

A digital attitude indicator (AI)(9) is centrally located for simple reference in the middle of the instrument panel, providing aircraft pitch information to $\pm 30^\circ$, bank to $\pm 60^\circ$, and magnetic direction indication. The AI includes two buttons just below that will dim (left button) or brighten (right button) the display screen when pressed individually. Pressing and holding both buttons simultaneously changes screen modes. For more details on operating the AI, see Kelly Manufacturing Company Publication 1404 for the KMC 2000-2 digital attitude indicator.

NOTE: *The magnetic direction indicator can be re-calibrated using the procedure detailed in the A5-B Maintenance Manual.*

Instruments used for engine and fuel monitoring form the Secondary Cluster along the bottom row of the stack. These include the fuel quantity (4), tachometer (5), oil temperature (6), oil pressure (7), and water/coolant temperature (8) gauges. All secondary instruments contain a red LED light that will illuminate whenever a redline limit is reached.

An annunciator panel (10) is located near the center of the instrument console between the Primary Cluster and Secondary Cluster. (See “Annunciator Panel” on page 14-12.)

Not shown in the figure is the panel dimmer knob which is just below the water/coolant temperature gauge (8). The dimmer is used for adjusting the brightness of the instrument lighting.

14.1.2.2 Angle of Attack System

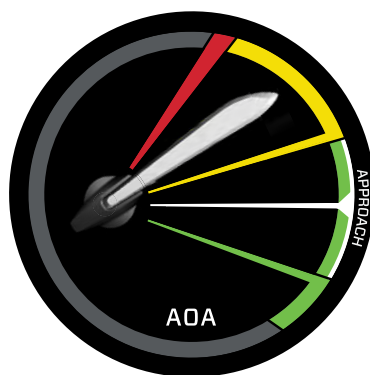


FIGURE 14-6

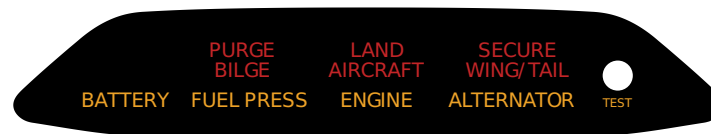
The AOA gauge provides a visual indication of how hard the wing is working to generate lift and how much more lift it can supply at any given time. AOA is related to stick position, and so the AOA gauge can also provide an approximate indication of the current stick position and how much farther aft it can move before the wing will stall.

The AOA system works by using static ports to measure the difference in pressure from the top and bottom of the left wing near the leading edge. These values are compared and computed to drive the AOA indicator electrically.

The horizontal line on the gauge depicts optimum AOA during approach for landing and also maximum lift-to-drag ratio which can be used for best range performance and best glide. The AOA gauge can also be used to help guide control inputs to achieve specific performance objectives during nearly every phase of flight. The ability to reference AOA during each of these phases allows much more precise inputs and also provides direct information about how the wing is performing at any given time. During a turn, the AOA system provides a direct indication of margin above stall in all phases of flight. This permits optimization of turn performance safely and efficiently. For cruise, AOA allows for efficient flight by providing a simple cue for optimum range performance. The AOA gauge is disabled at airspeeds below 30 knots.

14.1.2.3 Annunciator Panel

An Annunciator Panel (10) displaying Warning and Caution indications is located near the center of the instrument console between the primary and secondary instrument clusters. It is designed to provide simple visual indications of aircraft conditions that require corrective pilot action.



The upper row indications are Warning Lights, which illuminate in red to draw pilot attention to take action on critical safety of flight issues. The bottom row indications are Caution Lights, which illuminate in amber to draw pilot attention to aircraft system status or failures that may warrant action.

At the right side of the panel is a 'TEST' button. To verify that all LEDs are functional while the button is pressed, all annunciators should illuminate until the button is released.

For detailed meaning of, and response to, the annunciator lights, see Emergency Procedures.

14.1.2.4 Fuel Gauge

The fuel gauge is accurate to within \pm one gallon in coordinated, straight and level, unaccelerated flight. The low fuel indicator, operated by a separate sensor, illuminates when there are approximately two gallons remaining.

14.1.3 Garmin Aera 796 Equipped Aircraft

The VHF radio, supplied by Trig Avionics, allows two-way communication and the monitoring of two frequencies at the same time. The TY91 VHF remote transceiver is installed remotely inside the left-hand side of the nose of the aircraft and is controlled through a TC90 controller unit, located in the center stack console, and the push-to-talk buttons on both the pilot and passenger control sticks. The antenna with VHF radio is located on top of the horizontal tail of the aircraft. For more details on operating the TY91 and TC90, see Trig Avionics Limited Publication 00839-00-AF (TY91 and TY92 VHF Radio Installation Manual).

The TT22, also supplied by Trig Avionics, is a remote mounted Mode S transponder, installed inside the left side of the nose of the aircraft next to the VHF radio, and is controlled through a TC20 controller unit, located in the center stack console. The antenna for the transponder is located on top of the engine cowling. For more details on operating the TT22 and TC20, see Trig Avionics Limited Publication 00559-00-AF (TT22 Mode S Transponder Operating Manual).

The ELT, supplied by ACK Technologies, is installed below the center console and sends out a distress signal when manually or automatically activated. The ELT can be manually activated through the remote control located on the left-hand side of the overhead console. The antenna for ELT is located on the engine cowling aft of the transponder antenna.

14.1.4 Garmin G3X Touch™ Equipped Aircraft

Some Limited Edition A5-B aircraft are equipped with a Garmin GTR 20 communication radio, a Garmin GTX 45R Mode S ADS-B Out/In transponder, a Garmin G3X Touch™ flight display, and an ACK E-04 406 MHz emergency locator transmitter (ELT).

The VHF radio, supplied by Garmin, allows two-way communication and the monitoring of two frequencies at the same time. The GTR 20 remote transceiver is installed remotely inside the left-hand side of the nose of the aircraft and is controlled through the Garmin G3X Touch™ display and the push-to-talk buttons on both the pilot and passenger control sticks. The antenna with VHF radio is located on top of the horizontal tail of the aircraft. For more details on operating the communication radio via the Garmin G3X Touch™ display, see the following document which is supplied with your aircraft: Garmin Part Number 190-01754-00 Rev. M - Garmin G3X Touch™ Pilot's Guide (Section 4 CNS Interface).

The GTX 45R, also supplied by Garmin, is a remote mounted Mode S transponder with ADS-B in and out capability. It is installed inside the left side of the nose of the aircraft next to the VHF radio, and is controlled through the Garmin G3X Touch™ display. The antenna for the transponder is located on top of the engine cowling. The antenna for the GPS position source is located on the crossbeam. For more details on operating the transponder and utilizing the information provided by ADS-B In, see Garmin Part Number 190-01754-00 Rev. M - Garmin G3X Touch™ Pilot's Guide (Section 4.11 Remote Transponder Interface).

The Garmin G3X Touch™ flight display offers primary flight display (PFD) functionality as a backup system to the A5-B standard gauges, dynamic moving map capability for navigation/situational awareness, and an engine indication system (EIS) display intended for both backup system purposes and more in depth monitoring of engine parameters.

14.2 Troubleshooting

14.2.1 Cockpit Instrument Markings

Information in this section should be used to verify that markings shown in solid lines are legible.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

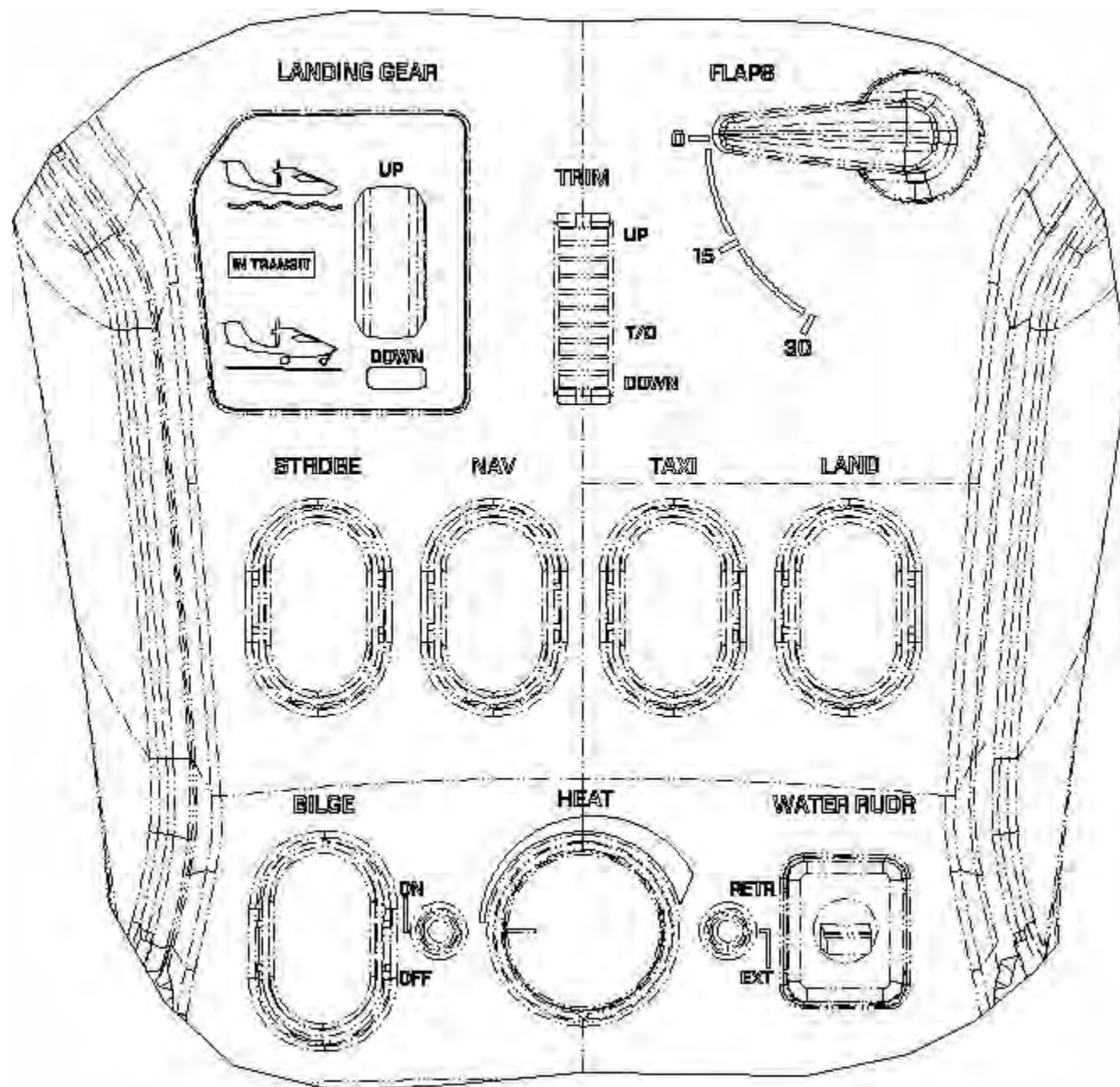


FIGURE 14-7
CENTER CONSOLE

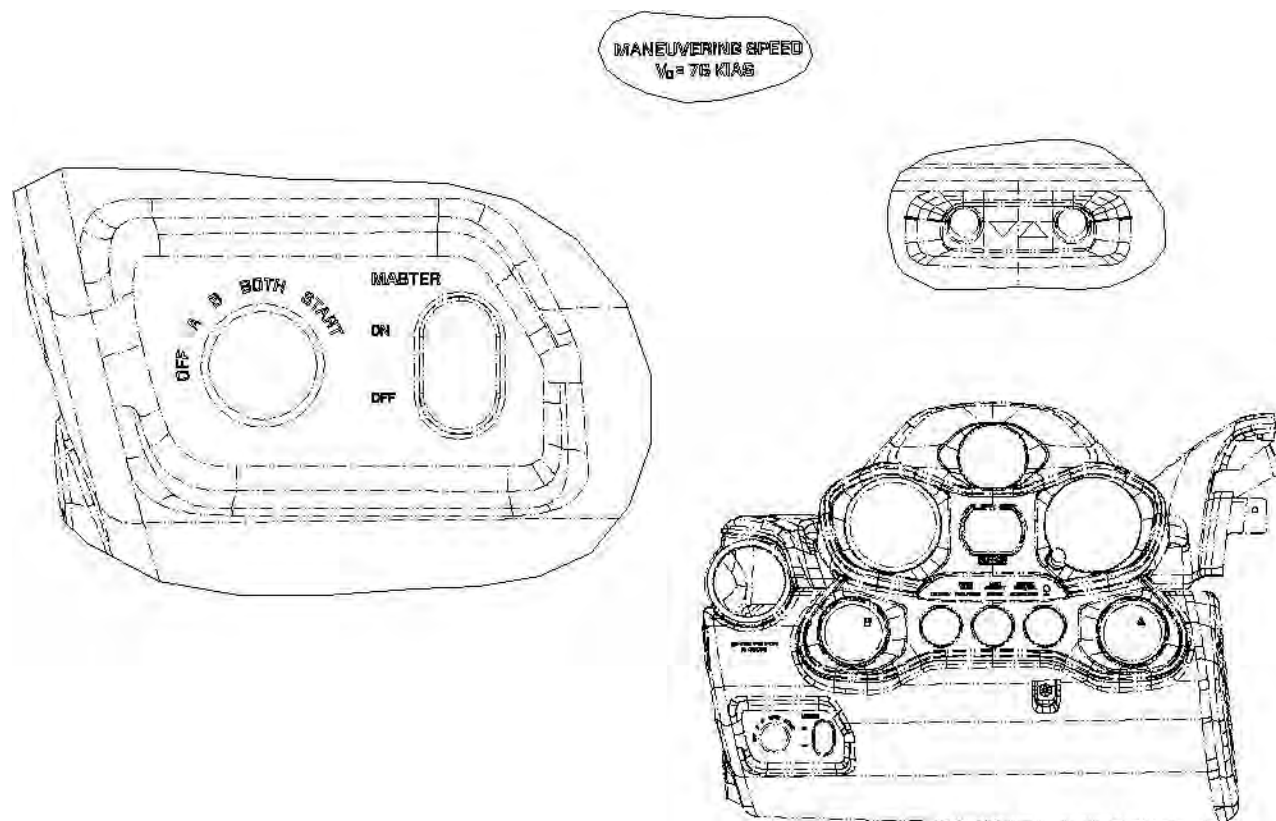


FIGURE 14-8
LEFT CROSSBEAM

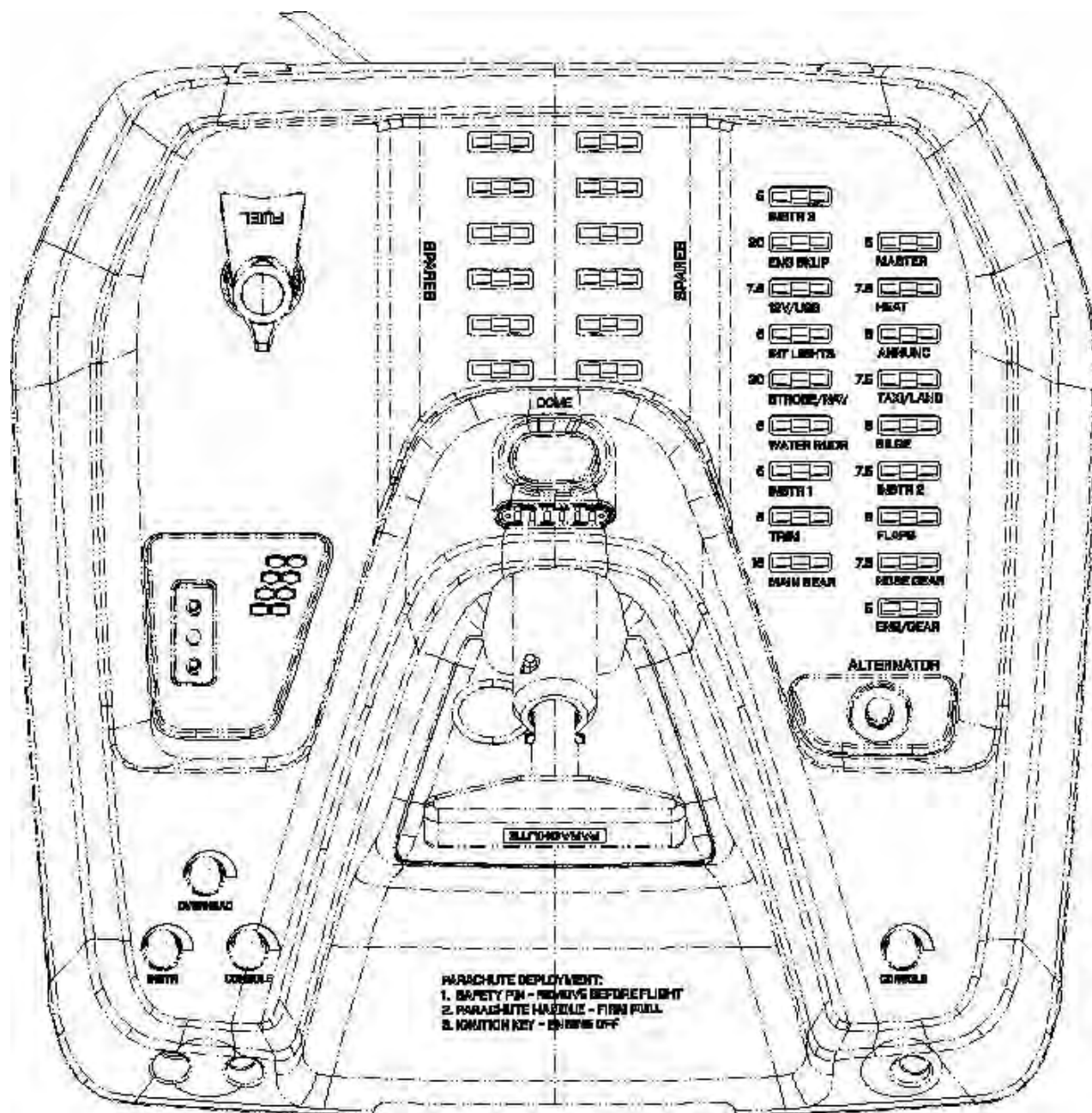


FIGURE 14-9
OVERHEAD CONSOLE

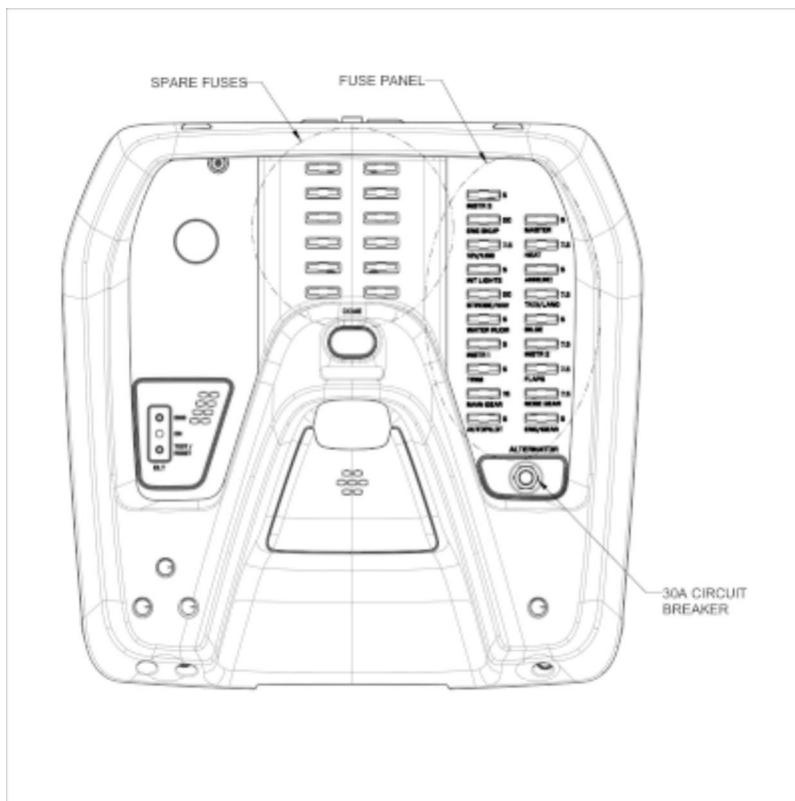


FIGURE 14-10
OVERHEAD CONSOLE, AUTOPILOT CONFIGURATION

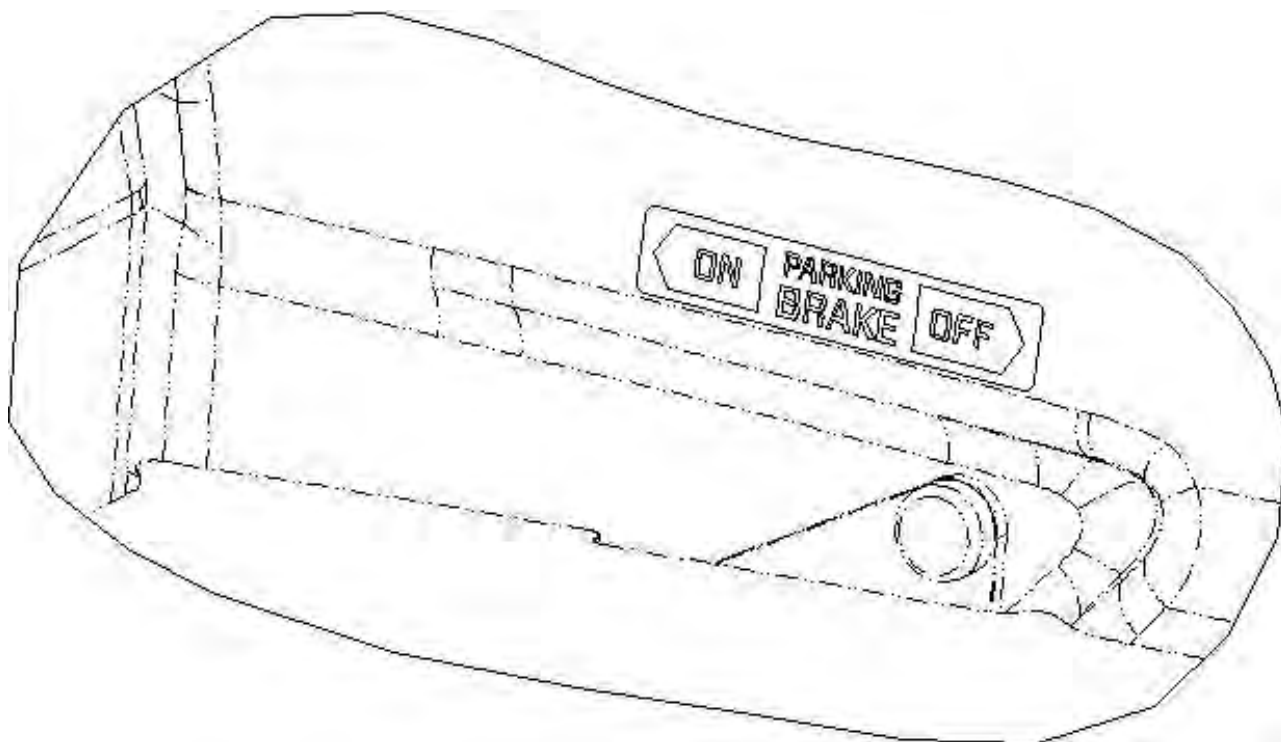


FIGURE 14-11
PARKING BRAKE

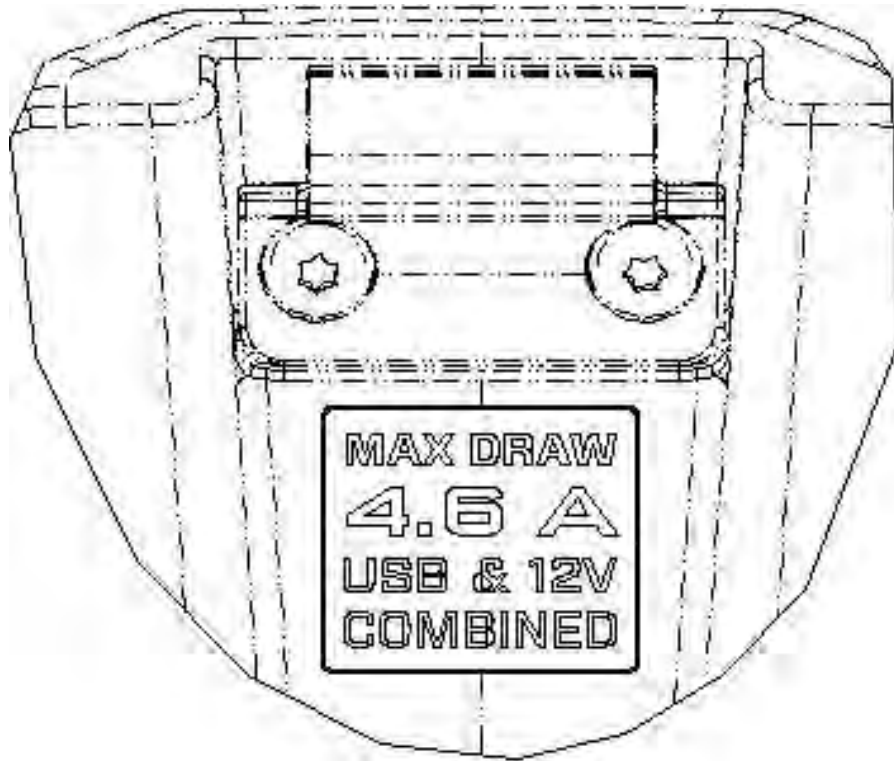


FIGURE 14-12
CENTER ARMREST BUCKET

VERIFICATION METHOD:

Verify all lines and text are visible and legible.

14.2.2 Attitude Indicator (AI)

The following directions should be used to trouble shoot the attitude indicator (AI).

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. If the AI detects any error, an “X” will appear on the display.

**FIGURE 14-13**

ATTITUDE INDICATOR ERROR MESSAGE

2. Perform the “Magnetic Direction Indicator Calibration” on page 14-28.

VERIFICATION METHOD:

If the problem has resolved, the standard AI screen will appear. If it does not resolve, perform the “Magnetic Direction Indicator Calibration” on page 14-28 a second time. If the second calibration does not resolve the condition, replace the instrument. See “Replace Instrument Panel Gauges” on page 14-47.

14.2.3 Transponder

For G3X equipped aircraft, see See 190-01499-10 Garmin GTX 34R/45R Installation Manual and 190-01115-01 Garmin G3X/G3X Touch Installation Manual for a description of equipment, installation instructions maintenance instructions, and troubleshooting guidelines.

For the Aera 796 equipped aircraft, see 00560-00-AQ--TRiG TT21/TT22 Mode S Transponder Installation Manual for transponder troubleshooting.

Reference SAFO 17002 as needed while performing transponder and VHF maintenance tasks.

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 4-4

"G3X Equipped Aircraft Transponder Troubleshooting" on page 14-22

"796 Equipped Aircraft Transponder Troubleshooting" on page 14-25

14.2.3.1 G3X Equipped Aircraft Transponder Troubleshooting

The following procedure is used for troubleshooting the transponder on a G3X equipped aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

- Reference the following wiring diagrams for pin out details:
 - "System Wiring Diagram, Garmin G3X Transponder" on page 7-21
 - "System Wiring Diagram, Garmin G3X EIS and ADAHRS Display" on page 7-19

Error Message on G3X Display

- Look for error message on G3X display, including but not limited to messages related to:
 - ADAHRS
 - GPS
 - ADS-B IN
 - ADS-B OUT
- See 190-01115-00 Garmin Pilot's Guide System status messages for guidance on specific messages.

Transponder and Other Aircraft Instrument Gauge Intermittent Power

- Make sure Overhead Console INSTR 1 fuse is not blown and is seated all the way in. (See "System Wiring Diagram, Garmin G3X EIS and ADAHRS Display" on page 7-19.)

ADAHRS and Garmin G3X Display Has Intermittent Power

- See "System Wiring Diagram, Garmin G3X Transponder" on page 7-21.
- Locate D9147P (ADAHRS connector J251) and disconnect with MASTER ON.
- Check for 12V between PIN 7 and PIN 9.
- Reseat D9147P connector.
- Locate and disconnect D9146P (ADAHRS connector J252)
- Locate and disconnect D9138J (GTX 45R Transponder Connector).
- With MASTER OFF, check for continuity for each pin between D9138J (GTX 45R Transponder Connector) and D9146P.
- Check for shield ground isolation at D9138J.

Transponder Information Not Showing on G3X Display

- See "System Wiring Diagram, Garmin G3X Transponder" on page 7-21.
- Locate and disconnect D9149P (G3X display connector, J4502).
- Locate and disconnect D9138J (GTX 45R Transponder Connector).
- With MASTER OFF, check for continuity for each pin between D9138J and D9149P.
- Check for shield ground isolation at D9138J.

No GPS Signal and No Weather Information Displayed on G3X Display

- Remove engine cowling. (See "Remove Engine Cowlings" on page 17-14. Steps 1-3) Locate disconnected D9008J1 connector from engine cowling.
- Locate and disconnect D9008J2 connector on the transponder.
- Perform a coax connector function test, using a multi meter with setting set to continuity, to ensure coax connector is still properly isolated.
 - a. Refer to Figure 14-14.
 - b. Confirm there is NO continuity between outer contact and center contact.
 - c. Confirm there is continuity between outer contact and connector shell.
 - d. Confirm there is NO continuity between connector shell and center contact.
 - e. If any of the above conditions are not met at either connector, replace coax connector.

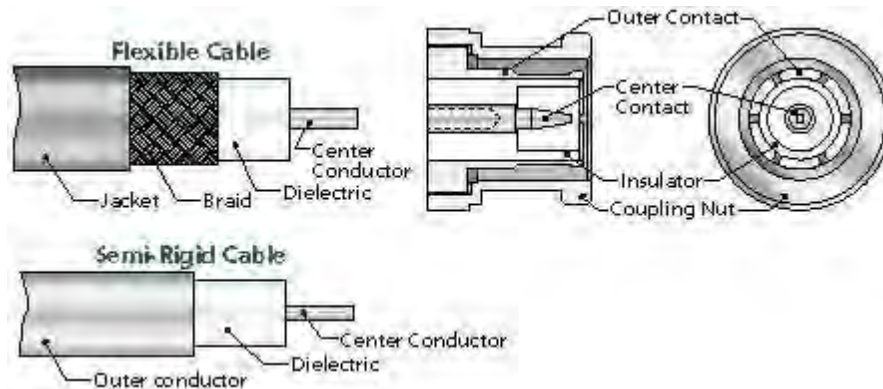


FIGURE 14-14
COAX CABLE LAYOUT

- Get two long lead wires to troubleshoot the transponder coax cable. Using the long lead wires:
 - a. Verify audible continuous beep at center contact between transponder antenna coax connector at engine bay and transponder coax connector in aircraft nose.
 - b. Verify audible continuous beep at outer contact between transponder antenna coax connector at engine bay and transponder coax connector in aircraft nose.
 - c. Verify NO beep between outer contact and center contact at either connector ends.
- Install engine cowl. (See “Install Engine Cowlings” on page 17-19.)
- If the function check for transponder coax cable passes, the issue could be either the antenna or the transponder unit.

VERIFICATION METHOD:

If troubleshooting fails to identify the problem, the antenna and/or transponder may need to be replaced. Contact ICON aircraft and See “Remove VHF Comm Transceiver and Transponder (G3X Configuration)” on page 14-147 and “Install VHF Comm Transceiver and Transponder (G3X Configuration)” on page 14-151.

RELATED INFORMATION:

"Transponder" on page 14-21

"Remove Engine Cowlings" on page 17-14

"Install Engine Cowlings" on page 17-19

"Remove VHF Comm Transceiver and Transponder (G3X Configuration)" on page 14-147

"Install VHF Comm Transceiver and Transponder (G3X Configuration)" on page 14-151

"Remove Individual Center Stack Components (G3X)" on page 7-53

14.2.3.2 796 Equipped Aircraft Transponder Troubleshooting

The following procedure is used for troubleshooting the transponder on a G3X equipped aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

- Reference the following wiring diagram for pin out and harness wiring details:
 - "System Wiring Diagram, Mode C" on page 7-33

TC20 Controller Does Not Communicate with Transponder

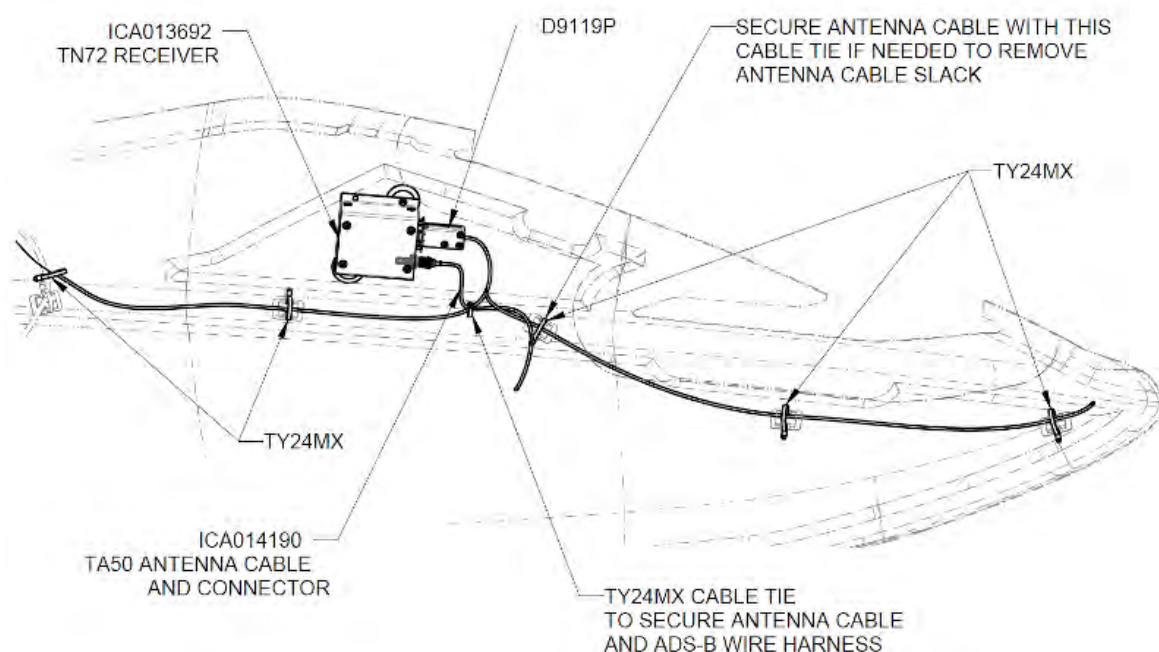
- Disconnect D9068P (Transponder Controller Connector) and D9041J (Transponder Mode C Connector).
- With MASTER OFF, check wiring continuity between TMAPA and TMAP2A, TMAPB and TMAP2B. Both connections must be solid for TC20 controller to function.
- Reconnect D9041J.
- With MASTER ON, between D9068P PIN 8 and PIN 9 should measure 6.5V. Between D9068P PIN 8 and Pin 1 should measure 6.5V.

No ADS-B IN/OUT/TIS Traffic Related Errors (NO ADS-B POS)

- Remove engine cowling. (See “Remove Engine Cowlings” on page 17-14. Steps 1-3.) Locate disconnected D9008J1 connector from engine cowling.
- Locate and disconnect D9008J2 connector on transponder.
- Perform a coax connector function test, using a multi meter with setting set to continuity, to ensure coax connector is still properly isolated.
 - a. Refer to Figure 14-14.
 - b. Confirm there is NO continuity between outer contact and center contact.
 - c. Confirm there is continuity between outer contact and connector shell.
 - d. Confirm there is NO continuity between connector shell and center contact.
 - e. If any of the above conditions are not met at either connector, replace coax connector.
- Get two long lead wires to troubleshoot the transponder coax cable. Using the long lead wires:
 - a. Verify audible continuous beep at center contact between transponder antenna coax connector at engine bay and transponder coax connector in aircraft nose.
 - b. Verify audible continuous beep at outer contact between transponder antenna coax connector at engine bay and transponder coax connector in aircraft nose.
 - c. Verify NO beep between outer contact and center contact at either connector ends.
- Install engine cowl. (See “Install Engine Cowlings” on page 17-19.)
- If the function check for transponder coax cable passes, the issue could be either the antenna or the transponder unit.

ADS-B Out Intermittently

- Check TC20 controller for software version (TT22.0 SW V2.13 or greater and Controller SW V1.14), if the software version is as indicated as shown in , remove TT22 Transponder (P/N 00745-00-01, “Remove VHF Comm Transceiver and Transponder” on page 14-145) and TC20 Control Head (P/N 00649-00, “Remove Individual Center Stack Bezel Components (Aera 796)” on page 7-46). Contact ICON. Ship transponder and control head for a software update.
- Locate TN72 GPS position receiver and FWD LH fuselage skin. (Figure 14-15)

**FIGURE 14-15****TN72 RECEIVER MOUNTING LOCATION AND WIRE HARNESS ROUTING**

- Reseat TA50 antenna connector.
- Disconnect D9119P (GPS receiver connector).
- With MASTER ON, D9119P PIN 1 and PIN 2 should measure 12V.
- Disconnect D9041J (transponder connector). With MASTER OFF, verify continuity between:
 - a. D9119P PIN 5 to D9041J PIN 4.
 - b. D9119P PIN 7 to D9041J PIN 5.
- If power check and continuity check pass, start with slave in a known functioning TA50 antenna and perform function check. Alternatively, slave in a known functioning TN72 unit.

VERIFICATION METHOD:

If troubleshooting fails to identify the problem, the antenna and/or transponder may need to be replaced. Contact ICON aircraft and See “Remove VHF Comm Transceiver and Transponder” on page 14-145 and “Install VHF Comm Transceiver and Transponder” on page 14-149.

RELATED INFORMATION:

- "Transponder" on page 14-21
- "Remove Engine Cowlings" on page 17-14
- "Install Engine Cowlings" on page 17-19
- "Remove VHF Comm Transceiver and Transponder" on page 14-145
- "Install VHF Comm Transceiver and Transponder" on page 14-149
- "Remove Individual Center Stack Bezel Components (Aera 796)" on page 7-46

14.2.4 Magnetic Direction Indicator Calibration

The following directions should be used to calibrate the magnetic direction indicator of the A5-B.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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.

NOTE: See KMC Publication No. 1404, KMC 2000-2, *Digital Attitude Indicator Operation Guide* for troubleshooting information.

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 compensa-

tion 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.

The instrument performs a self-test following calibration. If any error is found a red “X” will appear on the display. Troubleshoot by performing the calibration a second time. If the calibration does not rectify the condition, replace the attitude indicator. See “Replace Instrument Panel Gauges” on page 14-47.

NOTE: *The “X” can appear during a flight if the equipment detects an error. The pilot can recalibrate the unit during flight.*

14.2.5 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
ENGINE	LANE A minor fault. LANE B minor fault. LANE A & B minor faults.	Retrieve and review ECU data. See “ECU Troubleshooting” on page 17-9.
LAND AIRCRAFT + ENGINE	LANE A or B major fault.	

Trouble Light	Possible Cause	Remedy
FUEL PRESS	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.
LAND AIRCRAFT + FUEL PRESS	Excessively Low fuel pressure ($\text{FP} < 38.5$)	See FUEL PRESS light trouble shooting section for low fuel pressure possible cause and remedy.
	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
ALTERNATOR	Engine RPM less than 2400 after start.	Follow startup procedure. See "Engine Test Run" on page 17-7.
	Battery not charging with engine running.	Diagnose issue using wiring schematics. See "Electrical System Wiring Diagrams" on page 7-5.
	Low voltage on main bus (less than 13 VDC).	Diagnose issue using wiring schematics. See "Electrical System Wiring Diagrams" on page 7-5.
	Alternator B failure.	Replace alternator. See Rotax Maintenance Manual (Heavy Maintenance) for Rotax Engine Type 912 i Series alternator replacement.
ALTERNATOR Flashing	DAC software.	Check and update DAC software version as necessary.
LAND AIRCRAFT + ALTERNATOR + ENGINE	Alternator A failure.	Replace alternator. See Rotax Maintenance Manual (Heavy Maintenance) for Rotax Engine Type 912 i Series alternator replacement.
	Low voltage on main bus (less than 13 VDC)	Diagnose issue using wiring schematics. See "Electrical System Wiring Diagrams" on page 7-5.

Trouble Light	Possible Cause	Remedy
LAND AIRCRAFT + ALTERNATOR + BATTERY + ENGINE	Alternator A failure.	Replace alternator. See Rotax Maintenance Manual (Heavy Maintenance) for Rotax Engine Type 912 i Series alternator replacement.
	Battery voltage is low (11-12 VDC).	Test battery and replace if necessary. See “Battery Removal and Installation – Configuration A” on page 1-126.
	Battery not charging with engine running.	Diagnose issue using wiring schematics. See “Electrical System Wiring Diagrams” on page 7-5.
	Alternator B failure.	Replace alternator. See Rotax Maintenance Manual (Heavy Maintenance) for Rotax Engine Type 912 i Series alternator replacement.
BATTERY	Battery voltage is low (11-12 VDC).	Test battery and replace if necessary. See “Battery Diagnostic” on page 7-40.
	Battery not charging with engine running.	See “Battery Diagnostic” on page 7-40.
	Master Switch is OFF.	Turn Master Switch ON.
	30 amp circuit breaker pulled.	Reset 30 amp circuit breaker.

Trouble Light	Possible Cause	Remedy
LAND AIRCRAFT + BATTERY	Battery voltage is very low (less than 11 VDC).	Test battery and replace. See "Battery Diagnostic" on page 7-40. See "Battery Removal and Installation – Configuration A" on page 1-126.
	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 14-38.
	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 7-5.
LAND AIRCRAFT + BATTERY + ALTERNATOR	Alternator B failure.	Replace Alternator B.
	Battery voltage is low (11-12 VDC).	Test battery and replace if necessary. See "Battery Removal and Installation – Configuration A" on page 1-126.
	Battery not charging with engine running.	See "Battery Diagnostic" on page 7-40. See "Electrical System Wiring Diagrams" on page 7-5.

Trouble Light	Possible Cause	Remedy
SECURE WING/TAIL	LH or RH wing not secured.	Secure LH/RH wing. See "Install Left Wing" on page 18-11. See "Install Right Wing" on page 18-14.
	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 18-27.
	LH or RH horizontal tail tip not secured.	Secure LH/RH HT tip. See "Horizontal Tail" on page 13-1.
	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 13-6. See "Install Horizontal Tail Tip Lock Switches" on page 13-21.
PURGE BILGE	More than 1 gallon in bilge.	Run bilge pump. See "Check Bilge Pump Function" on page 7-70.

14.3 Instruments and Avionics General Maintenance

14.3.1 Overhead Console Component Replacement

Use this procedure to replace any indicated component mounted in the overhead console.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

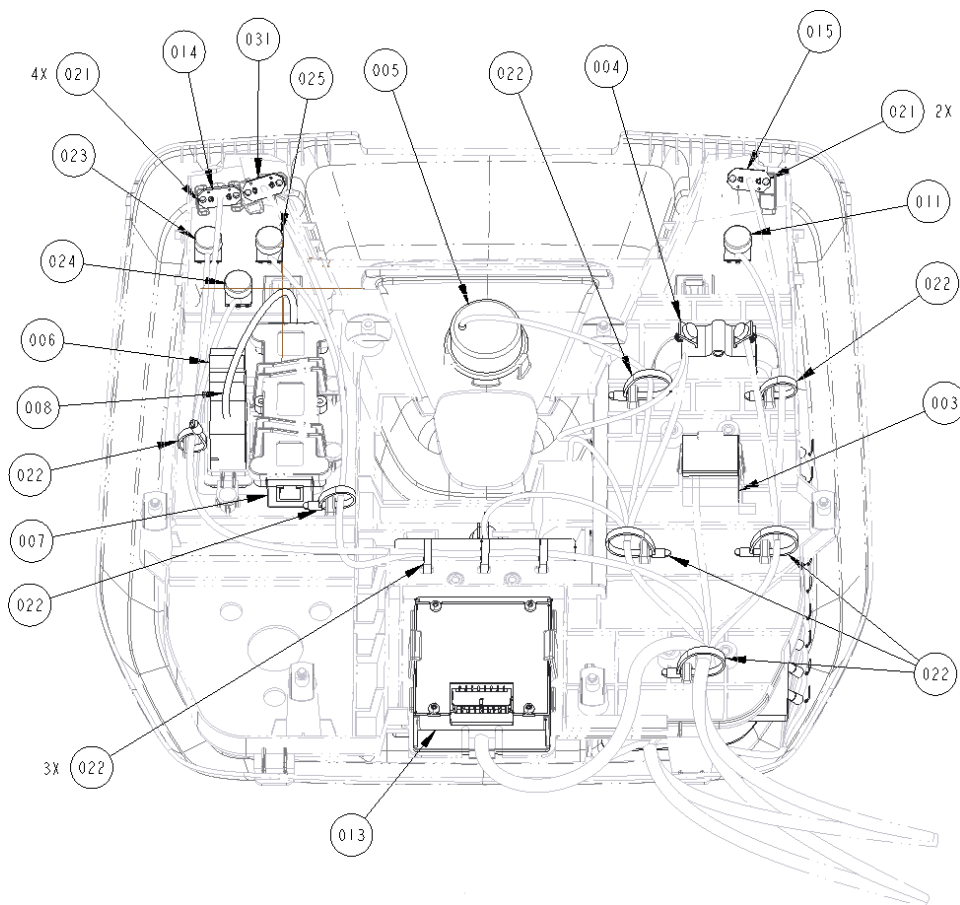
Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INFORMATION:



Find Number	Part Number	Name
003	M81714/67-02	Terminal Block, Mounting Track
004	W23-X1A1G-30	Circuit Breaker, 30A
005	ICA006179	Horn, Stall Warning
006	ICA012253	SWITCH, REMOTE, ELT TEST/RESET
007	ICA012255	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	TY23MX	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. Using a ball end 3/32 hex key, remove fuel shut off valve selector knob.
5. 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).
6. Place the overhead console on a clean work surface and replace any damaged or faulty component indicated in the figure and table below.
7. Use the graphic and associated parts list table to select the appropriate replacement components and then remove and replace the components.
8. Using a ball end 3/32 hex key, install fuel shut off valve selector knob.
9. 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_f.
10. Connect the D9078P and D9079J wire harness connectors and the ELT phone connector.

11. 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.
12. 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 14-76
"ELT Remote Control Panel Battery Replacement" on page 14-74
"Remove Dome Light Switch" on page 7-88
"Install Dome Light Switch" on page 7-89

14.3.2 Replace Overhead Console Fuses

Use this procedure to replace any indicated fuse mounted in the overhead console shown in Figure 14-16.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

ICA011204 (FUSE, 5A, EAASYID)

ICA011205 (FUSE, 7.5A, EASYID)

ICA011328 (FUSE, 15A, EASYID)

ICA011203 (FUSE, 20A, EASYID)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

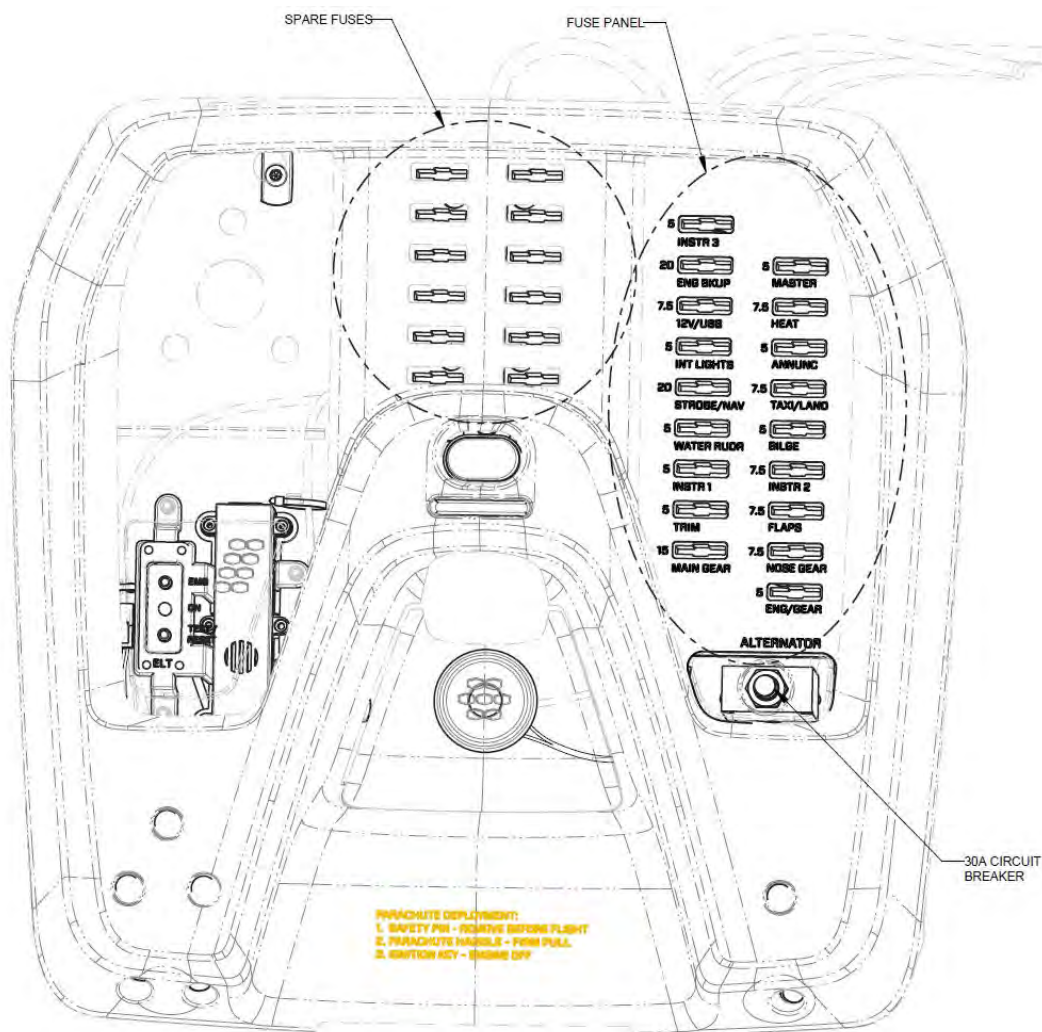


FIGURE 14-16
BOTTOM VIEW OF OVERHEAD CONSOLE AND FUSES.

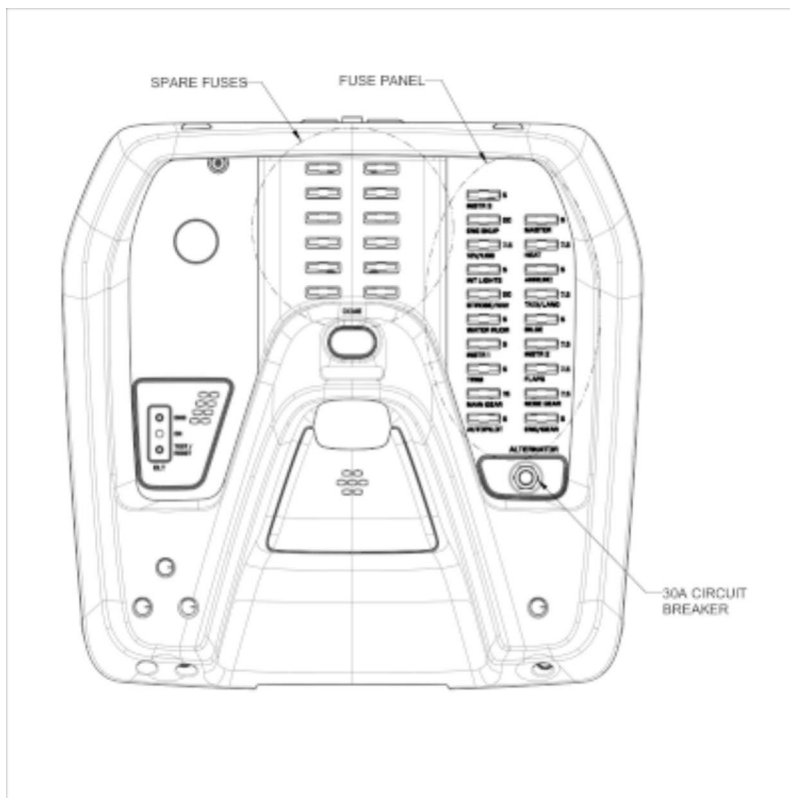


FIGURE 14-17
OVERHEAD CONSOLE, AUTOPILOT CONFIGURATION

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 14-16. 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 14-18
FUSE PANEL



FIGURE 14-19
FUSE PANEL, AUTOPILOT CONFIGURATION

Fuse ID	Description	Sub Components	Reference
INSTR 3	Secondary Power	Annunciator panel	"Annunciator Panel Function" on page 14-62
		DAC	"DAC Memory Unit" on page 14-178 "System Wiring Diagram, Engine Interface" on page 7-9 "System Wiring Diagram, Instrument Signals" on page 7-28
		Engine relays	"System Wiring Diagram, Engine Interface" on page 7-9
ENG BKUP	Engine Backup Power	Engine	"System Wiring Diagram, Engine Interface" on page 7-9
12V/USB	Outlets	12V outlet	"System Wiring Diagram, Outlets" on page 7-34
		USB outlet	"System Wiring Diagram, Outlets" on page 7-34
INT LIGHTS	Interior Lights	Lighting controller	"System Wiring Diagram, Interior Lighting" on page 7-29
		Dome light	"System Wiring Diagram, Interior Lighting" on page 7-29
STROBE/NAV	Anti – Collision Lights – Position	RH ACL-position	"System Wiring Diagram, Exterior Lights" on page 7-13
		LH-ACL-position	"System Wiring Diagram, Exterior Lights" on page 7-13
		Strobe controller	"System Wiring Diagram, Exterior Lights" on page 7-13
WATER RUDDER	Water Rudder	Actuator	"Water Rudder" on page 12-15 "System Wiring Diagram, Water Rudder" on page 7-37

Fuse ID	Description	Sub Components	Reference
INSTR 1	Instruments	Gauges	"System Wiring Diagram, Instrument Signals" on page 7-28
		Backlight potentiometer	"System Wiring Diagram, Instrument Lighting" on page 7-27
		Hour meter	"System Wiring Diagram, Hour Meter" on page 7-26
		Transponder	"Transponder" on page 14-21 "System Wiring Diagram, Mode C" on page 7-33
TRIM	Pitch Trim	Actuator	"Pitch Trim Actuator" on page 10-54 "System Wiring Diagram, Control Sticks, Pitch Trim" on page 7-7
MAIN GEAR	Main Landing Gear	Actuator	"Main Landing Gear" on page 15-39 "System Wiring Diagram, Landing Gear" on page 7-30
MASTER	Master Contactor	Contactor	"System Wiring Diagram, Engine Interface" on page 7-9
HEAT	Cabin Heat	Fan	"Cabin Heater" on page 8-3 "System Wiring Diagram, Heater" on page 7-25
		Solenoid valve	"System Wiring Diagram, Heater" on page 7-25

Fuse ID	Description	Sub Components	Reference
ANNUNC	Annunciators	Annunciator panel	"Annunciator Panel Function" on page 14-62
		Trim annunciator	"System Wiring Diagram, Control Sticks, Pitch Trim" on page 7-7
		Fuel level sensor	"Fuel Low-Level Light Diagnostic" on page 11-4 "System Wiring Diagram, Fuel" on page 7-16
		Fuel low sensor	"Fuel Low-Level Light Diagnostic" on page 11-4 "System Wiring Diagram, Fuel" on page 7-16
		Bilge sensor	"System Wiring Diagram, Bilge" on page 7-6
		Water rudder LED	"System Wiring Diagram, Water Rudder" on page 7-37
TAXI/LAND	Taxi-Landing	Bilge pump LED	"System Wiring Diagram, Bilge" on page 7-6
		LH taxi-landing	"System Wiring Diagram, Exterior Lights" on page 7-13
		RH taxi-landing	"System Wiring Diagram, Exterior Lights" on page 7-13
BILGE	Bilge Pump	Bilge Pump	"Check Bilge Pump Function" on page 7-70 "System Wiring Diagram, Bilge" on page 7-6

Fuse ID	Description	Sub Components	Reference
INSTR 2	Instruments	GPS	"System Wiring Diagram, GPS" on page 7-24
		VHF radio	"System Wiring Diagram, VHF" on page 7-35
		DAC	"DAC Memory Unit" on page 14-178 "System Wiring Diagram, Engine Interface" on page 7-9 "System Wiring Diagram, Instrument Signals" on page 7-28
		MSC	"System Wiring Diagram, Flaps" on page 7-15 "System Wiring Diagram, Heater" on page 7-25
FLAPS	Flaps	Actuator	"System Wiring Diagram, Flaps" on page 7-15
NOSE GEAR	Nose Landing Gear	Actuator	"System Wiring Diagram, Landing Gear" on page 7-30
ENG/GEAR	Relays	LANE A relay	"System Wiring Diagram, Engine Interface" on page 7-9
		LANE B relay	"System Wiring Diagram, Engine Interface" on page 7-9
		Fuel pump 1 relay	"System Wiring Diagram, Engine Interface" on page 7-9
		Fuel pump 2 relay	"System Wiring Diagram, Engine Interface" on page 7-9
		Starter relay	"System Wiring Diagram, Engine Interface" on page 7-9
		Main gear up relay	"System Wiring Diagram, Landing Gear" on page 7-30
		Main gear down relay	"System Wiring Diagram, Landing Gear" on page 7-30
		Nose gear up relay	"System Wiring Diagram, Landing Gear" on page 7-30

Fuse ID	Description	Sub Components	Reference
AUTOPILOT	Autopilot	Autopilot	"System Wiring Diagram, Garmin G3X Autopilot" on page 7-17
		Roll Servo	
		Pitch Servo	

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 15-15

14.3.3 Calibrate AOA Pressure Transducer

The following section contains the information necessary to perform the calibration of the AOA pressure transducer.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.
-

VERIFICATION METHOD:

Increased accuracy and the ability to adjust for sensor aging and varying environmental conditions to obtain the most accurate result possible.

Inspect the indicator LED to ensure that it is solid GREEN color.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Avionics and Electrical" on page 4-23

14.3.4 Replace Instrument Panel Gauges

Use the following to replace any of the nine gauges in the flight instrument panel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA010987 (INDICATOR, ANGLE OF ATTACK, 2.25DIA)

ICA015294 (INDICATOR, AIRSPEED, 3.12DIA)

ICA014400 (INDICATOR, ATTITUDE)

ICA014478 (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)

TASK INSTRUCTIONS:

1. Remove instrument cluster bezel. (See “Remove Instrument Cluster” on page 14-50.)
 2. Remove a set of four #6-32 screws securing each gauge to mount.
NOTE: Retain removed hardware for re-installation.
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 14-52.)
 5. This procedure requires a pitot-static leak test if the lines are disconnected from the gauges. (See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.)
-

VERIFICATION METHOD:

Altimeter and airspeed: Perform pitot-static leak test. (See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.)

Attitude indicator: After turning on the master switch, the instrument should turn on and light up. Perform calibration. (See “Magnetic Direction Indicator Calibration” on page 14-28.)

Fuel quantity: After turning on the master switch, the instrument should move to indicate the fuel quantity.

AOA: After turning on the master switch, the instrument needle should move to the lower range of the dial.

Turn on master switch, verify the needle position of the Oil Temp Oil Pressure, Coolant Temp, and Tachometer moved from 6 o'clock position to the lower range of the dial.

Perform an annunciator panel inspection. See “Annunciator Panel Function” on page 14-62.

RELATED INFORMATION:

"Left Instrument Panel Top Panel Removal" on page 9-20

"Install Instrument Cluster" on page 14-52

"Remove Instrument Cluster" on page 14-50

"Pitot-Static-AOA Leak Test Procedures" on page 14-181

"Verify Altimeter Calibration" on page 14-197

14.3.5 Multiple Systems Controller (MSC) Replacement

Use the following procedure to replace the multiple systems controller (MSC).

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-17.)
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 9-19.)

VERIFICATION METHOD:

Power up and check all avionics and electrical systems for proper function.

RELATED INFORMATION:

"Right Instrument Panel Top Panel Installation" on page 9-19

"Right Instrument Panel Top Panel Removal" on page 9-17

"Alternate Pitot-Static Leak Test Procedure" on page 14-195

14.3.6 Remove Instrument Cluster

Use the following to remove the instrument cluster to perform maintenance on instrument gauges or annunciator panel.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 14-186.)

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 14-20.

NOTE: Retain removed hardware for re-installation.

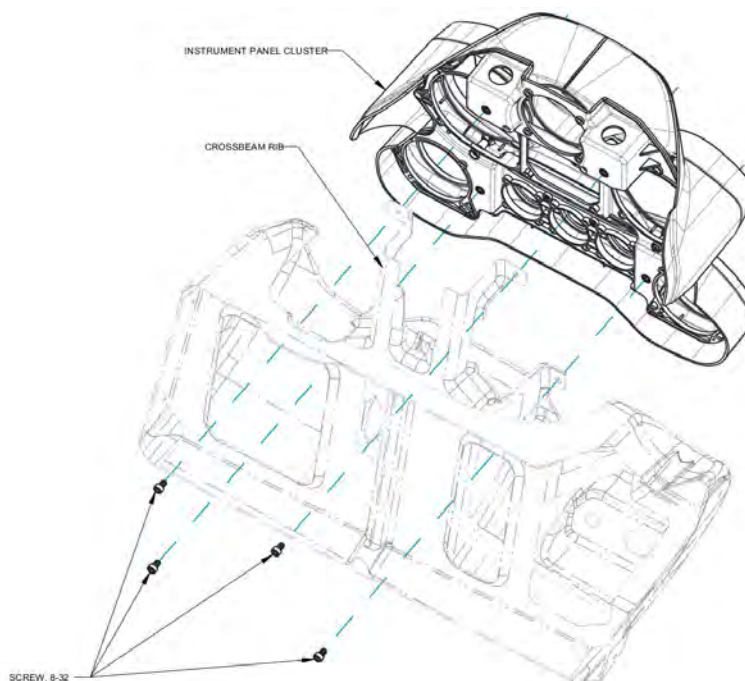


FIGURE 14-20
INSTRUMENT PANEL MOUNT ATTACHMENT DETAIL – EXPLODED VIEW

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 14-21.

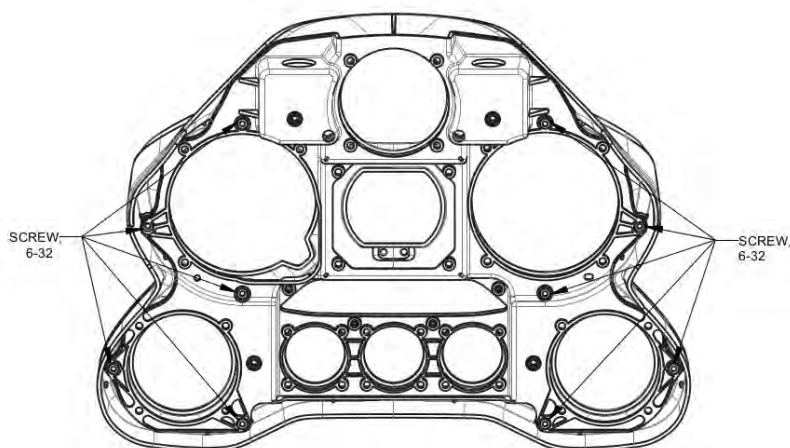


FIGURE 14-21
INSTRUMENT PANEL BEZEL DETAIL – AIRCRAFT REAR VIEW

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 14-181

"Install Instrument Cluster" on page 14-52

"Replace Instrument Panel Gauges" on page 14-47

"Replace Annunciator Panel" on page 14-63

14.3.7 Install Instrument Cluster

Use the following to install the instruments cluster.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA007864 (BEZEL ASSY, INSTRUMENT CLUSTER)
ICA007384 (MOUNTING PANEL, INSTRUMENT CLUSTER)
LS5000-904 (PANEL, ANNUNCIATOR)
ICA010987 (INDICATOR, ANGLE OF ATTACK, 2.25DIA)
ICA015294 (INDICATOR, AIRSPEED, 3.12DIA)
ICA014400 (INDICATOR, ATTITUDE)
ICA014478 (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, REMOVALBLE LOW STR, PURPLE)

A pitot-static leak test is required. See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.

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.
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.
4. Attach static tube to the altimeter.
5. Attach static and pitot tubes to airspeed indicator.
6. Perform pitot-static leak test. (See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.)
7. Re-install hood shell. Slide it forward into the clip hole and then press it down on the instrument cluster.

VERIFICATION METHOD:

Turn on master switch, verify the needle position of the Oil Temp, Oil Pressure, Coolant Temp, and Tachometer moved from 6 o'clock position to the lower range of the dial.

Altimeter and airspeed: Perform a pitot-static leak test. (See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.)

Attitude indicator: After turning on the master switch, the instrument should turn on and light up.

Fuel quantity: After turning on the master switch, the instrument should move to indicate the fuel quantity.

AOA: After turning on the master switch, the instrument needle should move to the lower range of the dial.

Perform an annunciator panel inspection. See "Annunciator Panel Function" on page 14-62.

RELATED INFORMATION:

"Remove Instrument Cluster" on page 14-50

"Replace Instrument Panel Gauges" on page 14-47

"Replace Annunciator Panel" on page 14-63

14.3.8 Access Center Stack Instruments and Switches

This section contains instructions to access the Center Stack instrument wire connections. Instructions are for access only and should not be used for switch replacement.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instrument (and Avionics)

Consumables

None

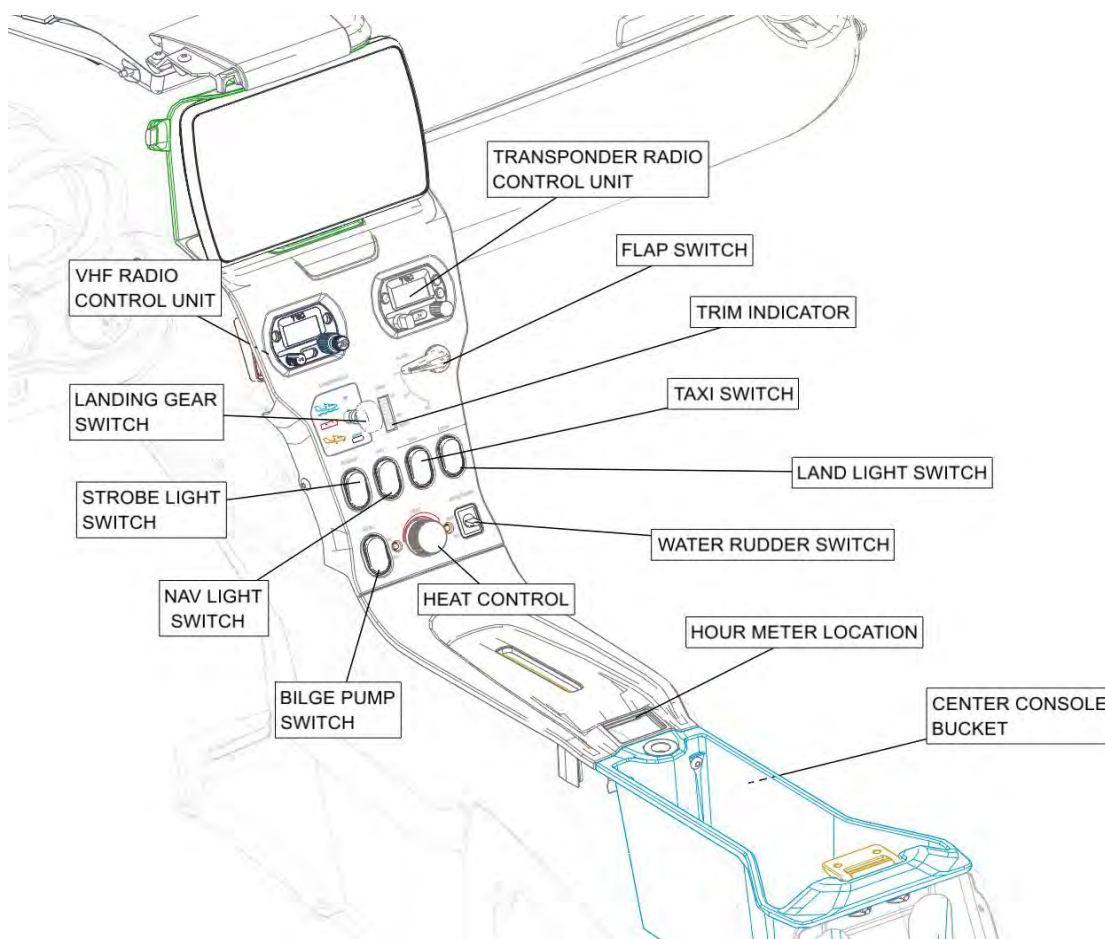


FIGURE 14-22
CENTER STACK OVERVIEW (GARMIN 796 GPS CONFIGURATION)

TASK INSTRUCTIONS:

1. Access the instruments and switches listed in the following table. (See “Aera 796 GPS Mount and Radio Stack Bezel Removal” on page 9-15.) The following table details the connections for instruments located in the Center Console Bucket.

Table 14-1: 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

Table 14-1: Center Stack Wire Instruments Wiring (Continued)

Instrument/Switch	Connection From	Connection To
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	

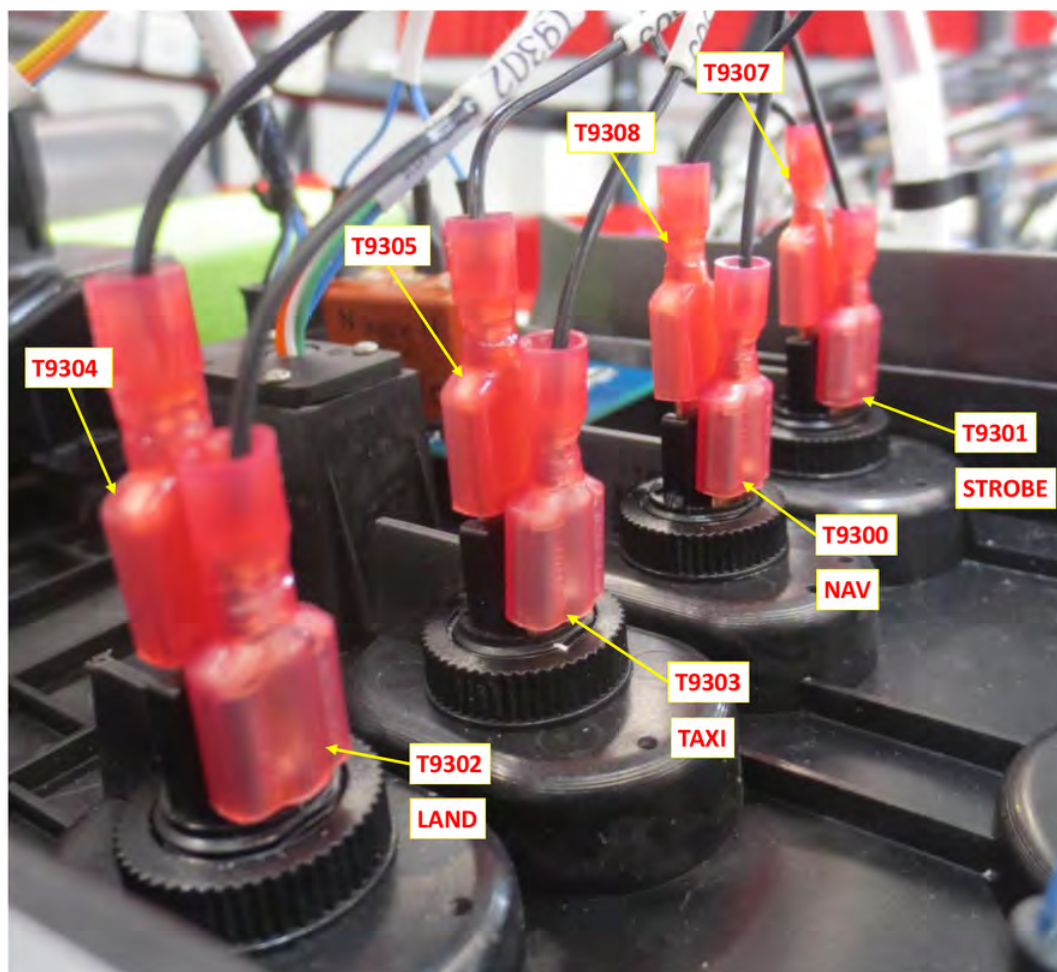


FIGURE 14-23
CENTER STACK WIRE HARNESS

2. Access the instruments and switches listed in the following table. (See “Center Console Bucket Removal” on page 9-5.)The following table details the connections for instruments located in the Center Console Bucket.

Table 14-2: 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.

If the transponder is inadvertently disconnected, please see “Install Individual Center Stack Bezel Components (Aera 796)” on page 7-48 to perform a functional test.

14.3.9 Remove and Install Hour Meter

This section contains instructions to remove and install hour meter.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

82452-82 (HOURMETER, QUARTZ, 12-60VDC, 10000HRS)

Aircraft System and Number

10 – Instruments and Avionics

Consumables

None

TASK INSTRUCTIONS:

1. Remove center console bucket. (See “Center Console Bucket Removal” on page 9-5.)
 2. Access the hour meter. (See “Throttle Handle and Bezel Removal” on page 9-10.)(See “Throttle Handle and Bezel Installation” on page 9-13.)
-

VERIFICATION METHOD:

Perform an engine test run and verify the hour meter digits are counting. (See “Engine Test Run” on page 17-7.)

14.3.10 Remove Microphone or Headphone Jack

Use the following procedure to remove the LH or RH microphone or headphone jacks due to failure.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Remove center armrest.
2. Remove center console bucket.
3. 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.

4. Disconnect connectors from headphone or microphone jacks.
 - a. D9073P connects to D9073J on microphone jack.
 - b. D9074P connects to D9074J on headphone jack.
 - c. D9075P connects to D9075J on microphone jack.
 - d. D9076P connects to D9076J on headphone jack.
 5. Remove nuts and remove the failed jacks and discard.
-

VERIFICATION METHOD:

Microphone or headphone jack has been removed.

14.3.11 Install Microphone or Headphone Jack

Use the following procedure to install the LH or RH microphone or headphone jacks due to failure.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA009650 (JACK, MICROPHONE, RH)

ICA009651 (JACK, MICROPHONE, LH)

ICA009652 (JACK, HEADPHONE, RH)

ICA009653 (JACK, HEADPHONE, LH)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Install LH/RH microphone jacks. (See Figure 14-24.)

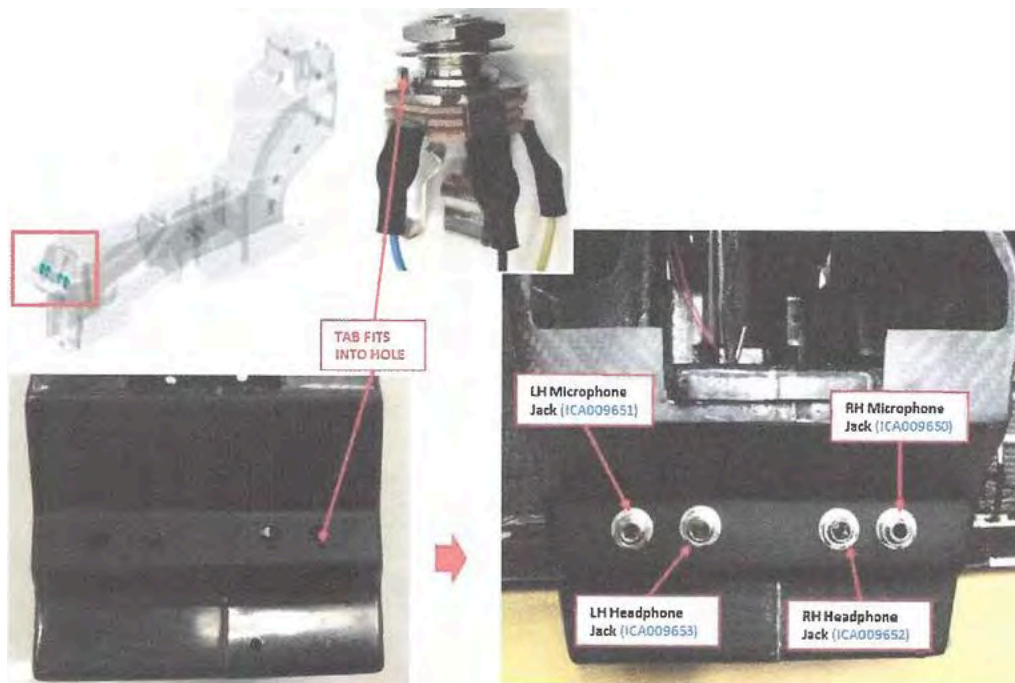


FIGURE 14-24
JACKS INSTALLATION

2. Install LH/RH headphone jacks. (See Figure 14-25.)

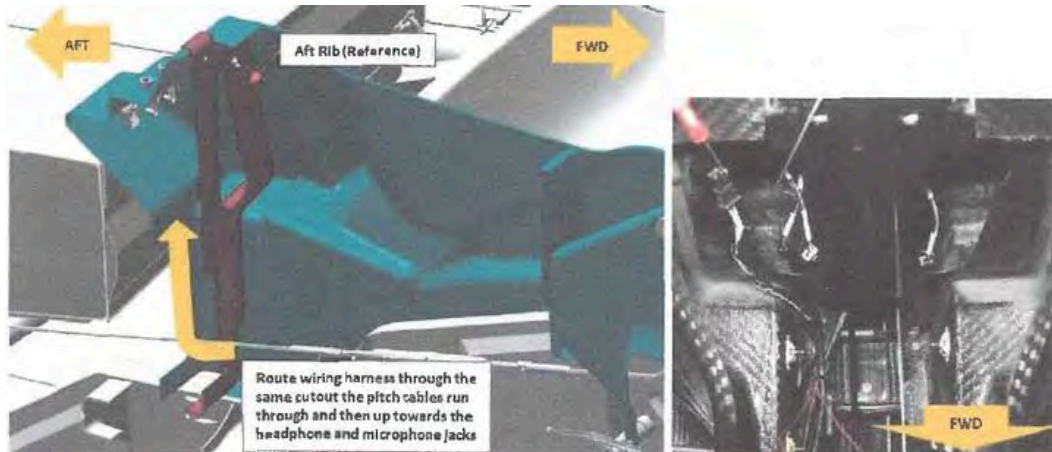


FIGURE 14-25
ELECTRICAL CONNECTIONS TO JACKS

CAUTION: Be careful not to damage tab during the install.

3. Slowly torque installed nuts to 20 in-lbs.

VERIFICATION METHOD:

Verify functional operation of microphones and headphones.

14.4 Annunciator Panel

14.4.1 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 14-29.)

14.4.2 Annunciator Panel Diagram/Schematic



FIGURE 14-26
ANNUNCIATOR PANEL

14.4.3 Inspection Instructions

14.4.3.1 Annunciator Panel Function

The following section contains information needed to test annunciator panel function.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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:

"Annual and 100-Hour Inspection – Operational Inspection" on page 4-25

"Replace Annunciator Panel" on page 14-63

14.4.4 Maintenance Instructions

14.4.4.1 Replace Annunciator Panel

The following can be used to replace the annunciator panel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 14-50.)
 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 14-52.)
-

VERIFICATION METHOD:

Check the operation of the annunciator panel (See "Annunciator Panel Function" on page 14-62.)

RELATED INFORMATION:

"Install Instrument Cluster" on page 14-52

"Remove Instrument Cluster" on page 14-50

"Annunciator Panel Function" on page 14-62

14.5 ELT

14.5.1 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 14-27.) The transmitter and battery are located beneath the center console panel, forward of the throttle handle. (See Figure 14-28.) 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.

14.5.2 ELT Diagram/Schematic

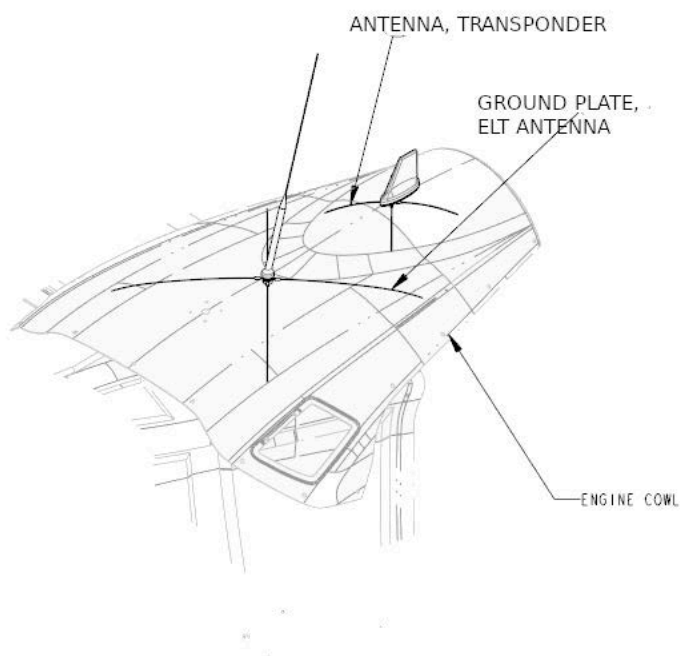


FIGURE 14-27
ELT ANTENNA AND TRANSPONDER ANTENNA

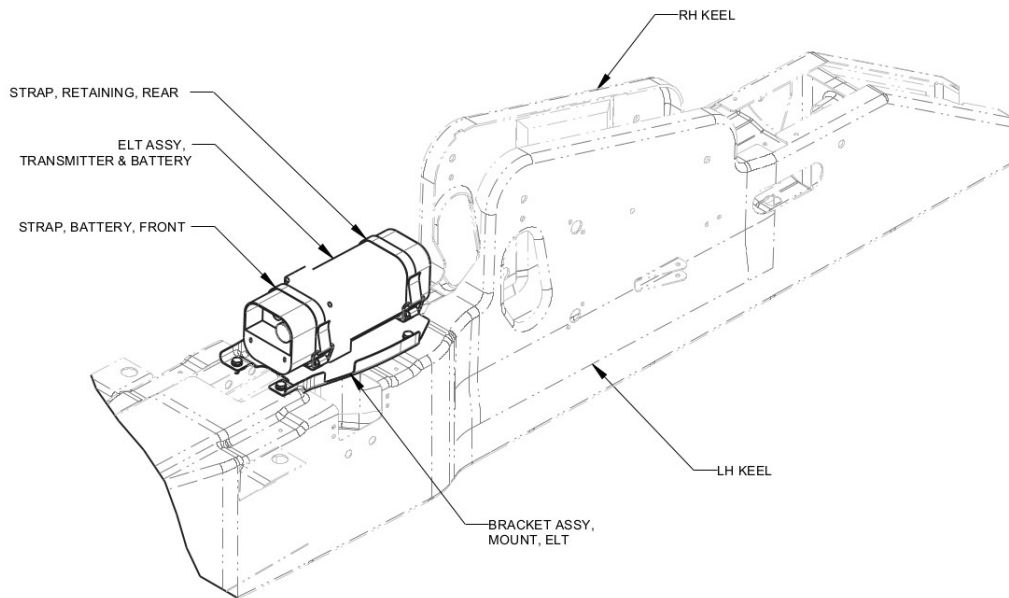


FIGURE 14-28
ELT ASSEMBLY LOCATION

14.5.3 Inspection Instructions

14.5.3.1 ELT Access

The following contains instructions for accessing the ELT for inspection and maintenance.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

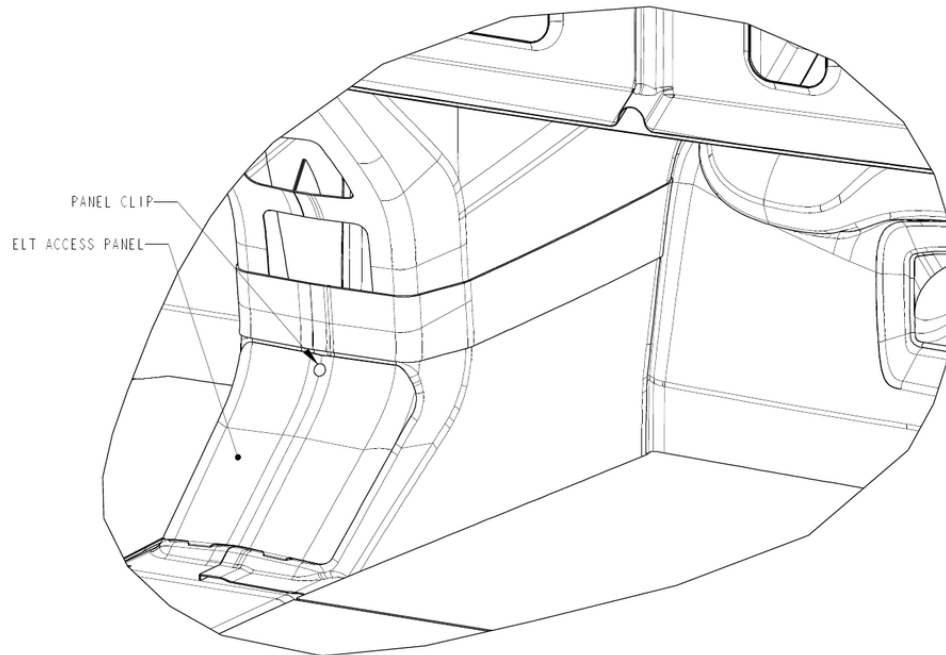
Consumables

None

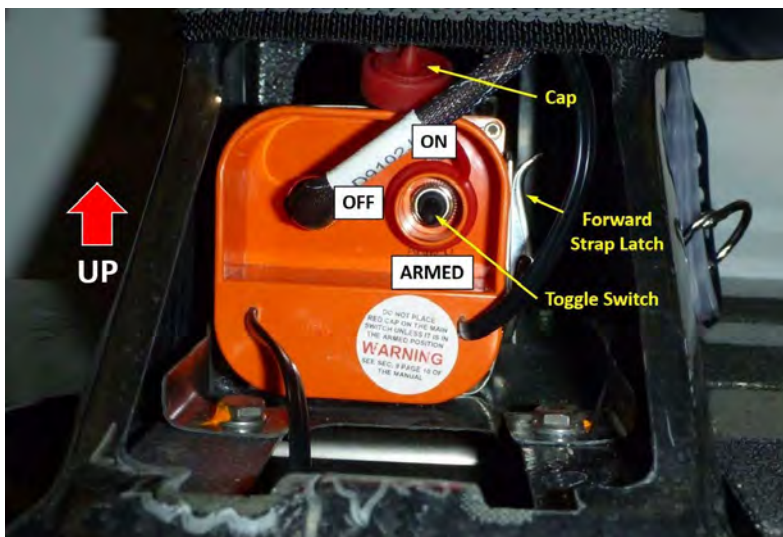
TASK INSTRUCTIONS:

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 14-68
- "ELT Remote Control Panel Battery Replacement" on page 14-74
- "ELT Battery Self Test" on page 14-71
- "ELT Battery Replacement" on page 14-72
- "ELT Audio Alert Indicator Battery Replacement" on page 14-76

14.5.3.2 ELT Inspection and Function Check

The following includes directions for the inspection and function check of the ELT.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

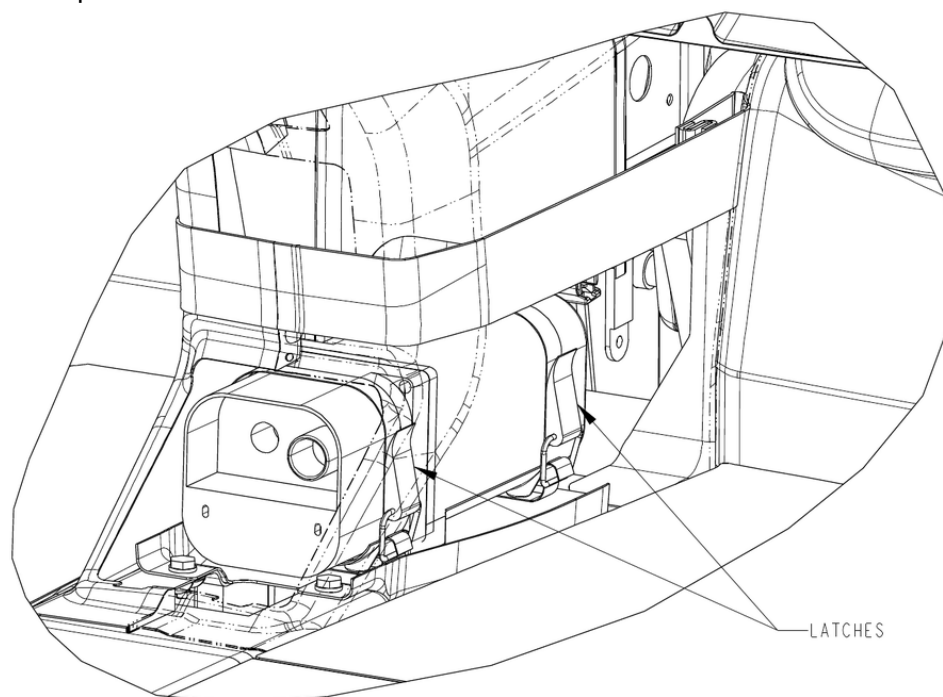
10 – Instruments (and Avionics)

Consumables

None

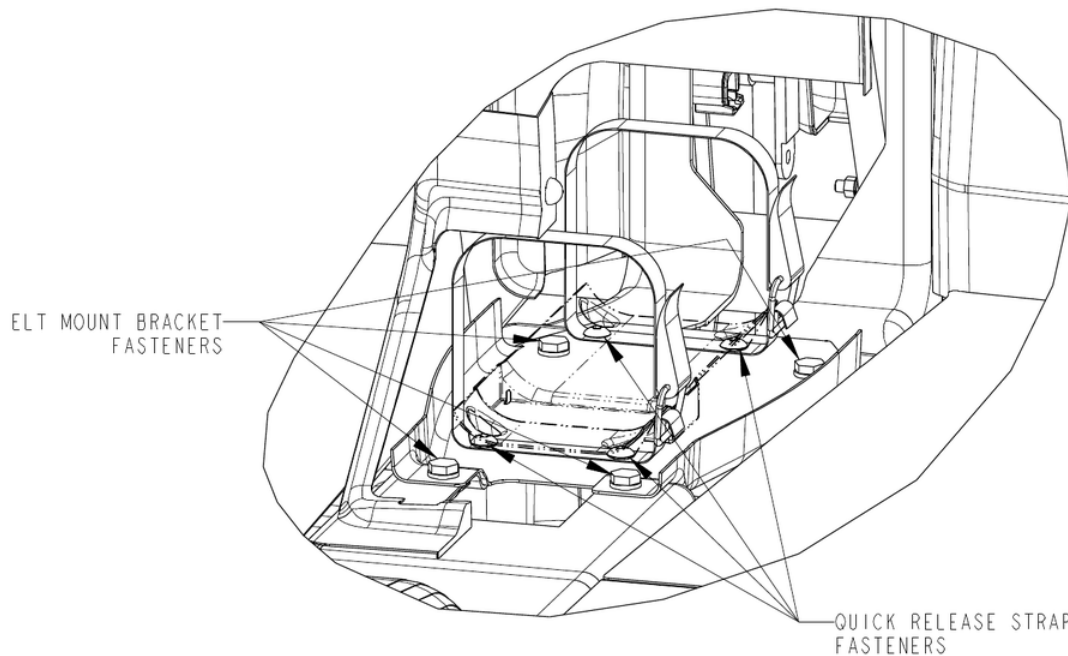
TASK INSTRUCTIONS:

1. Remove ELT access panel. (See “ELT Access” on page 14-66.)
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 10 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 14-71.

VERIFICATION METHOD:

Inspection is verified if all ELT functional checks pass.

RELATED INFORMATION:

"ELT Access" on page 14-66

"ELT Battery Self Test" on page 14-71

14.5.3.3 ELT Battery Self Test

The ELT is capable of performing a self test to verify that major ELT systems are functioning properly.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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 14-66

"ELT Battery Replacement" on page 14-72

"ELT Inspection and Function Check" on page 14-68

14.5.4 Maintenance Instructions

14.5.4.1 ELT Battery Replacement

Use these instructions to access the ELT battery for inspection or replacement.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA012256 (ELT ASSY, TRANSMITTER & BATTERY)

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 14-66.)
 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_f.
 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 14-71.)

RELATED INFORMATION:

"ELT Access" on page 14-66

"ELT Battery Self Test" on page 14-71

14.5.4.2 ELT Remote Control Panel Battery Replacement

Directions for replacing the ELT remote control panel indicator battery.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

Duracell PX28L 6 volt lithium battery, or equivalent

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

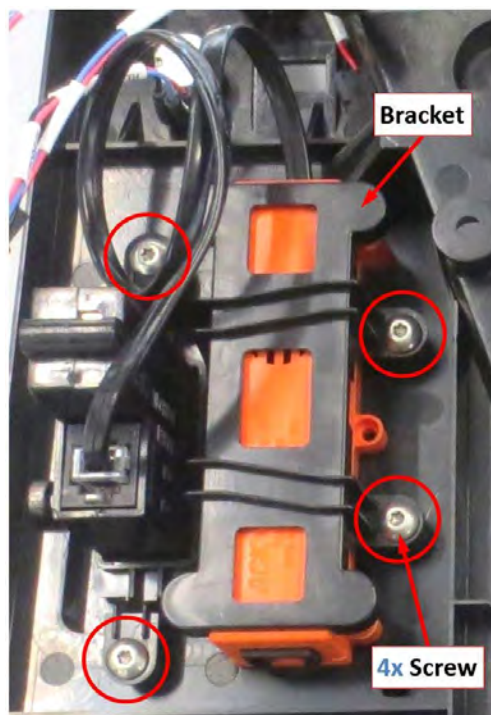
None

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.

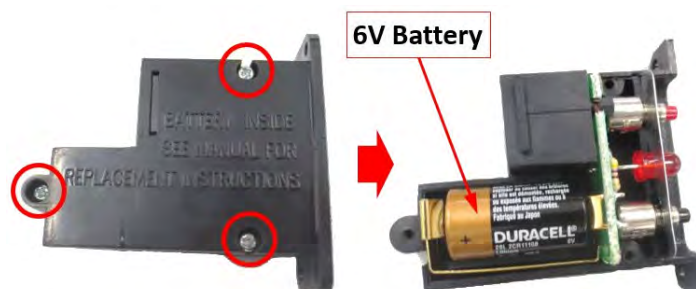
NOTE: *The Audio Annunciator Battery should be checked and replaced at the same time. (See "ELT Audio Alert Indicator Battery Replacement" on page 14-76.)*

TASK INSTRUCTIONS:

1. Remove the overhead console bezel and overhead console mount. (See "Overhead Console Component Replacement" on page 14-35.)
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:

After battery replacement, perform the ELT battery self test per "ELT Battery Self Test" on page 14-71.

RELATED INFORMATION:

"ELT Access" on page 14-66

"ELT Audio Alert Indicator Battery Replacement" on page 14-76

"Overhead Console Component Replacement" on page 14-35

14.5.4.3 ELT Audio Alert Indicator Battery Replacement

The following instructions detail how to replace the audio annunciator battery.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

Duracell CR-2,3 or equivalent

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

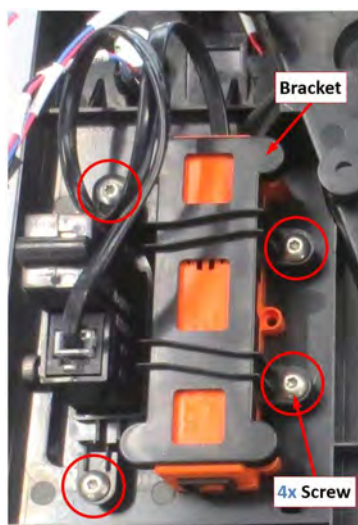
None

NOTE: *The ELT audio alert indicator's battery must be replaced every 10 years.*

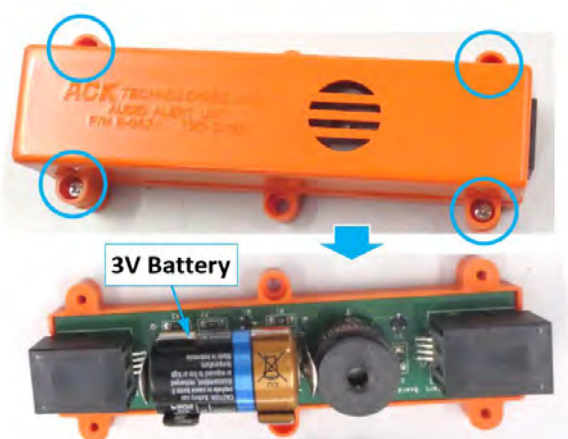
TASK INSTRUCTIONS:

1. Remove the overhead console bezel and console mount. (See "Overhead Console Component Replacement" on page 14-35.)
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:

After battery replacement, perform the ELT battery self test per "ELT Battery Self Test" on page 14-71.

NOTE: *The ELT Remote Battery should be checked and replaced at the same time.*

RELATED INFORMATION:

"ELT Access" on page 14-66

"ELT Remote Control Panel Battery Replacement" on page 14-74

"Overhead Console Component Replacement" on page 14-35

14.5.4.4 Transponder and ELT Antenna Replacement

Use the following task to replace the ELT transponder and transmitter antennas. For Removing and Installing the VHF Comm Transceiver and Transponder see "Remove VHF Comm Transceiver and Transponder" on page 14-145 and "Install VHF Comm Transceiver and Transponder" on page 14-149.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA012199 (ANTENNA, ELT)

ICA012182/ICA009540 ELT ANTENNA GROUND

00745-00-01 (TRANSPONDER UNIT TT22)

AV-74 (ANTENNA, TRANSPONDER)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

Loctite 243 THREADLOCKER

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

CB200 (ADHESIVE, ACRYLIC STRUCTURAL, 2 PART, CLICK BOND, 3.5 GRAM PACKET)

Reference SAFO 17002 as needed while performing transponder and VHF maintenance tasks.

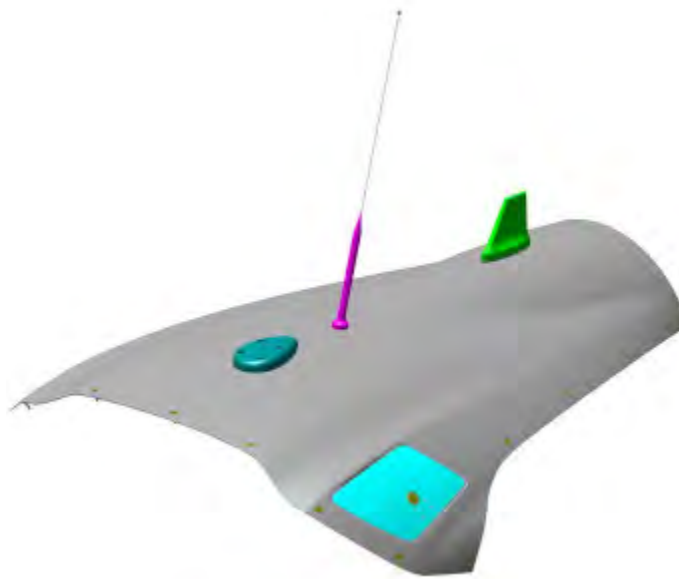


FIGURE 14-29
TRANSPONDER AND ELT ANTENNA PLACEMENT

TASK INSTRUCTIONS:

1. Remove top engine cowling. (See “Remove Engine Cowlings” on page 17-14.)
2. Loosen the nuts and lock washers to remove the TRANSPONDER ANTENNA.

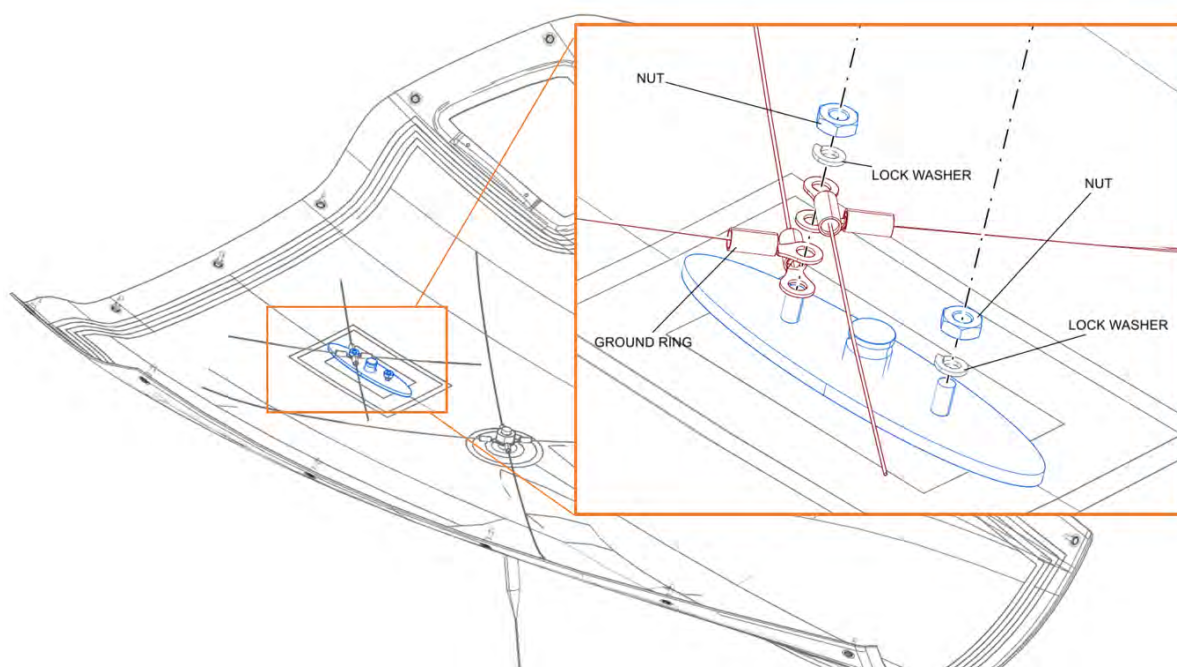


FIGURE 14-30
REMOVE TRANSPONDER ANTENNA

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.

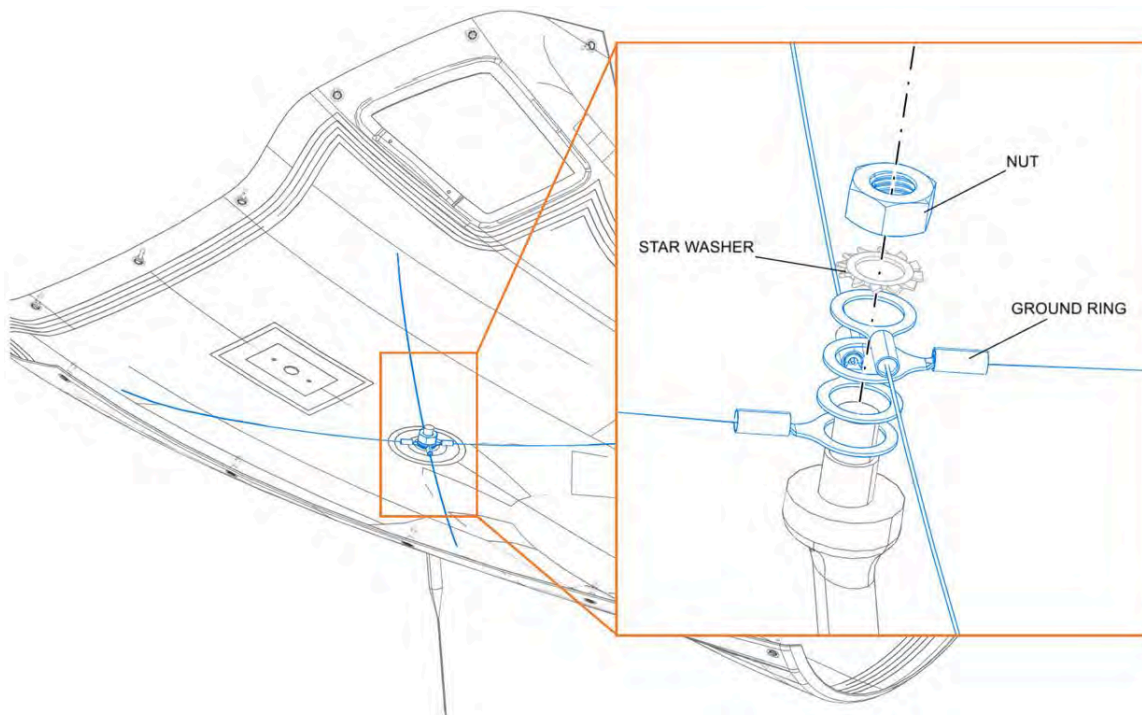


FIGURE 14-31
REMOVE ELT ANTENNA

To install ELT ANTENNA, see Figure 14-32 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. (Figure 14-33)
 - 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.

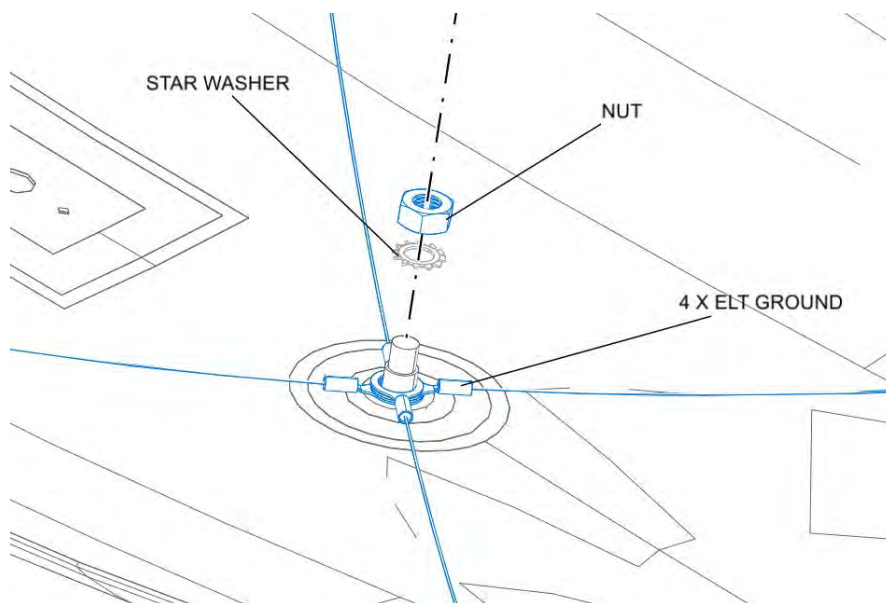


FIGURE 14-32
INSTALL ELT ANTENNA

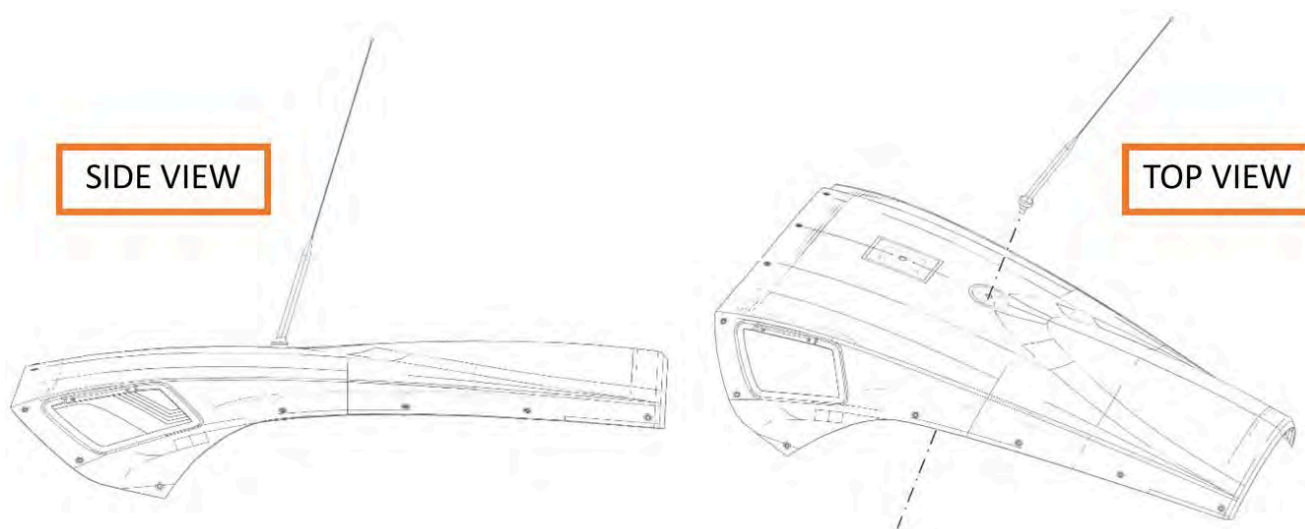


FIGURE 14-33
ELT ANTENNA ORIENTATION

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 14-34. 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.

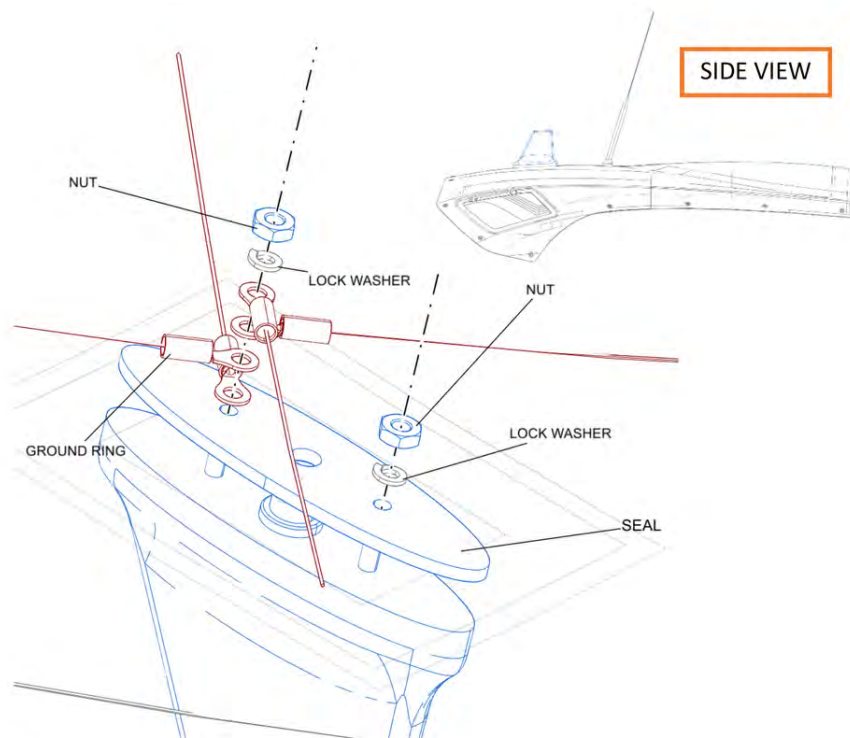


FIGURE 14-34
INSTALL TRANSPONDER ANTENNA

13. Ensure ELT and transponder antenna ground wires do not overlap and are not touching one another.

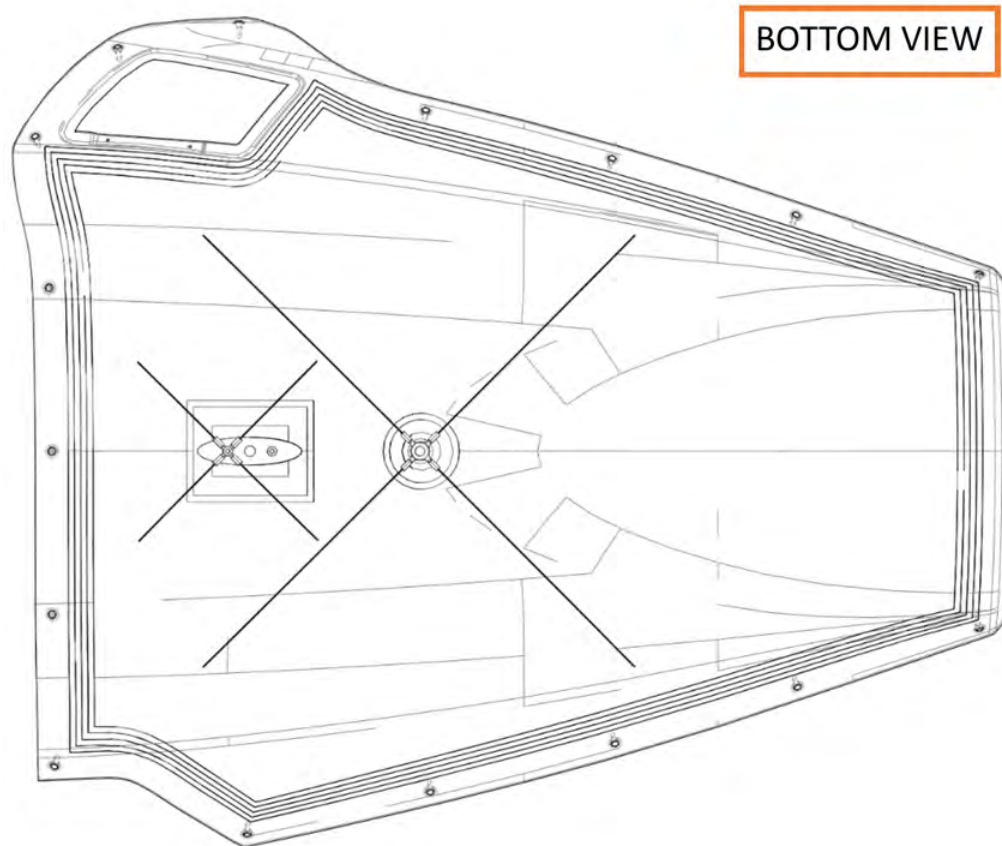


FIGURE 14-35
BOTTOM VIEW OF TOP ENGINE COWLING AFTER ANTENNAS ARE INSTALLED

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".

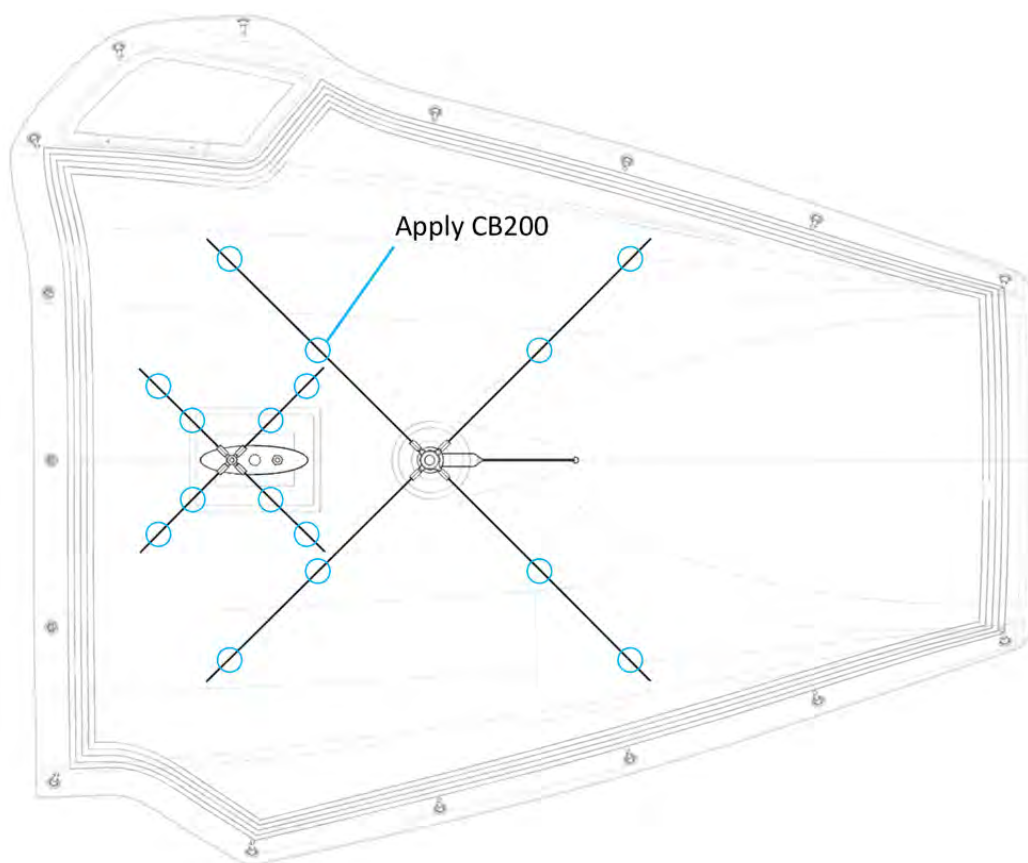


FIGURE 14-36
BOND GROUND WIRES TO COWL SURFACE

- 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 cowling. (See "Install Engine Cowlings" on page 17-19.)

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 14-71.

For Aera 796 aircraft, perform a transponder functional test for transmission on 121.5 MHz and 406 MHz. If the control unit was replaced, configure the transponder. See 00560-00-AQ--TRiG TT21/TT22 Mode S Transponder Installation Manual.

For G3X aircraft, perform a transponder functional test for transmission on 121.5 MHz and 406 MHz. If the control unit was replaced, configure the transponder. See 190-01499-10 Garmin GTX 34R/45R Installation Manual and 190-01115-01 Garmin G3X/G3X Touch Installation Manual.

14.6 Garmin G3X Touch™

14.6.1 Garmin G3X Touch™ Description

The VHF radio, supplied by Garmin, allows two-way communication and the monitoring of two frequencies at the same time. The GTR 20 remote transceiver is installed remotely inside the left-hand side of the nose of the aircraft and is controlled through the Garmin G3X Touch™ display and the push-to-talk buttons on both the pilot and passenger control sticks. The antenna with VHF radio is located on top of the horizontal tail of the aircraft. For more details on operating the communication radio via the Garmin G3X Touch™ display, see the following document which is supplied with your aircraft: Garmin Part Number 190-01754-00 Rev. M - Garmin G3X Touch™ Pilot's Guide (Section 4 CNS Interface).

The GTX 45R, also supplied by Garmin, is a remote mounted Mode S transponder with ADS-B in and out capability. It is installed inside the left side of the nose of the aircraft next to the VHF radio, and is controlled through the Garmin G3X Touch™ display. The antenna for the transponder is located on top of the engine cowling. The antenna for the GPS position source is located on the crossbeam. For more details on operating the transponder and utilizing the information provided by ADS-B In, see Garmin Part Number 190-01754-00 Rev. M - Garmin G3X Touch™ Pilot's Guide (Section 4.11 Remote Transponder Interface).

The Garmin G3X Touch™ flight display offers primary flight display (PFD) functionality as a backup system to the A5-B standard gauges, dynamic moving map capability for navigation/situational awareness, and an engine indication system (EIS) display intended for both backup system purposes and more in depth monitoring of engine parameters.

14.6.2 Maintenance Instructions

14.6.2.1 Remove OAT Sensor

Use the following procedure to remove the OAT sensor.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

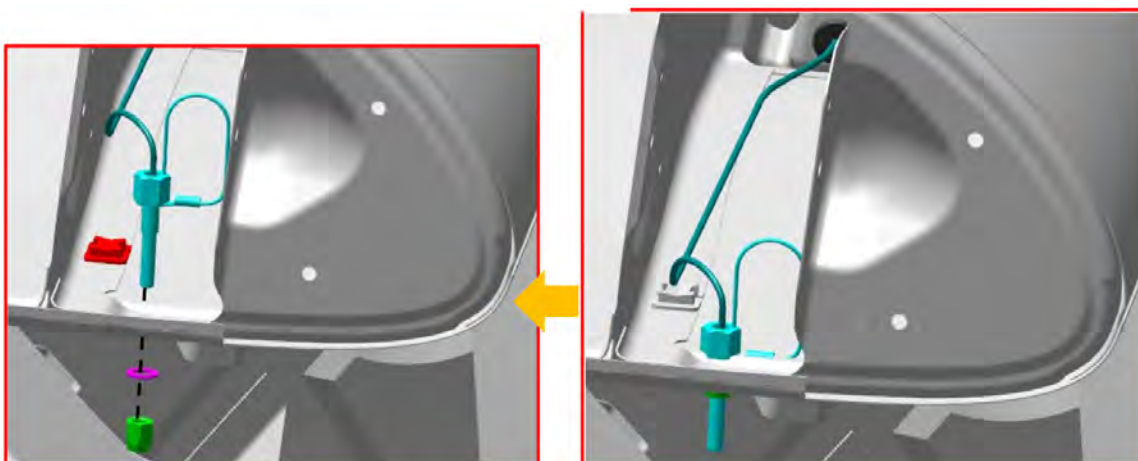
10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Remove cable tie securing the D9141P to cable tie block.
2. Disconnect connector D9141J of OAT sensor from D9141P on harness. Verify locking features of connector are disengaged.
3. Remove cable tie and route D9141J connector through the center wing rib.
4. Remove nut and washer. Retain nut for installation of new OAT sensor.
5. Remove OAT sensor.

**VERIFICATION METHOD:**

Install new OAT sensor.

RELATED INFORMATION:

"Install OAT Sensor" on page 14-87

14.6.2.2 Install OAT Sensor

Use the following procedure to install the OAT sensor.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014698 (SENIOR ASSY, OAT GTP 59, GARMIN)

NAS1515H5L (WASHER, FLAT, NYLON, .328 ID, .562 OD, .031 T)

2x CABLE-TIE, NYLON 6-6, 30LB, 5.50, TY-RAP

Aircraft System and Number

10 – Instruments (and Avionics)

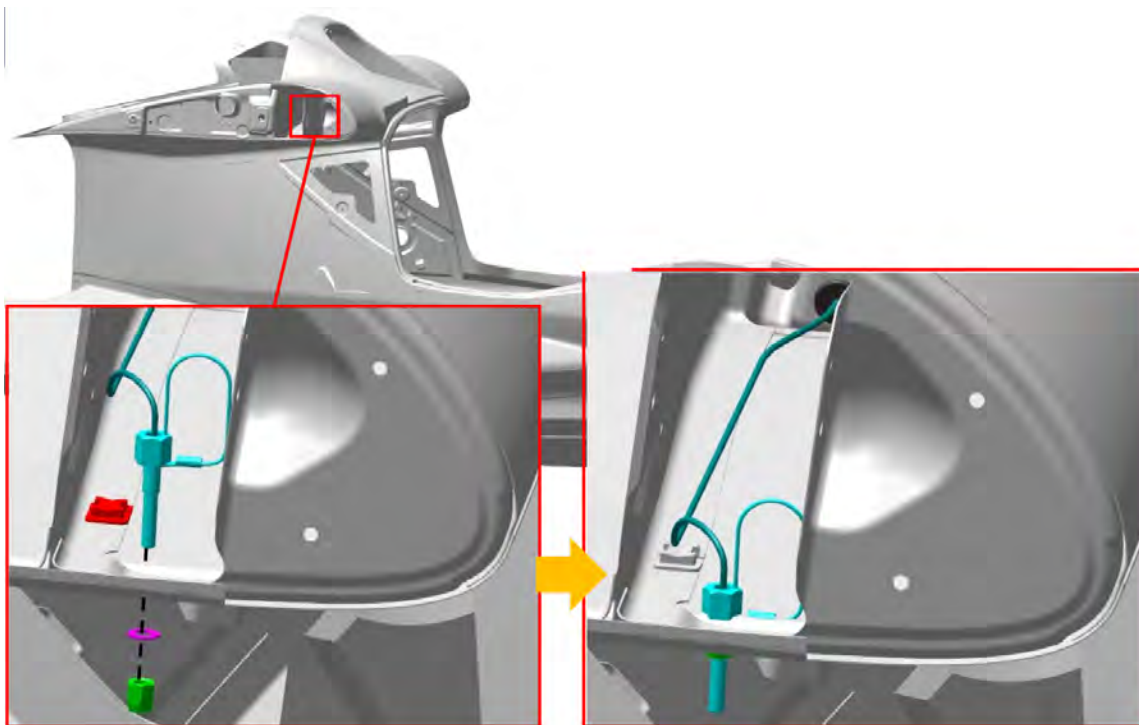
Consumables

Isopropyl Alcohol

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

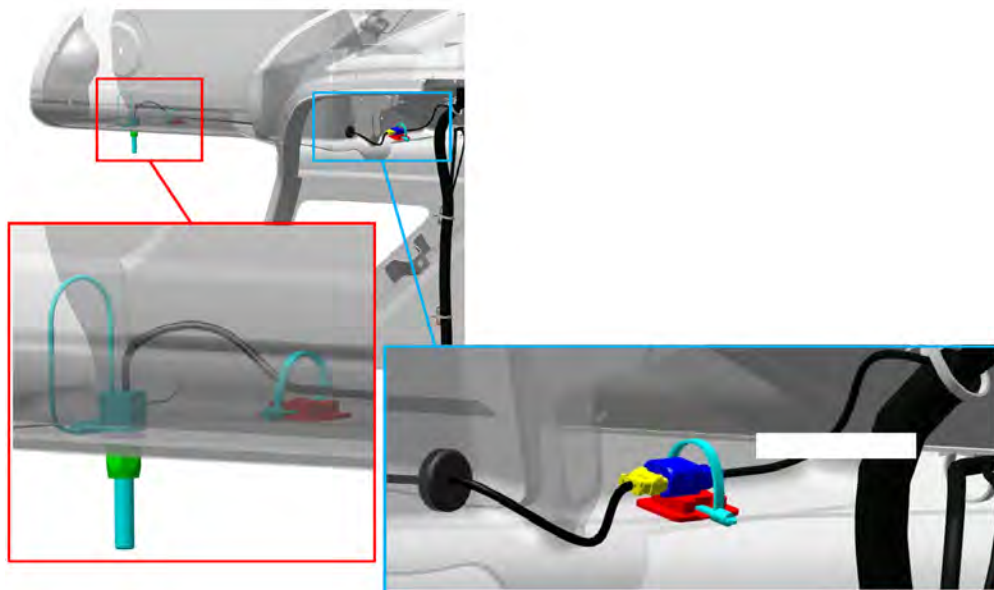
TASK INSTRUCTIONS:

1. Install OAT sensor body through hole in fuselage skin.



2. Using isopropyl alcohol, clean surfaces of nut where threadlocker will be applied.
3. Apply threadlocker to lower threads of nut as installed.

4. Install Nylon washer and nut onto OAT sensor.
NOTE: Loctite should not permeate washer.
5. Torque nut to 15-18 in-lbs.
6. Route D9141J connector from OAT sensor through pass through in center wing rib. Secure to cable tie block in center wing using 1x cable tie.
7. Install fixed grommet into pass-through hole.
8. Connect D9141J from OAT sensor to D9141P on harness. Verify locking features of connector are engaged.



9. Wrap connector D9141P with F4Tape to improve hold and secure to cable tie block using 1x cable tie.

VERIFICATION METHOD:

1. Turn on master switch, verify the G3X display is displaying the correct outside air temperature.

RELATED INFORMATION:

"Remove OAT Sensor" on page 14-86

14.6.2.3 Remove Pitch Servo (Autopilot Configuration)

Use the following procedure to remove the Pitch Servo.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Remove seat back. (See "Remove Seat Back" on page 4-43.)
 2. Remove baggage floor. (See "Baggage Floor Removal" on page 4-34.)
 3. Remove fuel tank. (See "Remove Fuel Tank" on page 11-22.)
 4. Remove hardware clamping 2x bridle cable double-shank ball swage at each end of bridle cable.
 5. Unwrap cable from around capstan.
 6. Unscrew fasteners attaching Pitch Servo to keel.
 7. Disconnect wire harness connector, D9148P.
-

VERIFICATION METHOD:

Install new Pitch Servo.

RELATED INFORMATION:

"Install Pitch Servo (Autopilot Configuration)" on page 14-90

14.6.2.4 Install Pitch Servo (Autopilot Configuration)

Use the following procedure to install the Pitch Servo.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME001100 (AUTOPILOT PITCH SERVO)

4x AN3C4A (BOLT, MACH, CRES, 10-32X.125)

4x NAS1149C0332R (WASHER, FLAT, CRES, .203x.032, PSVT)

ICA014714 (BRIDLE CABLE ASSY, SERVO AUTOPILOT)

4x ICA014718 (CLAMP, BRIDLE CABLE, PITCH, AUTOPILOT, GARMIN)

4x MS21043-3 (NUT, SLFLKG, RDC HEX, CRES, 10-32)

8x AN970C3 (WASHER, FLAT, CRES, .203X.875X.063)

4x AN3C5A (BOLT, MACH, CRES, 10-32X.250)

Aircraft System and Number

10 – Instruments (and Avionics)

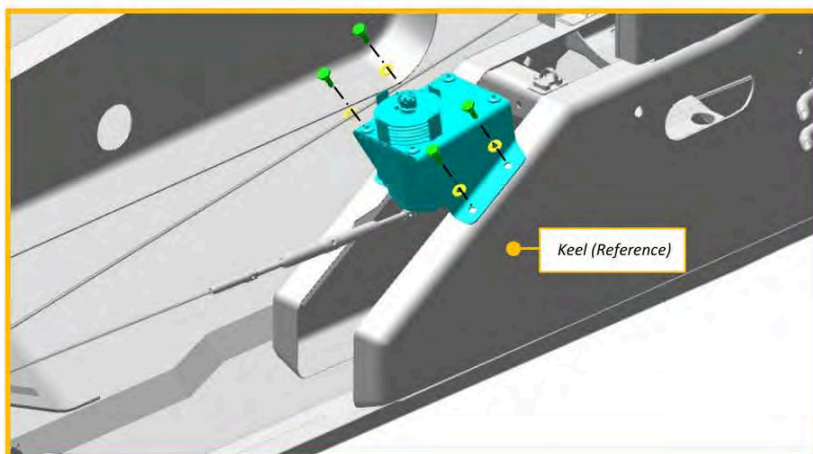
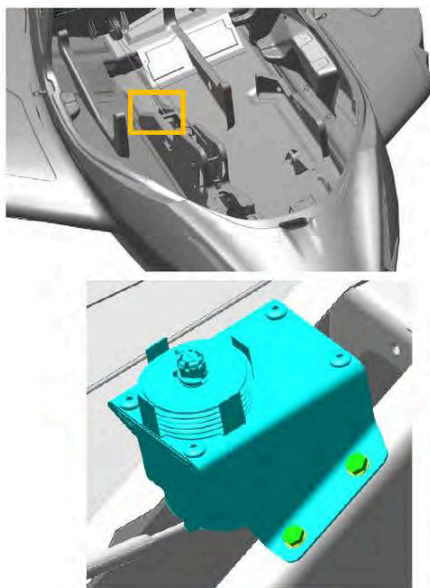
Consumables

Isopropyl Alcohol

ICA012080 (LUBRICANT, GENERAL PURPOSE)

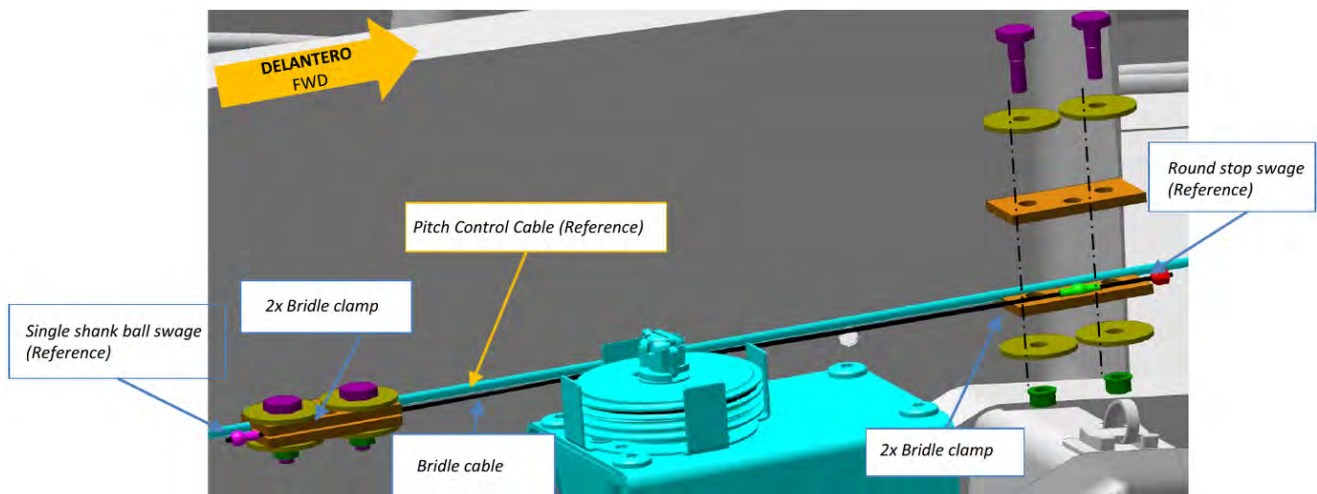
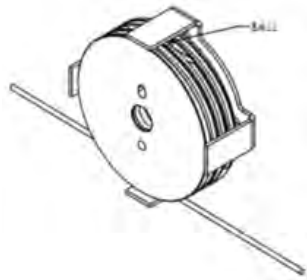
TASK INSTRUCTIONS:

1. Install autopilot pitch servo with AN3CrA bolts and NAS1149C0332R washers.



2. Using isopropyl alcohol, clean surfaces where lubricant will be applied. Lubricate hardware threads.
3. Torque fasteners to 26 in-lbs.
4. Feed bridle cable onto capstan of autopilot pitch servo subassy. Wrap the cable a full revolution around the capstan. Trap center double-shank ball swage of bridle cable into capstan. Orient bridle cable with the round stop FWD and ball swage AFT. Run bridle cable inboard to the pitch control.

CABLE EXITS IN OPPOSITE DIRECTION
ONE FULL WRAP OF CABLE IS REQUIRED. BALL
SHOULD BE IN CENTER OF CABLE WRAP WHEN
CABLE IS AT CENTER OF TRAVEL. THE CAPSTAN
MAY ROTATE A MAXIMUM OF 180° IN EITHER
DIRECTION, ALLOWING A MAXIMUM OF 3.6" OF
TRAVEL IN EACH DIRECTION.



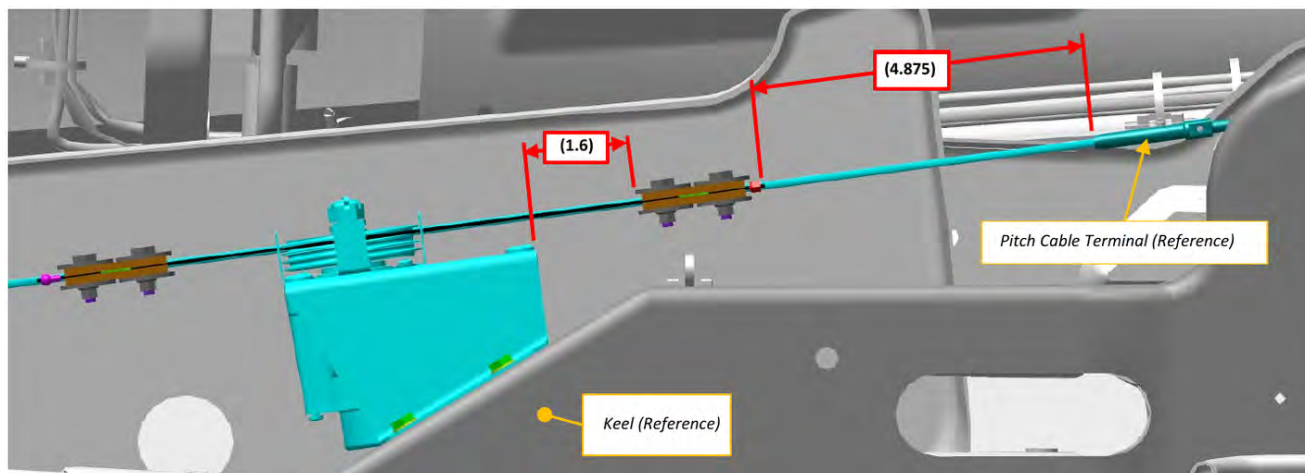
5. Locate 2x bridle cable double-shank ball swage at each end of bridle cable and sandwich pitch control cable and bridle cable between bridle clamps.

NOTE: Hardware orientation is permissible from either top or bottom directions.

NOTE: Ensure pitch rig pins are installed prior to setting distances and clamping cables down.

6. Achieve dimensions shown below to rig the autopilot pitch servo subassy. Fasten once achieved. Ensure that the bridle cable has 3-10 lbs of tension. Ensure there is no slack in cable when clamped.

NOTE: The cable tension specified does not require a calibration nor compensation for ambient temperature.



NOTE: *There is no need to check the primary pitch cable tension as that is done in pitch rigging. The dimensions in the figure are to avoid clearance issues.*

7. Using isopropyl alcohol, clean surfaces where lubricant will be applied. Lubricate hardware threads.
8. Torque fasteners to 20 in-lbs.

VERIFICATION METHOD:

Confirm that the clamps do not come in contact with the servo bracket or the center console at the pitch stops.

The procedure is complete when the pitch servo is installed, the bridle cable exhibits 3-10 lbs of tension, the pitch system functions to secondary stops without impediment, and the autopilot functions normally after conducting AFCS Pre-Flight Actions in accordance with the 190-01115-00, Garmin G3X™ Pilot's Guide.

NOTE: *The cable tension specified does not require a calibration nor compensation for ambient temperature.*

RELATED INFORMATION:

"Remove Pitch Servo (Autopilot Configuration)" on page 14-89

14.6.2.5 Remove Roll Servo (Autopilot Configuration)

Use the following procedure to remove the roll servo in the autopilot configuration.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

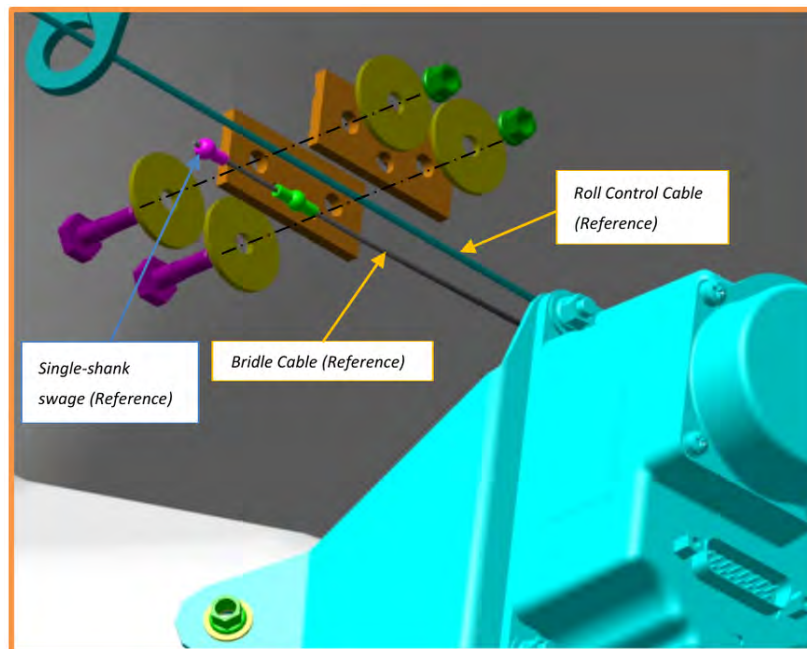
None



TASK INSTRUCTIONS:

1. Remove fasteners.
2. Unclamp roll control cable and bridle cable from bridle clamps. Completely remove bridle cable. Remove the nut and washer from the center wing spar and two bolts on the LHS center wing rib.

NOTE: The bolt on the roll pulley should be loosened but not removed.



3. Unwrap cable from capstan of autopilot roll servo.
4. Remove roll servo subassembly.

VERIFICATION METHOD:

Install new roll servo subassembly.

RELATED INFORMATION:

"Install Roll Servo (Autopilot Configuration)" on page 14-95

14.6.2.6 Install Roll Servo (Autopilot Configuration)

Use the following procedure to install the roll servo in the autopilot configuration.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

2x ICA014717 (CLAMP, BRIDLE CLAMP, ROLL, AUTOPILOT, GARMIN)

2x MS21043-3 (NUT, SLFLKG, RDC HEX, CRES, 10-32)

4x AN970C3 (WASHER, FLAT, CRES, .203X.875X.063)

2x AN3C5A (BOLT, MACH, CRES, 10-32X.250)

Aircraft System and Number

10 – Instruments (and Avionics)

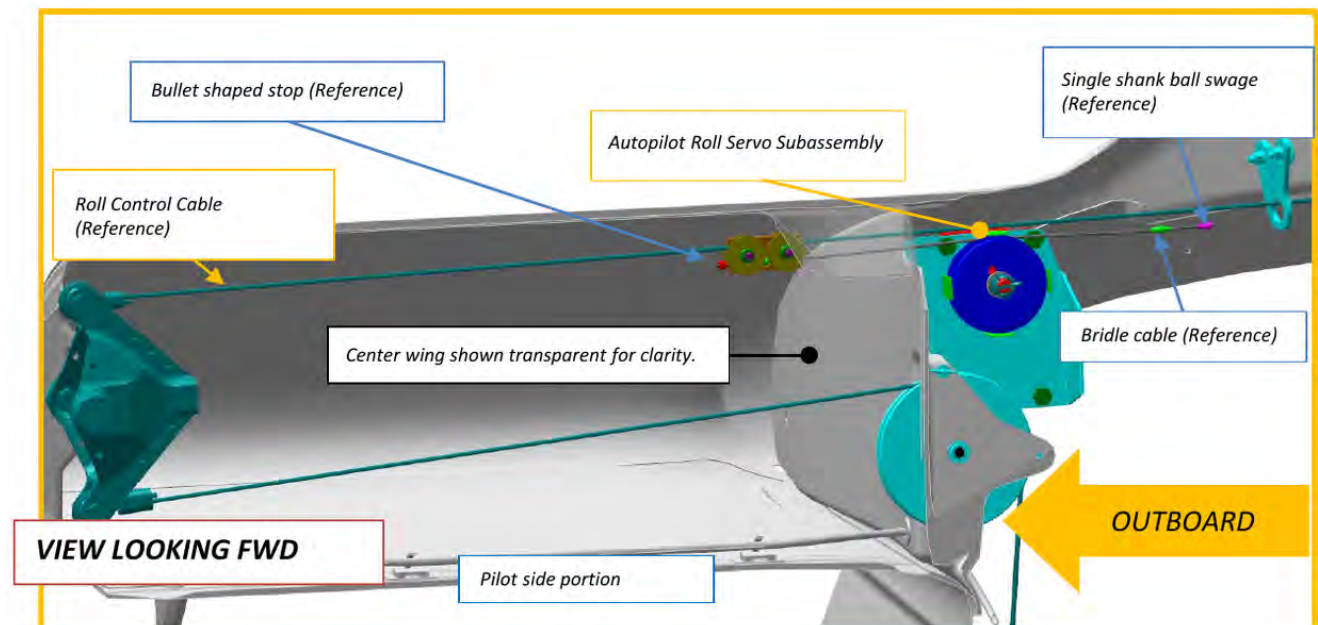
Consumables

Isopropyl Alcohol

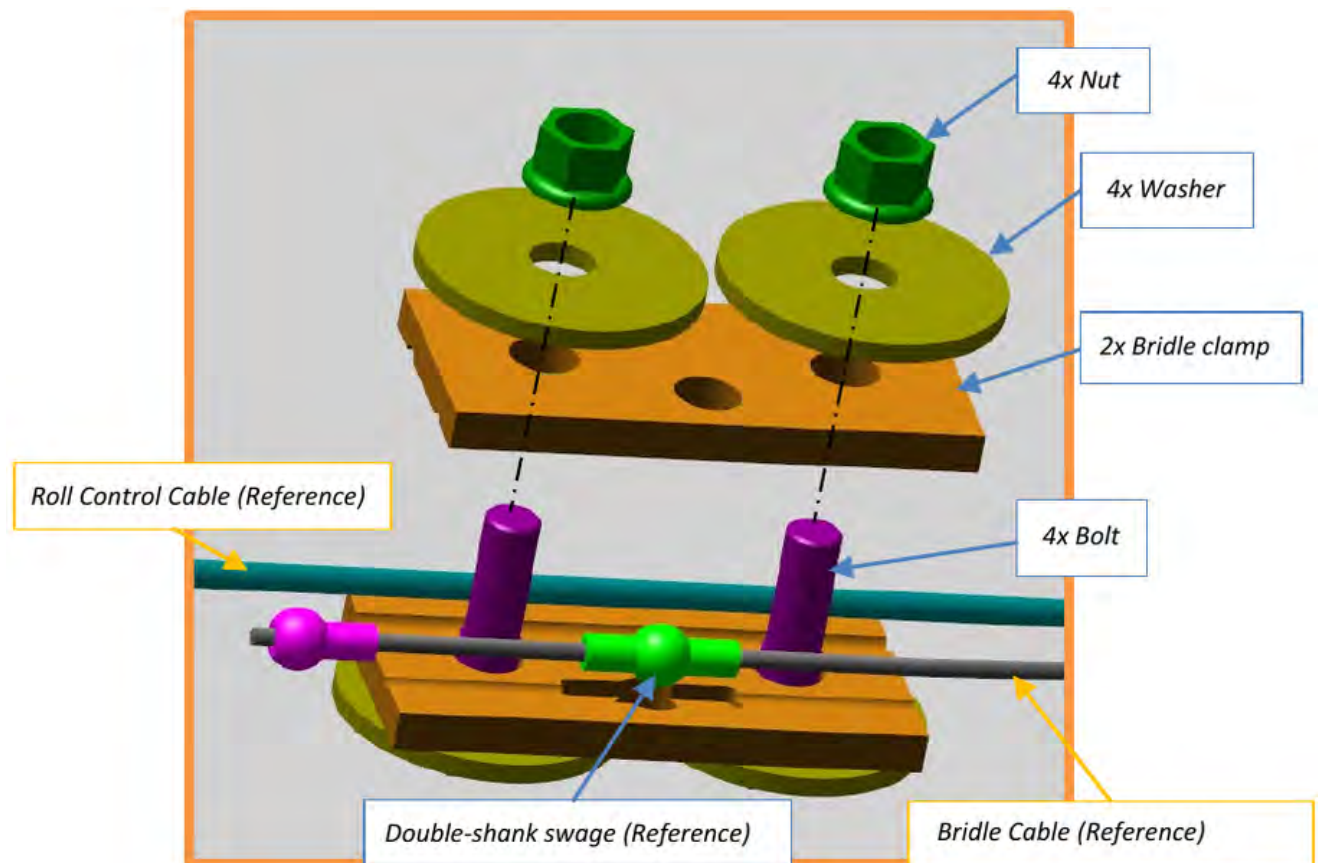
ICA012080 (LUBRICANT, GENERAL PURPOSE)

**TASK INSTRUCTIONS:**

1. Re-install outboard bridle cable clamp.
2. Feed bridle cable onto capstan of autopilot roll servo subassy. Wrap the cable a full revolution around the capstan.
3. Trap center double-shank ball swage of bridle cable into capstan. Orient bridle cable with the bullet shaped stop OUTBOARD and single shank ball swage INBOARD. Run bridle cable inboard to the roll control cable.



4. Located bridle cable double-shank ball swage at the end of the bridle cable and sandwich roll control cable and bridle cable between bridle clamps.
5. Clamp roll control cable and bridle cable between bridle clamps.



NOTE: Hardware orientation is permissible from either top or bottom direction.

6. Achieve the dimensions in Figure 1-55 to rig the autopilot roll servo subassy. Fasten once achieved. Ensure that the bridle cable has 3-10 lbs of tension. Ensure there is no slack in the cable when clamped.

NOTE: The cable tension specified does not require a calibration nor compensation for ambient temperature.

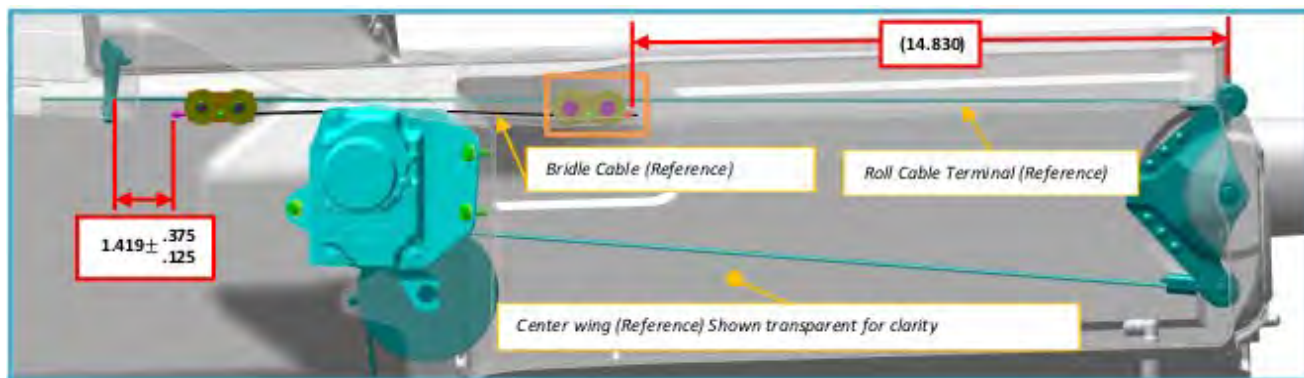


FIGURE 14-37
VIEW LOOKING AFT

NOTE: There is no need to check the primary pitch cable tension as that is done in pitch rigging. The dimensions in the figure are to avoid clearance issues.

7. Using isopropyl alcohol, clean surfaces where lubricant will be applied. Lubricate hardware threads.
8. Torque fasteners to 16.4-19.4 in-lbs.

VERIFICATION METHOD:

The procedure is complete when the roll servo is installed, the bridle cable exhibits 3-10 lbs of tension, the pitch system functions to secondary stops without impediment, and the autopilot functions normally after conducting AFCS Pre-Flight Actions in accordance with the 190-01115-00, Garmin G3X™ Pilot's Guide.

NOTE: The cable tension specified does not require a calibration nor compensation for ambient temperature.

RELATED INFORMATION:

"Remove Roll Servo (Autopilot Configuration)" on page 14-93

14.6.2.7 Disassemble Roll Servo Subassembly

Use this procedure to remove the Roll Servo from the Roll Servo Bracket.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft Systems and Number

10 – Instruments (and Avionics)

Safety Equipment

As Needed

Consumables

None

TASK INSTRUCTIONS:

1. Remove the Roll Servo Subassembly out of the aircraft. (See "Remove Roll Servo (Autopilot Configuration)" on page 14-93.)
2. Remove the cotter pin from the subassembly. (See Figure 14-38.)
3. Remove the castle nut, lock washer, flat washer, and capstan from the subassembly. Retain all hardware for re-assembly.
4. Remove the cable guard screws, cable guard washers, and cable guard.

5. Remove the #10 hardware.
 6. Separate the Servo from the Roll Servo Bracket.
-

VERIFICATION METHOD:

Task is complete when the Servo and Roll Servo Bracket have been separated.

14.6.2.8 Assemble Roll Servo Subassembly

Use this procedure to install the Roll Servo onto the Roll Servo Bracket.

TASK INFORMATION:**Applicable Aircraft Serial Number**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

1x ICA014578 (SERVO, AUTOPILOT, GSA 28, GARMIN)

1x ICA014579 (KIT, CAPSTAN, GSA 28, GARMIN)

2x ICA015285 (BRACKET, SERVO, ROLL, GSA 28, GARMIN)

Aircraft Systems and Number

10 – Instruments (and Avionics)

Safety Equipment

As Needed

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

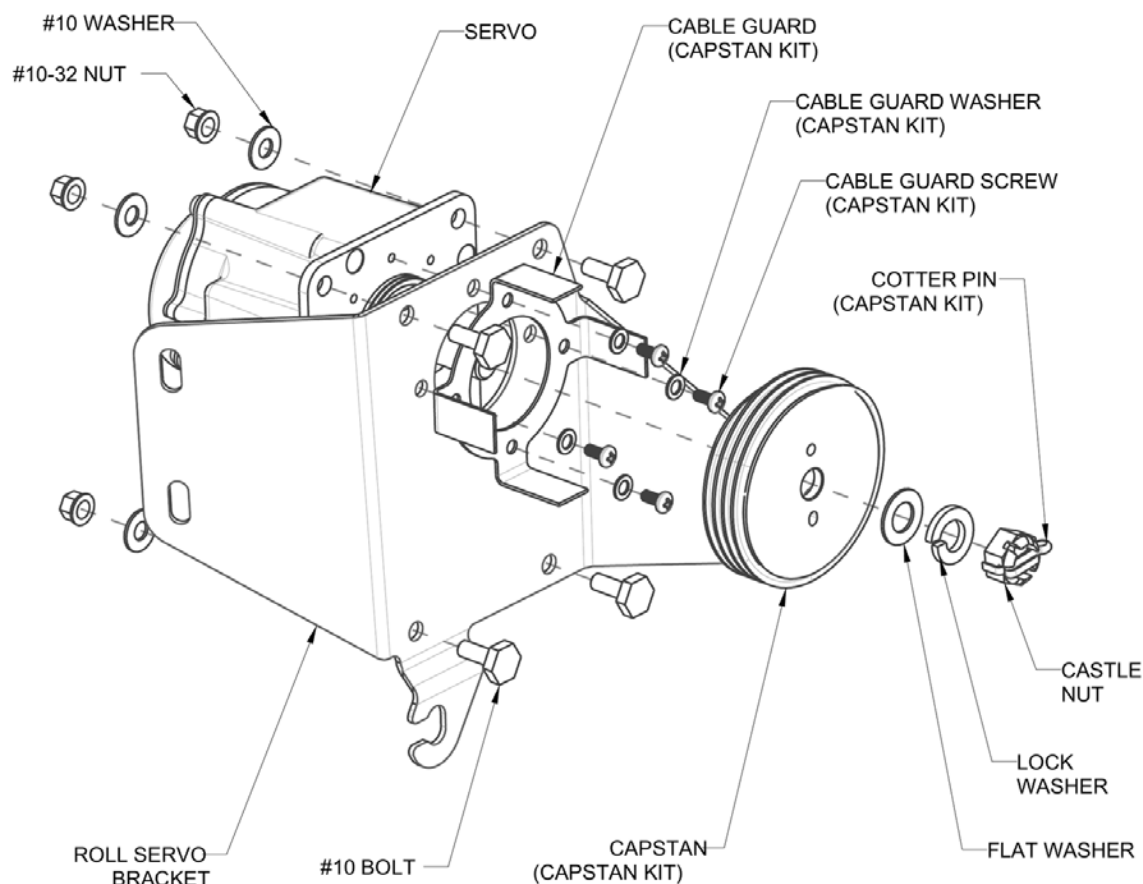


FIGURE 14-38
ROLL SERVO SUBASSEMBLY – EXPLODED VIEW

TASK INSTRUCTIONS:

1. Position Servo to the Roll Servo Bracket. (See Figure 14-38.)
2. If reusing #10 nut, apply lubricant to #10 bolt.
3. Use 4x #10 nut, washer, bolt to secure the Servo to the Roll Servo Bracket. Torque hardware to 16.4-19.4 in-lbs.
4. Line Cable Guard in ortho position relative to the Servo as shown in Figure 14-39. Secure with washer and screw from Capstain Kit. Torque to 8± in-lbs.

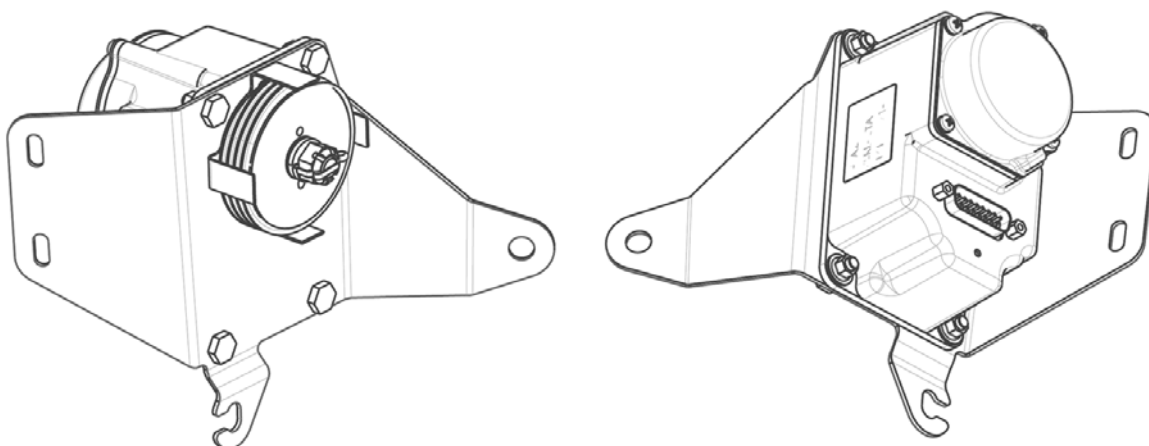


FIGURE 14-39
ROLL SERVO SUBASSEMBLY

5. Position Capstan onto Servo such that hole and slot mates with alignment pins on Servo output hub.

NOTE: If Servo is being replaced, first remove the cotter pin, castle nut, lock washer, and flat washer.

6. Secure the Capstan with the castle nut, lock washer, and flat washer.
7. Tighten castle nut until lock washer is fully compressed but do not exceed 20 in-lbs.
8. Loosen castle nut until adjacent castellation lines up with hole in the output shaft for the cotter pin.
9. Install the cotter pin.
10. Install the Roll Servo Subassembly into the aircraft. (See “Install Roll Servo (Autopilot Configuration)” on page 14-95.)

VERIFICATION METHOD:

Task is complete when the Roll Servo Subassembly has been assembled as shown in Figure 14-39.

14.6.2.9 Remove ADAHRS

Use the following procedure to remove ADAHRS.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

This procedure requires a pitot-static leak test. (See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.)

TASK INSTRUCTIONS:

1. Remove cluster hood shell by pulling upon the aft side and sliding hood towards the aft of the aircraft.
 2. If necessary, remove Left Instrument Top Panel. (See “Left Instrument Panel Top Panel Removal” on page 9-20.)
 3. Disconnect D9146P and D9147P connectors from the ADAHRS.
 4. Disconnect 2x Static Air Lines and 1x Pitot Air Line. (See Figure 14-40.)
 5. Remove #10 screw and washer.
 6. Remove ADAHRS from the aircraft.
 7. If replacing ADAHRS, unscrew the 1/8 NPT Push-On Connectors from the ADAHRS.
-

VERIFICATION METHOD:

The task is completed when the ADAHRS has been removed.

14.6.2.10 Install ADAHRS

Use the following procedure to install the ADAHRS.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

- (1) ICA014692 (ADAHRS, GSU 25C, GARMIN)
- (4) NAS1149C036R (WASHER, FLAT, CRES, .188X.063, PSVT)
- (4) 10F37MTT3 (SCREW, MACH TRH, 6LOBE, 10-32X.375, CRES)
- (3) ICA014904 (CONNECTOR, PUSH-ON, MALE NPT, .188-.125, BRASS, 200F)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

LOCTITE 243 (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE MED STR; BLUE)
 TT-I-735A or equivalent (ISOPROPYL ALCOHOL)
 TT-M0261 or equivalent (MEK: METHYL ENTHYL KETONE)
 O-A-51 or equivalent (ACETONE)

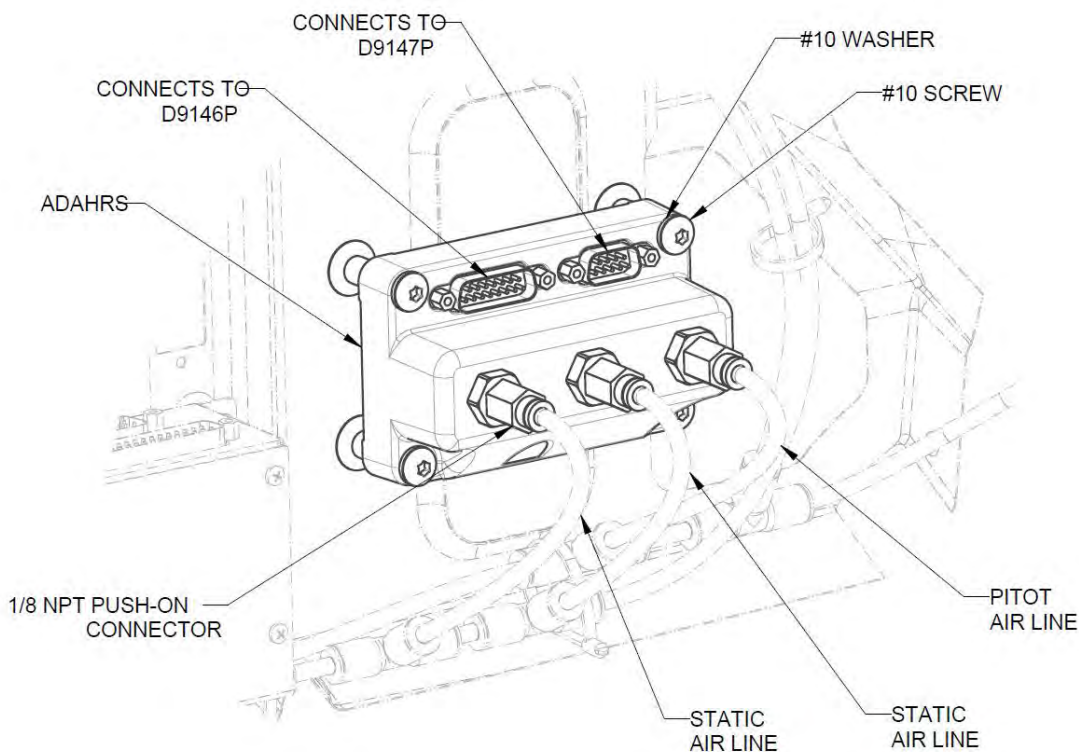


FIGURE 14-40
 ADAHRS INSTALLED-VIEW LOOKING AFT AT LHS CROSSBEAM

TASK INSTRUCTIONS:

1. Clean threads of 1/8 NPT Push-on connectors with Isopropyl Alcohol, MEK, or Acetone.

2. Apply Loctite 243 to 1/8 NPT Push-on connectors.
3. Torque the 1/8 NPT Push-on connectors into the ADAHRS to 1.5-2.5 turns from finger tight.
4. Position the ADAHRS in the orientation shown in Figure 14-40.
5. Secure the ADAHRS with #10 washer and screw. Torque to 25-28 in-lbs.
6. Connect 2x Static Air Lines and 1x Pitot Air Line as shown in Figure 14-40.
7. Connect D9146P and D9147P from the Fuselage Wire Harness to the ADAHRS.
8. If removed, install Left Instrument Top Panel. (See “Left Instrument Panel Top Panel Installation” on page 9-21.)
9. Re-install hood shell. Slide it forward into the clip hole and then press it down on the instrument cluster.

VERIFICATION METHOD:

Successful completion of Pitot-Static-AOA Leak Test. (See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.)

14.6.2.11 Remove EIS

Use this procedure to remove the EIS.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Remove cluster hood shell by pulling upon the aft side and sliding hood towards aft aircraft.
 2. If necessary, remove Left Instrument Top Panel. (See “Left Instrument Panel Top Panel Removal” on page 9-20.)
 3. Disconnect connectors D9144P and D9145P from the EIS. (Figure 14-41)
 4. Remove the #10 screws and remove the EIS. If necessary, disconnect D9010J.
-

VERIFICATION METHOD:

Task is complete when the EIS has been removed from the aircraft.

14.6.2.12 Install EIS

Use the following procedure to install the EIS.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014689 (ENGINE INDICATION SYSTEM, GEA 24, GARMIN)

(4) 10F37MTT3 (SCREW, MACH TRH, 6LOBE, 10-32X.375, CRES)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

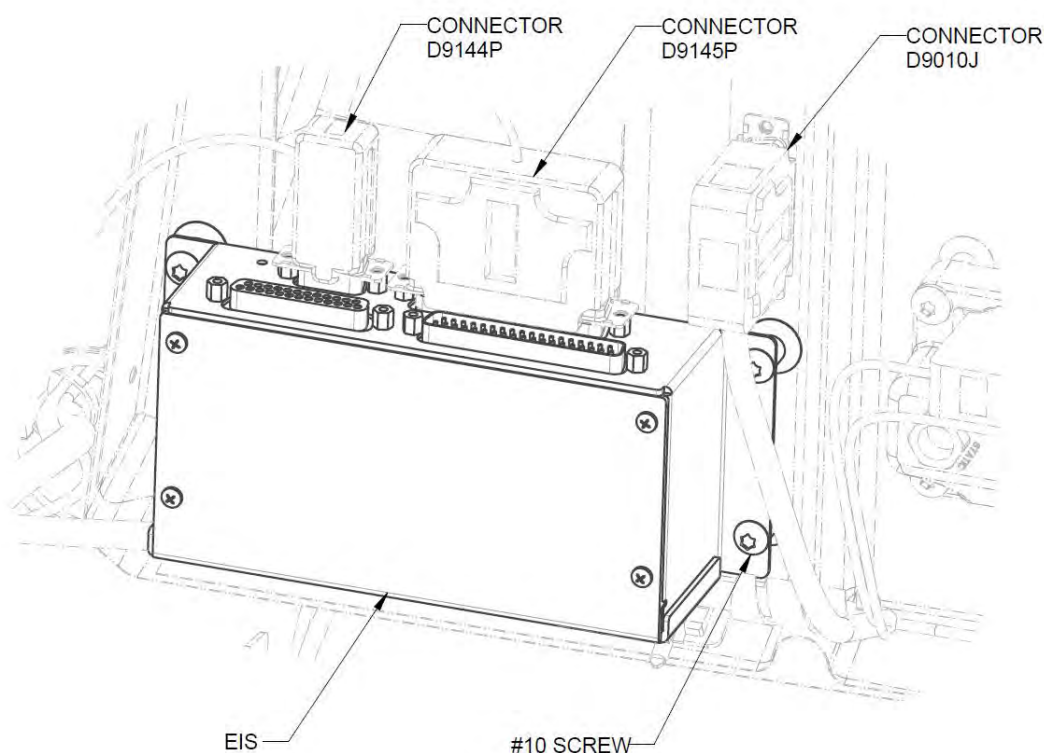


FIGURE 14-41
EIS INSTALLED-VIEW LOOKING AFT AT LHS CROSSBEAM

TASK INSTRUCTIONS:

1. Position the EIS in the orientation shown in Figure 14-41.
 2. Secure EIS with #10 screws. Torque to 25-28 in-lbs.
 3. Secure connectors D9144P and D9145P from the Fuselage Wire Harness to the EIS.
 4. If removed, secure connector D9010J as shown in Figure 14-41.
 5. If removed, install Left Instrument Top Panel. (See “Left Instrument Panel Top Panel Installation” on page 9-21.)
 6. Re-install hood shell. Slide it forward into the clip hole and then press it down on the instrument cluster.
-

VERIFICATION METHOD:

Complete the Engine Test Run. (See “Engine Test Run” on page 17-7.)

14.6.2.13 Remove Magnetometer

Use the following procedure to remove the magnetometer.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Remove the Right Top Instrument Panel Cover. (See “Right Instrument Panel Top Panel Removal” on page 9-17.)
2. Disconnect D9142P connect from the Magnometer.
3. Remove lock nuts. Make note of the washer stack-up.

CAUTION: *When removing the magnetometer, it should be noted how many and where the washers are stacked. This can then be used to re-install the magnetometer. Washer stack-up is critical for re-installation.*

4. Remove washers and Magnometer.
-

VERIFICATION METHOD:

The procedure is complete when the Magnometer has been removed from the aircraft.

14.6.2.14 Install Magnetometer

Use the following procedure to install and configure the magnetometer.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014694 (MAGNETOMETER, GMU 11, GARMIN)

4x CBR000G06CR8-750 (STUD, ADH BND, FBRG, 6-32 X .500, 300SS, TRIM)

4x NAS1149CN632R (WASHER, FLAT, CRES, 36X.032, PSVT)

4x MS21043-06 (NUT, SLFLKG, RDC HEX, CRES, 6-32)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

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

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

O-A-51 or equivalent (ACETONE)

LOCTITE 242 (THREADLOCKER, BLUE)

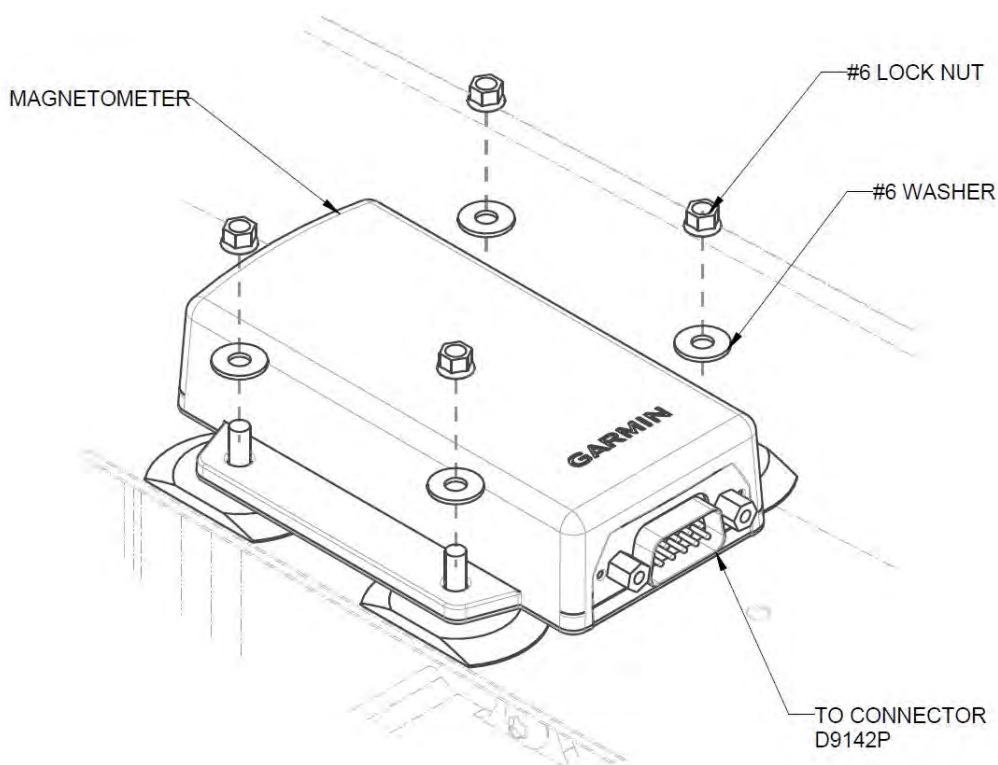


FIGURE 14-42
GARMIN MAGNETOMETER INSTALLED

TASK INSTRUCTIONS:

1. Install any washers that were previously installed between studs and Magnetometer.
2. Place Magnetometer onto the studs as shown in Figure 14-42.
3. Install all the last four washers previously removed.
4. Secure the Magnetometer with 4x #6 lock nuts. If reusing #6 nut, apply lubricant to studs. Torque hardware to 7.8-9.3 in-lbs.

NOTE: Use of non-magnetic tools (e.g. beryllium copper or titanium) is recommended when installing or servicing the GMU 11. Do not use a screwdriver that contains a magnet when installing or servicing the GMU 11.

NOTE: If the GMU is removed, the anti-rotation properties of the mounting screws must be restored. This may be done by replacing the screws with new Garmin P/N 211-60037-08. If original screws must be re-used, coat screw threads with Loctite 242 (blue) thread-locking compound, Garmin P/N 291-00023-02, or equivalent. Important: Mounting screws must be brass.

NOTE: Any time a GMU is reinstalled, a new magnetometer calibration is required (section 34.4.4.3 for GDU 37X systems and section 34.4.8.3 for GDU 4XX systems) is required. Following a successful

magnetometer calibration, the Return to Service procedure is complete.

5. Secure the connector D9142P from Fuselage Wire Harness.
6. Temporarily install the Right Top Instrument Panel Cover.
7. Complete the following procedures from section MAG (Magnetometer) Configuration, per latest G3X Installation Manual (190-11115-01):
 - a. Unit Orientation (should be configured to Connector Port), section 35.4.8.1
 - b. Magnetic Interference Test, section 35.4.8.2
 - c. Magnetometer Calibration, section 35.4.8.3

VERIFICATION METHOD:

Successful completion of the last step.

14.6.2.15 Remove G3X Display

Use the following procedure to remove the Garmin G3X display.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Remove screws from G3X Bezel. (See Figure 14-44.)

2. Disconnect G3X Display from D9150P and D914P.
 3. Remove G3X Display from bezel. (See Figure 14-43.)
-

VERIFICATION METHOD:

The process is complete when the G3X Display has been removed.

RELATED INFORMATION:

"Install Garmin G3X Display" on page 14-112

14.6.2.16 Install Garmin G3X Display

Use the following procedure to install the Garmin G3X display.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014704 (DISPLAY UNIT, G3X TOUCH, 7 INCH, GDU 450, GARMIN)

4x 6C37KC530 (SCREW, MACH SHCS, 6LOBE, CRES BLACK, 6-32X.375)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

Isopropyl Alcohol

TASK INSTRUCTIONS:

1. Insert the G3X Display unit into the G3X Bezel, and connect to the main harness.
 - a. Connect the two ports on the G3X Display to D9149P and D9150P on Main Wire Harness.
 - b. Verify locking features of connector are engaged.
 - c. Torque screwlocks to 2-4 in-lbs.

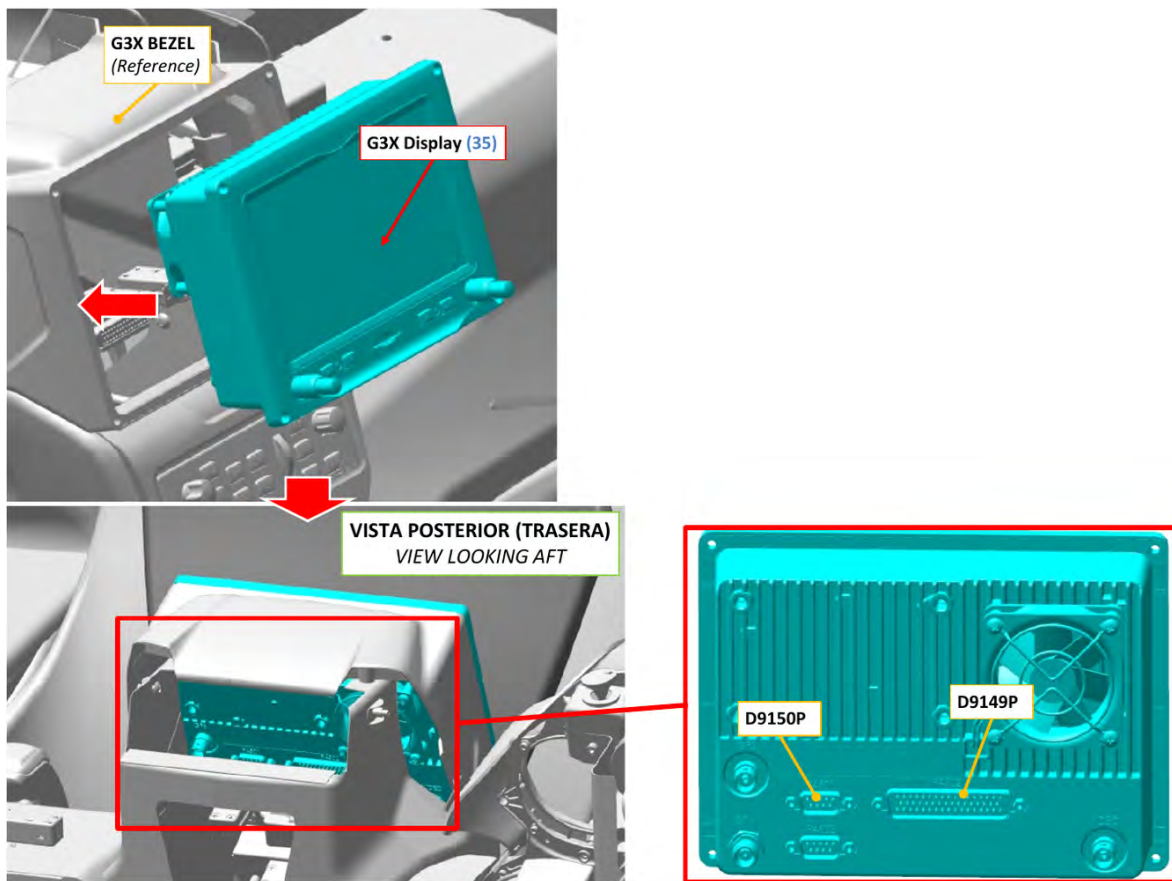


FIGURE 14-43
G3X DISPLAY

2. Using isopropyl alcohol, clean surfaces where lubricant will be applied. Apply lubricant liberally to threads and shanks of 4X screws.
3. Install the 4x screws through the G3X display into the threaded inserts in the G3X Bezel.

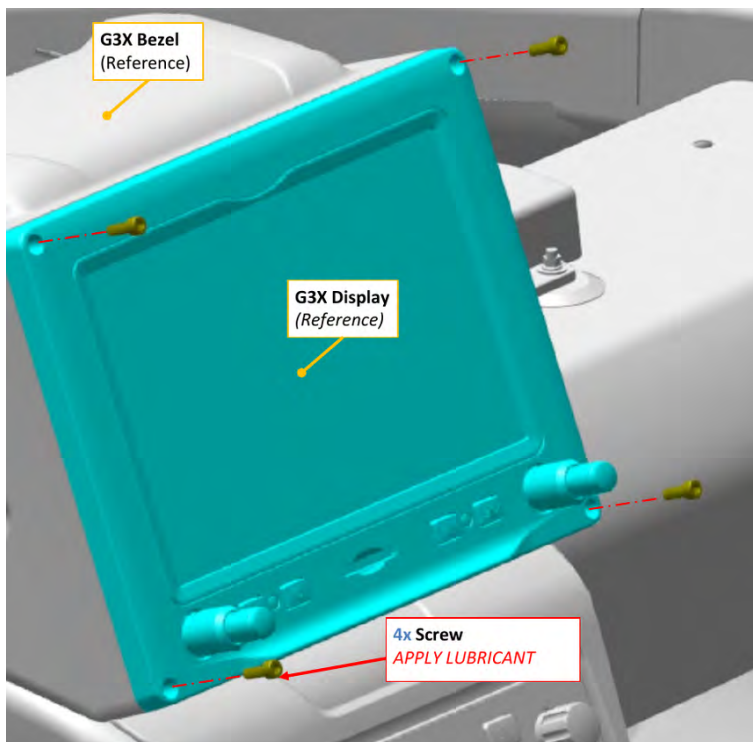


FIGURE 14-44
G3X DISPLAY

4. Torque screws to 6.0-10.0 in-lbs.

VERIFICATION METHOD:

1. Turn on the master switch. Confirm the G3X display is powered and functioning properly.

RELATED INFORMATION:

"Garmin G3X and Autopilot Bezel Installation" on page 1-41

"Radio Stack Installation" on page 1-38

"Remove G3X Display" on page 14-111

14.6.2.17 Remove IP Center Spine

Use the following task to remove the IP Center Spine.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME000342-C (SPINE, IP CENTER, SUBASSY)

4x 8C50MTT3 (SCREW, TRUSS, 6 LOB, 8-32 X .50, SS316)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

Isopropyl Alcohol

TASK INSTRUCTIONS:

1. Remove 4x screws. (See Figure 14-45.)
 2. Remove IP center spine subassembly.
-

VERIFICATION METHOD:

Verify that the IP center spine subassembly has been removed.

RELATED INFORMATION:

"Install IP Center Spine" on page 14-115

14.6.2.18 Install IP Center Spine

Use the following task to install the IP Center Spine.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME000342-C (SPINE, IP CENTER, SUBASSY)

4x 8C50MTT3 (SCREW, TRUSS, 6 LOB, 8-32 X .50, SS316)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

Isopropyl Alcohol

TASK INSTRUCTIONS:

1. Using isopropyl alcohol, clean surfaces where lubricant will be applied. Apply lubricant liberally to threads and shanks of 4x screws.

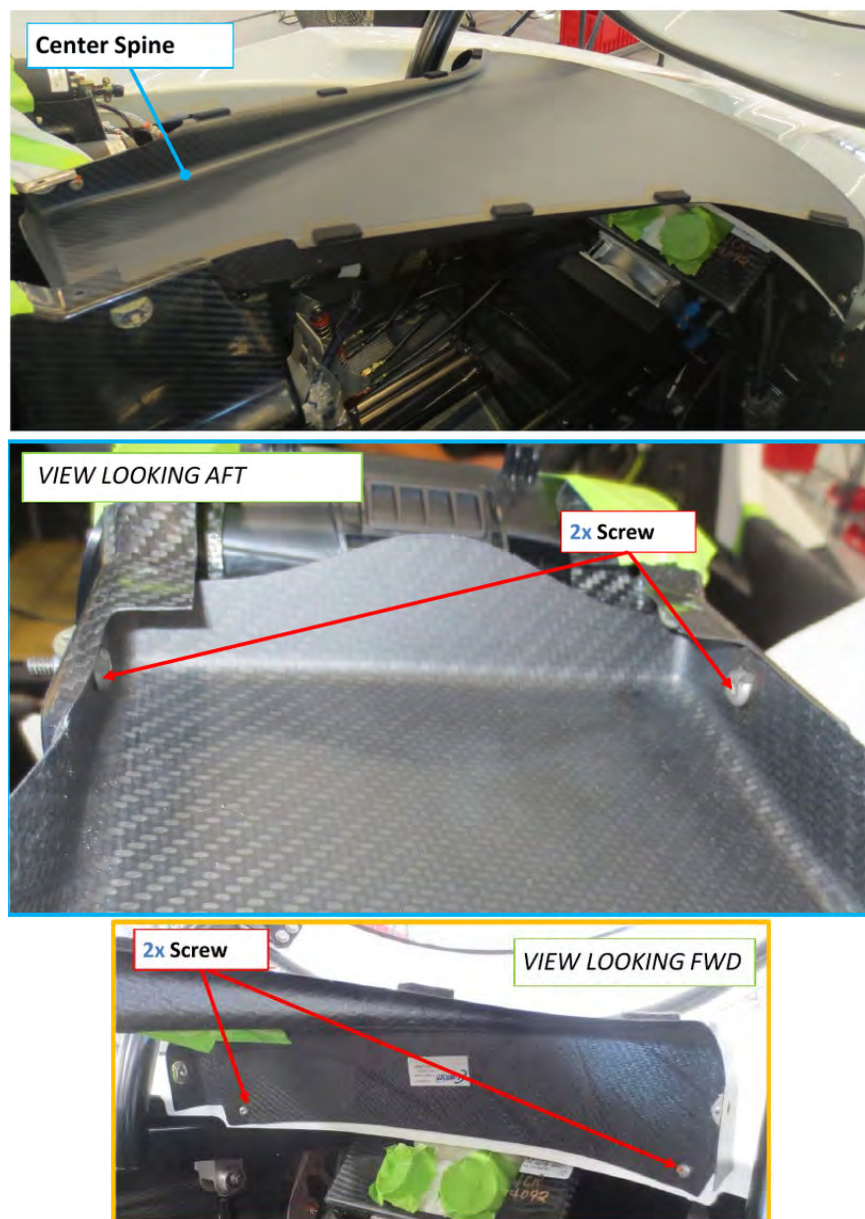


FIGURE 14-45
CENTER SPINE

2. Install IP center spine subassembly with screws as shown.
3. Torque screws to 13 in-lbs.

VERIFICATION METHOD:

Verify the installation of the IP center spine is complete.

RELATED INFORMATION:

"Instrument Panel Top Panel Installation" on page 9-24

"Remove IP Center Spine" on page 14-114

14.6.2.19 Remove Main Wire Harness

Use the following to remove the Main Wire Harness from the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Cut cable tie securing the MSC wire harness.
2. Disconnect D9142P from main wire harness.
3. Disconnect main wire harness from Garmin ADAHRS.
 - a. Disconnect D9145P and D9144P.
4. Disconnect D90106 and D9010P
5. Disconnect main wire harness from master switch. (See Figure 14-46.)
 - a. Disconnect T9056.
 - b. Disconnect T9032.

6. Remove spiral wrap from fuselage wire harness.
 7. Cut cable ties securing main wire harness to crossbeams.
-

VERIFICATION METHOD:

The procedure is complete when the Wire Harness have been disconnected.

14.6.2.20 Secure Main Wire Harness

Use the following task to connect the Pitot Line with the aircraft.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

Spiral Wrap

TASK INSTRUCTIONS:

1. Route the FWD part of the Main Wire Harness along the crossbeams. Loosely install 4x cable ties.
2. Apply a minimum of 1" spiral wrap to the fuselage wire harness at the location where the harness travels over the LH crossbeam ridge.

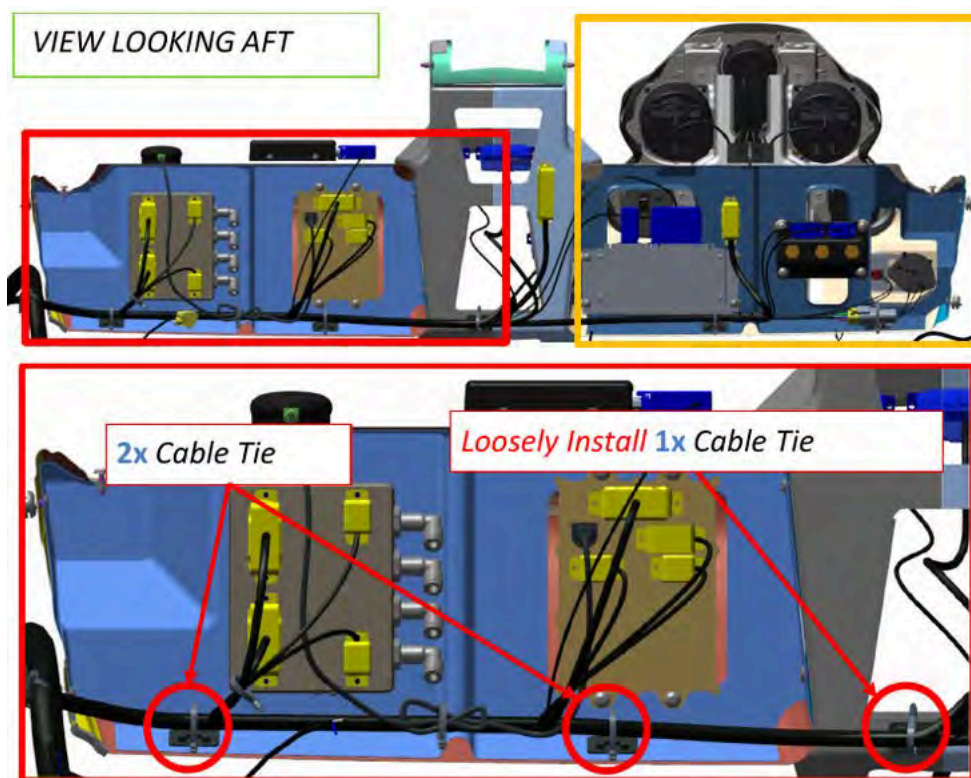
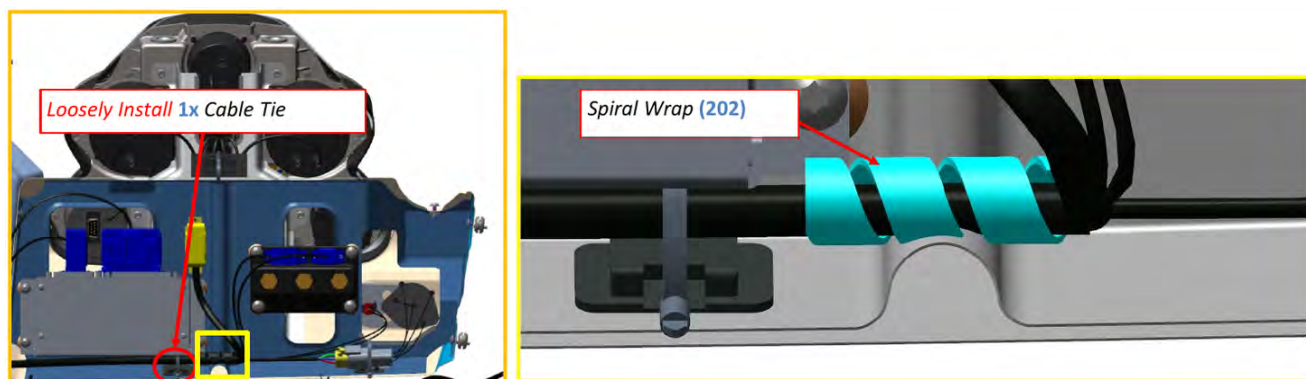


FIGURE 14-46
SECURE WIRE HARNESS



VERIFICATION METHOD:

Verify there are no instances of wire chafing and that wire protection is applied in the appropriate locations.

Verify all connectors have good connections and adequate strain relief.

Verify zip ties are tightened properly, adequately holding wire harness in place and preventing movement without visible signs of bending or cutting wire insulation/sleeving or pinching pitot/static lines.

14.6.2.21 Make Electrical Connections

Use the following task to make electrical connections with the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

Cable Tie

TASK INSTRUCTIONS:

1. Connect D9113P from main wire harness to ignition jumper. Verify locking features of connector are engaged.
2. Wrap connector with 1.5 full wraps of F4 Tape and secure to tie mount with 1x loosely installed cable tie.

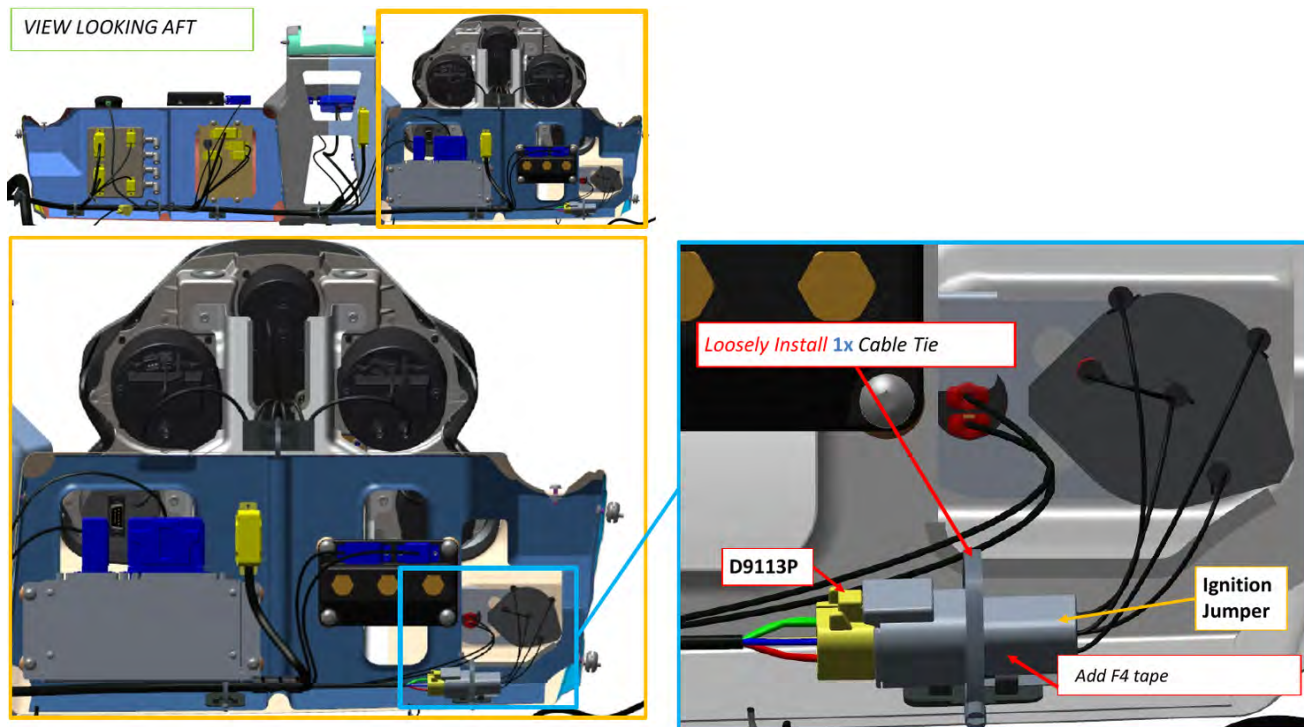


FIGURE 14-47
MAKE ELECTRICAL CONNECTIONS

3. Make connections from main wire harness to master switch.
 - a. Connect T9032 from main wire harness to lower (shorter) stud on master switch.
 - b. Connect T9056 from main wire harness to upper (longer) stud on master switch.

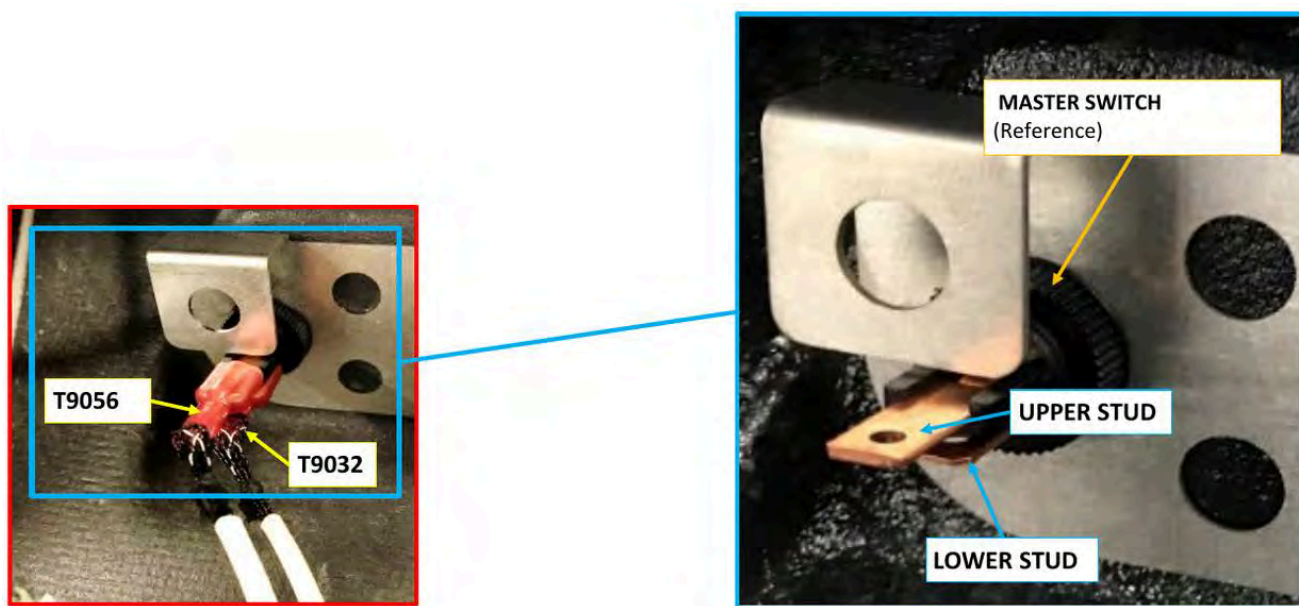


FIGURE 14-48
MASTER SWITCH

4. Make connections from main wire harness to Garmin ADAHRS:
 - a. Connect D9146P from main wire harness to 15 pin connector.
 - b. Connect D9147P from main wire harness to 9 pin connector.
5. Connect D9010P connector on main wire harness to D9010J connector on LH crossbeam. Secure using captive screws on the harness connector.

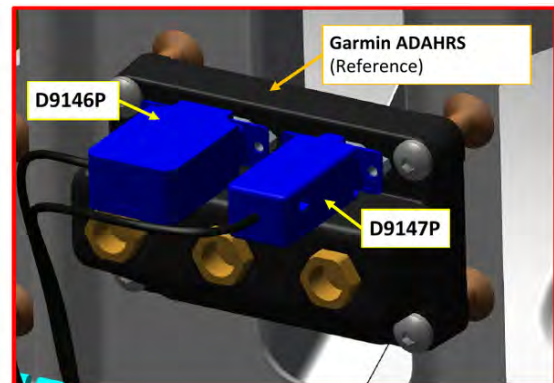
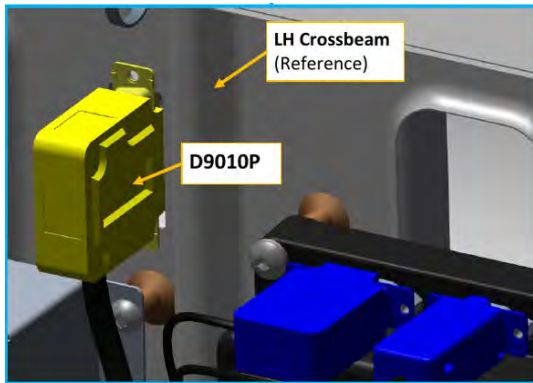


FIGURE 14-49
GARMIN ADAHRS

6. Make connections from main wire harness to Garmin ADAHRS
 - a. Connect D9144P from main wire harness to 9 pin connector.
 - b. Connect D9145P from main wire harness to 50 pin connector.

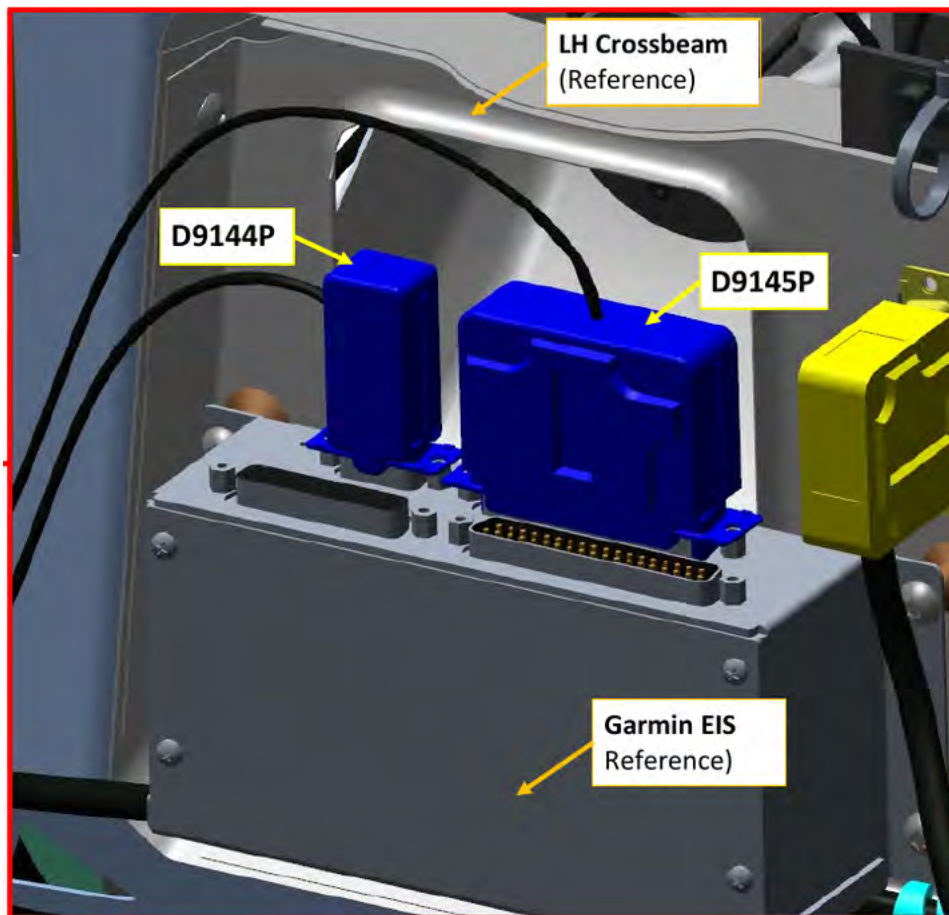


FIGURE 14-50
GARMIN ADAHRS

7. Connect D9142P from the main wire harness to the magnetometer.
8. Secure the DAC antenna wire bundles with 1x cable ties to the main harness. Orient the DAC wires to leave clearance for installation of memory unit.
9. Secure the MSC wire harness bundle using cable tie.

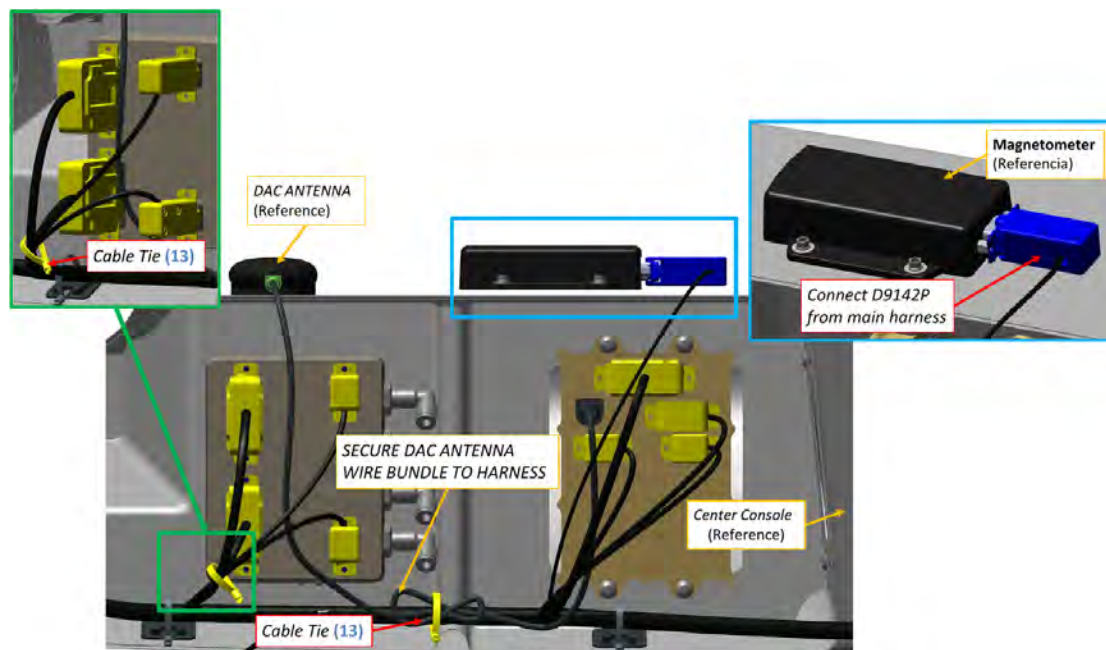


FIGURE 14-51
WIRE HARNESS

VERIFICATION METHOD:

Verify there are no instances of wire chafing and that wire protection is applied in the appropriate locations.

Verify all connectors have good connections and adequate strain relief.

Verify zip ties are tightened properly, adequately holding wire harness in place and preventing movement without visible signs of bending or cutting wire insulation/sleeving or pinching pitot/static lines.

14.6.2.22 Cut Tubing to Length

Use the following to cut the tubing to length.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

5x ME000610 (STATIC LABEL)

3x ME000609 (PITOT LABEL)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Cut the following lengths of tubing:
 - a. 1x28.5"±0.5"
 - b. 4x5.5"+0.5/-0.0"
 - c. 2x1.75"+0.5/-0.0"
 - d. 1x10.5"±1.0"
 - e. 1x15.5"±0.5"
 - f. 1x11.5"±0.5"
 - g. 1x8.5"±1.0"
 2. Apply the following labels a minimum of 1" from the end of each of the following tubing lengths:
 - a. "STATIC" – 3x5.5" and 2x11.5"
 - b. "PITOT" – 5.5", 10.5", and 28.5"
-

VERIFICATION METHOD:

Verify lengths of tubing match measurements listed in Step 1.

14.6.2.23 Disconnect Pitot Line

Use the following to disconnect the Pitot Line.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Disconnect tubing from tee connector. Remove from MSC. (See Figure 14-54.)
 2. Remove tubing with PITOT label from LH port of the Garmin ADAHRS. (See Figure 14-53.)
 3. Disconnect tubing from tee connectors and remove from RH port of airspeed indicator.
-

VERIFICATION METHOD:

Task is complete when the pitot line is disconnected.

14.6.2.24 Connect Pitot Line

Use the following task to connect the Pitot Line with the aircraft.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

6x ICA011589 (PUSH-ON TEE CONNECTOR)

CUT PITOT TUBES from “Cut Tubing to Length” on page 14-125

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Locate the precut 10.5" piece of tubing with PITOT label. (See "Cut Tubing to Length" on page 14-125.) Install the labeled end into aircraft RH port of the airspeed indicator.
2. Connect 1x push on tee connector so the 90° port points inboard.
3. Secure the tee connector with the ignition connector using the previously install loose cable tie as shown. Leave cable tie loose.
4. Identify the pitot line (bundled with main wire harness, routed inside fuselage on LH side of aircraft). Route to the connector.
5. Trim excess hose as required.
6. Ensure hoses are fully inserted into connectors.
7. Ensure pitot line is connected to the aircraft RH port in airspeed indicator.

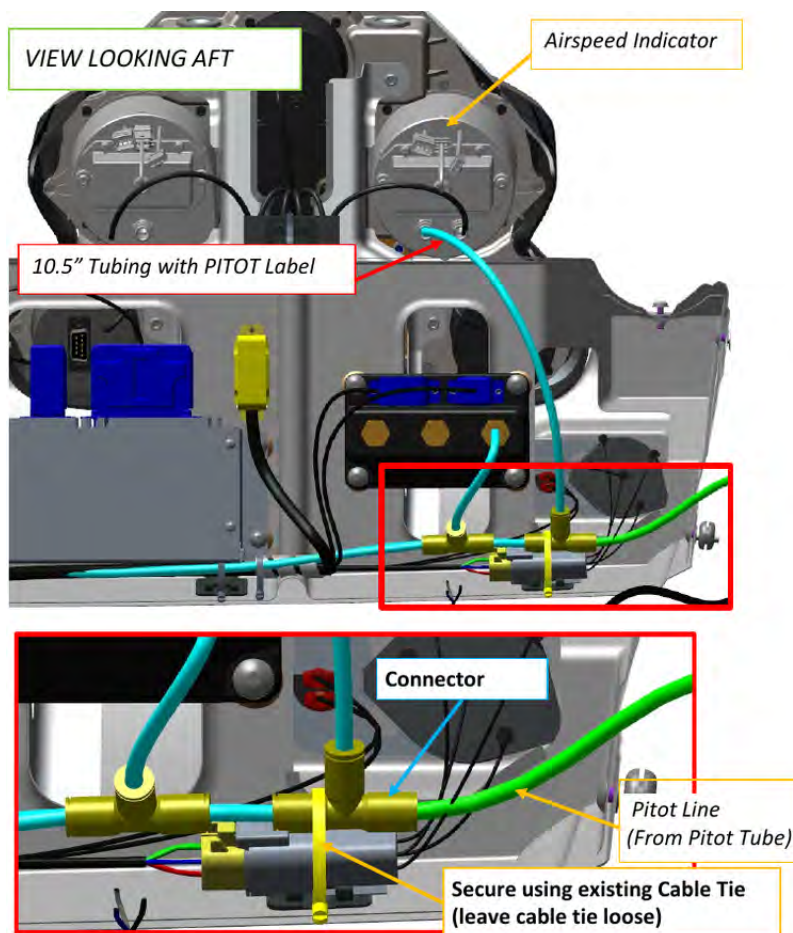


FIGURE 14-52
PITOT LINE

8. Locate precut 1.75" piece of tubing.

9. Install into push on tee previously installed.
10. Connect 1x push on tee connector to other end of tubing.
11. Locate the precut 5.5" piece of tubing with PITOT label. Install the labeled end into the aircraft LH port of the Garmin ADAHRS.
12. Install the opposite end of the tube into the top port of the tee connector.

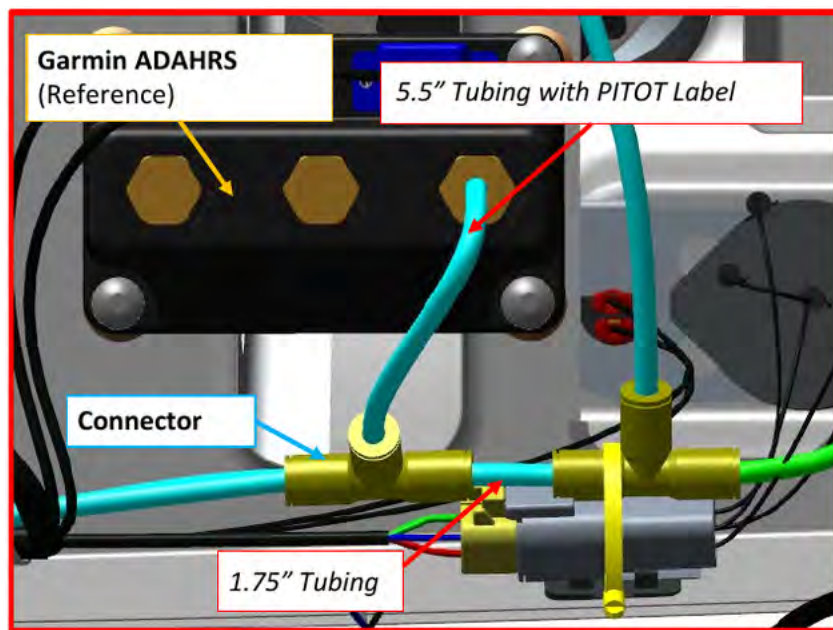


FIGURE 14-53
PITOT LINE

13. Locate the precut 28.5" piece of tubing with PITOT label. Install the labeled end into the PT port of the MSC.
14. Route tubing along crossbeams as shown.
15. Connect tubing to open port of previously installed push on tee connector. Tubing will be secure in later steps.

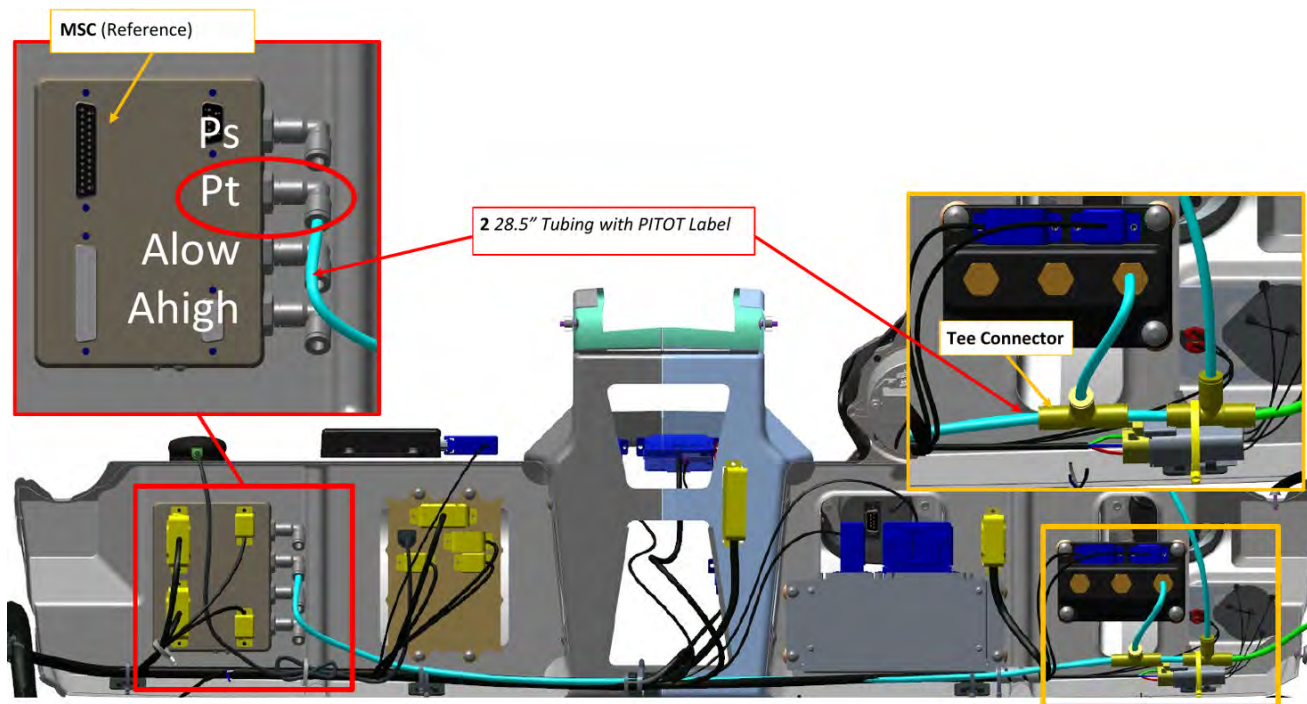


FIGURE 14-54
PITOT LINE

VERIFICATION METHOD:

Verify there are no instances of wire chafing and that wire protection is applied in the appropriate locations.

Verify all connectors have good connections and adequate strain relief.

Verify zip ties are tightened properly, adequately holding wire harness in place and preventing movement without visible signs of bending or cutting wire insulation/sleeving or pinching pitot/static lines.

Perform PITOT Static leak check. See "Pitot-Static-AOA Leak Test Procedures" on page 14-181.

14.6.2.25 Disconnect Static Line

Use the following to disconnect the Static Line from the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Identify the static line and cut cable tie securing it to the wire harness.
 2. Cut cable tie to disconnect tee connector that is securing wire harness and PITOT lines.
 3. Disconnect tube from top port of the tee connector.
 4. Remove tee connector.
 5. Cut cable ties securing STATIC tube from wire harness and PITOT tube.
 6. Remove tubing from port on tee connector. (See Figure 14-59.)
 7. Cut cable to disconnect STATIC tubing from D9144P and D9145P wires. (See Figure 14-58.)
 8. Remove tube from top port of tee connector.
 9. Cut cable tie securing STATIC tube, PITOT tube, and wire harness.
 10. Disconnect tube from tee connector.
 11. Remove tubing from tee connector.
 12. Remove push on tee.
 13. Disconnect center tube from top port of tee connector.
 14. Disconnect tube from PITOT tee connector and main wire harness.
 15. Cut cable tie to disconnect STATIC tubing from PITOT tubing. (See Figure 14-55.)
-

VERIFICATION METHOD:

Task is complete when static line is disconnected.

14.6.2.26 Connect Static Line

Use the following to connect the Static Line with the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

6x ICA011589 (PUSH-ON TEE CONNECTOR)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

Cable Tie

TASK INSTRUCTIONS:

1. Locate precut 11.5" piece of tubing with STATIC label. Install the labeled end into the aircraft LH port of the airspeed indicator.
2. Install the opposite end of the tube into the straight port of the tee connector.
3. Secure STATIC tubing to previously installed PITOT tubing using cable tie.
4. Secure tee connector to previously installed PITOT tee connector and main wire harness using cable tie.

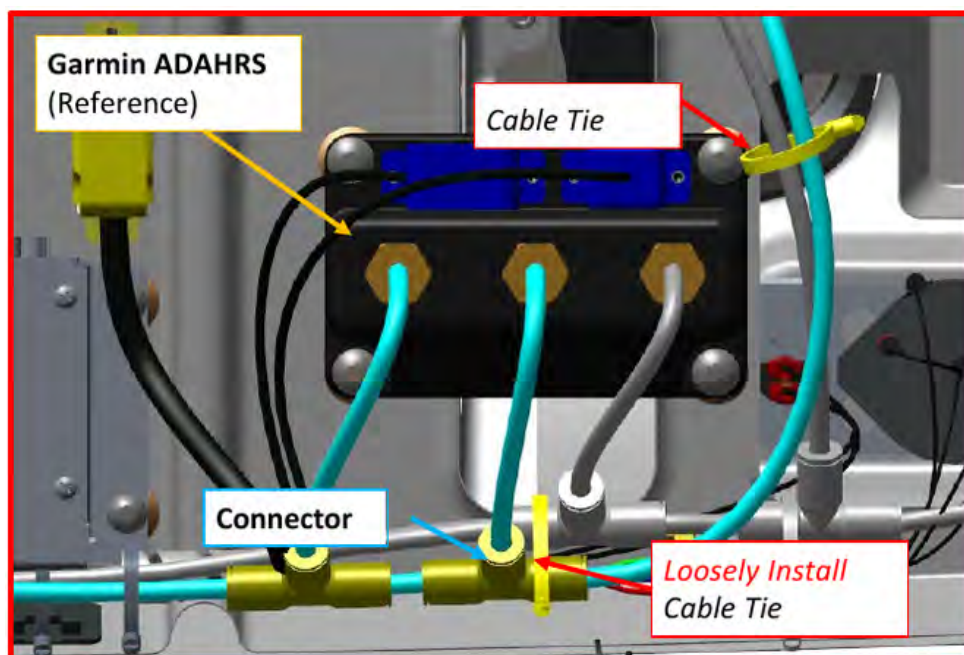


FIGURE 14-55
STATIC LINE

NOTE: *Loosely install the cable tie. The cable tie will be secured at a later step. This cable tie will be used to route and secure the STATIC and AOA lines as well.*

5. Locate 2x precut 5.5" pieces of tubing with STATIC labels. Install the labeled end into the open ports of the GARMIN ADAHRS.
6. Connect center 5.5" tube into top port of previously installed tee connector.
7. Locate precut 1.75" piece of tubing.
8. Install into push on tee previously installed.
9. Connect 1 push on tee connector to another end of tubing.
10. Connect remaining 5.5" tube into top port of tee connector.

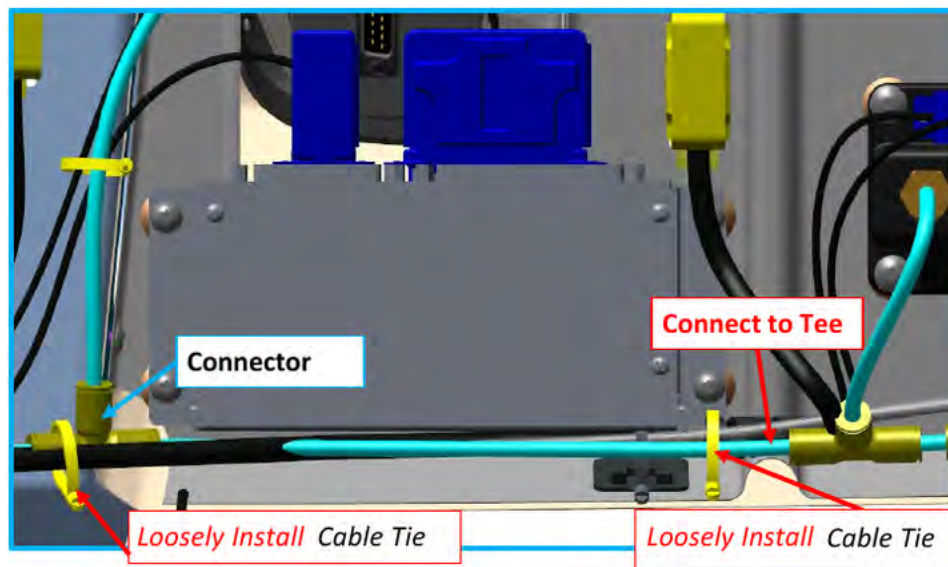


FIGURE 14-56
STATIC LINE

11. Locate precut 8.5" piece of tubing. Install one end into the open port of the previously installed tee connector.
12. Connect opposite end of tube to 1x push on tee connector.
13. Loosely secure STATIC tube, PITOT tube, and wire harness using 1x cable tie within 1" of cable tie block.
14. Loosely secure tee connector to main wire harness, and PITOT tube using 1x cable tie as shown.

NOTE: *Loosely install the cable ties. The cable tie will be secure at a later step. These cable ties will be used to route and secure the STATIC and AOA lines as well.*

15. Locate precut 11.5" piece of tubing with STATIC label. Install the labeled end into the port on the altimeter.
16. Install the opposite end of the tube into the top port of the previously installed tee connector.
17. Secure STATIC tubing to D9144P and D9145P wires using 1x cable tie in the location shown.

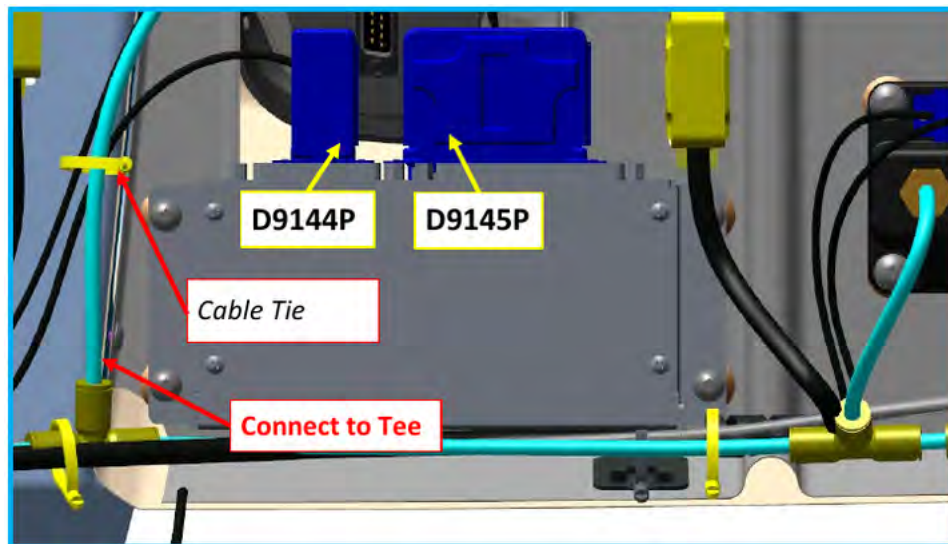


FIGURE 14-57
STATIC LINE

18. Locate precut 15.5" piece of tubing and install into open port on previously installed tee connector as shown.
19. Route tube along crossbeams as shown.
20. Loosely secure STATIC tube to wire harness and PITOT tube using 2x cable ties. Cable ties to be within 1" of existing cable tie mounts.

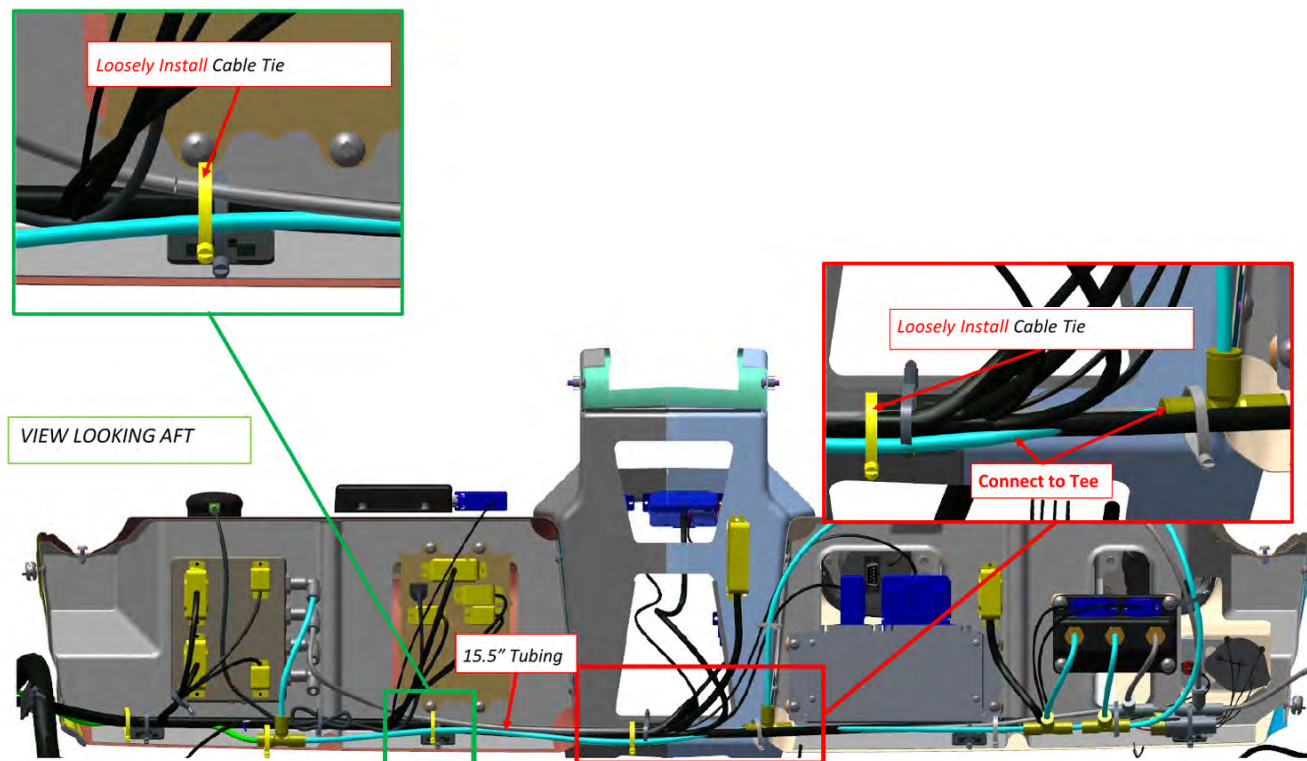


FIGURE 14-58
STATIC LINE

21. Install 1 tee connector onto opposite end of 15.5" tube as shown.
22. Locate precut 5.5" piece of tubing with STATIC label. Install the labeled end into the PS port of the MSC.
23. Install the opposite end of the tube into the top port of the tee connector as shown.
24. Loosely secure tee connector to wire harness and PITOT lines using 1x cable tie as shown.
25. Identify the static line (bundled with wire harness, routed inside fuselage on RH side of aircraft). Route and cut the tubing to the static push-on tee connector, ensuring there is enough length to be routed through the first two tie mounts.
26. Secure static line to wire harness using 1x cable tie within 1" of existing cable tie mount.

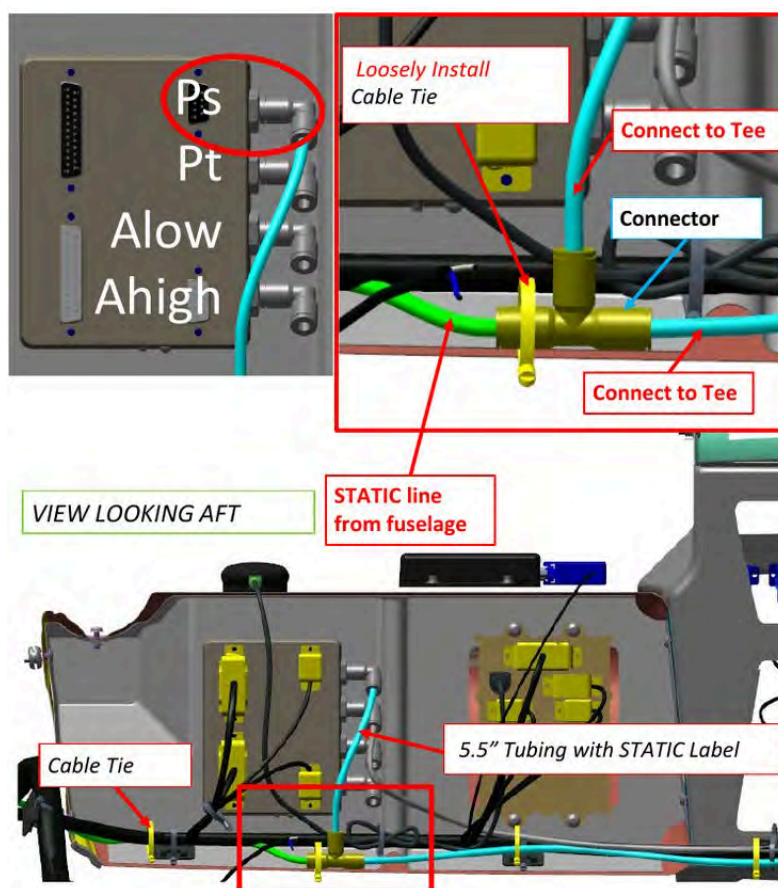


FIGURE 14-59
STATIC LINE

VERIFICATION METHOD:

Verify there are no instances of wire chafing and that wire protection is applied in the appropriate locations.

Verify all connectors have good connections and adequate strain relief.

Verify zip ties are tightened properly, adequately holding wire harness in place and preventing movement without visible signs of bending or cutting wire insulation/sleeving or pinching pitot/static lines.

Perform PITOT Static leak check. See "Pitot-Static-AOA Leak Test Procedures" on page 14-181.

14.6.2.27 Disconnect High Pressure AOA Line

Use the following to disconnect the High Pressure AOA Line from the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Disconnect hose from the port on MSC labeled “Ahigh”.
 2. Identify the high pressure AOA line and remove from MSC.
-

VERIFICATION METHOD:

Task is complete when high pressure AOA line is removed.

14.6.2.28 Connect High Pressure AOA Line

Use the following to connect the High Pressure AOA line with the aircraft.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME000612 (HIGH PRESSURE AOA LABEL)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Identify the high pressure AOA line (routed inside fuselage on LH side of aircraft). Route to MSC.

*NOTE: Do not route AOA Line through fuselage wire harness tie mounts.
Route the AOA line through the PITOT and STATIC cable ties.*

2. Apply “HIGH PRESSURE AOA” label in the noted location. Trim excess hose as required and connect hose to the port on MSC labeled “Ahigh”. Ensure hose is fully inserted into connector.

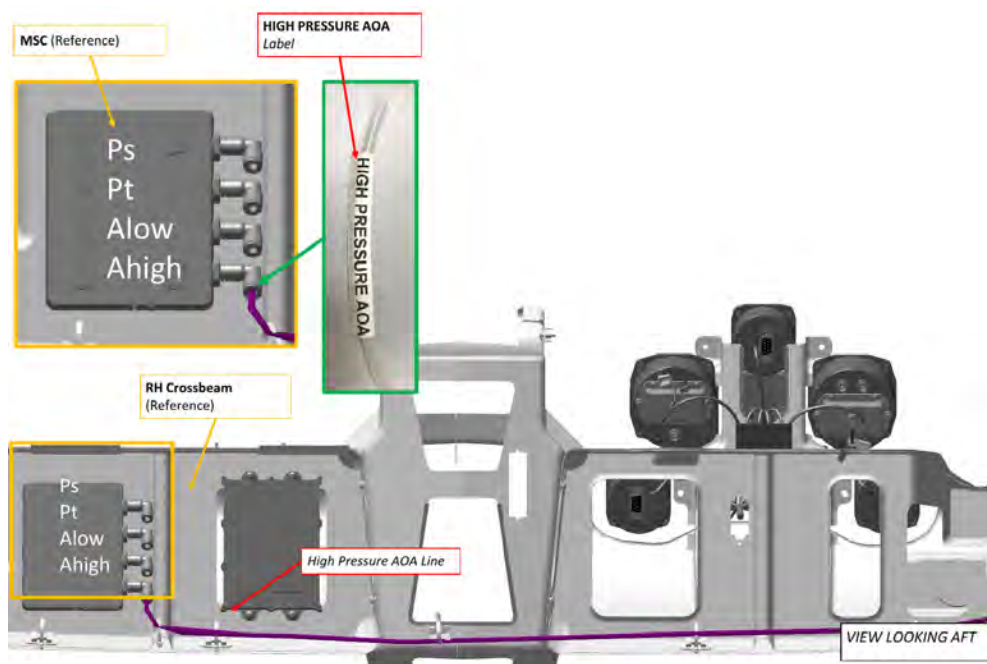


FIGURE 14-60
HIGH PRESSURE AOA LINE

VERIFICATION METHOD:

Verify there are no instances of wire chafing and that wire protection is applied in the appropriate locations.

Verify all connectors have good connections and adequate strain relief.

Verify zip ties are tightened properly, adequately holding wire harness in place and preventing movement without visible signs of bending or cutting wire insulation/sleeving or pinching pitot/static lines.

Perform PITOT Static leak check. See “Pitot-Static-AOA Leak Test Procedures” on page 14-181.

14.6.2.29 Disconnect Low Pressure AOA Line

Use the following to disconnect the Low Pressure AOA Line from the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Disconnect hose from the port on the MSC labeled “Alow”.
 2. Identify the low pressure AOA line and remove from MSC.
-

VERIFICATION METHOD:

Process is complete when the low pressure AOA line has been removed.

14.6.2.30 Connect Low Pressure AOA Line

Use the following to connect the Low Pressure AOA Line.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ME000613 (LOW PRESSURE AOA LABEL)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Identify the low pressure AOA line (routed inside fuselage on LH side of aircraft). Route to MSC.
*NOTE: Do not route AOA line through fuselage wire harness tie mounts.
Route the AOA line through the PITOT and STATIC cable ties.*
2. Slide “LOW PRESSURE AOA” label onto the end of the tube. Trim excess hose as required and connect hose to the port on the MSC labeled “Alow”. Ensure hose is fully inserted into connector. Apply minimal heat to the heat shrink label to secure it a minimum of 1” away from the end of the tube to prevent interference with connector.

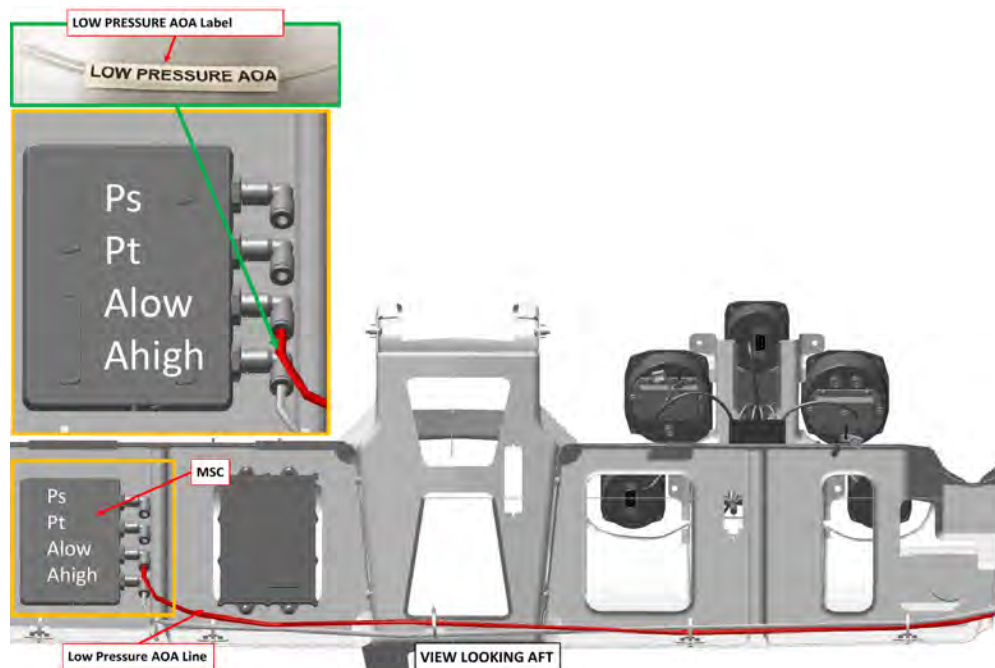


FIGURE 14-61
CONNECT AOA LINE

VERIFICATION METHOD:

Verify there are no instances of wire chafing and that wire protection is applied in the appropriate locations.

Verify all connectors have good connections and adequate strain relief.

Verify zip ties are tightened properly, adequately holding wire harness in place and preventing movement without visible signs of bending or cutting wire insulation/sleeving or pinching pitot/static lines.

Perform PITOT Static leak check. See "Pitot-Static-AOA Leak Test Procedures" on page 14-181.

14.7 VHF Comm Antenna

14.7.1 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 14-62.) The antenna transmits on the VHF radio spectrum – also known as aircraft band. This allows for communication between air traffic control and aircraft pilot.

14.7.2 VHF Comm Antenna Diagram/Schematic

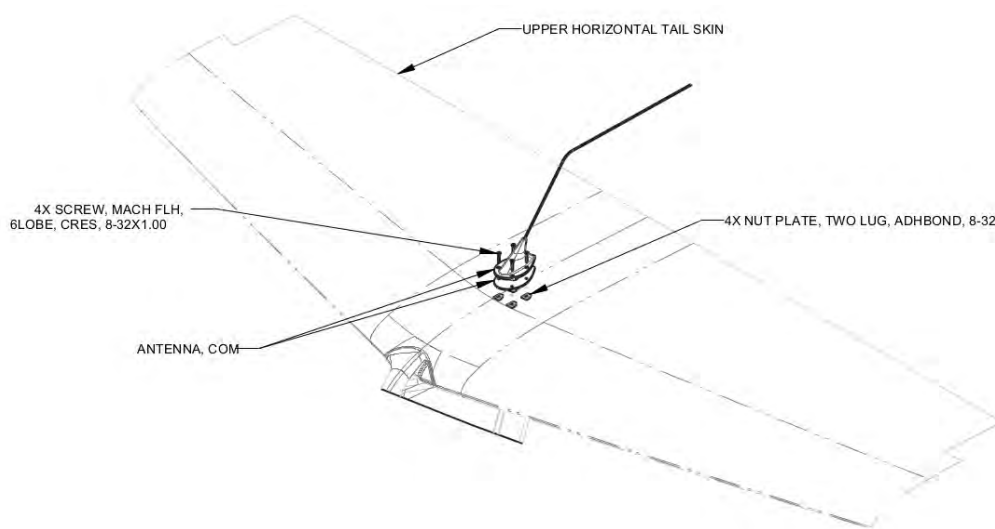


FIGURE 14-62
COMM ANTENNA – EXPLODED VIEW

14.7.3 Maintenance Instructions

14.7.3.1 Comm Antenna Removal

These instructions are to be used to remove the comm antenna for transportation or repair.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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.

14.7.3.2 Comm Antenna Installation

These instructions are to be used to install the comm antenna after transportation or repair.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

AV-17 (ANTENNA, COM)

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:

Turn on the master switch, perform comm check to ensure the radio is functioning properly.

14.7.3.3 Remove VHF Comm Transceiver and Transponder

Use the following procedure to remove the VHF Comm Transceiver (Radio) and the Transponder. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

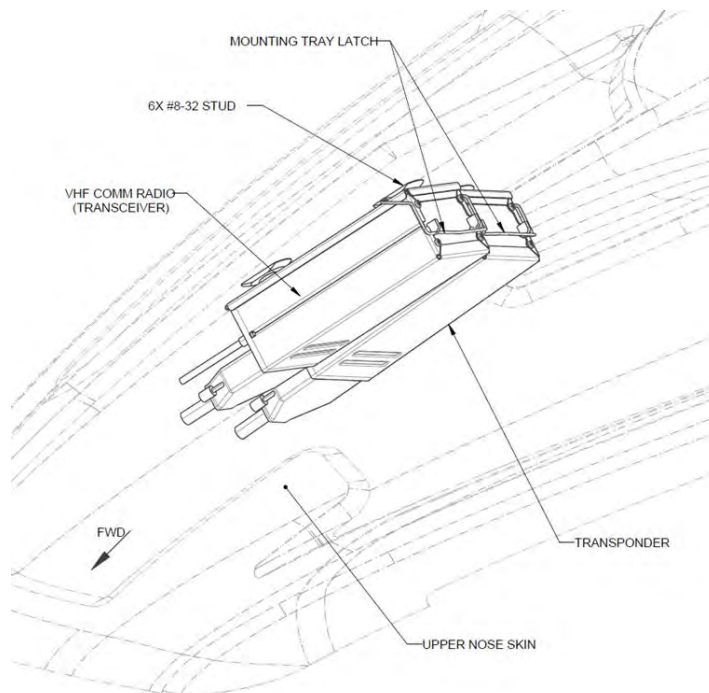


FIGURE 14-63
VHF COMM TRANSCEIVER AND TRANSPONDER INSTALLATION. VIEW LOOKING UP-RIGHT.

TASK INSTRUCTIONS:

1. Remove cluster hood shell by pulling upon the aft side and sliding hood towards the aft of the aircraft.
2. Remove Left Instrument Top Panel. (See “Left Instrument Panel Top Panel Removal” on page 9-20.)
3. If needed, remove the left hand Landing and Taxi Light. (See “Remove Landing and Taxi Lights” on page 7-82.)
4. Remove VHF Comm Radio (Transceiver).
 - a. Pull back Mounting Tray Latch to remove the VHF Comm Radio (Transceiver) out of the Mounting Tray. (See Figure 1-85.)
 - b. Disconnect VHF Comm Radio connector D9018P and coax antenna cable D9057P1.
 - c. Remove the VHF Comm Radio out of the aircraft.
5. Remove Transponder.
 - a. Pull back Mounting Tray Latch to remove the Transponder out of the Mounting Tray.
 - b. Disconnect Transponder connector D9041J and coax antenna cable D908J1.
 - c. Remove the Transponder out of the aircraft.
6. Remove Mounting Brackets. The Mounting Brackets are identical for the VHF Comm Radio and the Transponder.
 - a. Loosen 3x 8-32 Hex Nuts. (See Figure 1-86.)
 - b. Remove Mounting Tray from the studs.
 - c. Repeat for each Mounting Tray.

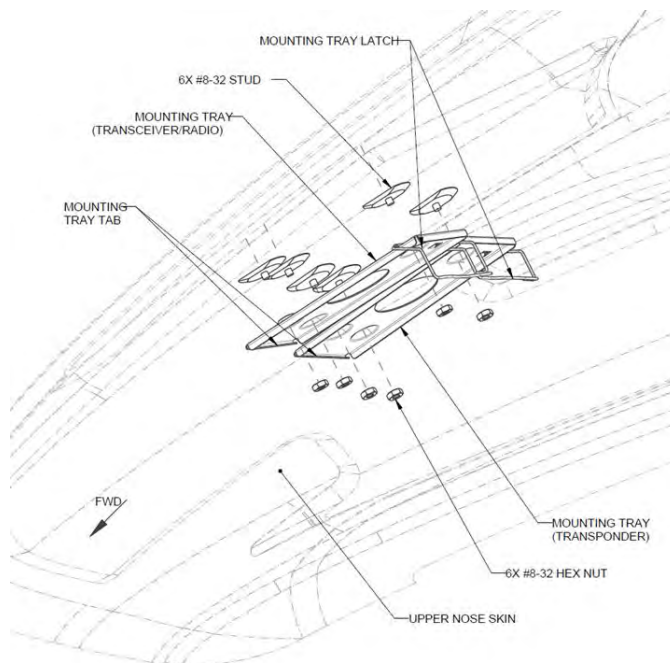


FIGURE 14-64
VHF COMM TRANSCIVER AND TRANSPONDER MOUNTING BRACKET INSTALLATION.
VIEW LOOKING UP-RIGHT.

VERIFICATION METHOD:

Task is complete when the VHF Comm Radio, the Transponder, and Mounting Trays have been removed from the aircraft.

RELATED INFORMATION:

"796 Equipped Aircraft Transponder Troubleshooting" on page 14-25

14.7.3.4 Remove VHF Comm Transceiver and Transponder (G3X Configuration)

Use the following procedure to remove the VHF Comm Transceiver (Radio) and the Transponder. This task is applicable to the G3X configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All (G3X Configuration Only)

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

CONNECTORS TO RADIO AND TRANSPONDER ASSEMBLY**TASK INSTRUCTIONS:**

1. Remove cluster hood shell by pulling upon the aft side and sliding hood towards the aft of the aircraft.
2. Remove Left Instrument Top Panel. (See “Left Instrument Panel Top Panel Removal” on page 9-20.)
3. If needed, remove the left hand Landing and Taxi Light. (See “Remove Landing and Taxi Lights” on page 7-82.)
4. Remove Radio/Transponder assembly:
 - a. Loosen 3X nut on Mounting Tray, do not remove nut. Slide Outboard side studs toward AFT direction, then slide the inboard side studs toward AFT direction to relieve Radio/Transponder subassembly. (See Figure 14-70.)
 - b. Disconnect VHF Comm Radio connector D9139P and coax antenna cable D9057P1.
 - c. Disconnect Transponder connector D9138J and coax cable D9008J1. (See Figure 14-71.)
 - d. Remove Radio/Transponder subassembly from aircraft.
5. Remove Radio:
 - a. Remove 8x screws on Radio/Transponder bracket. (See Figure 14-68.)
 - b. Remove Radio from Radio/Transponder bracket.
6. Remove Transponder:
 - a. Remove 6x screws on Radio/Transponder bracket. (See Figure 14-67.)
 - b. Remove Transponder from Radio/Transponder Bracket.

VERIFICATION METHOD:

Task is complete when the VHF Comm Radio, the Transponder, and Mounting Trays have been removed from the aircraft.

RELATED INFORMATION:

"G3X Equipped Aircraft Transponder Troubleshooting" on page 14-22

14.7.3.5 Install VHF Comm Transceiver and Transponder

Use the following procedure to install the VHF Comm Transceiver (Radio) and the Transponder. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

00667-00 (MOUNTING TRAY, TRANSPONDER, TY21 &TY91)

00882-00-01 (RADIO, VHF, TY91) [Transceiver]

00745-00-01 (TRANSPONDER UNIT, TT22)

9025A009 (NUT, PLAIN, HEX, 316SS, 8-32 X .125)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

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

LOCTITE 222 (THREADLOCKER, ACRYLIC, REMOVABLE LOW STR, PURPLE)

As Needed:

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

Reference SAFO 17002 as needed while performing transponder and VHF maintenance tasks.

TASK INSTRUCTIONS:

1. Install 2x Mounting Brackets. (See Figure 1-86.)
 - a. Secure Mounting Bracket onto 3x studs using 3x 8-32 Hex Nuts.
 - b. Apply blue threadlocker (LOCTITE 243) and torque to 7-9 in-lbs.
 - c. Repeat for second Mounting Bracket.

2. Install Transponder.
 - a. Transponder connector D9041J from fuselage wire harness to the Transponder.
 - b. Connect the transponder coax cable D9008J1 to the Transponder antenna output.
 - c. Place the Transponder into the inboard Mounting Tray Tab and secure with Mounting Tray Latch as shown in Figure 1-85.

NOTE: Reference SAFO 17002 as needed while performing transponder maintenance tasks.
 - d. Configure the transponder per 00560-00-AQ-TRIG TT21/TT22 Mode S Transponder Installation Manual, section 6 and perform an altitude encoder calibration per section 6.2.2.
3. Install VHF Comm Radio (Transceiver).
 - a. Connect D9018P from the fuselage wire harness to the VHF Comm Transceiver.
 - b. Connect the comm coax cable D9057P1 to the VHF Comm Transceiver antenna output.
 - c. Place the Transceiver into the outboard Mounting Tray Tab and secure with Mounting Tray Latch as shown in Figure 1-85.
4. If previously removed, secure the wire harness branches to connectors D9018P and D9041J to the nearest tie mount on the Nose Landing Gear Box with a Cable-Tie (TY24MX).
5. If previously removed, secure the coax cables D9008J1 and D9057P1 to the nearest tie mount forward of the left hand Landing and Taxi Light with a Cable-Tie (TY24MX).
6. If previously removed, re-install the left hand Landing and Taxi Light. (See "Install Landing and Taxi Lights" on page 7-84.)
7. Re-install Left Instrument Top Panel. (See "Left Instrument Panel Top Panel Installation" on page 9-21.)
8. Re-install hood shell. Slide it forward into the clip hole and then press it down on the instrument cluster.

VERIFICATION METHOD:

NOTE: Reference SAFO 17002 as needed while performing transponder maintenance tasks.

Perform a transponder correspondence test. See 00560-00-AQ--TRiG TT21/TT22 Mode S Transponder Installation Manual.

Ensure VHF radio header screen turns on and is operable. Test radio transmission and receiving with an external radio.

RELATED INFORMATION:

"796 Equipped Aircraft Transponder Troubleshooting" on page 14-25

14.7.3.6 Install VHF Comm Transceiver and Transponder (G3X Configuration)

Use the following procedure to install the VHF Comm Transceiver (Radio) and the Transponder. This task is applicable to the G3X configuration only

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All (G3X Configuration Only)

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014614 (BRACKET, RADIO & TRANSPONDER, GTR 20 & GTX 45R, GARMIN)

ICA014700 (RADIO, VHF, GTR 20, GARMIN)

ICA014701 (TRANSPONDER, ADS-B IN, GTX 45R, GARMIN)

3x MS21043-3 (NUT, PLAIN, HEX, 316SS, 8-32 X .125)

3x NAS1149C0332R (WASHER)

ICA014708 (COAX ADAPTER)

7x MS51957-17 (SCREW)

6x 98019A309 (WASHER)

ICA014705 (COAX BRACKET)

NAS43DD0-8A (SPACER)

8x MS51957-13 (SCREW)

2x M24308/26-1F (SCREWLOCK)

ICA014984 (COAX ADAPTER)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

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

LOCTITE 222 (THREADLOCKER, ACRYLIC, REMOVABLE LOW STR, PURPLE)

As Needed:

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

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel)
TT-I-735A (ISOPROPYL ALCOHOL)

TASK INSTRUCTIONS:

1. Install Radio/Transponder bracket assembly. (See Figure 14-65.)

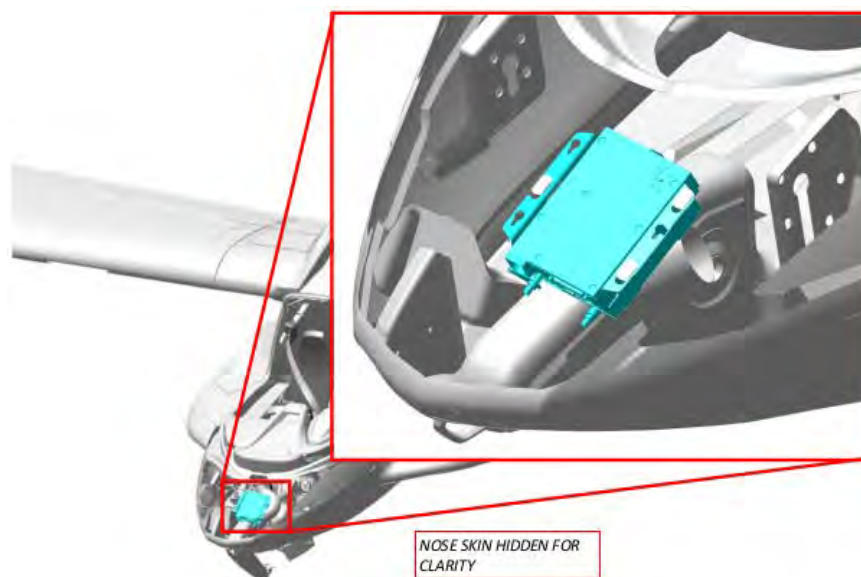


FIGURE 14-65
VHF COMM TRANSCEIVER AND TRANSPONDER

- a. If there are existing screws on transponder, remove existing screws. (See Figure 14-66.)

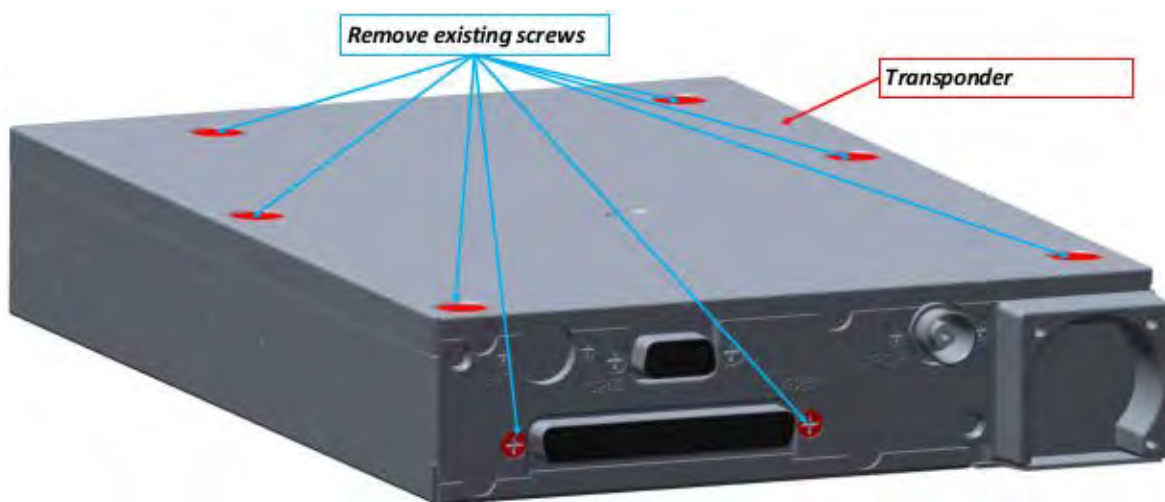


FIGURE 14-66
REMOVE EXISTING SCREWS FROM TRANSPONDER UNIT

- b. Using isopropyl alcohol, clean surfaces where Threadlocker will be applied.
- c. Apply threadlocker (LOCTITE 222) to threads of screws.
- d. Install Radio and Transponder brackets to transponder as shown using 6x screws (MS51957-17) and 6x washers (98019A309). (See Figure 14-67.)

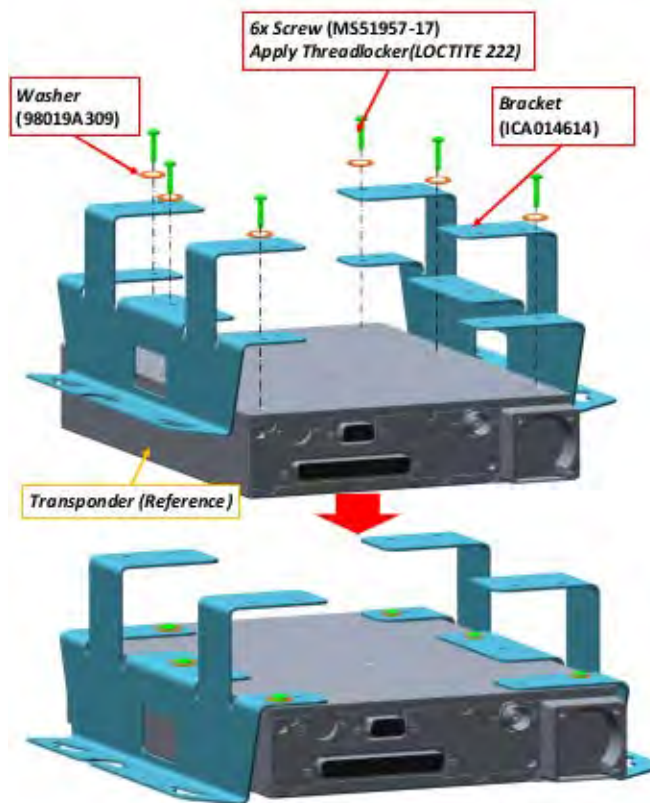


FIGURE 14-67
INSTALL RADIO TRANSPONDER BRACKET

- e. Torque screws to 2-4 in-lbs.
- f. Install Radio (ICA014700) into radio and transponder bracket as shown using 8x screws (MS51957-13). (See Figure 14-68.)

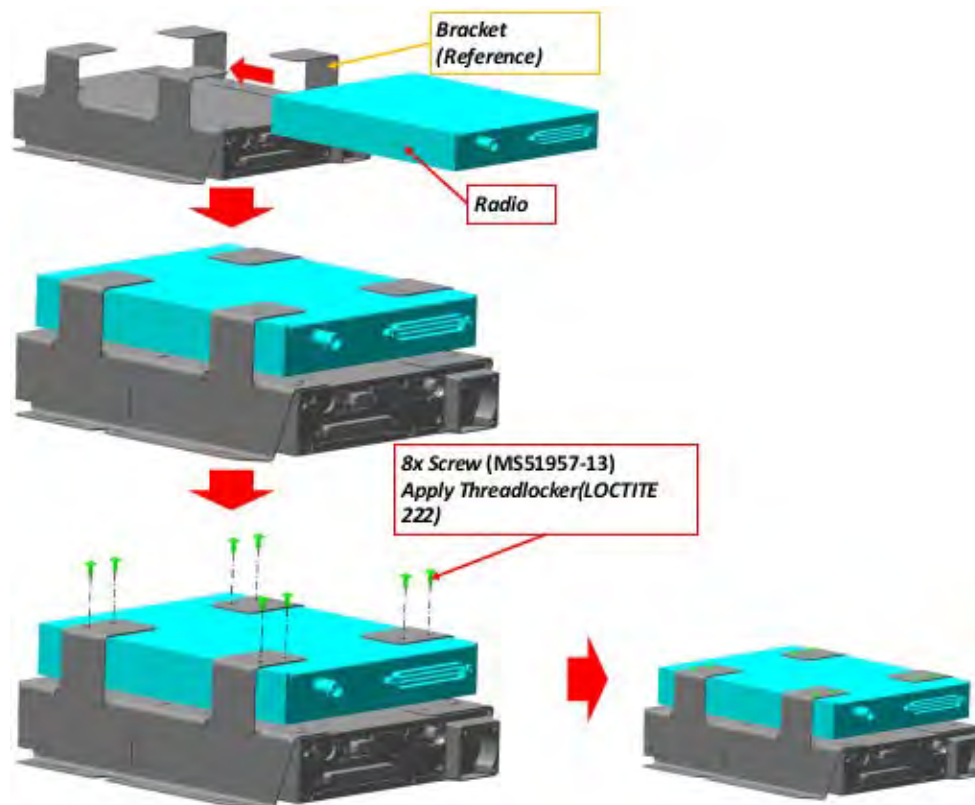


FIGURE 14-68
INSTALL RADIO TO RADIO TRANSPONDER BRACKET

- g. Torque screws to 2-4 in-lbs.
- h. Install 2x female screwlocks (M24308/26-1F) into transponder as shown. (See Figure 14-69.)

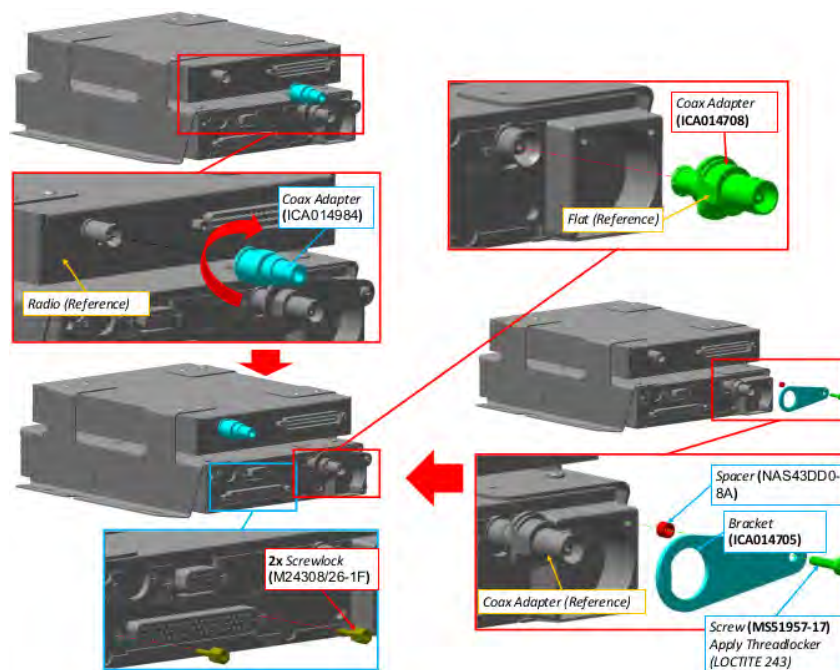


FIGURE 14-69
INSTALL ADAPTER AND SPACER TO RADIO TRANSPONDER

- i. Install Coax Adapter (ICA014984) into receptacle on front of transponder as shown. (See Figure 14-69.)
- j. Install Coax Adapter (ICA014708) onto radio coax jack as shown. Align center pin and twist clockwise to engage the locking mechanism. (See Figure 14-69.)
- k. Install Coax Bracket (ICA014705) spacer (NAS43DD0-8A) and screw (MS51957-17) into transponder. Ensure bracket is fully seated on coax adapter. (See Figure 14-69.)

2. Install Transponder and Radio bracket Assembly to fuselage.
 - a. Pre-install lock nuts (MS21043-3) and washers (NAS1149C0332R) as shown leaving a gap for the installation of G3X Radio/Transponder subassembly. (See Figure 14-70.)

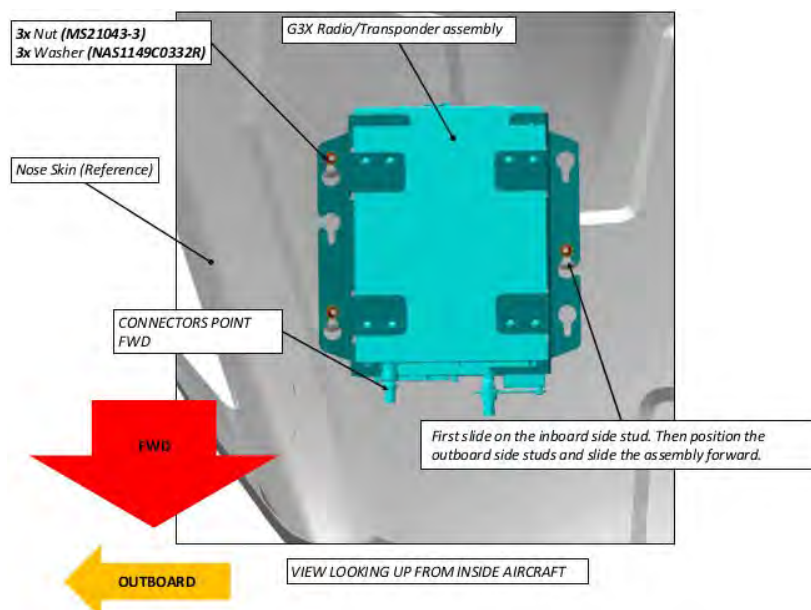


FIGURE 14-70
INSTALL RADIO AND TRANSPONDER ASSEMBLY TO FUSELAGE

- b. Install G3X Radio/Transponder subassembly by first sliding on the inboard side stud. Then position the outboard side studs and slide the assembly forward. (See Figure 14-70.)
- c. Torque nut to 16.4-19.4 in-lbs.
- d. Connect Transponder connector D9138J from fuselage wire harness to the Transponder. (See Figure 14-71.)

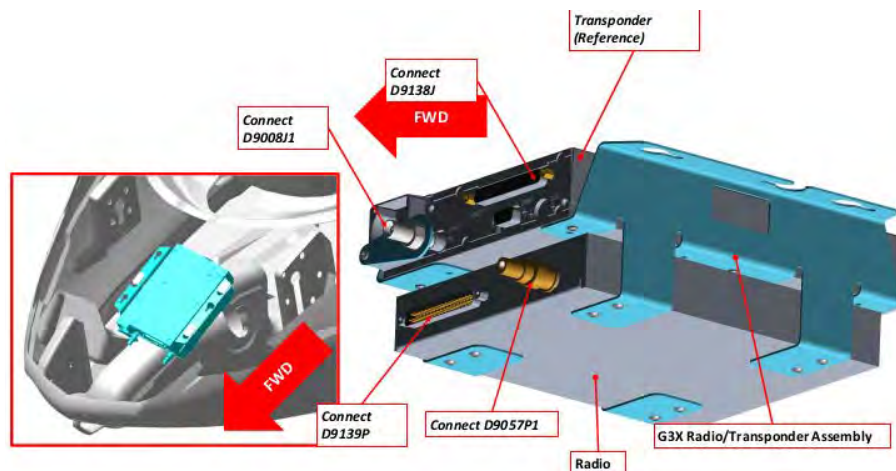


FIGURE 14-71
CONNECTORS OF RADIO TRANSPONDER SUBASSEMBLY

- e. Connect the Transponder coax cable D9008J1 to the Transponder antenna output. (See Figure 14-71.)
 - f. Connect D9139P from the fuselage wire harness to the VHF Comm Radio. (See Figure 14-71.)
 - g. Connect the comm coax cable D9057P1 to the Coax Connection on VHF Comm Radio antenna output. (See Figure 14-71.)
3. If previously removed, secure the wire harness branches to connectors D9138P and D9139J to the nearest tie mount with a cable-tie (TY24MX).
 4. If previously removed, secure the coax cables D9008J1 and D9057P1 to the nearest tie mount forward of the left hand landing and taxi light with a cable-tie (TY24MX).
 5. If previously removed, re-install the left hand Landing and Taxi Light. (See "Install Landing and Taxi Lights" on page 7-84.)
 6. Re-install Left Instrument Top Panel. (See "Left Instrument Panel Top Panel Installation" on page 9-21.)
 7. Re-install hood shell. Slide it forward into the clip hole and then press it down on the instrument cluster.

VERIFICATION METHOD:

Perform a transponder correspondence test. See 190-01499-10 Garmin GTX 34R/45R Installation Manual and 190-01115-01 Garmin G3X/G3X Touch Installation Manual.

Test VHF radio transmission and receiving with an external radio.

RELATED INFORMATION:

"G3X Equipped Aircraft Transponder Troubleshooting" on page 14-22

14.8 ADS-B GPS System

14.8.1 Maintenance Instructions

14.8.1.1 Remove ADS-B GPS Antenna

Use the following procedure to remove the ADS-B GPS Antenna. The ADS-B Out system requires that TT22 Transponder software is v2.13 or greater and TC20 Control Head Software is v1.14 or greater. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014190 (ANTENNA, GPS, ADS-B COMPACT)

Aircraft System and Number

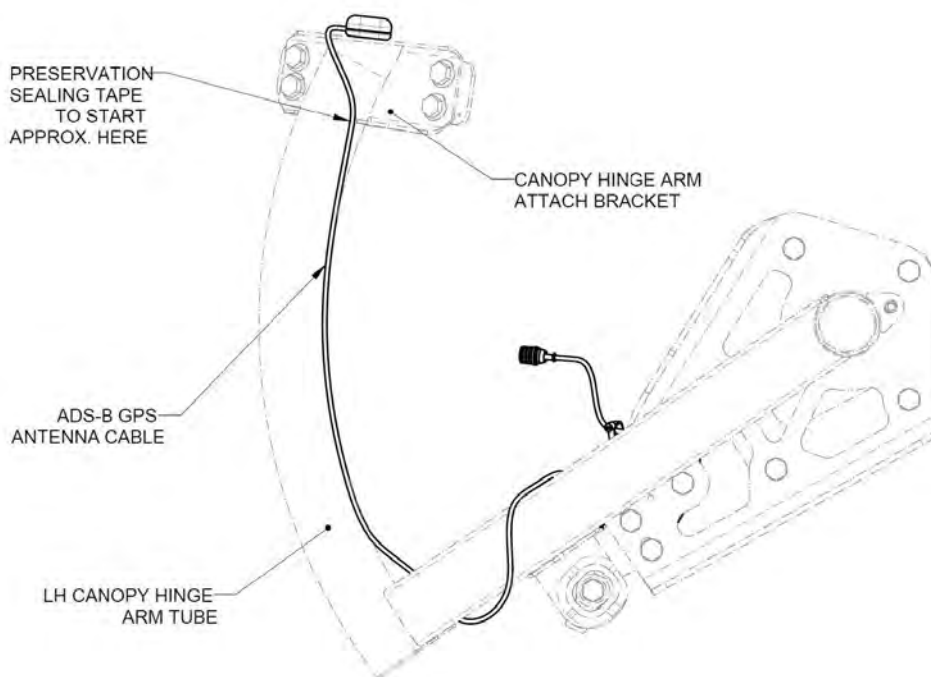
10 – Instruments (and Avionics)

Consumables

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

TASK INSTRUCTIONS:

1. Remove Left Instrument Top Panel. (See “Left Instrument Panel Top Panel Removal” on page 9-20.)
2. Remove the Preservation Sealing Tape from the ADS-B GPS ANTENNA and the Canopy Hinge. See Figure 14-72.

**FIGURE 14-72**

ANTENNA ROUTING LOOKING LEFT, OUTBOARD (TAPE NOT SHOWN)

3. Remove all CABLE-TIES securing the ADS-B GPS ANTENNA.
4. Disconnect the ADS-B GPS ANTENNA coax connector from the ADS-B GPS Receiver.
5. Gently peel off the ADS-B GPS ANTENNA from the top of the LH Canopy Hinge. Remove the ADS-B GPS ANTENNA from the aircraft.

VERIFICATION METHOD:

The ADS-B GPS ANTENNA has been removed from the aircraft.

14.8.1.2 Install ADS-B GPS Antenna

Use the following procedure to install the ADS-B GPS Antenna. The ADS-B Out system requires that TT22 Transponder software is V2.13 or greater and TC20 Control Head software is V1.14 or greater. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014190 (ANTENNA, GPS, ADS-B COMPACT)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

70006436714 (3M VHB TAPE 5915 BLACK, 1/2 IN X 72 YD 16 MIL)

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

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

AC-111 (ADHESION PROMOTOR, AC-111)

ICA014234 (TAPE, PRESERVATION SEALING, 481, 3M, 1.00 BK)

TASK INSTRUCTIONS:

1. Mount ADS-B GPS ANTENNA to the top of the Canopy Hinge Arm Attach Bracket as shown in and as follows. See Figure 14-73.
 - a. Clean the surface with ISOPROPYL ALCOHOL and let it dry.
 - b. Apply ADHESION PROMOTOR to mating surfaces and let it dry.
 - c. Apply 0.75 in. of 3M VHB TAPE 5915 BLACK on the mating surface of the antenna and the bracket in the orientation shown.
 - d. Use about 15 psi of pressure at a temperature of 70°F.

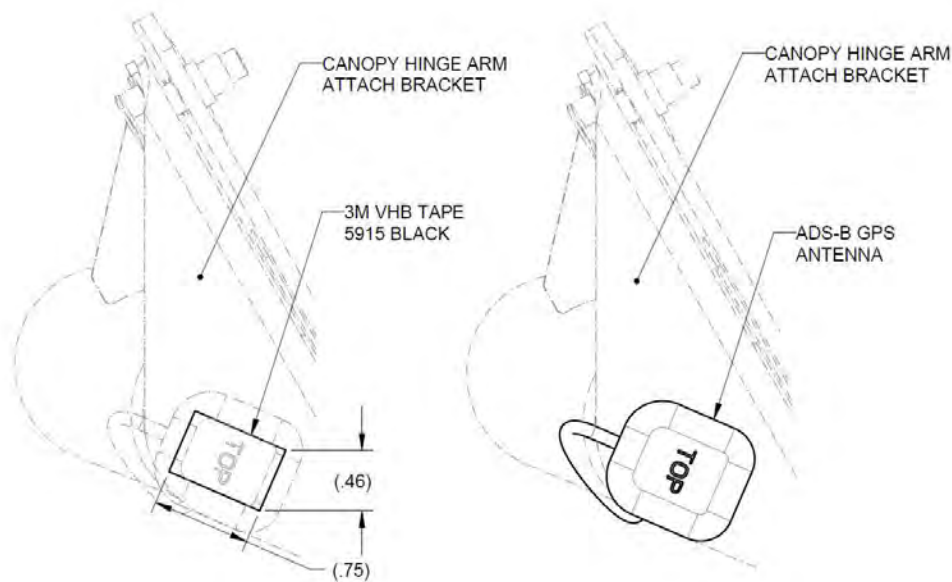


FIGURE 14-73
ANTENNA MOUNTING

NOTE: Bond cures to 75% in 1 hour, 90% in 24 hours, and 100% in 72 hours at 70°F.

2. Secure the ADS-B GPS ANTENNA to the LH Canopy Hinge Arm Tube as follows:
 - a. Clean the LH Canopy Hinge Arm Tube with ISOPROPYL ALCOHOL.
 - b. Cut $10.00 \pm .25$ in. of PRESERVATION SEALING TAPE.
 - c. Keeping the ADS-B GPS ANTENNA cable straight, center the tape onto the cable starting at about 3 inches from the antenna.
 - d. Carefully tape the cable to the LH Canopy Hinge Arm Tube along the FWD-inboard side as shown in Figure 14-72, Figure 14-74, Figure 14-75. The taped portion of the cable should start under the Canopy Hinge Arm Attach Bracket.



FIGURE 14-74
ANTENNA ROUTING LOOKING LEFT, OUTBOARD. CANOPY OPEN



FIGURE 14-75
ANTENNA ROUTING LOOKING AFT. CANOPY OPEN.

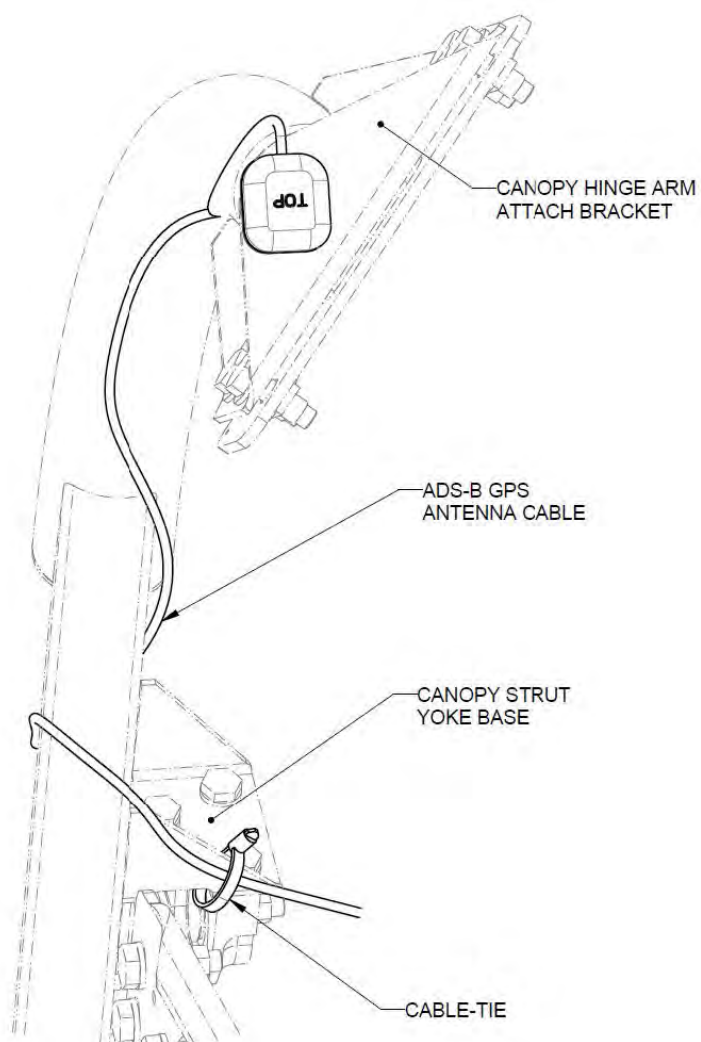


FIGURE 14-76
ANTENNA ROUTING LOOKING AFT-DOWN

3. Continue routing the ADS-B GPS ANTENNA cable around the rectangular portion of the LH Canopy Hinge Arm Tube as shown in Figure 14-72.
4. Secure the cable with the CABLE-TIE around the Canopy Strut Yoke Base as shown in Figure 14-76.

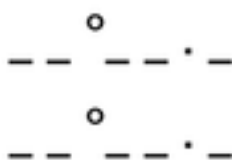
5. Connect ADS-B GPS ANTENNA to the ADS-B GPS Receiver.
6. Install the Left Instrument Panel Top Panel. (See “Left Instrument Panel Top Panel Installation” on page 9-21.)

VERIFICATION METHOD:

- 1) Take the aircraft outside and place in clear view of the sky.
- 2) Turn knob on control head to ATL mode. Wait for the display to change from ALT to GND. If not, there is something wrong with the squat switch or setting.

NOTE: It may take up to 2 min for it to cycle to GND.

- 3) Press FN button twice on the TC20 until ADS-B POSN diagnostic screen is displayed it will display the following for position fix.



- 4) After 2 min the GPS should have obtained a position fix. If no fix is determined and an error of “WARNING No ADSB Pos” shows up, call ICON for further support.

14.8.1.3 Remove G3X ADS-B Antenna

Use the following procedure to remove the ADS-B GPS Antenna. This task is applicable to the Garmin G3X configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Disconnect antenna from coax cable D9156J and clean sealant from the removed antenna.
2. Remove tape and ground wires from engine cowl. (See Figure 14-81.)
3. Remove NAS1149CN816R washers and unscrew 4 MS21043-08 Nuts from Garmin antenna and engine cowl. (See Figure 14-79.)
4. Remove Garmin antenna from engine cowl.

VERIFICATION METHOD:

The procedure is complete when the antenna has been removed from the engine cowl. Install new antenna.

RELATED INFORMATION:

"Install G3X ADS-B Antenna" on page 14-166

14.8.1.4 Install G3X ADS-B Antenna

Use the following procedure to install the ADS-B antenna. This task is applicable to the Garmin G3X configuration only.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014925 (ANTENNA, ADS-B, GPS/WAAS, GA 35, GARMIN)

8C100MTF3/100 (SCREW, MACH FLH, 6LOBE, CRES, 8-32X1.00)

NAS1149CN816R (WASHER, FLAT, CRES, 38X.016, PSVT)

MS21043-08 (NUT, SLFLKG, RDC HEX, CRES, 8-32)

ICA014926 (GROUND WIRE, ADS-B GPS, 18 AWG, 8.00)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE)

CB200 (ADHESIVE, ACRYLIC STRUCTURAL, 2 PART, CLICK BOND, 3.5 GRAM PACKET)

ICA012218 (ADHESIVE SEALANT, WHITE)

ICA013211 (WAX, CARNAUBA)

ICA012218 (SIKAFLEX ADHESIVE)

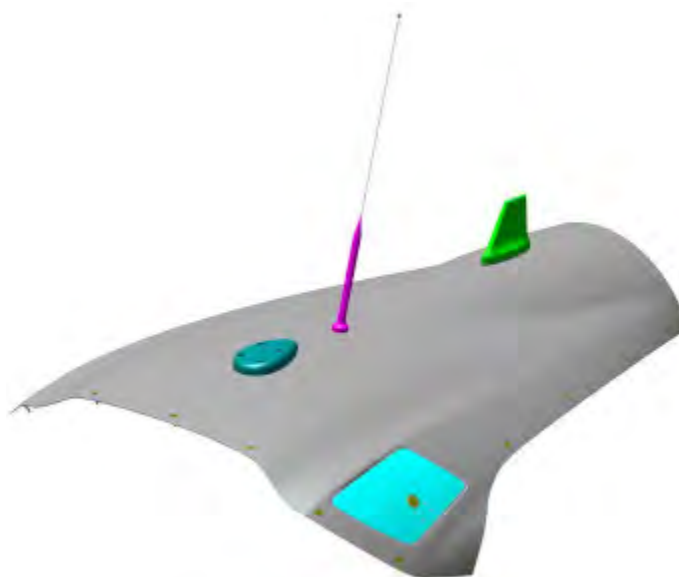


FIGURE 14-77
ENGINE COWLING

TASK INSTRUCTIONS:

1. Prep Garmin antenna and top cowl for potting by completing the following:
 - a. Apply carnauba paste wax onto mating surfaces of antenna and cowling. Do not wax inside of or on O-ring.
 - b. Allow 5 minutes for the wax to flash off.
 - c. Wipe carnauba wax off using a lint free cloth to leave thin film of residue on the mating surfaces.
 - d. Repeat the previous steps a total of three times.
2. Apply adhesive sealant, around 4x mounting holes locations and center -ring of the Garmin antenna. Apply enough Sikaflex to fill gap between antenna and cowl.
3. Position Garmin antenna on cowl with coax connector inserted in the center hole. Ensure antenna is oriented as shown.

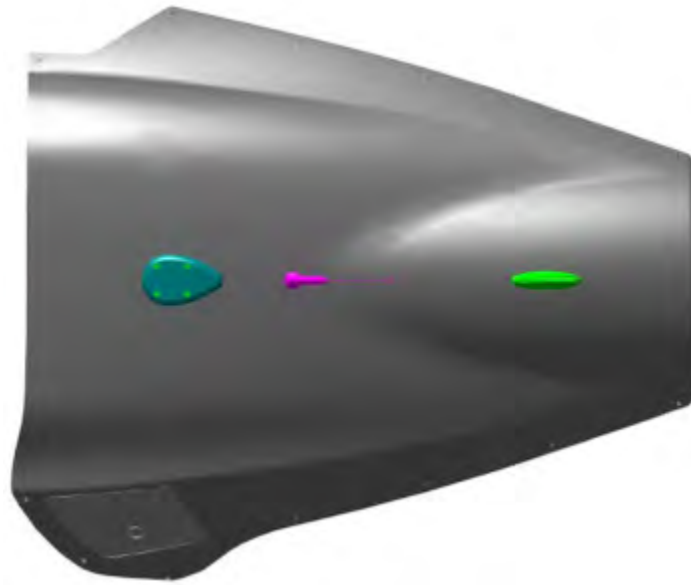


FIGURE 14-78
POSITION OF ANTENNA ON ENGINE COWLING

4. Using isopropyl alcohol, clean surfaces where lubricant will be applied.
5. Apply lubricant liberally to threads and shank of screw.

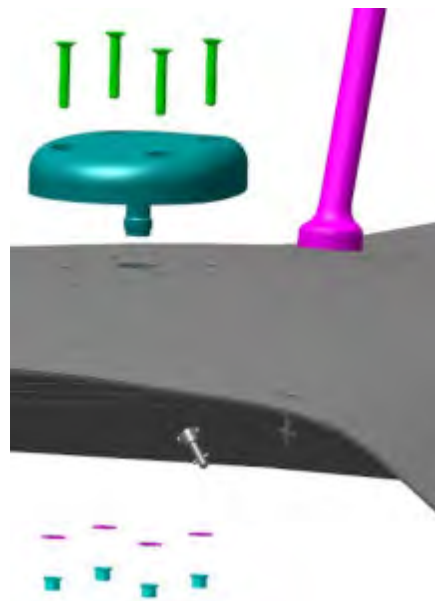


FIGURE 14-79
APPLY LUBRICANT AND SECURE ANTENNA

6. Secure antenna using noted hardware.
7. Torque nut to 13-15 in-lbs. Ensure at least one full thread is protruding from the nut.
8. On the lower unpainted side of cowl orient 2x ground wires 90° from one another as shown. Temporarily secure ground wires using tape in the approximate location shown.

NOTE: *Ensure ground wires are stretched along the lower side of engine cowl and oriented as shown.*

9. Mark the 5x locations on the ground wires where CB200 will be applied as shown.

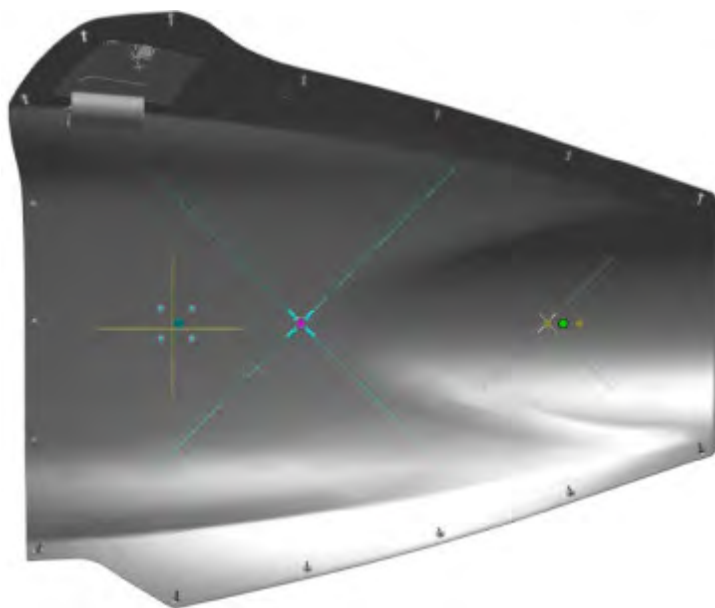


FIGURE 14-80
ENGINE COWL

10. Prepare cowl bonding surface:
- Mask surrounding area as required.
 - Wipe bonding surface with isopropyl alcohol using 2-wipe method.
 - Lightly abrade bonding surface using 120-180 grit sandpaper.
NOTE: *Do not abrade more than .25" beyond bond area.*
NOTE: *Abrade carbon surface just enough to remove surface gloss.*
 - Blast surface with shop air to remove any remaining particulate residues.
 - If any dust remains, wipe bonding surface again using isopropyl alcohol.

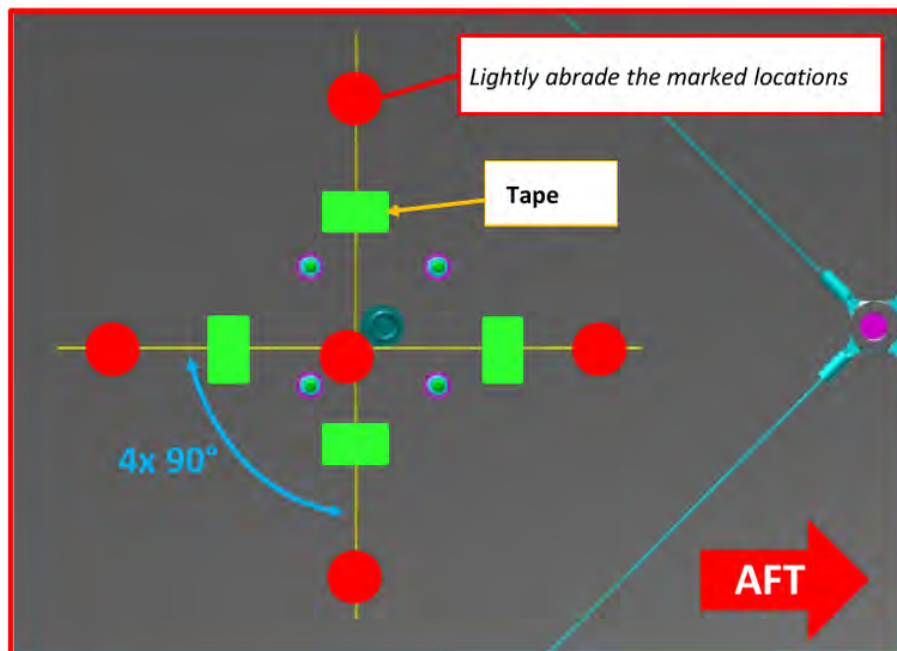


FIGURE 14-81
APPLYING G3X ANTENNA TO ENGINE COWL

11. Using CB200 adhesive, bond 2x ground wires to cowl surface at locations shown with 1/2 normal diameter dollop/blob.
 - a. Ensure adhesive is completely mixed before it is applied.

NOTE: Use mixed adhesive within 5 minutes. Multiple batches may be required.

NOTE: Ensure that there is squeeze out around the entire perimeter.
 - b. Allow adhesive to cure for a minimum of 30 minutes before handling and 2 hours before installing hardware.

NOTE: Apply uniformly for better result and do not cover the labels.
12. Allow adhesive to become tacky before removing tape. Use caution to ensure wires do not get pulled out of the adhesive. Allow 30 minutes for the adhesive to cure.
13. Connect D9156J to antenna.

VERIFICATION METHOD:

- 1) For ADS-B Check, take aircraft into open sky area and squawk ALT. Confirm "NO ADSB" message is extinguished after establishing communication with radio towers.

NOTE: It may take up to 2 min for it to cycle to GND.
- 2) After 2 min the GPS should have obtained a position fix. If no fix is determined and "NO ADSB" message does not extinguish, call ICON for further support.

RELATED INFORMATION:

"Remove G3X ADS-B Antenna" on page 14-165

14.8.1.5 Remove ADS-B GPS Receiver

Use this procedure to remove the ADS-B GPS Receiver. The ADS-B Out system requires that TT22 Transponder software is V2.13 or greater and TC20 Control Head software is V1.14 or greater. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA013692 (RECEIVER, GPS, TSO-C199)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Locate the GPS RECEIVER on the LH Fuselage Skin, forward of the rudder pedals.
 2. Disconnect wire harness D9119P.
 3. Disconnect the coax ADS-B GPS Antenna connector.
 4. Loosen the lock nuts and washers securing the GPS RECEIVER to the LH Fuselage Skin. Salvage the hardware. Remove the GPS RECEIVER.
-

VERIFICATION METHOD:

GPS RECEIVER has been removed.

14.8.1.6 Install ADS-B GPS Receiver

Use this procedure to install the ADS-B GPS Receiver. The ADS-B Out system requires that TT22 Transponder software is V2.13 or greater and TC20 Control Head software is V1.14 or greater. This task is applicable to the Garmin 796 configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA013692 (RECEIVER, GPS, TSO-C199)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Position the GPS RECEIVER onto the studs on the LH Fuselage Skin. See Figure 14-82.

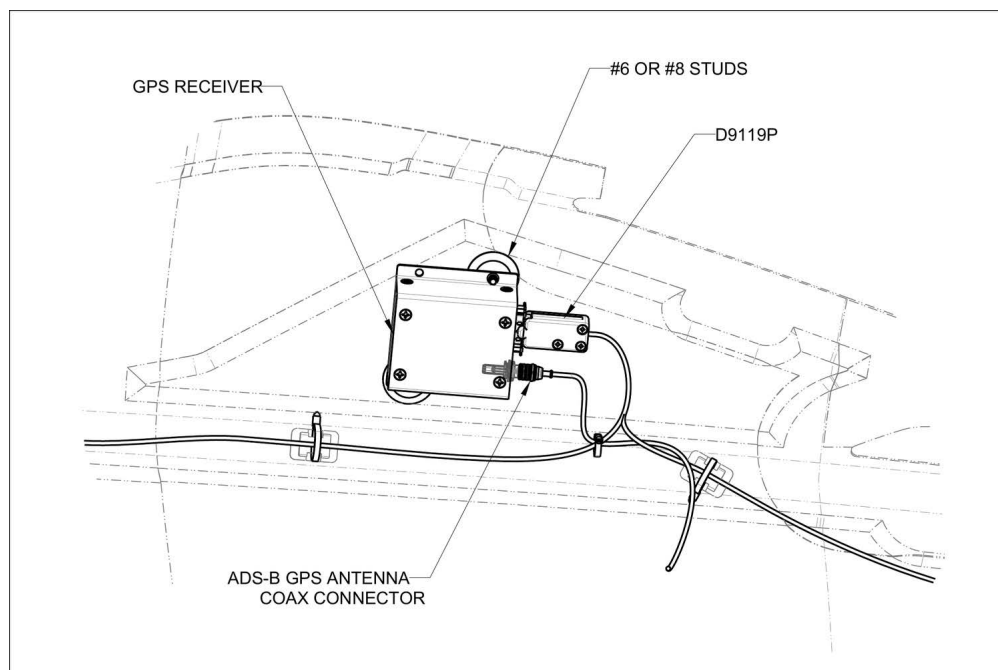


FIGURE 14-82
 ADS-GPS RECEIVER INSTALLATION (ACTUAL NUMBER OF STUDS USED MAY DIFFER)

NOTE: The number of studs may vary from 2 to 4.

2. Secure the GPS RECEIVER with the lock nuts and washers previously removed. Hardware may be #6-32 or #8-32 size. Torque the #6 lock nuts to 8.0-9.5 in-lbs and #8 lock nuts to 11.3-13.3 in-lbs.

NOTE: The mounting holes may be enlarged to a diameter of 3/16" (.1875").

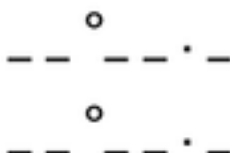
3. Connect the coax ADS-B GPS Antenna cable connector to the GPS RECEIVER.
4. Connect the D9119P to the GPS RECEIVER.

VERIFICATION METHOD:

- 1) Take the aircraft outside and place in clear view of the sky.
- 2) Turn knob on control head to ATL mode. Wait for the display to change from ALT to GND. If not, there is something wrong with the squat switch or setting.

NOTE: It may take up to 2 min for it to cycle to GND.

- 3) Press FN button twice on the TC20 until ADS-B POSN diagnostic screen is displayed. It will display the following for position fix.



- 4) After 2 min the GPS should have obtained a position fix. If no fix is determined and an error of "WARNING No ADSB Pos" shows up, call ICON for further support.

14.8.1.7 Remove G3X ADS-B GPS Receiver

Remove ADS-B GPS receiver. This task is applicable to the Garmin G3X configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014695 (RECEIVER, GPS, GARMIN ADS-B)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Locate the GPS RECEIVER on the LH Fuselage Skin, forward of the rudder pedals.
 2. Disconnect the D9155J antenna cable and D9137P harness connector.
 3. Remove the receiver by loosening the three nuts and washers securing the receiver to the bonded studs.
-

VERIFICATION METHOD:

ADS-B receiver has been removed.

RELATED INFORMATION:

"Install G3X ADS-B GPS Receiver" on page 14-175

14.8.1.8 Install G3X ADS-B GPS Receiver

Install ADS-B GPS receiver as shown using the specified hardware on the previously bonded studs. This task is applicable to the Garmin G3X configuration only.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014695 (RECEIVER, GPS, GARMIN ADS-B)

ICA012078 (LUBRICANT)

(3) NAS1149C0332R (WASHER)

(3) MS21043-3(NUT)

Aircraft System and Number

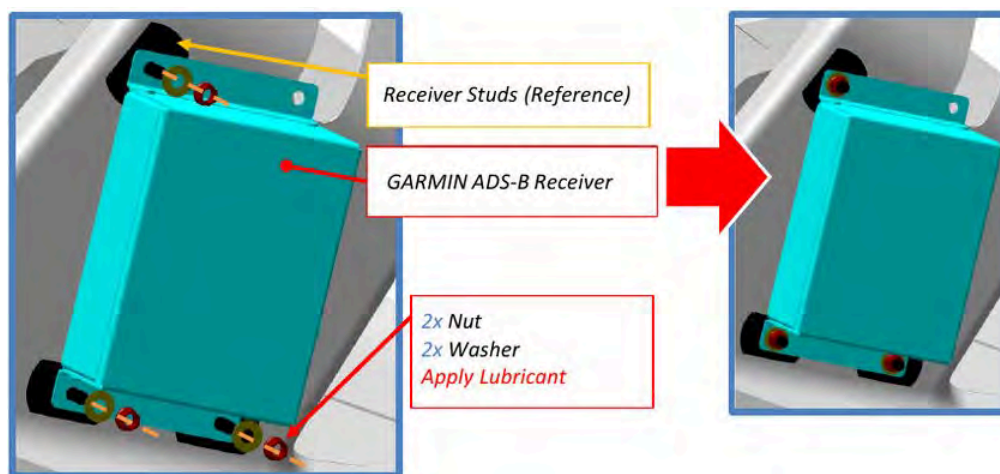
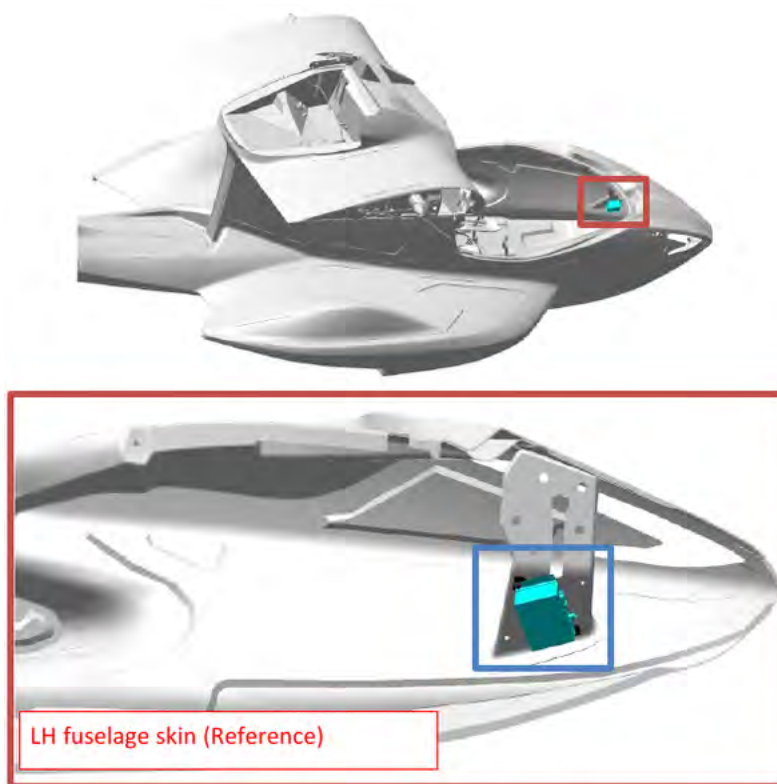
10 – Instruments (and Avionics)

Consumables

Isopropyl Alcohol

TASK INSTRUCTIONS:

1. Using isopropyl alcohol, clean surfaces where lubricant will be applied.
2. Add lubricant liberally to threads of studs.
3. Install Garmin ADS-B GPS receiver as shown using specified hardware.



4. Torque 3x nuts to 16.4-19.4 in-lbs.
5. Connect D9155J antenna cable and D9137P on main harness.

VERIFICATION METHOD:

- 1) For ADS-B Check, take aircraft into open sky area and squawk ALT. Confirm "NO ADSB" message is extinguished after establishing communication with radio towers.

NOTE: It may take up to 2 min for it to cycle to GND.

- 2) After 2 min the GPS should have obtained a position fix. If no fix is determined and "NO ADSB message does not extinguish, call ICON for further support.

RELATED INFORMATION:

"Remove G3X ADS-B GPS Receiver" on page 14-174

14.9 DAC Memory Unit

14.9.1 DAC Memory Unit Description

The digital to analogue converter (DAC) on the A5-B records data from operations.

14.9.2 Maintenance Instructions

14.9.2.1 DAC Memory Unit Removal

The A5-B contains a memory unit that records data from operations. Use this task to remove the DAC memory unit.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 14-179

14.9.2.2 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:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA010394 (CONVERTER, DIGITAL TO ANALOG *SERIALIZED*)

Aircraft System and Number

10 – Instruments (and Avionics)

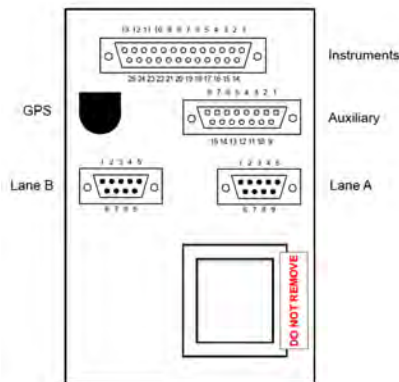
Consumables

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 memory unit into the DAC912iS unit. The DAC memory unit should slide easily in.

2. Re-install the four 2mm internally wrenched hex screws. Torque to snug (~10 in-lb_f). 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:

Confirm that the four hex screws are torqued properly and the tamper-proof placard is installed. There is no operational indication that the unit is installed correctly.

RELATED INFORMATION:

"DAC Memory Unit Removal" on page 14-178

14.10 Pitot-Static-Angle of Attack (AOA) System

RELATED INFORMATION:

"Remove Instrument Cluster" on page 14-50

14.10.1 Inspection Instructions

14.10.1.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 14-186.)

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 14-181.) 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 14-183.) 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 14-195.) Record the results in the Verification Method section below.
 3. Perform the AOA system testing. (See “AOA System Testing” on page 14-192.) 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 25.1325 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 14-183

"Pitot Static Leak Check Operation" on page 14-186

"AOA System Testing" on page 14-192

"Alternate Pitot-Static Leak Test Procedure" on page 14-195

"Replace Instrument Panel Gauges" on page 14-47

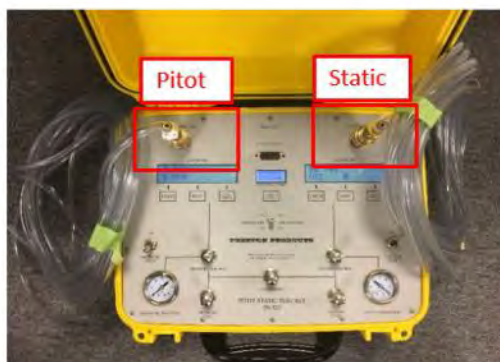
14.10.1.1.1 Preston Pressure Pitot-Static Tester Set-Up

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.

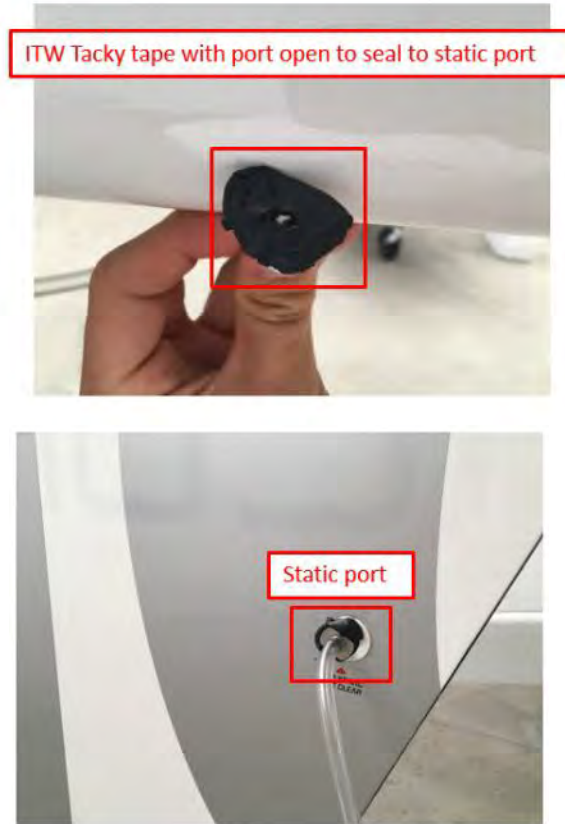
NOTE: The static port hose has barbed fitting reducer to a smaller hose on one end along with a BFST26-820 fitting at the end.



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 14-181

14.10.1.1.2 Pitot Static Leak Check Operation

Instructions for conducting the pitot-static-AOA leak check with the test equipment.

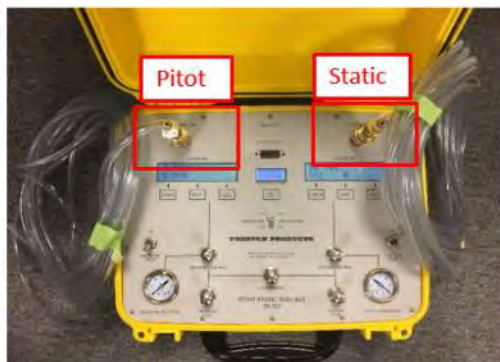


CAUTION: The airspeed and altimeter are delicate instruments. Care must be taken when applying pressure to the pitot-static system to avoid pressures and rapid changes of pressure that could damage the instruments.

TASK INSTRUCTIONS:

1. 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.

ITW Tacky tape with port open to seal to static port



Static port



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.

Right Side 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.



7. On the front panel of the PS-525 tester, ensure that the **Pressure Pump** and **Vacuum Pump** switches are both OFF.
8. Close the **Pressure Control** and **Vacuum Control** and **Crossbleed** valves by rotating clockwise until they seat.

NOTE: DO NOT Over tighten the valves

9. Open the **Pressure Vent** and **Vacuum Vent** valves.
10. Ensure that the **Pressure Reservoir** and **Vacuum Reservoir** gages indicate 0 psi and 0 inHg respectively.
11. 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.

NOTE: 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.

NOTE: For greater accuracy, the tester should be powered on for 15 minutes before use.

12. Close the **Pressure Vent** and **Vacuum Vent** valves.
13. Switch on the **Pressure Pump** until it reads 10-15 psi.
14. Switch on the **Vacuum Pump** until it reads 15-20 inHg.
15. Open the **Crossbleed** valve.
16. 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.

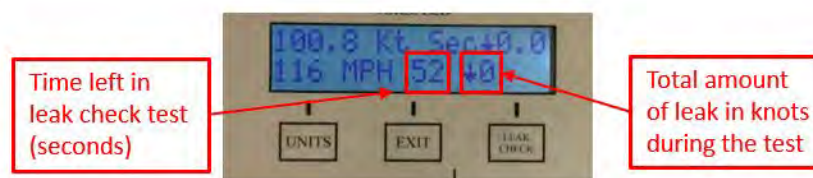


17. Carefully close the **Crossbleed** valve by turning clockwise.
18. Carefully open the **Pressure Control** valve. It will turn approximately 3/4 of a turn before the valve opens. Increase the indicated airspeed on the display to 100 knots. Carefully close the **Pressure Control** valve.



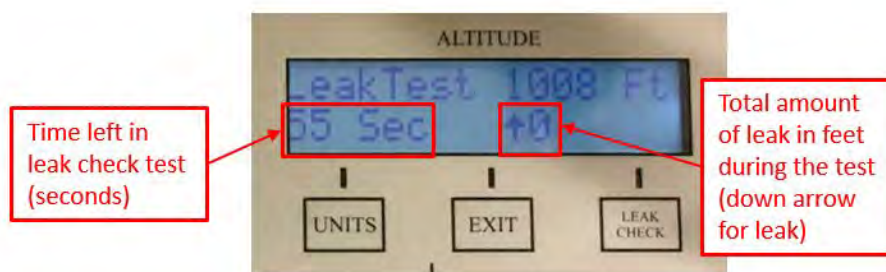
19. Look at the airspeed indicator in the cockpit and verify that the indicated airspeed is within 5 knots of what is displayed on the PS-525 airspeed display.
20. Press the **Leak Check** button under the **Airspeed** display.
21. Press **Leak Check** two more times until the screen indicates 60 sec, 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.

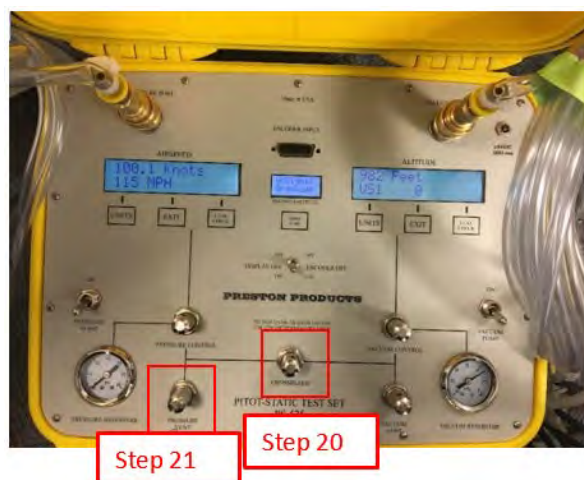


22. Press **Exit** on the **Airspeed** display.
23. Press the **Leak Check** button under the **Altitude** display.
24. Press **Leak Check** two more times until the screen indicates 60 sec, then press the **Units** button to start the leak check.

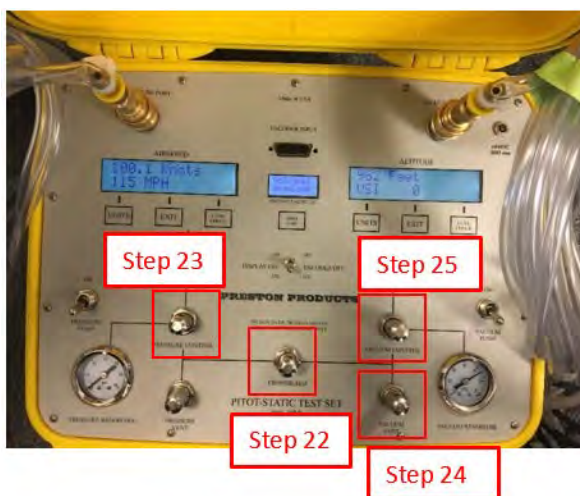
NOTE: The ICON standard is no more than a 50 feet total leak over 60 seconds.



25. Press **Exit** on the **Altitude** display.
26. 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.



27. Lower the altitude by carefully opening the **Pressure Vent** ensuring not to exceed 4,000 ft/min on the **Altitude** display.
28. Close the **Crossbleed** valve.



29. Carefully open the **Pressure Control** valve to bring the **Pressure Reservoir** indicator to 0 psi.
30. Carefully open the **Vacuum Vent** valve.
31. Carefully open the **Vacuum Control** valve until the **Vacuum Reservoir** indicator shows 0 inHg.
32. Open the **Crossbleed** valve for storage.
33. Turn the PS-525 tester unit power to **Display Off**.
34. 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 14-181.)

RELATED INFORMATION:

"Pitot-Static-AOA Leak Test Procedures" on page 14-181

14.10.1.1.3 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.

NOTE: 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.

NOTE: For greater accuracy, the tester should be powered on for 15 minutes before use.

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.

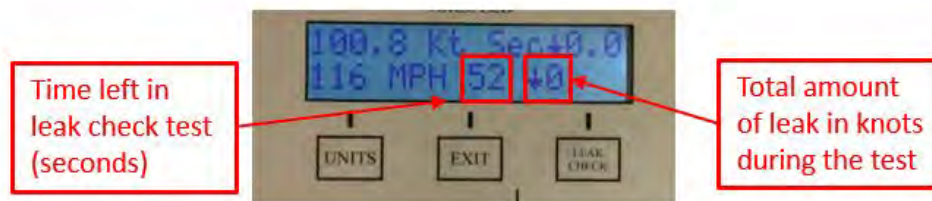
NOTE: In the above example the altitude should be increased to approximately 1066 ft.

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 14-181.)

RELATED INFORMATION:

"Pitot-Static-AOA Leak Test Procedures" on page 14-181

"Install Left Wing" on page 18-11

14.10.1.1.4 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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)

Safety Equipment

As Needed

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 14-49

"Pitot-Static-AOA Leak Test Procedures" on page 14-181

14.10.2 Maintenance Instructions

14.10.2.1 Verify Altimeter Calibration

This section contains instructions to calibrate the altimeter for regular inspections.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 14-3. If the reading is outside the tolerance, contact ICON for warranty, remove and replace the altimeter. (See "Replace Instrument Panel Gauges" on page 14-47.)

5. Turn Master switch OFF.

Table 14-3: 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:

"Annual and 100-Hour Inspection – Avionics and Electrical" on page 4-23

"Replace Instrument Panel Gauges" on page 14-47

14.10.2.2 Pitot-Static-AOA Leak Troubleshooting

Use the following procedures to troubleshooting 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.

14.10.2.2.1 Check MSC

Use this procedure to troubleshoot the Pitot-Static-AOA System in case of a leak.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 9-17.)

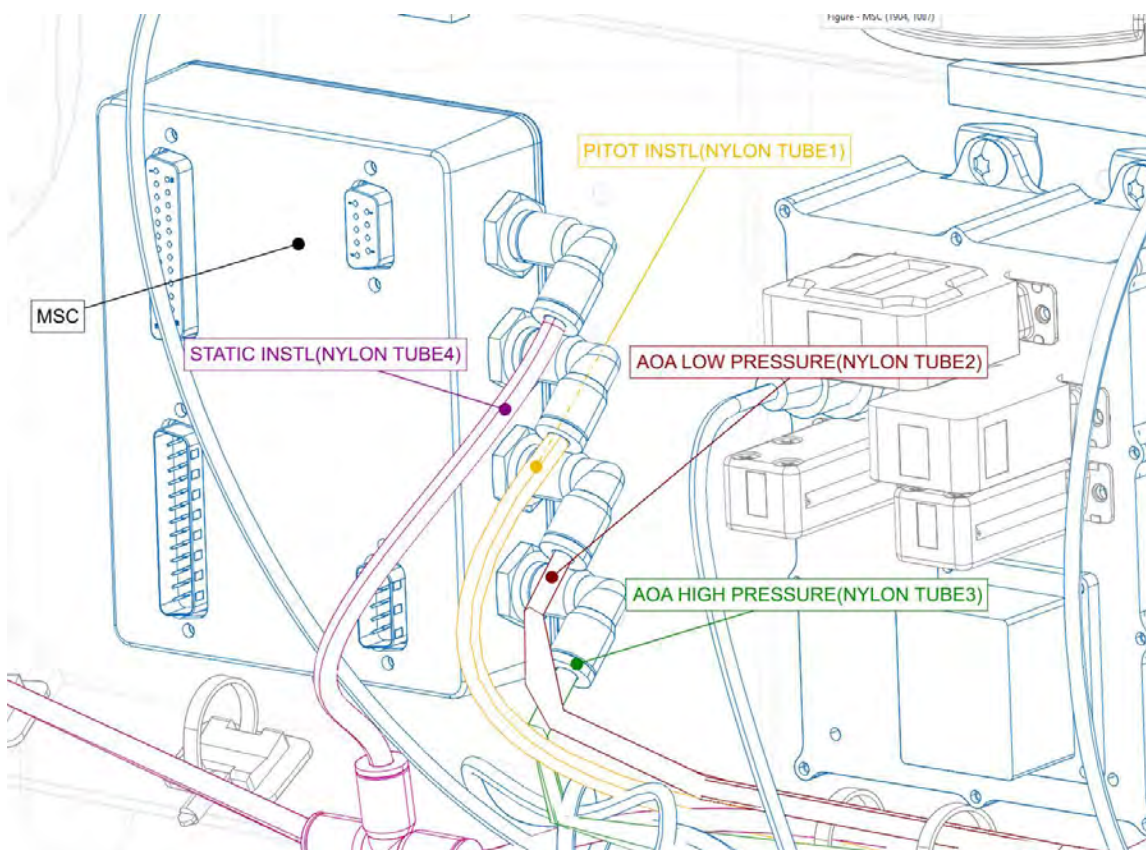


FIGURE 14-83
CONNECTION AT MSC

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 14-181.)
-

VERIFICATION METHOD:

If no leaks are found proceed to Check Wing Connections. (See "Check Wing Connections" on page 14-200.)

14.10.2.2.2 Check Wing Connections

Use the following procedure to check the wing connections for leaks.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 18-8. Steps one to three.)

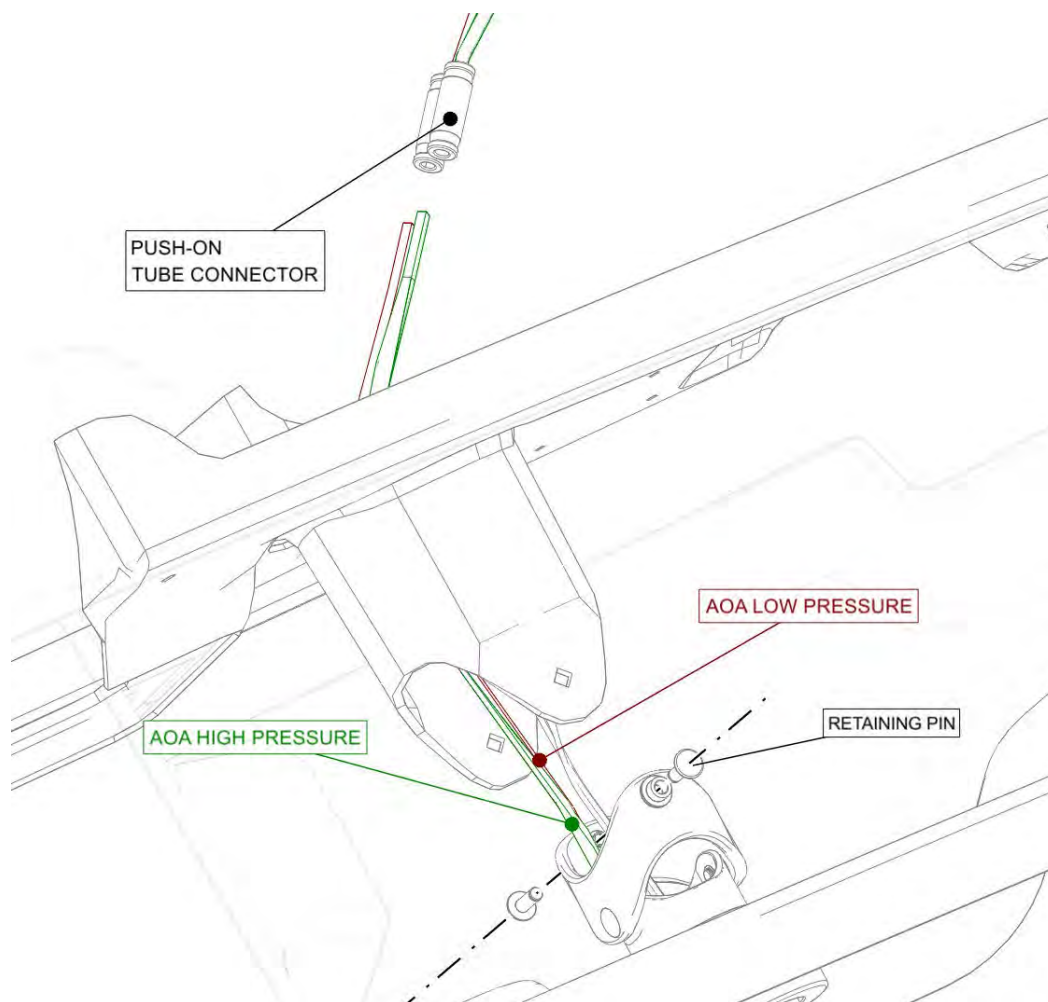


FIGURE 14-84
WING END AOA TUBE CONNECTION

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 14-181.)
6. Reinstall the wing. (See "Install Left Wing" on page 18-11.)

VERIFICATION METHOD:

This task is complete when AOA system is fully functioning.

14.11 Fuel Pressure Sensor

14.11.1 Fuel Pressure Sensor Description

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

14.11.2 Fuel Pressure Sensor Diagram/Schematic

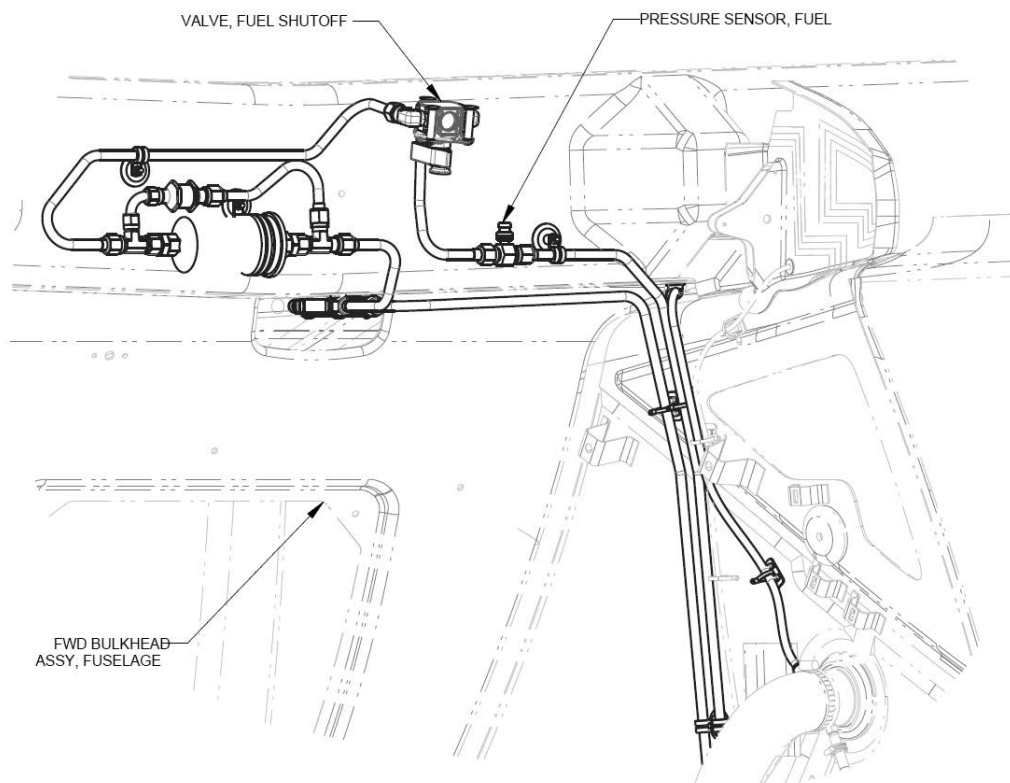


FIGURE 14-85
FUEL PRESSURE SENSOR LOCATION

14.11.3 Maintenance Instructions

14.11.3.1 Remove Fuel Pressure Sensor

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

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

None

TASK INSTRUCTIONS:

1. Remove headliner. (See “Headliner Removal” on page 4-30.)
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 14-86.)

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

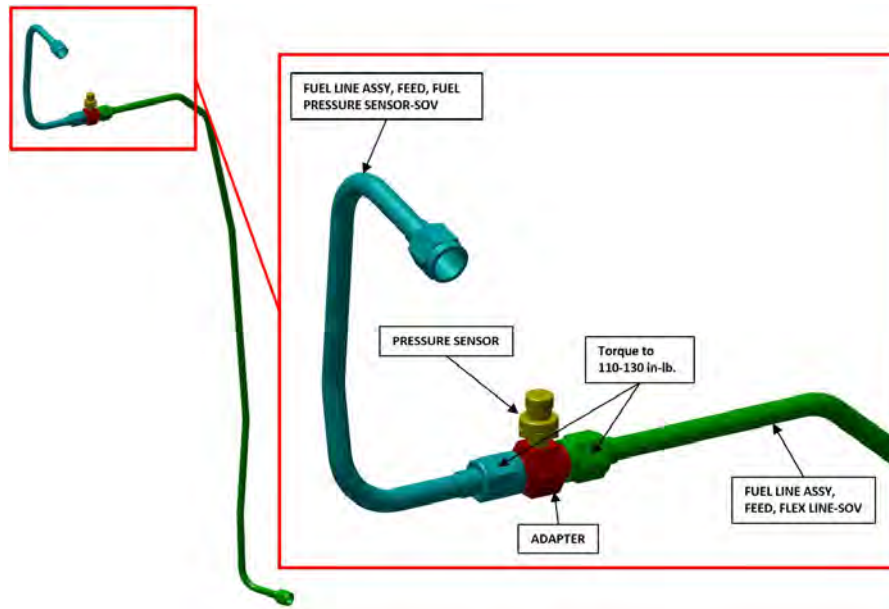


FIGURE 14-86
FUEL SUPPLY LINE, SUBASSEMBLY

VERIFICATION METHOD:

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

RELATED INFORMATION:

"Headliner Removal" on page 4-30

14.11.3.2 Install Fuel Pressure Sensor

Use the following instructions to install the fuel pressure sensor.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

M_P75A-E4C (PRESSURE SENSOR, FUEL, 75PSI, .125NPT)

Aircraft System and Number

10 – Instruments (and Avionics)

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)

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 14-86.)
 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 4-31.)
 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 4-31

14.12 Fuel Level Sensor

14.12.1 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.

14.12.2 Fuel Level Sensor Diagram/Schematic

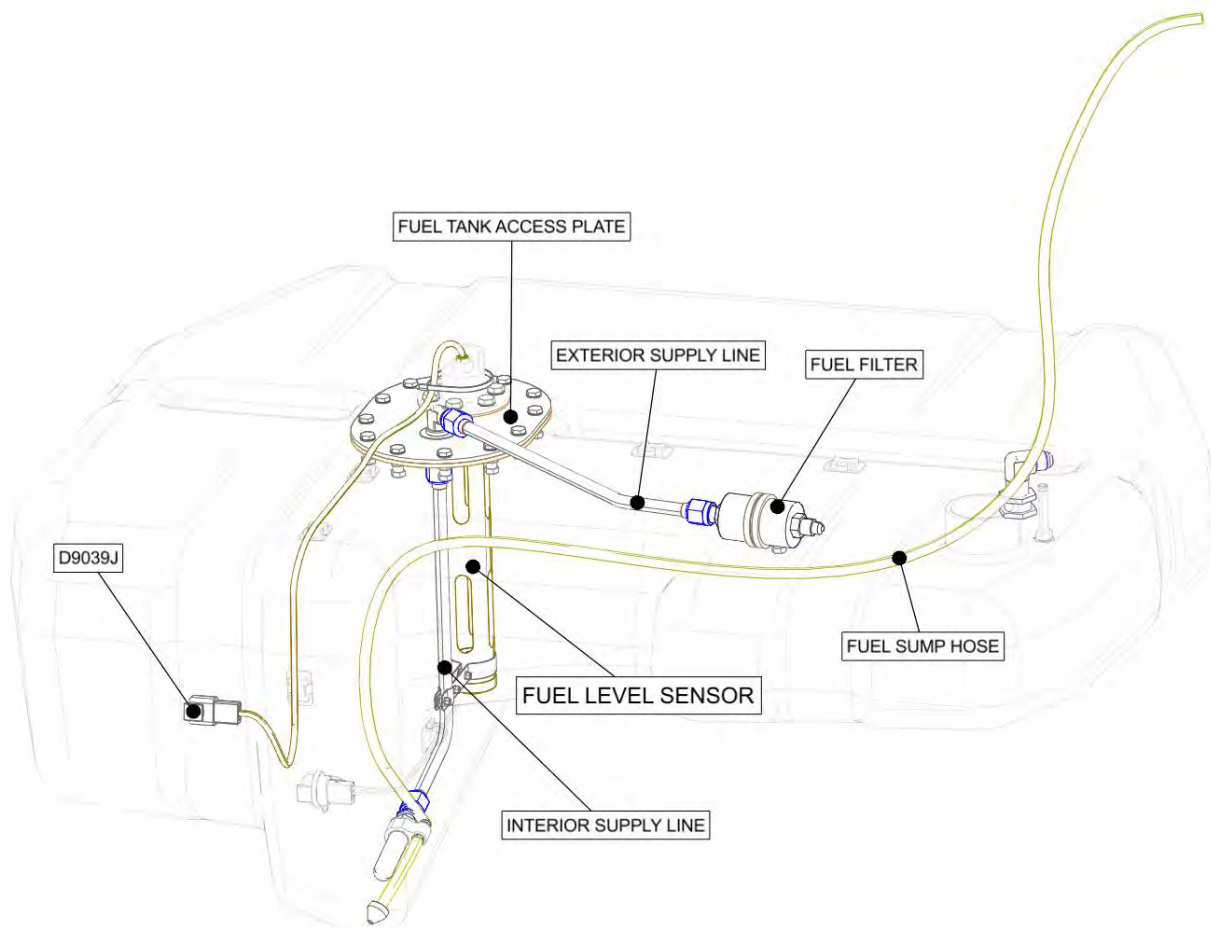


FIGURE 14-87
FUEL LEVEL SENSOR INSTALLATION DIAGRAM

14.12.3 Maintenance Instructions

14.12.3.1 Remove Fuel Level Sensor

Use the following task to remove the fuel level sensor.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA011319 (PROBE, FUEL LEVEL SENSOR)

ICA012903 (GASKET, FUEL SENSOR)

ICA011512 (GASKET, ACCESS PLATE, FUEL TANK)

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

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

TY23MX (CABLE-TIE, NYLON 6-6, 18LB, TY-RAP)

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

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

ICA012861 (SEALANT, GASKET, FUEL RESISTANT)

TASK INSTRUCTIONS:

1. Remove the RHS Back. (See “Remove Seat Back” on page 4-43.)
2. Remove the Baggage Floor. (See “Baggage Floor Removal” on page 4-34.)
3. Disconnect fuel level sensor connector from D9039P aircraft wire harness. Cut the zip ties securing the wire harness.

4. Disconnect the exterior supply line. See Figure 14-87.
 - a. Loosen bolt on the Coarse Fuel Filter clamp.
 - b. Disconnect the Exterior Supply Line from the Supply Line Fitting on the Fuel Tank Access Plate.
 - c. Cap and plug open lines throughout.
5. Remove electrical connections from Fuel Level Sensor. See Figure 14-89.
 - a. Use a 7/16 wrench to remove bolt, washer, and ring terminals T9028 and T9026 from the Fuel Level Sensor.
 - b. Disconnect the Fuel Level Sensor connector from D9039P on the Main Fuselage Wire Harness.
 - c. Remove three cable ties securing the Fuel Level Sensor harness and the T9028 ground wire to the Fuel Tank.

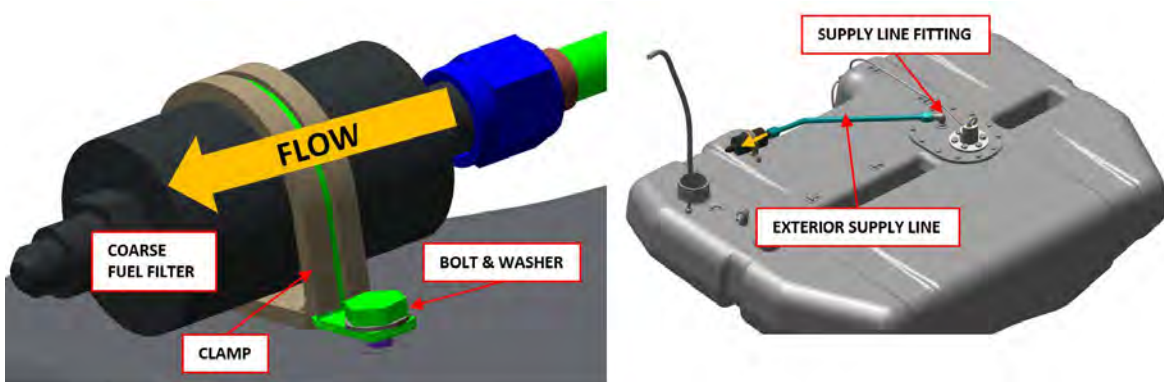


FIGURE 14-88
COARSE FUEL FILTER CLAMP AND EXTERIOR SUPPLY LINE

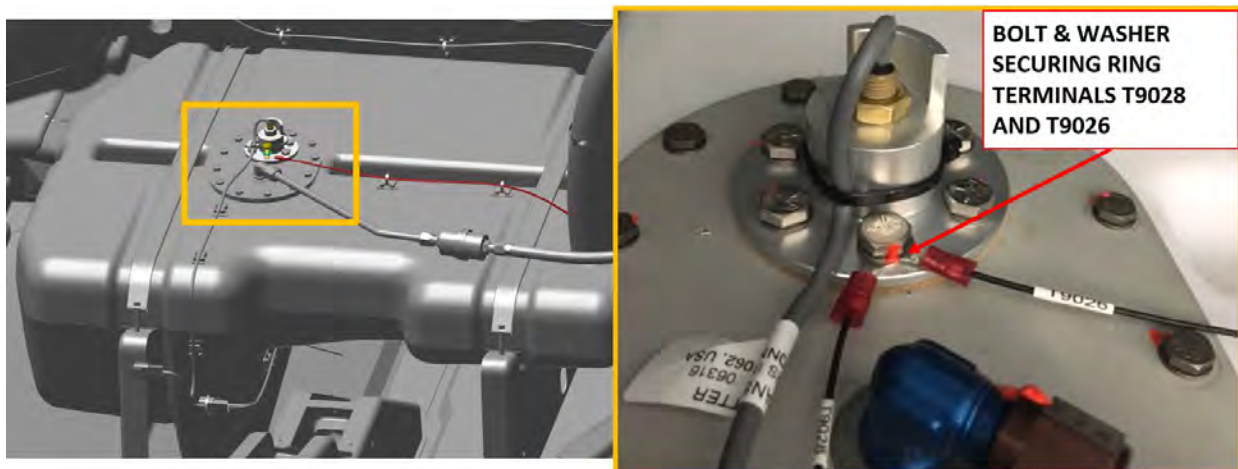


FIGURE 14-89
COARSE FUEL FILTER CLAMP AND EXTERIOR SUPPLY LINE

6. Remove the Fuel Level Sensor Assembly.
 - a. Remove 12 bolts and washers from the Fuel Tank Access Plate. See Figure 14-90.
 - b. Slowly raise the Fuel Level Sensor assembly out of the Fuel Tank. Do not pull it out of the tank completely because interior tubing is still attached to it.
 - c. Remove the cable tie and interior tubing from the Fuel Level Sensor assembly (Figure 14-91).
 - d. Completely remove the Fuel Level Sensor assembly out of the Fuel Tank.

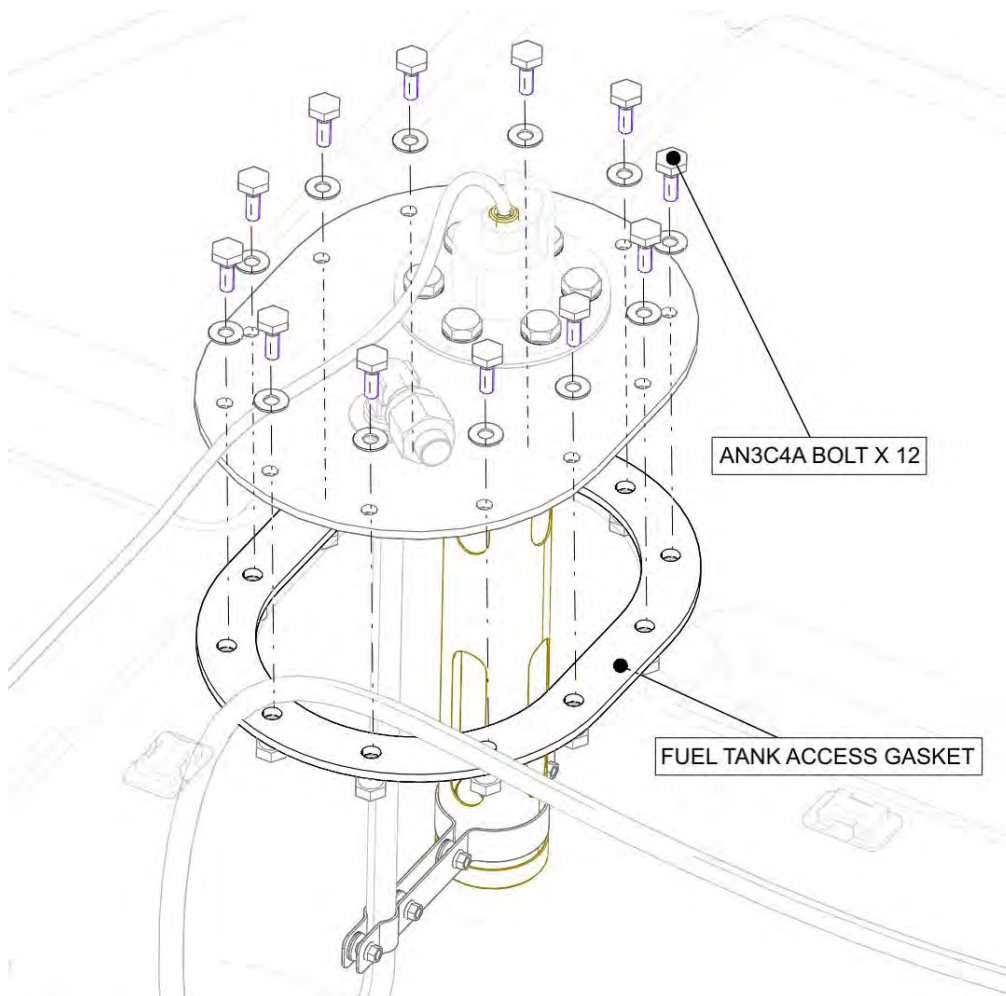


FIGURE 14-90
REMOVE FUEL TANK ACCESS PLATE

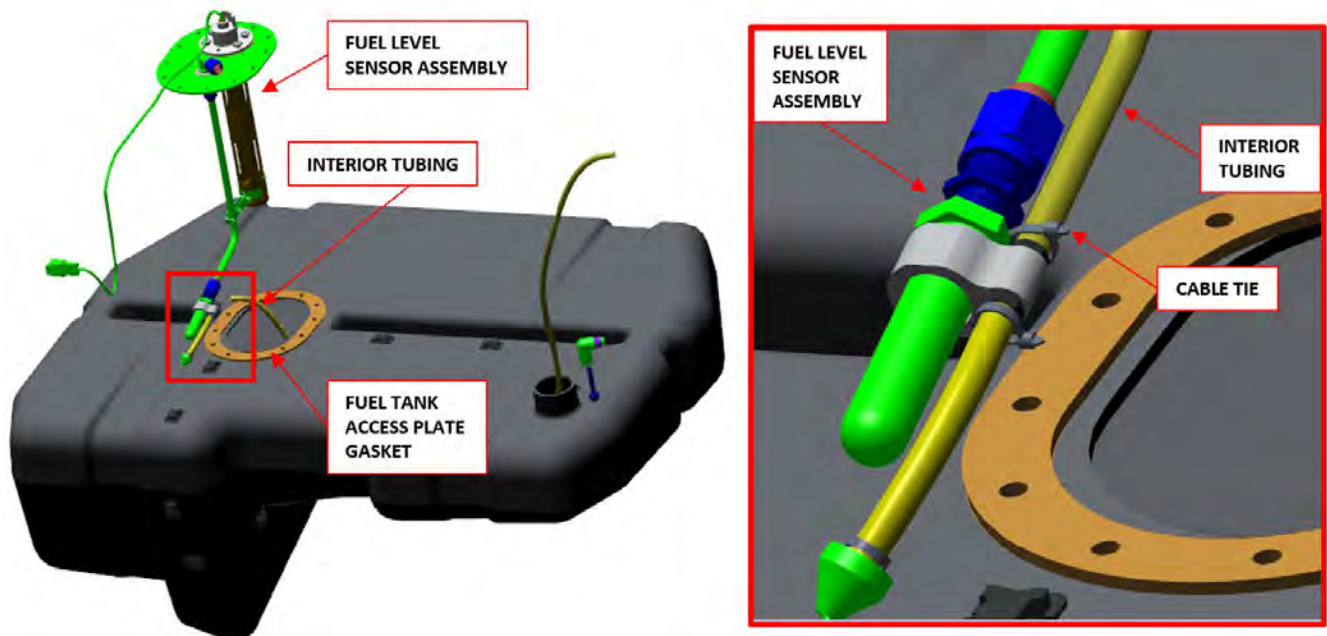


FIGURE 14-91
FUEL LEVEL SENSOR ASSEMBLY

7. Remove the Fuel Level Sensor. See Figure 14-92.
 - a. At the bottom of the Fuel Level Sensor, remove 2x Torx screws from the clamp bracket.
 - b. Remove the 5 remaining bolts and washers on the Fuel Level Sensor. See Figure 14-93.
 - c. Remove the Fuel Level Sensor Probe and Fuel Tank Access Gasket from the Fuel Access Plate.

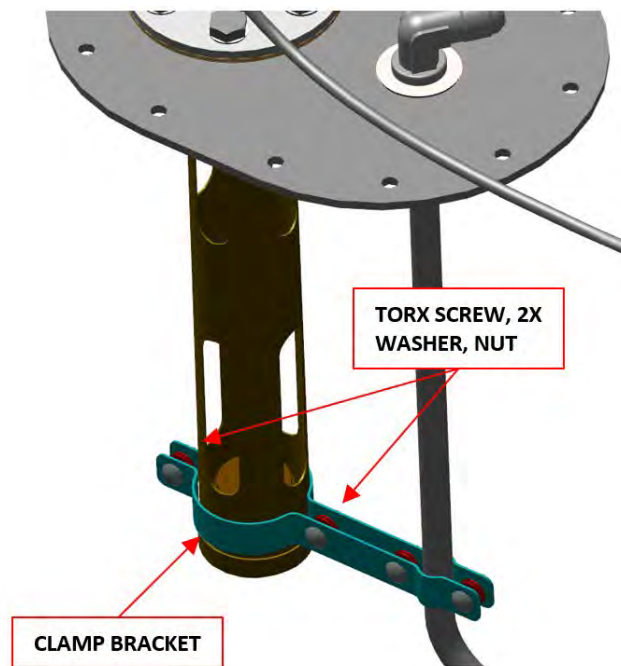


FIGURE 14-92
CLAMP BRACKET & HARDWARE

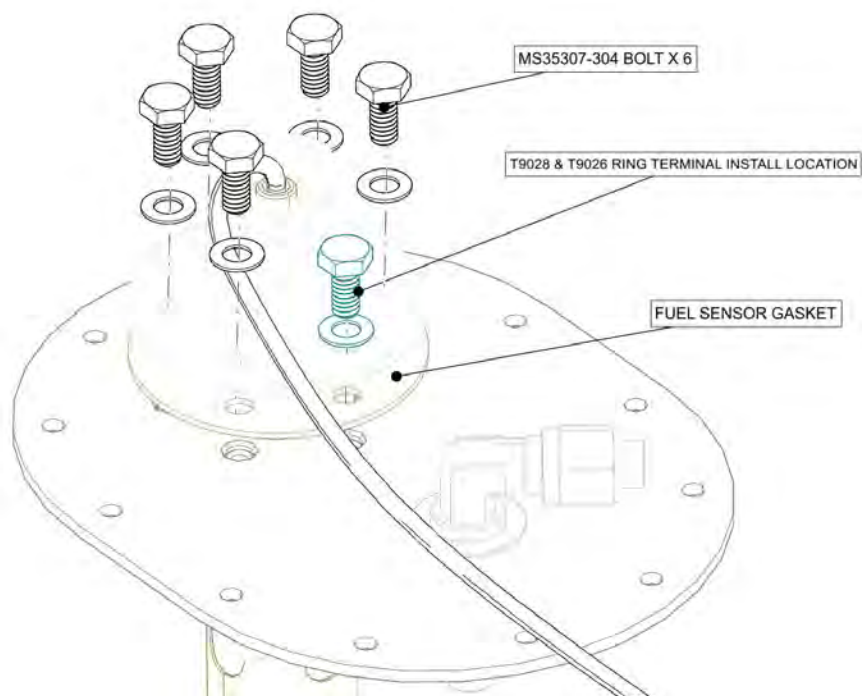


FIGURE 14-93
FUEL LEVEL SENSOR PROBE INSTALLATION

VERIFICATION METHOD:

Install new Fuel Level Sensor. (See "Install Fuel Level Sensor" on page 14-212.)

RELATED INFORMATION:

- "Baggage Floor Removal" on page 4-34
- "Remove Seat Back" on page 4-43
- "Baggage Floor Installation" on page 4-35
- "Install Seat Back" on page 4-44

14.12.3.2 Install Fuel Level Sensor

Use the following task to install the Fuel Level Sensor.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA011319 (PROBE, FUEL LEVEL SENSOR)

ICA012903 (GASKET, FUEL SENSOR)

ICA011512 (GASKET, ACCESS PLATE, FUEL TANK)

Aircraft System and Number

10 – Instrument (and Avionics)

Consumables

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

TY23MX (CABLE-TIE, NYLON 6-6, 18LB TY-RAP)

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

LOCTITE 423 (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE MED STR, BLUE)

ICA012861 (SEALANT, GASKET, FUEL RESISTANT)

TASK INSTRUCTIONS:

1. Install the new FUEL LEVEL SENSOR PROBE onto the Fuel Tank Access Plate:
 - a. Clean the Fuel Level Sensor Plate with ISOPROPYL ALCOHOL.
 - b. Orient Fuel Level Sensor Probe as shown in Figure 14-94 and install into the Fuel Access Plate using a new FUEL SENSOR GASKET, THREADLOCKER, 5X bolts, and 5x washers previously removed. See Figure 14-93. Torque bolts in a star shaped pattern to 40-45 in-lbs.

NOTE: The last bolt on the fuel level sensor will be installed at a later step.
 - c. Position Clamp Bracket on the Fuel Level Sensor as shown in Figure 14-94.
 - d. Install Torx screw, nut, and 2x washers on the Clamp Bracket. While maintaining this position, torque Torx screws on Clamp Bracket to 7-10 in-lbs. (See Figure 14-92.)

NOTE: Remove all 4 Torx screws if necessary for correct alignment.

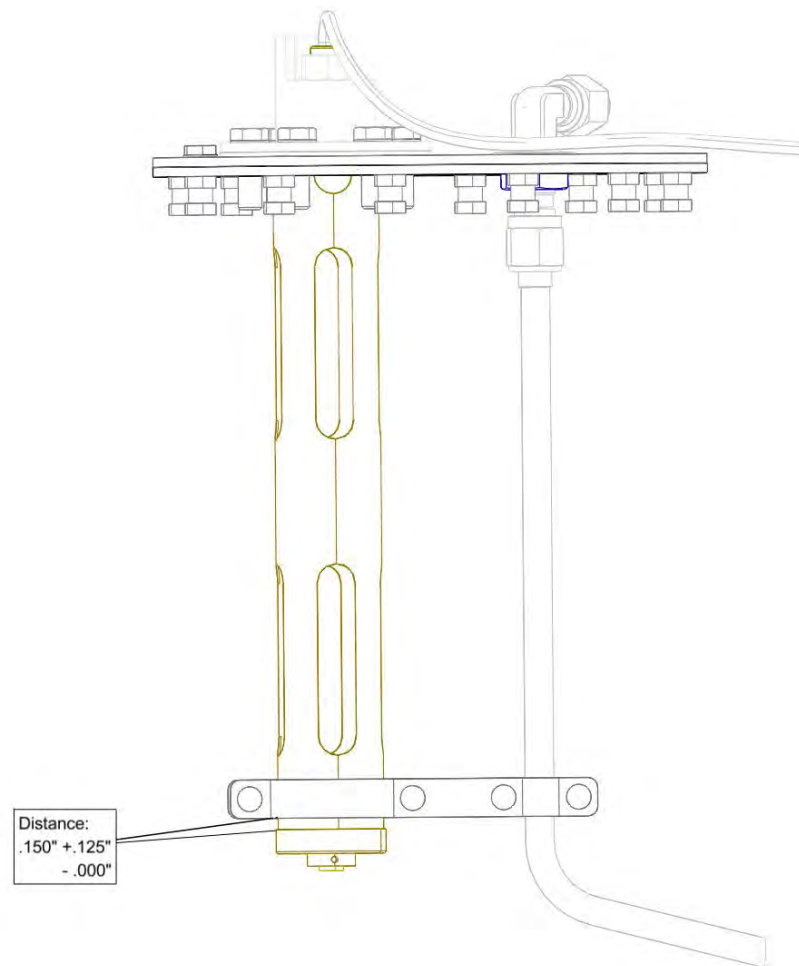


FIGURE 14-94
INSTALL CLAMP BRACKETS

2. Install the Fuel Level Sensor Assembly into the Fuel Tank:
 - a. Clean the Fuel Access Plate with ISOPROPYL ALCOHOL.
 - b. Apply SEALANT as one continuous bead approximately 0.030"-.060" thick to both sides of a new ACCESS PLATE GASKET.

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 Access Plate Gasket surfaces before placing the Gasket onto the Fuel Tank.

- c. Pull end of interior tubing from inside the Fuel Tank and secure to Fuel Level Sensor Assembly using 18lb CABLE-TIE. (See Figure 14-91.)
- d. Lower the Fuel Level Sensor Assembly into the Fuel Tank ensuring that the Sealant only contacts the Fuel Tank Access Plate.
- e. Secure the Fuel Tank Access Plate to the Fuel Tank using THREADLOCKER, 12 bolts and washers previously removed.

Torque bolts 25-30 in-lbs in a star shaped pattern as shown in Figure 14-95.

Repeat star shaped torque 2-3 times to ensure that gasket is evenly compressed and that all bolts are torqued to specification.

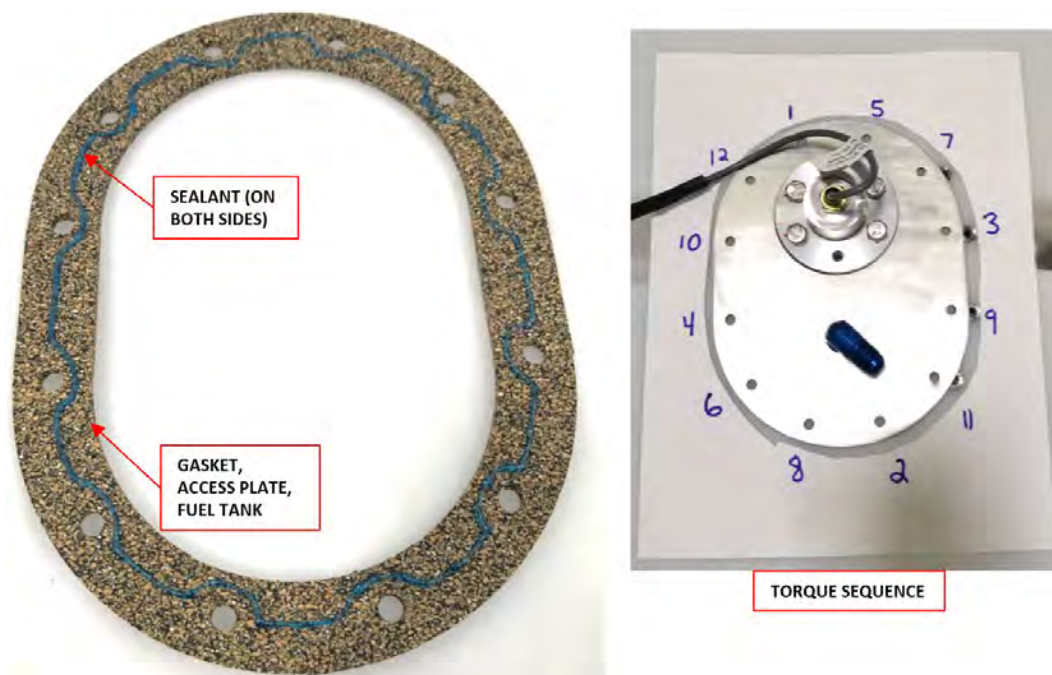


FIGURE 14-95
FUEL TANK ACCESS PLATE GASKET AND TORQUE SEQUENCE

3. Secure the electrical connections to the Fuel Level Sensor Plate, Figure 14-89:
 - a. Use a 7/16 wrench to install bolt, washer, and ring terminals T9028 and T9026 ring onto the Fuel Level Sensor Plate. Use THREADLOCKER and torque to 40-45 in-lbs.
 - b. Verify continuity to ground between ring terminals and ground stud.
 - c. Secure the Fuel Level Sensor Harness and the T9028 ground wire to the Fuel Tank cable tie mount using three 30lb CABLE-TIES. (See Figure 14-96.)
 - d. Connect the Fuel Level Sensor connector to D9039P on the Main Fuselage Wire Harness.
4. Connect Exterior Supply Line:
 - a. Remove any caps or plugs from the Supply Line Fitting. (See Figure 14-88.)
 - b. Connect the Exterior Supply Line to the Fitting on the Fuel Tank Access Plate. Torque to 110-130 in-lbs.
 - c. Apply THREADLOCKER and torque Coarse Fuel Filter clamp bolt to 25-30 in-lbs.
5. 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.
 - b. Turn on aircraft to verify fuel low-level light comes on.
 - c. Add three gallons of fuel into the fuel tank – verify the low-level light goes out.
 - d. Add two more gallons of fuel into the fuel tank – verify fuel level sensor reads about 5 gallons.
6. Secure fuel level sensor wire harness to zip tie mounts on fuel tank using three zip ties.

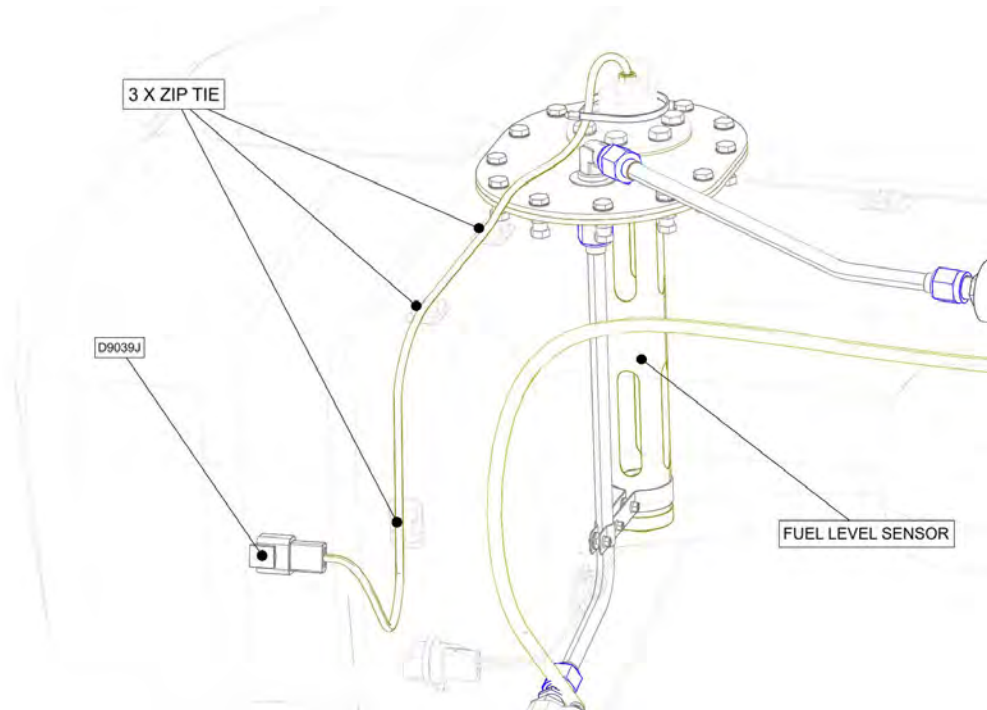


FIGURE 14-96
SECURE FUEL LEVEL SENSOR WIRE HARNESS (T9028 GROUND WIRE NOT SHOWN).

7. Install the right seat back closeout. (See “Install Seat Back” on page 4-44.)
8. Install the right baggage floor. (See “Baggage Floor Installation” on page 4-35.)

VERIFICATION METHOD:

Step 5 acts as the verification method for this procedure.

14.13 Low Fuel Level Sensor

14.13.1 Maintenance Instructions

14.13.1.1 Remove Low Fuel Level Sensor

Use this procedure to remove the Low Fuel Level Sensor.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014185 (SENSOR, ULTRASONIC, DRY, 1/2-20, 12VDC)

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

Aircraft System and Number

10 – Instruments (and Avionics)

Consumables

LOCITITE 423 (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE MED STR, BLUE)

TASK INSTRUCTIONS:

1. Remove the Baggage Floor. (See “Baggage Floor Removal” on page 4-34.)
2. Remove the RH Seat Back. (See “Remove Seat Back” on page 4-43.)
3. Pump all fuel from Fuel Tank. (See “Pump Usable Fuel From Fuel Tank” on page 11-9.)
4. Remove 3X CABLE-TIEs along the Dry Ultrasonic Sensor Installation. (See Figure 14-97.)

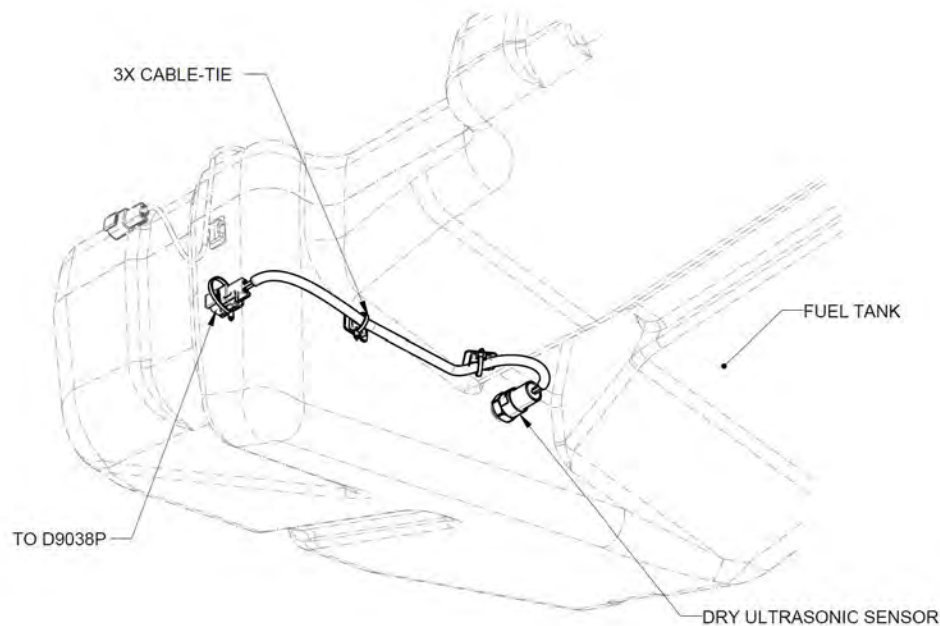


FIGURE 14-97
DRY ULTRASONIC SENSOR INSTALLATION

5. Disconnect the Dry Optical Sensor wire from D9038P on the Main Fuselage Wire Harness.
6. Remove the DRY ULTRASONIC SENSOR from the Fuel Tank.

VERIFICATION METHOD:

This procedure is complete when the Low Fuel Level Sensor has been removed.

14.13.1.2 Install Low Fuel Level Sensor

Use this procedure to install the Low Fuel Level Sensor.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA014185 (SENSOR, ULTRASONIC, DRY, 1/2-20, 12VDC)

TY24MX (CABLE-TIE, NYLON 6-6, 30LB, 5/50, TY-RAP)

Aircraft System and Number

10 – Instrument (and Avionics)

Consumables

LOCTITE 222 (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE LOW STR, BLUE)

TASK INSTRUCTIONS:

1. Apply LOW STR THREADLOCKER to the new DRY ULTRASONIC SENSOR and install into the Fuel Tank. Torque to 45-55 in-lbs.
 2. Connect the Dry Ultrasonic Sensor connector to D9038P on the Main Fuselage Wire Harness.
 3. Secure connector and cable with 3X CABLE-TIES.
 4. Install RH Seat Back. (See “Install Seat Back” on page 4-44.)
 5. Install the Baggage Floor. (See “Baggage Floor Installation” on page 4-35.)
-

VERIFICATION METHOD:

The task is complete when the low fuel level sensor has been installed without leaks.

Chapter 15

LANDING GEAR

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15.1 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-B 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.

15.2 Diagram/Schematic



15.3 Landing Gear General Maintenance

15.3.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Inclinometer

Wing Jack Point Adapter – ICA009750

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Safety Equipment

As Needed

Consumables

None

TASK INSTRUCTIONS:

1. Remove the Aft Bulkhead Baggage Panel (See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.) 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 2-25.)
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.

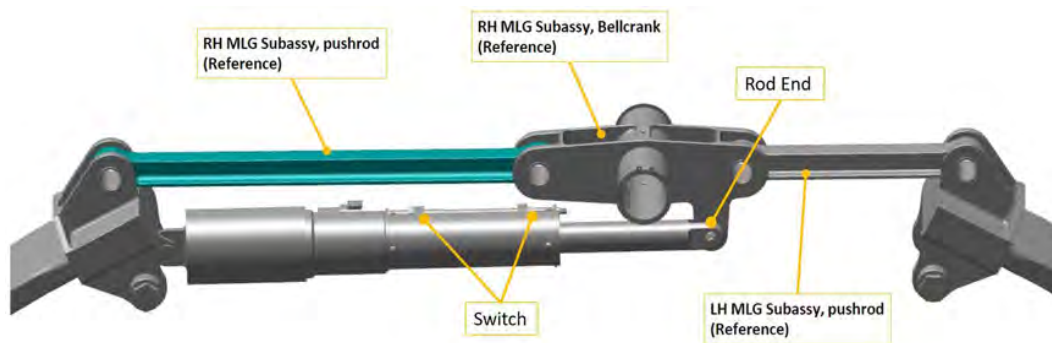


FIGURE 15-1
MAIN LANDING GEAR INSTALLATION

5. Move the digital protractor to the Bellcrank surface and read measurement. The measurement on the protractor should read $3.822 \pm .237^\circ$. (See "Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down" on page 15-58 if out of tolerance.
6. Verify that the nose gear bellcrank and drag link are in line with one another in the extended position. See "Nose Landing Gear (NLG) Rigging and Check with Landing Gear Down" on page 15-85 for rig pin information and procedures.
7. Turn on master switch and verify that in the cockpit the landing gear indicator is in the landing gear down position.
8. Bring aircraft back to ground and remove jacks.

VERIFICATION METHOD:

Check that the results are within the acceptable limits. See Steps 5 - 7.

RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 4-27
 "Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25
 "Annual and 100-Hour Inspection – Landing Gear" on page 4-14

15.3.2 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 2-25.)
 2. Initiate gear retraction.
 3. Verify landing gear indication moves to “In Transit” while actuators are working.
 4. Once stopped, verify blue landing gear up indication has been obtained.
 5. 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.
 6. Verify that the landing gear has fully retracted and the nose gear doors have withdrawn completely to provide a smooth closed outer surface.
 7. Extend landing gear.
 8. Turn off master switch.
 9. Lower the aircraft and remove jacks.
-

VERIFICATION METHOD:

Verify that each check is passed successfully.

RELATED INFORMATION:

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

"Annual and 100-Hour Inspection – Landing Gear" on page 4-14

15.3.3 Main Landing Gear Inspection

Inspect the main landing gear system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Wing Jack Point Adapter – ICA009750

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

9. With the inspector viewing the main landing gear control system located behind the aft baggage panel, actuate the landing gear and verify that actuator and gear components travel smoothly with no binding or stuttering.
10. Extend gear, bring aircraft back to ground, and remove jacks.

VERIFICATION METHOD:

Verify that each check is passed successfully.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Landing Gear" on page 4-14
"Removal and Installation of Inspection Panels and Fairings" on page 4-27
"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25
"Re-Bond Main Landing Gear (MLG) Boot" on page 15-48

15.3.4 Landing Gear Indicator Lights

The following should be used to test and check the landing gear indicator lights.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Wing Jack Point Adapter – ICA009750

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Safety Equipment

As Needed

Consumables

None

This task can be readily combined with the Landing Gear Retraction and Extension Time task. (See "Retraction and Extension Time" on page 15-12.)

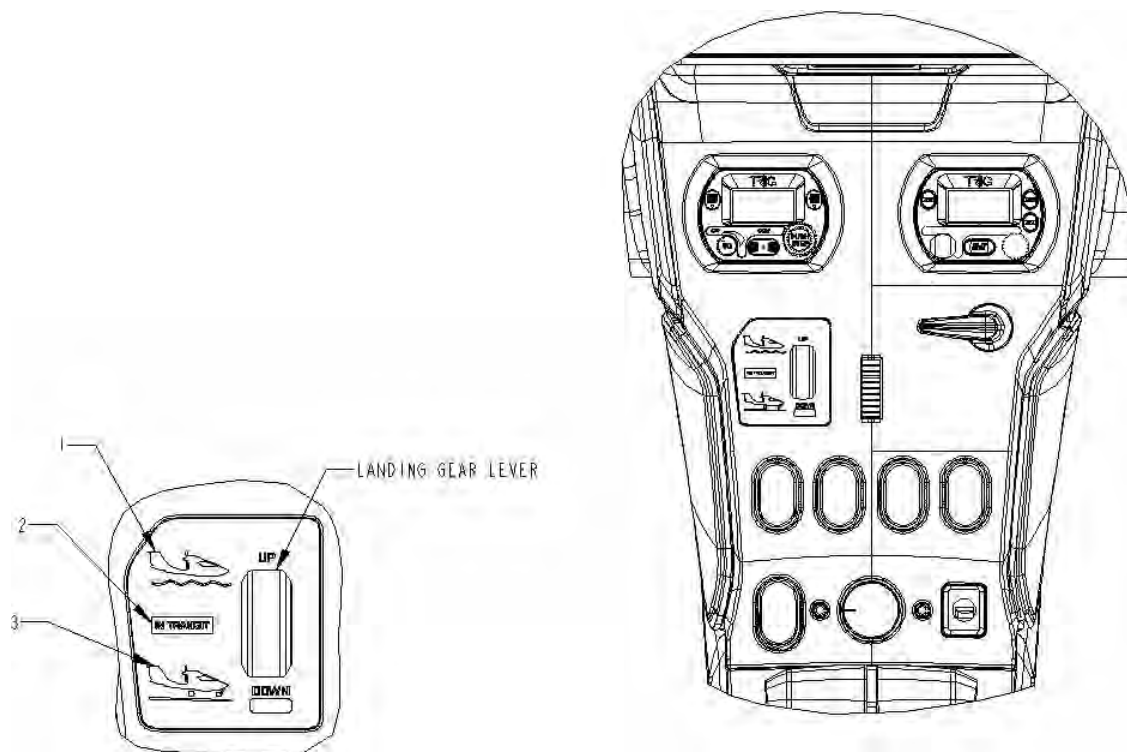


FIGURE 15-3
LANDING GEAR INDICATOR.

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 2-25.)
 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.
 8. Extend gear, bring aircraft to ground, and remove jacks.
-

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:

"Annual and 100-Hour Inspection – Landing Gear" on page 4-14

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

"Retraction and Extension Time" on page 15-12

15.3.5 Retraction and Extension Time

The following should be used to inspect the landing gear retraction and extension time.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Wing Jack Point Adapter – ICA009750

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Safety Equipment

As Needed

Consumables

None

This task can be readily combined with the Landing Gear Indicator Lights task. (See "Landing Gear Indicator Lights" on page 15-10.)

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.
 12. Extend gear, bring aircraft back to ground, and remove jacks.
-

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 15-10

15.3.6 Nose Wheel Centering

The following should be used to inspect the nose wheel centering operation.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

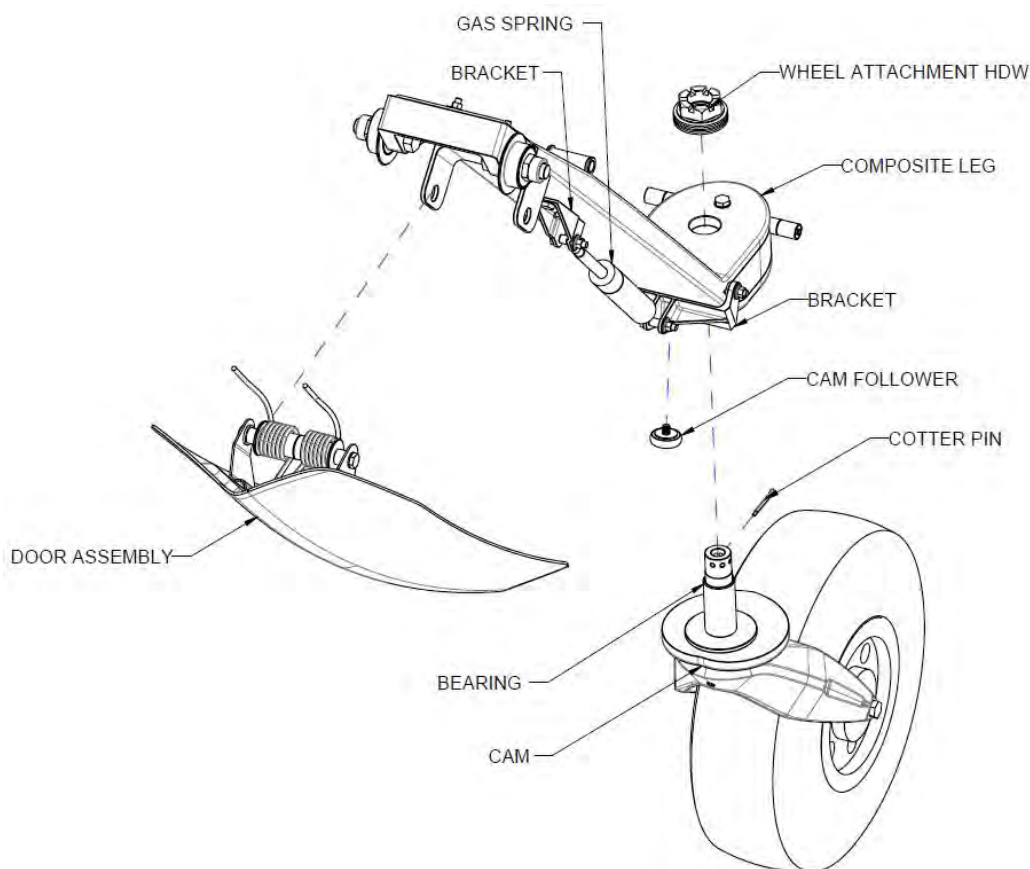


FIGURE 15-4
NOSE WHEEL CENTERING.

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 15-4) 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.

15.3.7 Landing Gear Actuator Fuse Blown

The following procedure is used to determine whether the landing gear actuator has a fuse blown.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-5
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 14-38.)

VERIFICATION METHOD:

Retract and extend the landing gear to verify actuation of the landing gear.

RELATED INFORMATION:

"Replace Overhead Console Fuses" on page 14-38

15.3.8 Landing Gear Excessive Friction Check

Use the following procedure to check for excessive friction in either the MLG or NLG installation.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 2-25.)
 2. Disconnect the landing gear 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. Verify no binding of gear leg under its own weight.
 5. Reconnect the landing gear actuator, lower aircraft, and remove jacks.
-

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 2-25

15.3.9 Wheel and Brake System Maintenance

Maintenance of the wheel brake systems.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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.
-

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:

- "Annual and 100-Hour Inspection – Landing Gear" on page 4-14
- "Interval Maintenance – Calendar Intervals" on page 4-4
- "Brake Line Replacement Procedure" on page 15-23
- "Rudder Pedal Connector Lines Replacement" on page 15-23
- "Forward Lines Replacement" on page 15-25
- "Aft Lines Replacement" on page 15-27
- "Parking Brake Valve Replacement Procedure" on page 15-34

15.3.10 Landing Gear Actuator Limit Switch Adjustment Procedure

There are multiple configurations of actuators in the Fleet currently. Please use applicable actuator part number and Figure 15-6 to identify whether this section is applicable to your aircraft actuator. If

your actuator doesn't match this part number/configuration refer to "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-20. Use this procedure to adjust the limit switch on the desired actuator.

TASK INFORMATION:

Applicable Actuator Part Number

ICA004001

ICA013071

ICA004000

ICA013070

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

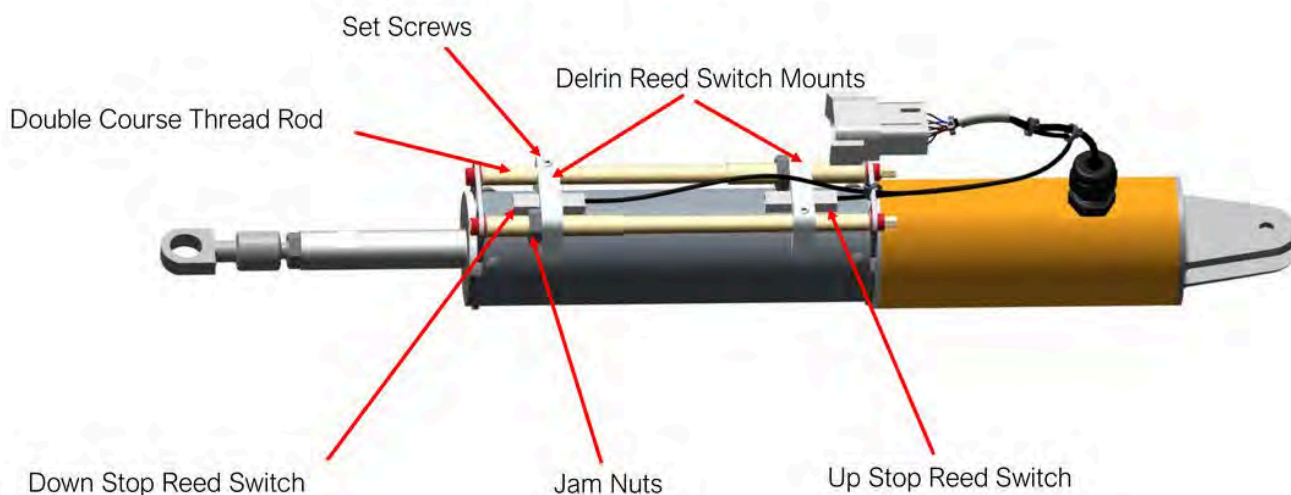


FIGURE 15-6
LANDING GEAR ACTUATOR FOR ASN 00001-00109

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 9-17.) (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)
 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 2-25.)
 3. Use an open-end wrench to loosen the jam nut tightened against the limit switch adjustment saddle for the affected switch.
 4. Loosen Set Screw from adjustment rod and rotate the adjustment rod to the desired position.
 5. Torque Set Screw to 2-4 in-lbs.
 6. Torque the jam nut to 36-40 in-lbs to secure the position of the limit switch.
 7. Power up the aircraft, and actuate the landing gear to verify adjustment.
 8. Repeat steps 3 thru 6 as needed until the landing gear is properly adjusted. (See "Nose Landing Gear (NLG) Rigging and Check with Landing Gear Up" on page 15-82, "Nose Landing Gear (NLG) Rigging and Check with Landing Gear Down" on page 15-85, "Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Up" on page 15-56, or "Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down" on page 15-58 as needed)
 9. Replace the interior panels, extend the landing gear, and lower the aircraft off the jacks. (See "Right Instrument Panel Top Panel Installation" on page 9-19.) (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)
-

VERIFICATION METHOD:

Power up the aircraft, and actuate the landing gear to verify adjustment.

RELATED INFORMATION:

"Right Instrument Panel Top Panel Removal" on page 9-17

"Right Instrument Panel Top Panel Installation" on page 9-19

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

"Nose Landing Gear (NLG) Rigging and Check with Landing Gear Up" on page 15-82

"Nose Landing Gear (NLG) Rigging and Check with Landing Gear Down" on page 15-85

15.3.11 Landing Gear Actuator Limit Switch Adjustment Procedure

There are multiple configurations of actuators in the fleet currently. Please use applicable actuator part number and Figure 15-7 to identify whether this section is applicable to your aircraft actuator. If your actuator doesn't match this part number/configuration refer to "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-18. Use this procedure to adjust the limit switch on the desired actuator.

TASK INFORMATION:

Applicable Actuator Part Number

ICA013160

ICA013161

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

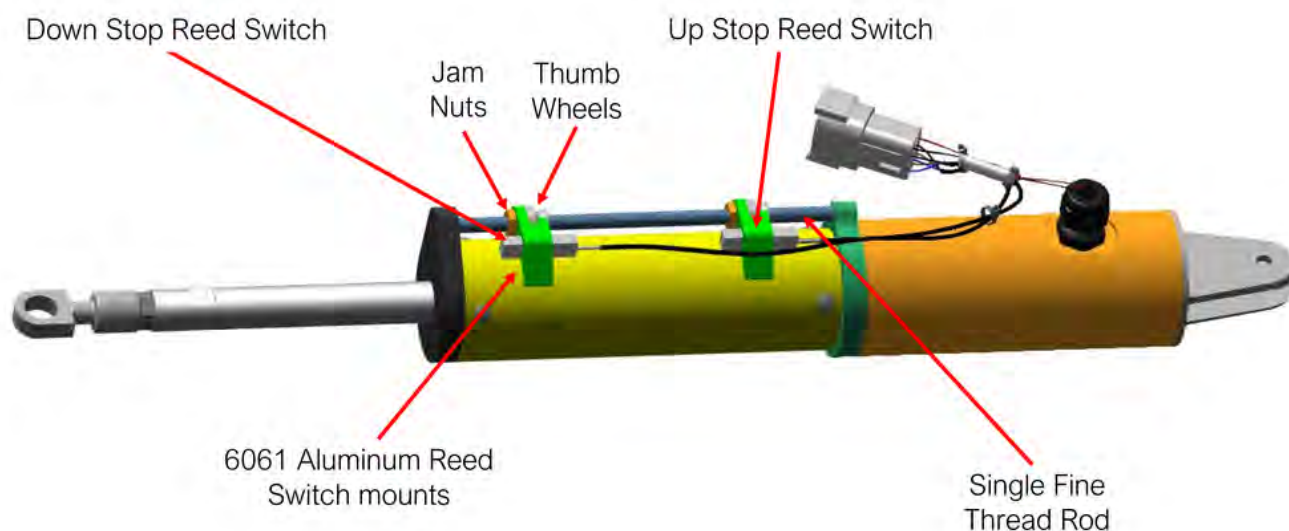


FIGURE 15-7
LANDING GEAR ACTUATOR

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 9-17.) (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)
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 2-25.)
3. Use an 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 20-24 in-lbs 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 5 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 9-19.)(See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)
-

VERIFICATION METHOD:

Power up the aircraft, and actuate the landing gear to verify adjustment.

RELATED INFORMATION:

"Nose Landing Gear (NLG) Rigging and Check with Landing Gear Up" on page 15-82

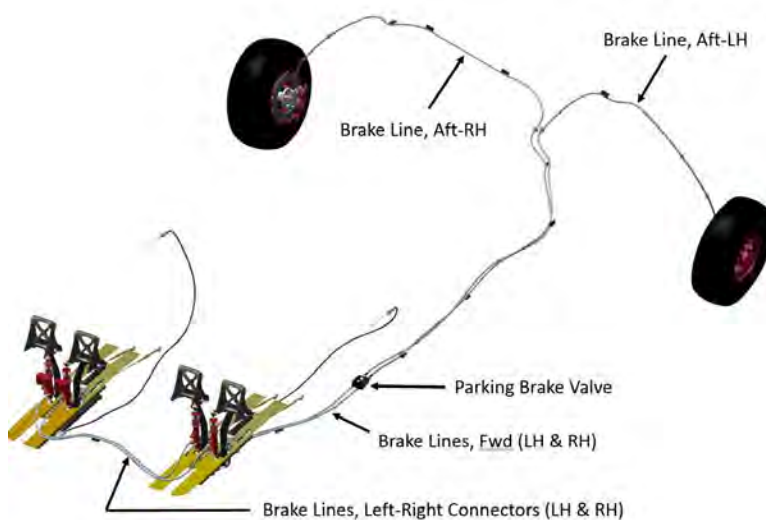
"Nose Landing Gear (NLG) Rigging and Check with Landing Gear Down" on page 15-85

15.4 Brake Line

15.4.1 Maintenance Instructions

15.4.1.1 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 15-17

"General Brake Line Termination Procedure" on page 15-31

15.4.1.1.1 Rudder Pedal Connector Lines Replacement

Use the following procedure to replace the rudder pedal connector lines.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-31.)
5. Wrap the entire length of each brake line with spiral wrap.
6. Route the line as shown in Figure 15-8.

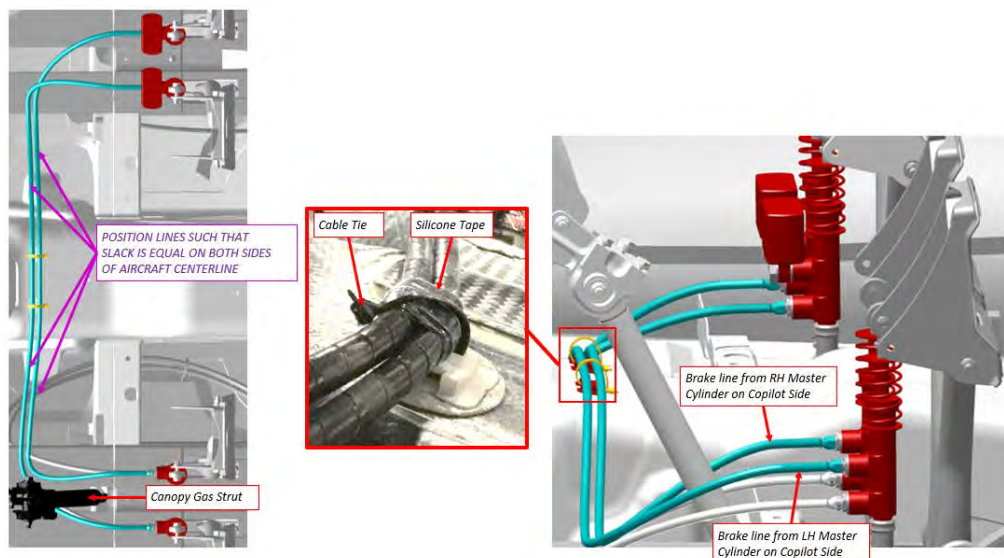


FIGURE 15-8
 BRAKE LINE REPLACEMENT

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 120-132 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.
12. Bleed the brakes per the procedure in the Beringer Manual.

VERIFICATION METHOD:

Check for correct operation and no leaks.

RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 15-17

"General Brake Line Termination Procedure" on page 15-31

15.4.1.1.2 Forward Lines Replacement

Use the following procedure to replace the forward lines.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-31.)
 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 15-31.)
 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 120-132 in-lbs
 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 120-132 in-lbs
 12. Bleed the brakes per the procedure in the Beringer Manual.
-

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.

Check for correct operation and no leaks.

RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 15-17

"General Brake Line Termination Procedure" on page 15-31

15.4.1.1.3 Aft Lines Replacement

Use the following procedure to replace the aft lines.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-31.)
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.

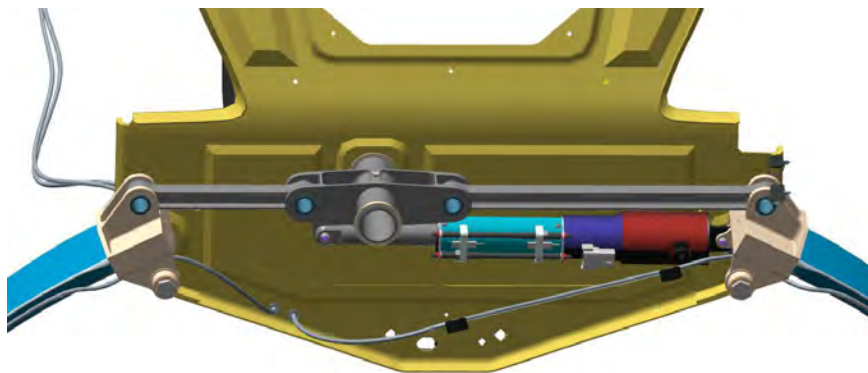


FIGURE 15-9
FORWARD MAIN BULKHEAD

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 15-10. Torque the Banjo bolt to 140 in-lb_f and then torque an additional 90° of rotation.

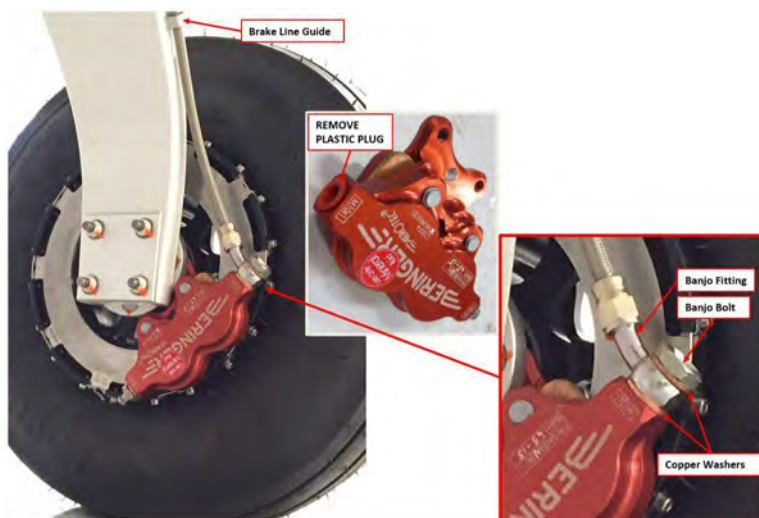


FIGURE 15-10
MAIN LANDING GEAR

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 15-11.



FIGURE 15-11
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 be 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 15-12).



FIGURE 15-12
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 15-13 shows a typical mount.

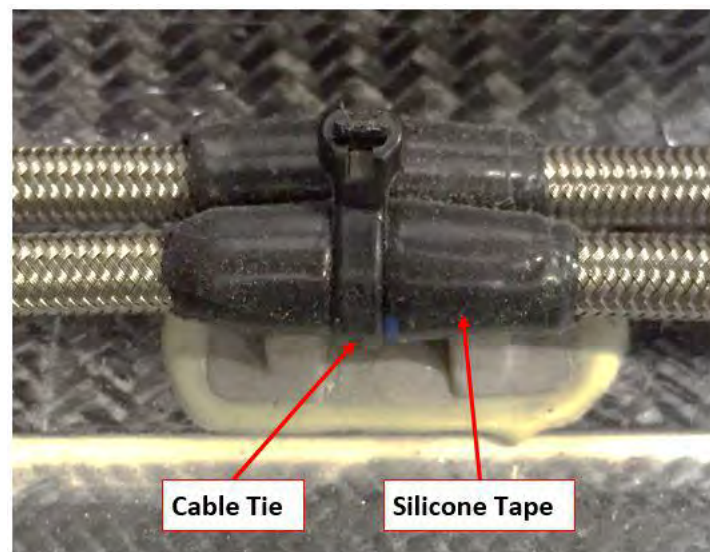


FIGURE 15-13
PARKING BRAKE VALVE

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 15-31.)
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 120-132 in-lbs (see Figure 15-14).

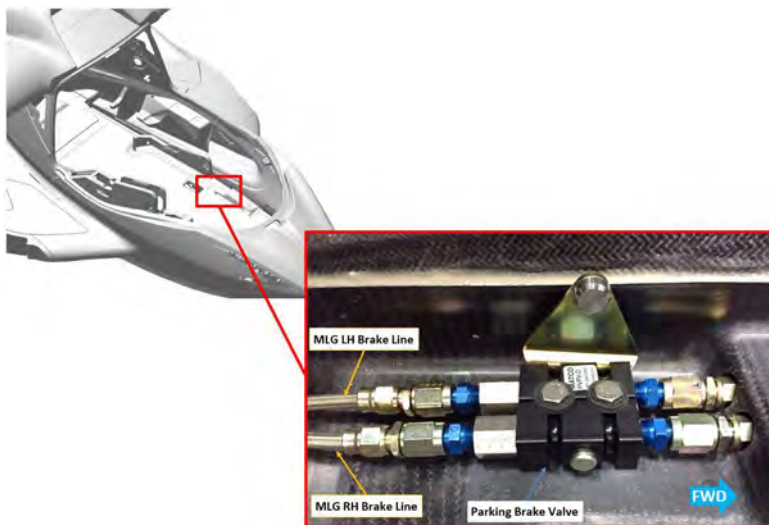


FIGURE 15-14
BRAKE LINE REPLACEMENT

17. Bleed the brakes per the procedure in the Beringer manual.

VERIFICATION METHOD:

Check for correct operation and no leaks.

RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 15-17
 "General Brake Line Termination Procedure" on page 15-31

15.4.1.2 General Brake Line Termination Procedure

Use the following procedure for preparing and cutting the brake line to length and adding banjo fittings.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-15).

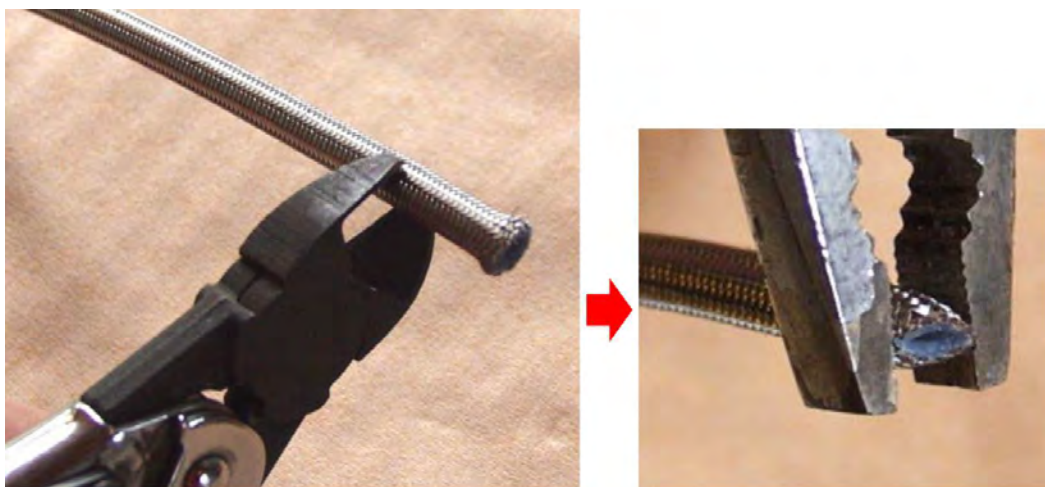


FIGURE 15-15
GENERAL BRAKE LINE TERMINATION

3. Disassemble hose end fitting into its component parts, socket, olive, and main body (see Figure 15-16 for example using a banjo fitting).

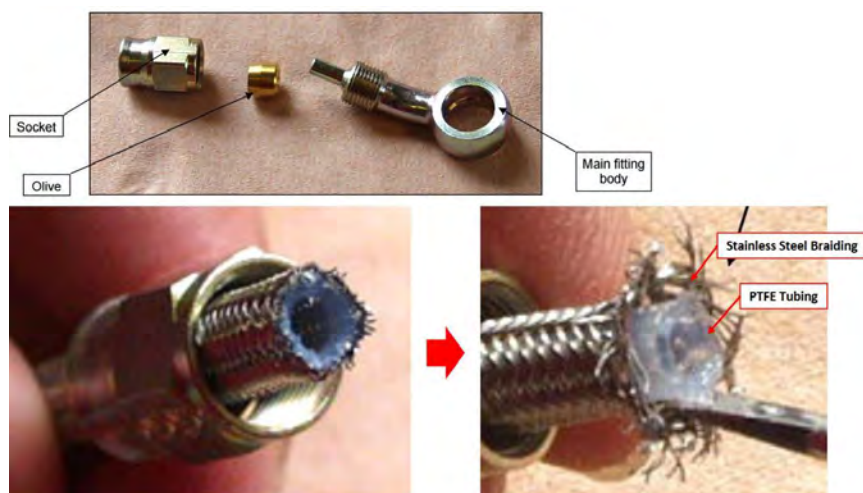


FIGURE 15-16
GENERAL BRAKE LINE TERMINATION

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 15-16).
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 15-17).

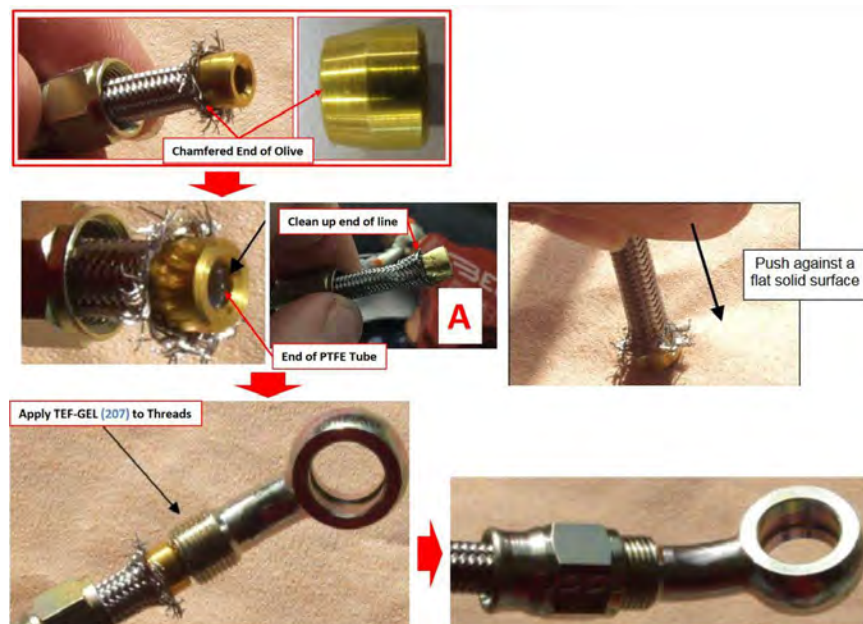


FIGURE 15-17
GENERAL BRAKE LINE TERMINATION

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[®] 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_f, 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 15-23
- "Rudder Pedal Connector Lines Replacement" on page 15-23
- "Forward Lines Replacement" on page 15-25
- "Aft Lines Replacement" on page 15-27
- "Parking Brake Valve Replacement Procedure" on page 15-34

15.4.1.3 Parking Brake Valve Replacement Procedure

Use the following procedure to replace the parking brake valve.

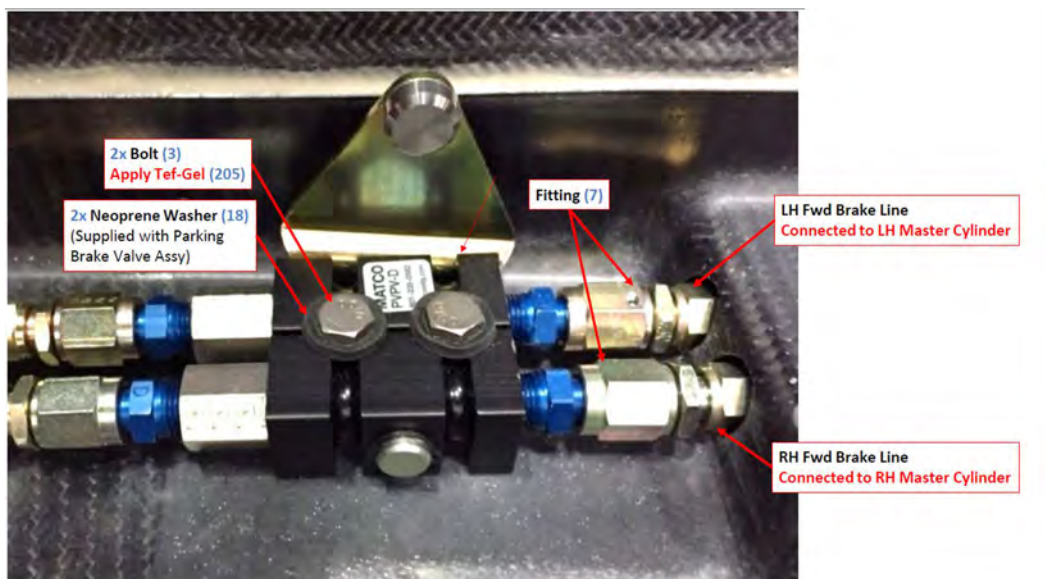


FIGURE 15-18
PARKING BRAKE VALVE AND COMPONENTS

RELATED INFORMATION:

"Wheel and Brake System Maintenance" on page 15-17

"General Brake Line Termination Procedure" on page 15-31

15.4.1.3.1 Parking Brake Valve Removal Procedure

Use the following to remove the parking brake valve.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

15.4.1.3.2 Parking Brake Valve Assembly and Installation Procedure

Use the following procedure to assemble and install the parking brake valve.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

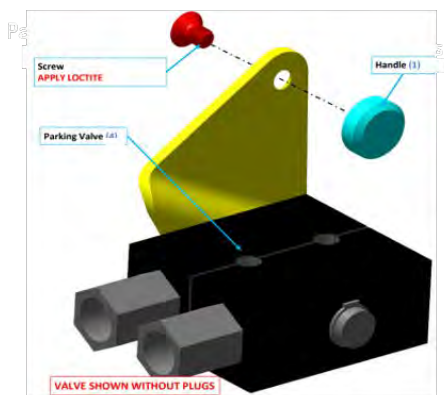


FIGURE 15-19
INITIAL ASSEMBLY OF PARKING VALVE

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.

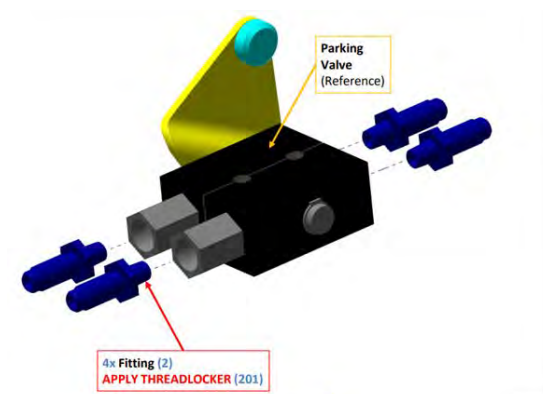


FIGURE 15-20
FINAL ASSEMBLY OF PARKING VALVE

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).

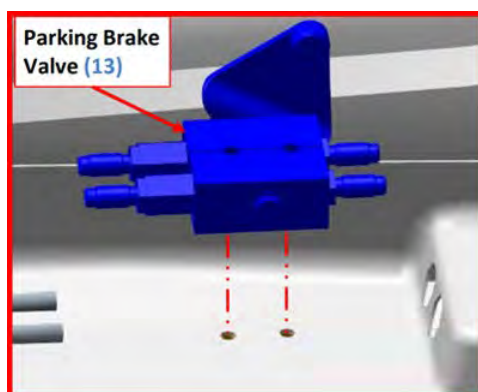


FIGURE 15-21
ORIENTATING THE PARKING VALVE

7. Connect AFT brake lines to parking brake valve. Torque fittings to 120-132 in-lbs. Check that hardware is secure.

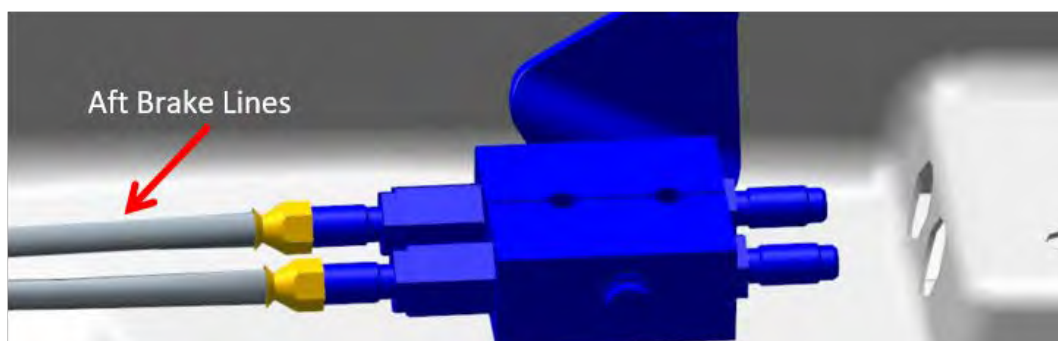


FIGURE 15-22
INSTALLATION OF BRAKE LINES ONTO PARKING VALVE

8. Connect brake line fittings to parking brake valve and lower adapters on brake master cylinders.

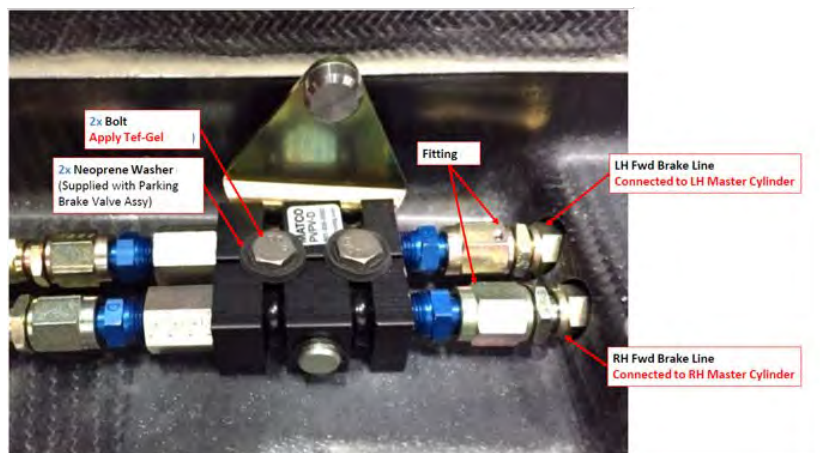


FIGURE 15-23
COMPLETED VIEW OF PARKING VALVE

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® 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. Check for correct operation and no leaks.

15.5 Main Landing Gear

15.5.1 Maintenance Instructions

15.5.1.1 Main Landing Gear (MLG) Removal

Use the following procedure to remove the main landing gear (MLG) assembly.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009749 (WING HARD JACKING POINT)

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 "Remove Seat Back" on page 4-43.)(See "Baggage Floor Removal" on page 4-34.)
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 4-36.)
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.



FIGURE 15-24
DISCONNECT LEFT AND RIGHT BRAKE LINES

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.



FIGURE 15-25
MLG BOOT BOND FLANGES

7. Remove all the cable ties that secure the left and right brake lines from the parking brake valve back to the gear.

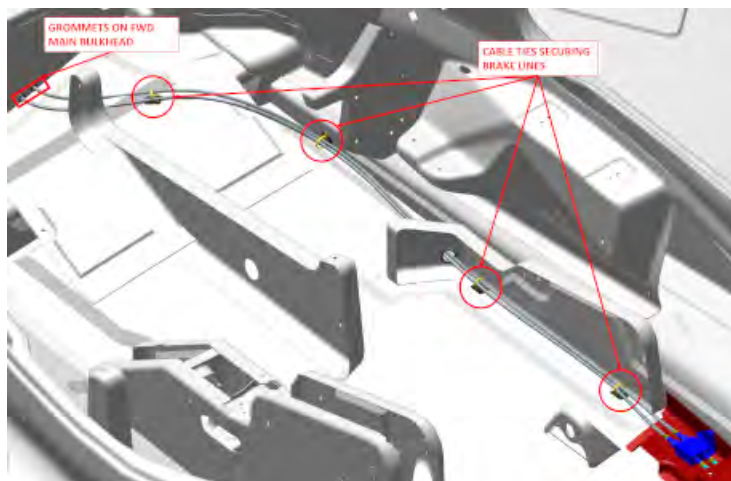


FIGURE 15-26
CABLE TIES SECURING BRAKE LINES

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.

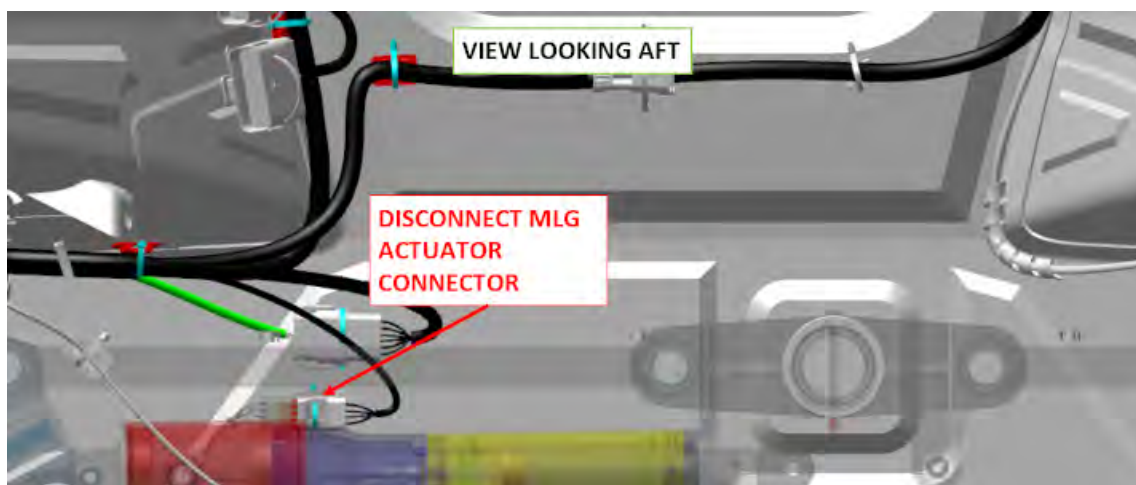


FIGURE 15-27
MLG ACTUATOR

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.

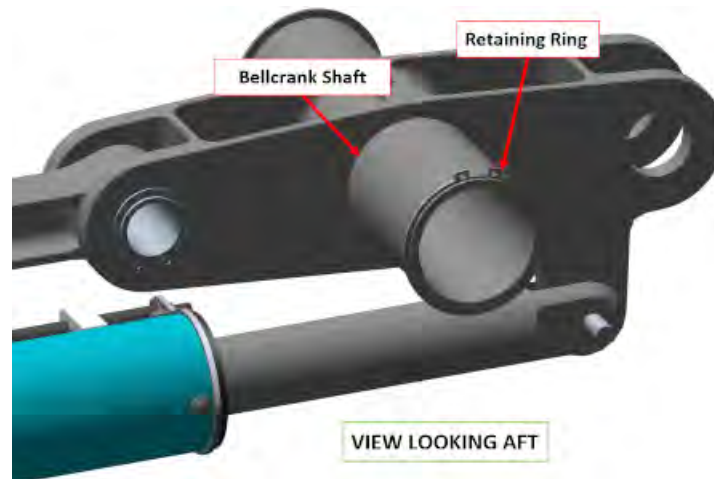


FIGURE 15-28
MLG BELLCRANK SHAFT AND RETAINING RING

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:

- "Remove Seat Back" on page 4-43
- "Install Seat Back" on page 4-44
- "Baggage Floor Removal" on page 4-34
- "Baggage Floor Installation" on page 4-35
- "Main Landing Gear (MLG) Boot Removal" on page 15-45
- "Main Landing Gear (MLG) Boot Installation" on page 15-46
- "Inspect Flap Rigging" on page 10-66

15.5.1.2 Main Landing Gear (MLG) Installation

The following procedure should be used to install the main landing gear (MLG).

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA007426 (MAIN LANDING GEAR TRUNNION BUSHINGS)

AN10C20A (BOLT)

AN3C27A (BOLT)

NAS1149C332R (WASHER)

S73HW2-100-100 (RETAINING RING)

MS35489-35 (RUBBER GROMMETS)

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 AN10C20A 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_f.
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 bellcrank 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_f.
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 AN10C20A 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±100 in-lb_f.
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_f.
19. Check and adjust the MLG actuator stops using the rigging procedure. (See “Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Up” on page 15-56. See “Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down” on page 15-58.) 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 15-46.)
21. Install the seat backs and baggage floors. (See “Install Seat Back” on page 4-44.) (See “Baggage Floor Installation” on page 4-35.)
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 4-38.)
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 “Check Landing Gear Extended Position” on page 15-5. See “Check Landing Gear Retracted Position” on page 15-6.)

RELATED INFORMATION:

- "Remove Seat Back" on page 4-43
- "Install Seat Back" on page 4-44
- "Baggage Floor Removal" on page 4-34
- "Baggage Floor Installation" on page 4-35
- "Main Landing Gear (MLG) Boot Removal" on page 15-45
- "Main Landing Gear (MLG) Boot Installation" on page 15-46
- "Inspect Flap Rigging" on page 10-66

15.5.1.3 Main Landing Gear (MLG) Boot Removal

Use this procedure to remove the MLG boot as part of the MLG boot replacement.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-49.)
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 15-48
- "Main Landing Gear (MLG) Wheel and Axle Removal" on page 15-49
- "Main Landing Gear (MLG) Removal" on page 15-39
- "Main Landing Gear (MLG) Installation" on page 15-42

15.5.1.4 Main Landing Gear (MLG) Boot Installation

Use this procedure to install the MLG boot after it has been removed.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009749 (WING HARD JACKING POINT)

Parts Required

None

Aircraft System and Number

11 – Landing Gear

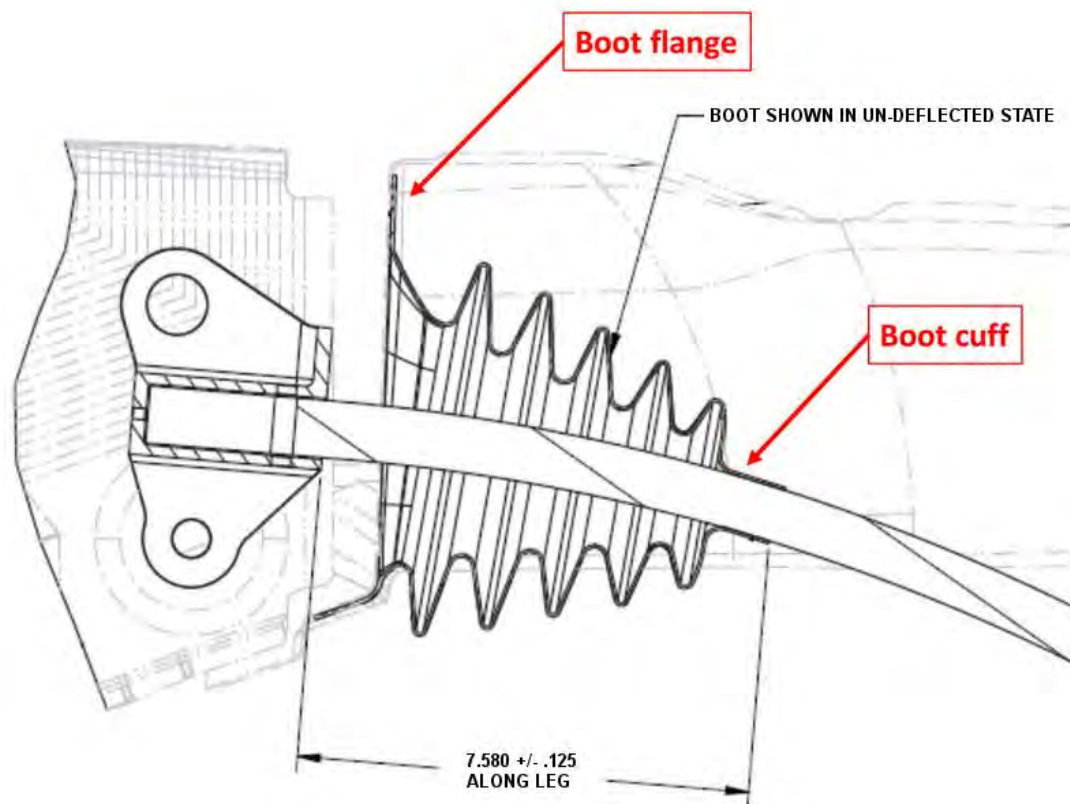
Consumables

Sil-Poxy[®] 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[®] 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 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[™] is performed.
6. Apply Sil-Poxy[®] adhesive to the boot flange and press against Seawings[™]. 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 15-52.) 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.

Verify that 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 15-48

"Main Landing Gear (MLG) Wheel and Axle Installation" on page 15-52

"Main Landing Gear (MLG) Removal" on page 15-39

"Main Landing Gear (MLG) Installation" on page 15-42

15.5.1.5 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-45.) 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 15-46.) 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 15-8
- "Main Landing Gear (MLG) Boot Removal" on page 15-45
- "Main Landing Gear (MLG) Boot Installation" on page 15-46

15.5.1.6 Main Landing Gear (MLG) Wheel and Axle Removal

Use the following procedure to remove the MLG wheel and axle.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009749 (WING HARD JACKING POINT)

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 2-25.)
2. Remove the safety wire that secures the brake rotor to the MLG wheel.





FIGURE 15-29
WHEEL/BRAKE ROTOR DETAIL.

3. Remove MLG wheel seal cap.
4. Remove cotter pin, MLG wheel nut, wheel, and spacer.



FIGURE 15-30
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 15-45

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

15.5.1.7 Main Landing Gear (MLG) Wheel and Axle Installation

Use the following procedure to install the MLG wheel and axle.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA012120 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® 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™ 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™ grease to the axle threads and tighten wheel nut to 216 in-lb per the Beringer Manual.



FIGURE 15-31
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 15-46

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

15.5.1.8 Main Landing Gear (MLG) Actuator Removal

Use the following task to remove the main landing gear (MLG) actuator.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009749 (WING HARD JACKING POINT)

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 4-27.)
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 4-27

15.5.1.9 Main Landing Gear (MLG) Actuator Installation

Use the following task to install the main landing gear (MLG) actuator.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA008138 (BEARING, ACTUATOR, MLG)

ICA008139 (BUSHING, ACTUATOR, MLG)

2X NAS1149C0532R (WASHER, FLAT, CRES, .312-24)

2X MS21043-5 (NUT, SLFLKG, RDC HEX, CRES, .312-24)

ANC512A (BOLT, MACH, CRES, .312-24X.812)

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_f.
 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_f.
 9. Connect the actuator electrical connector to the aircraft harness.
 10. Perform the MLG actuator rigging procedure. (See "Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down" on page 15-58. See "Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Up" on page 15-56.)
 11. Install the aft bulkhead baggage panel. (See "Baggage Sidewall Panel Installation" on page 4-38.)
 12. Lower the aircraft from the jacks.
-

VERIFICATION METHOD:

See verification in MLG actuator rigging procedure. (See "Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down" on page 15-58. See "Main Landing Gear (MLG) Rigging and Rigging Check with Landing Gear Down" on page 15-58.)

15.5.1.10 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:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009750 (Wing Jack Point Adapter)

ITL-12297 (WEIGHT, LANDING GEAR RIGGING, 5LB)

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

TASK INSTRUCTIONS:

1. Jack the aircraft up or weight the tail to cause the nose to raise 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 15-32.)

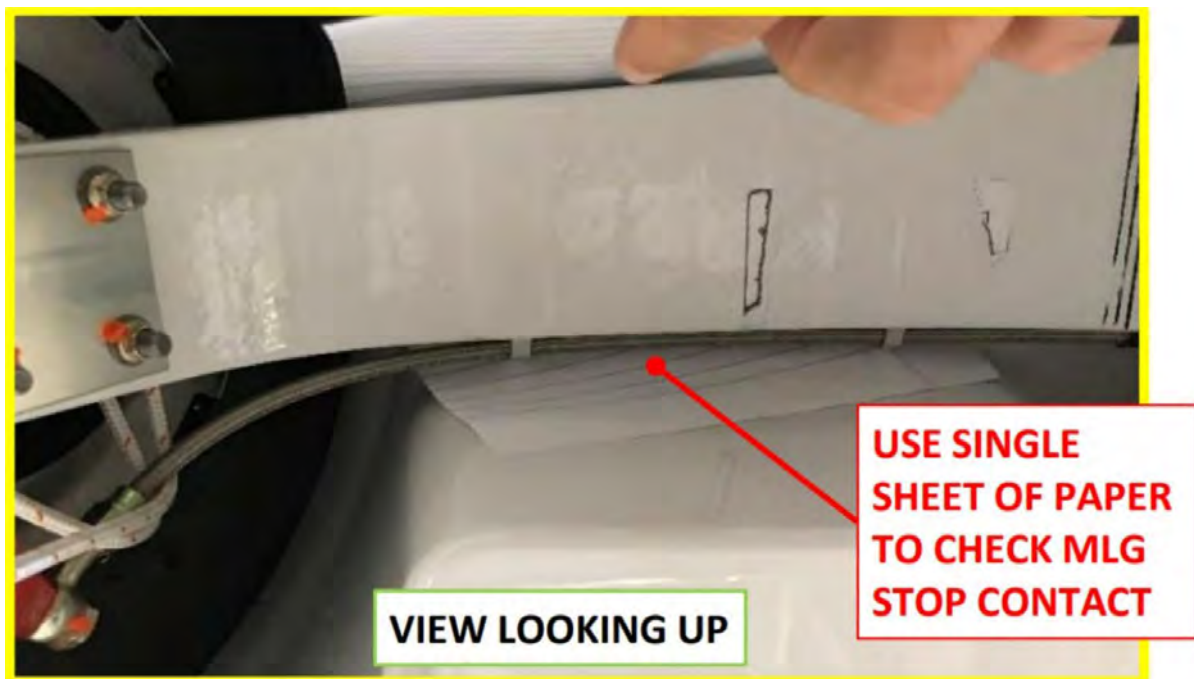


FIGURE 15-32
PAPER CHECK BETWEEN MLG STRUT AND STOP

5. Remove weight.
 6. Extend gear, lower the aircraft from jacks or remove weight and foam blocks as appropriate, and remove jacks.
-

VERIFICATION METHOD:

A single sheet of paper should slide with a slight drag between the MLG strut and stop.

15.5.1.11 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:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 to cause the nose to raise 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.

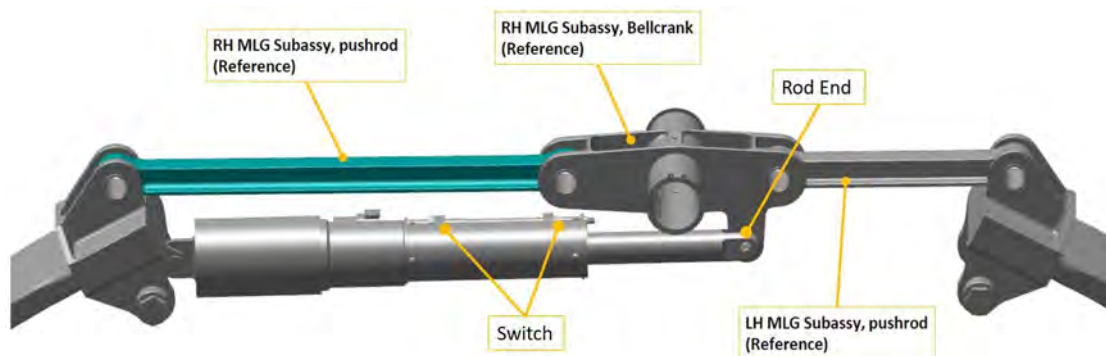


FIGURE 15-33
MAIN LANDING GEAR INSTALLATION

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.
8. Lower the aircraft from jacks or remove weight and foam blocks as appropriate and remove jacks.

VERIFICATION METHOD:

The protractor's measurement should read $3.822 \pm .237^\circ$.

15.6 Nose Landing Gear

15.6.1 Inspection Instructions

15.6.1.1 Nose Gear Inspection

Inspect the nose landing gear system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Wing Jack Point Adapter – ICA009750

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

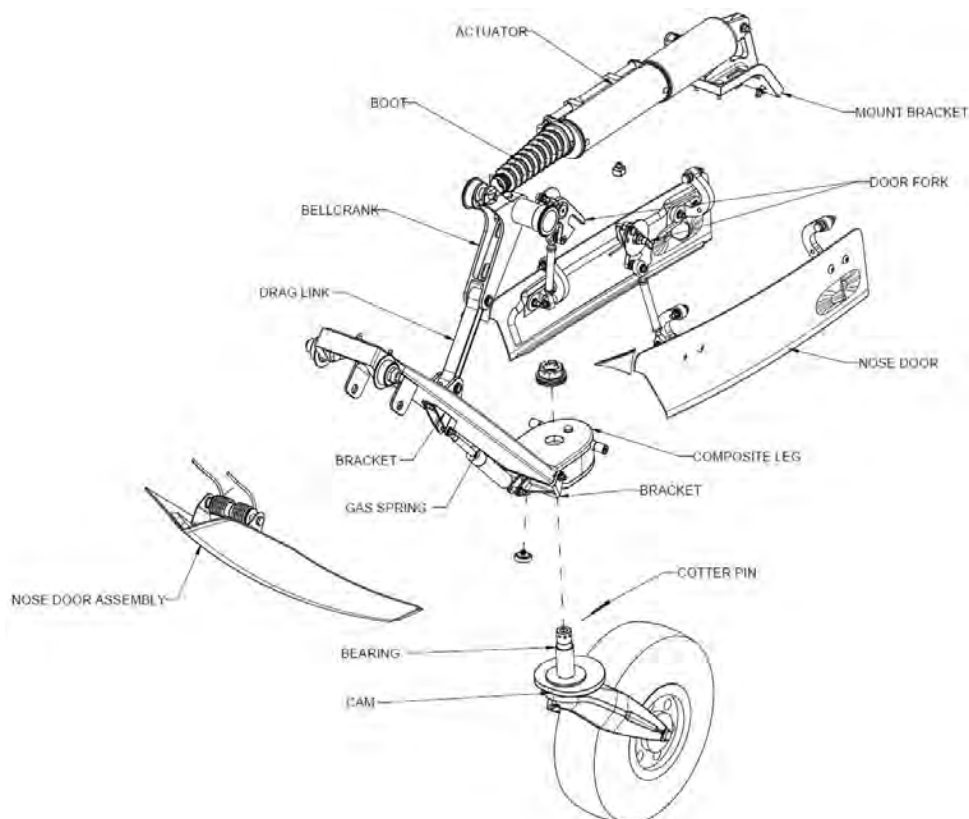


FIGURE 15-34
NOSE LANDING GEAR ASSEMBLY DETAIL.

TASK INSTRUCTIONS:

1. Jack the aircraft using the built-in jack points. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 2-25.)
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.
 - b. After the aircraft has been jacked, apply 10-15 lbs of alternating force to the nose landing gear to confirm all components are attached and secure.
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:

"Annual and 100-Hour Inspection – Landing Gear" on page 4-14

"Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25

"Aft Nose Landing Gear (NLG) Door Mechanism Removal, Installation, and Rigging" on page 15-88

15.6.2 Maintenance Instructions

15.6.2.1 Nose Landing Gear (NLG) Wheel Removal

Use the following procedure to remove the nose landing gear wheel.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009749 (WING HARD JACKING POINT)

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 15-86

15.6.2.2 Nose Landing Gear (NLG) Wheel Installation

Use the following procedure to install the nose landing gear (NLG) wheel.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009749 (WING HARD JACKING POINT)

Parts Required

AV-ICON-002 (AXLE, WHEEL, NLG)
 ICA011894 (SPACER, AXLE, NOSE WHEEL)
 2X AN4C11A (BOLT, MACH, CRES, .250-28X.688))

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_f.
5. Lower the aircraft from jacks or remove weight as appropriate.

VERIFICATION METHOD:

Check that the wheel spins freely and that tire pressure is correct (45 psi).

RELATED INFORMATION:

"Nose Wheel Tire Leak" on page 15-86

15.6.2.3 Nose Landing Gear (NLG) Leg Assembly Removal

The following task should be used to remove the nose landing gear (NLG) leg assembly.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009749 (WING HARD JACKING POINT)

Parts Required

None

Aircraft System and Number

11 – Landing Gear

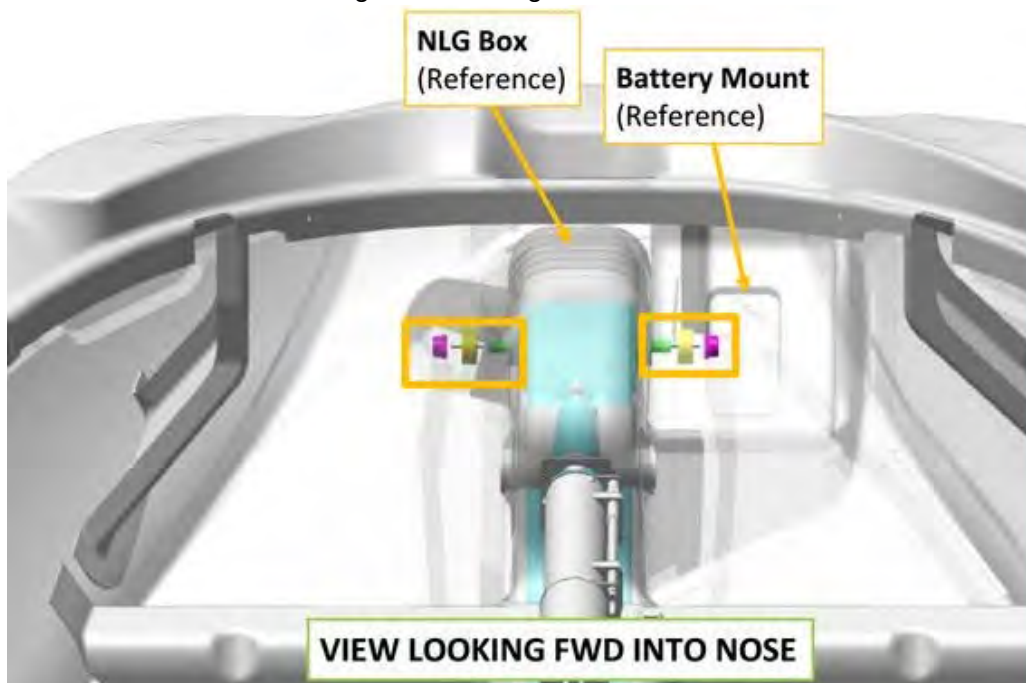
Consumables

LOCTITE® 222™

TASK INSTRUCTIONS:

1. Remove left and right instrument panel top panel. (See “Right Instrument Panel Top Panel Removal” on page 9-17.) (See “Left Instrument Panel Top Panel Removal” on page 9-20.)
2. Remove the aircraft battery. (See “Battery Removal and Installation – Configuration A” on page 1-126.)
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® 222™).
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 11/16 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 9-17

"Left Instrument Panel Top Panel Removal" on page 9-20

15.6.2.4 Nose Landing Gear (NLG) Leg Assembly Installation

Use the following procedure to install the nose landing gear leg assembly.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

AN7C14A (BOLT, MACH, .439-20, CRES, 1.59375, 0.9375)

ICA007417 (BUSHING, TRUNNION, NLG)

MS21044C7 (NUT, SLFLKG, HEX, CRES, .437-20)

ICA007756 (PIN, WRIST, NLG)

S73HW2-100-043 (RETAINING RING, CRES, .438X0.25)

4040RSS3.125MOD-12 (SPACER, UNTHREADED, CRES, .194X.3125X3.125)

AN526C632-40 (SCREW, MACH, CRES .138-32X2.5)

Z4110-316SS (BINDING POST, CRES, .138-32X.188X1.00)

NAS1149033R (WASHER, FLAT, CRES, .203X.032, PSVT)

Aircraft System and Number

11 – Landing Gear

Consumables

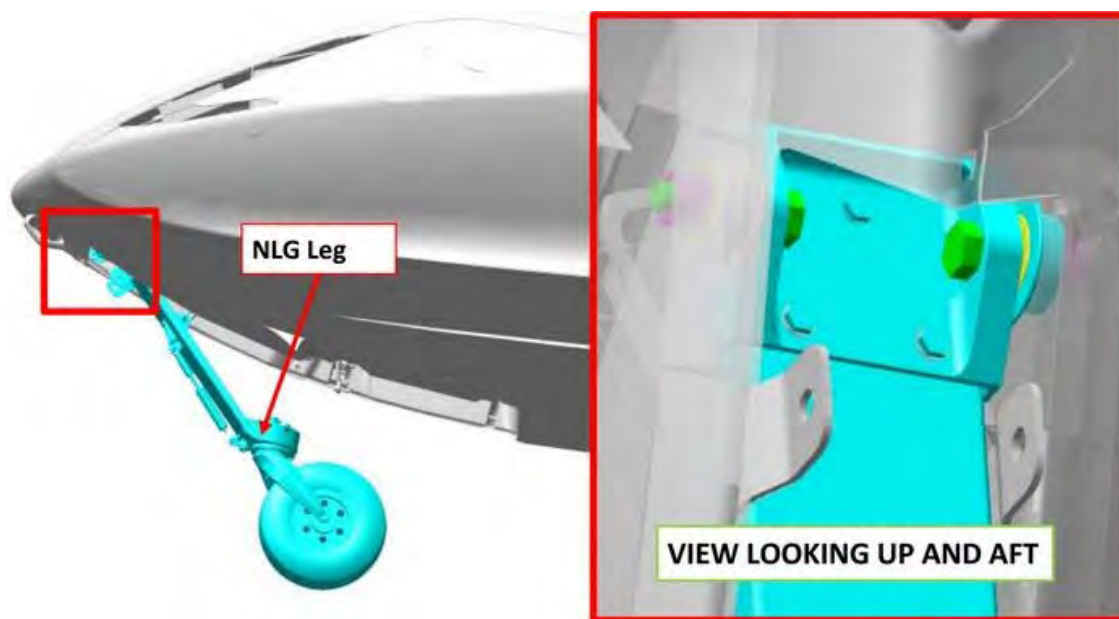
Tef-Gel®

LOCTITE® 222™

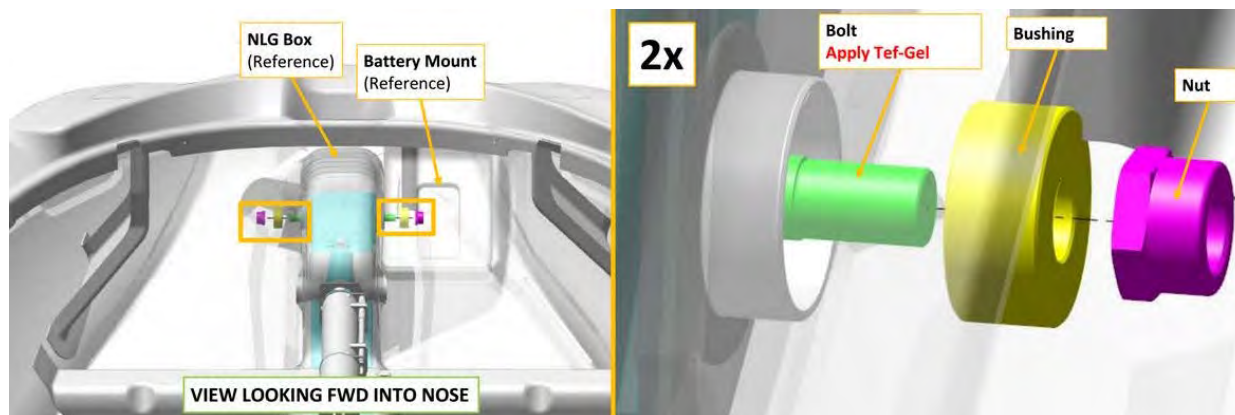
Ensure that the NLG leg assembly is complete with leg, trunnion, wrap around bracket, drag link bracket, and wheel centering assembly installed. If the NLG fork steering bearing is not in place, install it before proceeding with the steps below. (See “Nose Landing Gear Steering Bearing Replacement Procedure” on page 15-72.)

TASK INSTRUCTIONS:

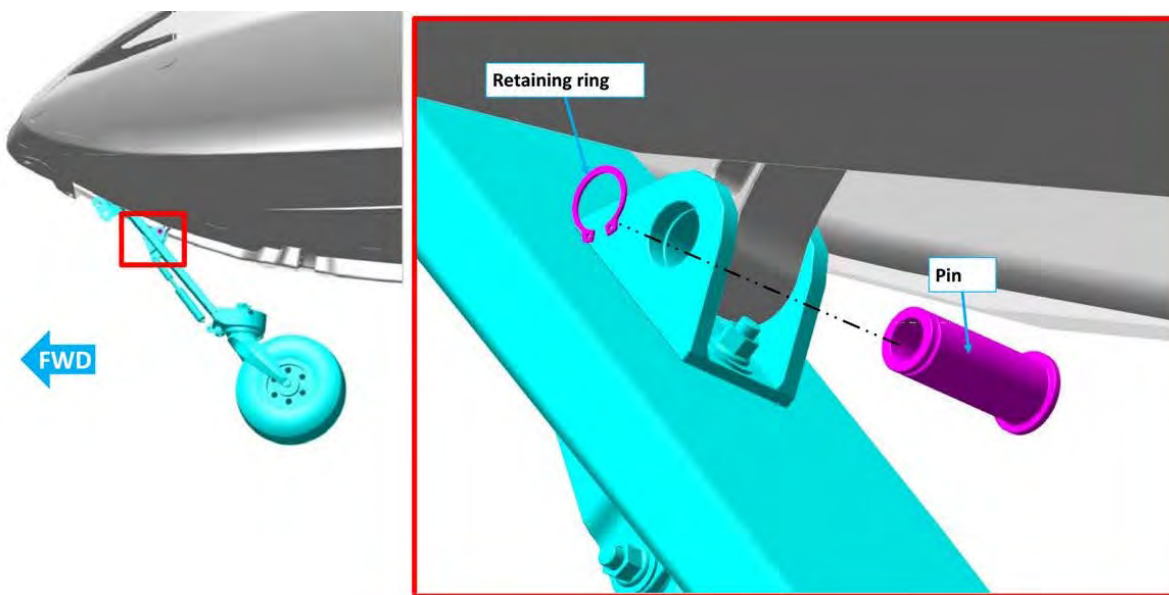
1. Locate the NLG leg into position in the NLG box in the aircraft.



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.



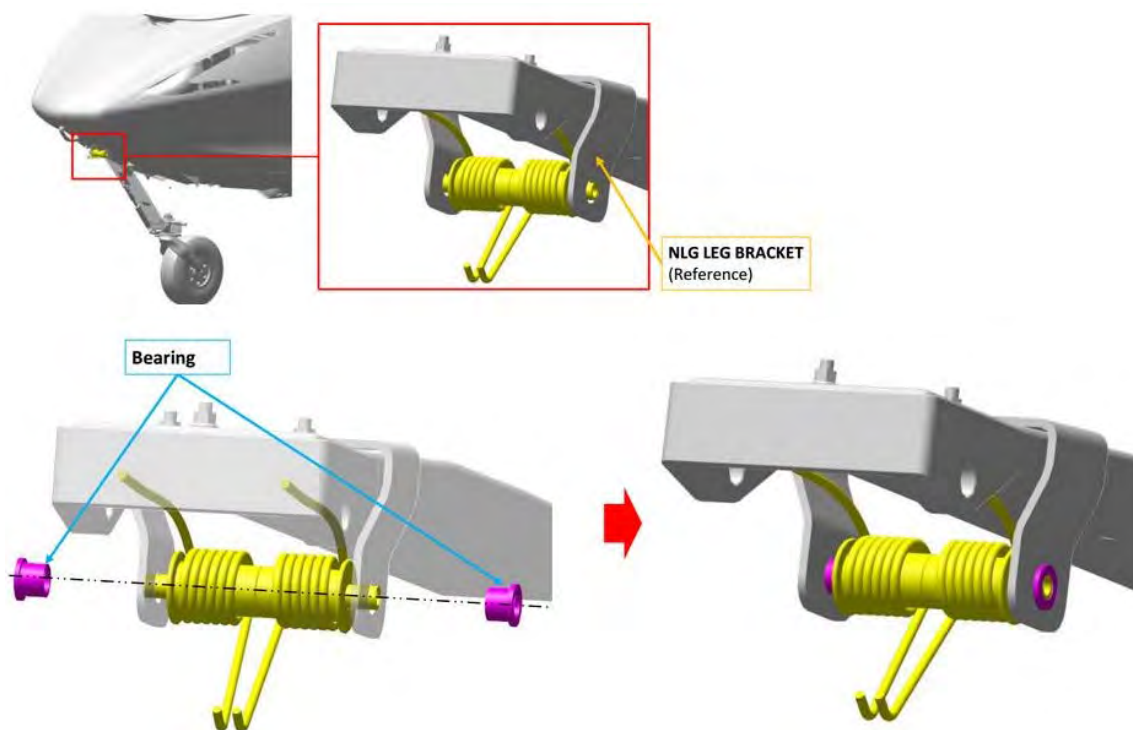
4. Torque the AN7 pivot bolts and nuts to 322 in-lb_f.
5. Locate the NLG drag link into position in the bracket on the NLG leg and install the ICA007756 wrist pin.



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® 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. Torque screw to 8 ± 2 in-lbs.

12. Cycle the nose landing gear. Confirm that the landing gear indicator indicates the correct gear position. 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 15-70

"Right Instrument Panel Top Panel Installation" on page 9-19

"Left Instrument Panel Top Panel Installation" on page 9-21

15.6.2.5 Nose Landing Gear (NLG) Cam Follower Replacement

Use this procedure to replace the nose landing gear (NLG) cam follower.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

93615A432 (SOCKET HEAD SCREW)

ICA010386 (CENTERING BRACKET)

SFR4ZZ (BEARING)

ICA010387 (CAM FOLLOWER)

NAS1149C0463R (WASHER)

91525A323 (WASHER)

Aircraft System and Number

11 – Landing Gear

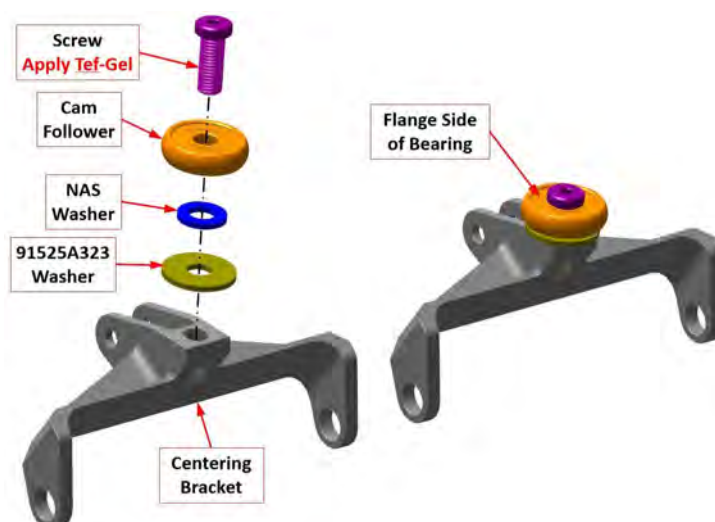
Consumables

LOCTITE® 603™

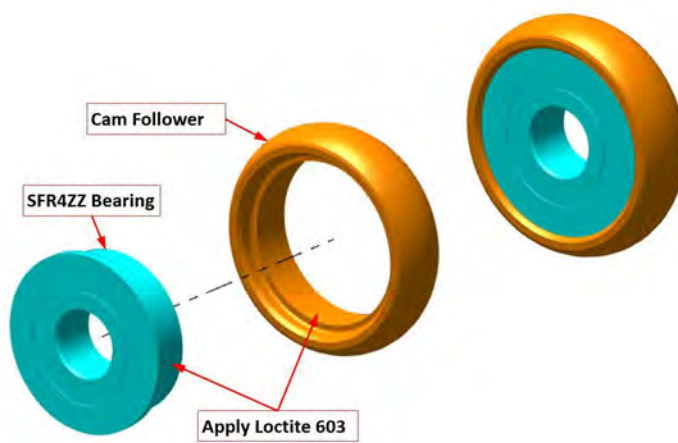
Tef-Gel®

TASK INSTRUCTIONS:

1. Use standard practices to remove the forward landing gear door assembly.
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_f.
8. Remove the safety wire installed in Step 3.
9. Perform the verification steps below and correct any deficiencies.
10. Use standard practices to install the nose landing gear forward door assembly.

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 15-66

15.6.2.6 Nose Landing Gear Steering Bearing Replacement Procedure

Use the following procedures to replace the nose landing gear steering bearing.

15.6.2.6.1 Remove Nose Landing Gear Steering Bearing

This task is used to remove the nose landing gear steering bearing.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

TASK INSTRUCTIONS:

1. Press bearing out of leg using acceptable pressing tools. 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.
 2. Discard the NLG bearing.
 3. 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 15-73.)

RELATED INFORMATION:

"Prepare Nose Gear and Nose Gear Steering Bearing for Bonding" on page 15-73

"Bond New Nose Landing Gear Steering Bearing" on page 15-74

"Nose Landing Gear (NLG) Fork Installation" on page 15-78

15.6.2.6.2 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:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Specific Tools Required

None

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

80 Grit Aluminum Oxide Sandpaper
TT-I-735A or equivalent (ISOPROPYL ALCOHOL)

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 15-72
"Nose Landing Gear (NLG) Fork Installation" on page 15-78

15.6.2.6.3 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:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Specific Tools Required

ICON nose gear bearing installation/removal tool

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

LOCTITE® EA 9394

Miller Stephenson MS-122RB Release Agent

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 15-72

"Nose Landing Gear (NLG) Fork Installation" on page 15-78

15.6.2.6.4 Nose Landing Gear (NLG) Fork Removal

Use the following procedure to remove the NLG fork.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Specific Tools Required

Diagonal Cutters/Pliers

1-1/8 Wrench or Socket

ICA009749 (WING HARD JACKING POINT)

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Safety Equipment

As Needed

Consumables

.032 or .041 safety wire

TASK INSTRUCTIONS:

1. Chock the main wheels.
2. Orient the nose wheel 180° from the natural in-trail position. See Figure 15-35.



FIGURE 15-35
NOSE WHEEL

3. Wrap safety wire around the nose wheel centering gas strut to prevent it from extending.



FIGURE 15-36
SECURE WITH SAFETY WIRE

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 2-25.)
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 and thrust washer from bottom of leg.
-

VERIFICATION METHOD:

Procedure is complete when NLG Fork has been removed.

15.6.2.6.5 Nose Landing Gear (NLG) Fork Installation

Use these instructions to install NLG fork.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Specific Tools Required

Diagonal Cutters/Pliers

1-1/8 Wrench or Socket

ICA009749 (WING HARD JACKING POINT)

Parts Required

MS24665-304 (COTTER PIN)

Aircraft System and Number

11 – Landing Gear

Safety Equipment

As Needed

Consumables

None

TASK INSTRUCTIONS:

1. Clean parts of leg and fork cam where thrust bearing contacts, and install thrust bearing over pivot shaft.
2. Install nose wheel assembly into gear leg. (See “Nose Landing Gear (NLG) Wheel Installation” on page 15-63.)

3. Install the Belleville/flat washer stack in the same orientation it was removed.
4. Tighten castle nut finger tight.
5. Orient the nose wheel 180° from the in-trail position and remove the safety wire from the self-centering gas strut.
6. 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.
7. Loosen the castle nut by one flat.
8. 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.
9. Install a new cotter pin once proper operation is achieved.
10. Remove the foam block from under the hull or lower the aircraft off the jacks.

VERIFICATION METHOD:

Ensure NLG fork rotates freely with no binding and self centers with no load on wheel.

RELATED INFORMATION:

"Remove Nose Landing Gear Steering Bearing" on page 15-72

"Prepare Nose Gear and Nose Gear Steering Bearing for Bonding" on page 15-73

"Bond New Nose Landing Gear Steering Bearing" on page 15-74

15.6.2.7 Replace Nose Landing Gear Actuator

Use the next two procedures to replace the nose landing gear actuator.

15.6.2.7.1 Remove Nose Landing Gear Actuator

Use the following task to remove the Nose Landing Gear (NLG) Actuator.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

Tef-Gel®

TASK INSTRUCTIONS:

1. See “Removal and Installation of Inspection Panels and Fairings” on page 4-27.
 2. 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) (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 2-25.)
 3. Disconnect the NLG actuator electrically from the D9024P connector of the FWD Fuselage Wire Harness.
 4. Disconnect the forward attachment bolt of the actuator and retain hardware.
 5. Loosen the LARGE CLAMP that connects the NLG Actuator BOOT to the nose landing gear box. Slide the BOOT off the NLG box. Retain all hardware.
 6. Loosen the SMALL CLAMP that connects the NLG Actuator BOOT the forward side of the NLG actuator. Retain all hardware.
 7. Disconnect the aft connection point of the actuator from bracket attached to the nose landing gear box. Retain all hardware.
 8. Disconnect the actuator connector from the FWD Fuselage Wire Harness.
 9. Remove the actuator from the aircraft by sliding it out from the nose landing gear box.
-

VERIFICATION METHOD:

The procedure is complete when the actuator has been removed.

15.6.2.7.2 Install Nose Landing Gear Actuator

Use the following task to remove the Nose Landing Gear (NLG) Actuator.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA013071 (NOSE LANDING GEAR ACTUATOR)

AN4C10A (BOLT, MACH, CRES, .250-28X.563)

NAS1149C0432R (WASHER, FLAT, CRES, .250X.032XPSVT)

ICA008136 (BUSHING, PLAIN, CRES, .250X.032XPSVT)

119255 (BOOT, ACTUATOR)

LARGE CLAMP (30-45/9-W5, WORM DRIVE, NORMA TORRO, .35X1.19-1.75)

SMALL CLAMP (3808, WORM DRIVE, MINI, .312X0.906)

Aircraft System and Number

11 – Landing Gear

Consumables

Tef-Gel®

TASK INSTRUCTIONS:

1. Trim hex heads of the limit switch adjuster screws to 0.250" +.000/-.050 using a cut off wheel, file, or metal saw.
2. Slide NLG Actuator into the NLG box and attach the aft end of the actuator to the NLG box bracket using the BOLT, WASHER, MS21032-4 nut, and BUSHING. Torque bolt to 48 in-lbs.
3. Allow approximately .05" of BOOT to protrude beyond the clamp then Slide NLG Actuator BOOT over the NLG actuator rod end and secure with a LARGE CLAMP and SMALL CLAMP.

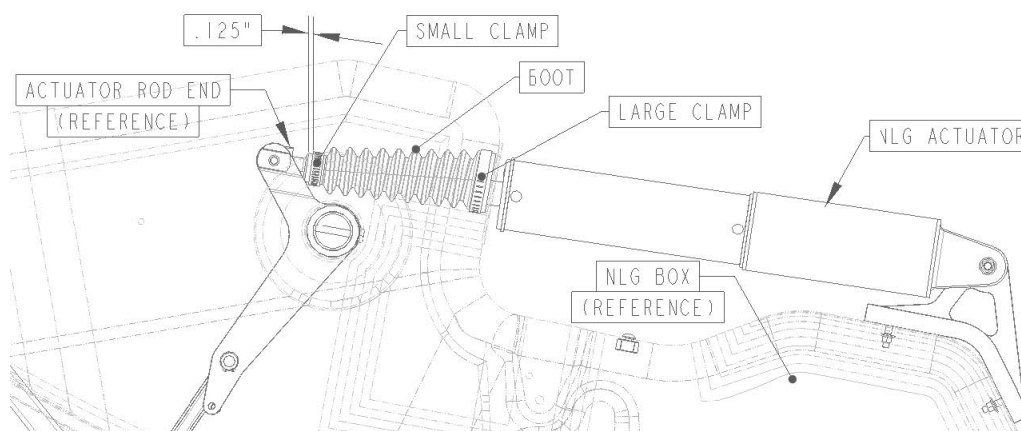


FIGURE 15-37
BOOT INSTALLATION

4. Secure the AFT end of the BOOT over the NLG box flange. Position the BOOT so that it is as close to the NLG box as possible. Torque LARGE CLAMP until there is a rise in torque then 1/4 turn more.

5. Verify Boot is not twisted and continue to position the FWD end of the boot on the rod end as close to the end of the rod as possible. Torque SMALL CLAMP until there is a rise in torque then 1/4 turn more.
6. Insert BUSHING into the bearing and connect the rod end to the NLG bell crank using the BOLT and WASHER. Apply Tef-Gel® to BUSHING and BOLT threads and shank prior to assembly. Torque bolt to 53 in-lbs.

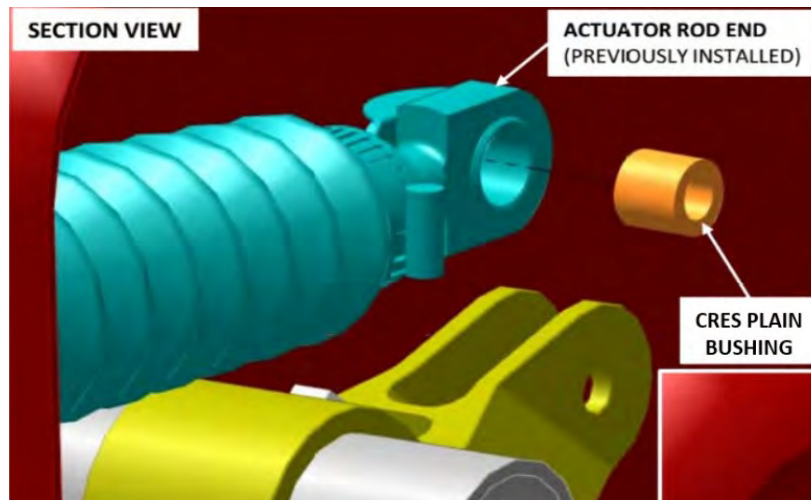


FIGURE 15-38
ACTUATOR DETAILED VIEW

7. Connect NLG actuator electrically to D9024P of the FWD Fuselage Wire Harness.

VERIFICATION METHOD:

Rig the actuator. See “Nose Landing Gear (NLG) Rigging and Check with Landing Gear Up” on page 15-82.

15.6.2.8 Nose Landing Gear (NLG) Rigging and Check with Landing Gear Up

Use the following procedure to check the rigging with Landing Gear UP.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009750 (HARD JACKING POINT, ASM)

ITL012297 (5lbs WEIGHT)

Single Sheet of Paper

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

TASK INSTRUCTIONS:

1. Jack the aircraft up so that the nose gear is clear of the ground. (See “Empty Weight and CG Measurement While on Jackpoint Scales” on page 2-25.)
2. Disengage both NLG doors by removing both sets of AN3C11A Bolts, CRES Bushings, and MS21043-3 Nuts that attach the gooseneck bellcrank to the rod end.

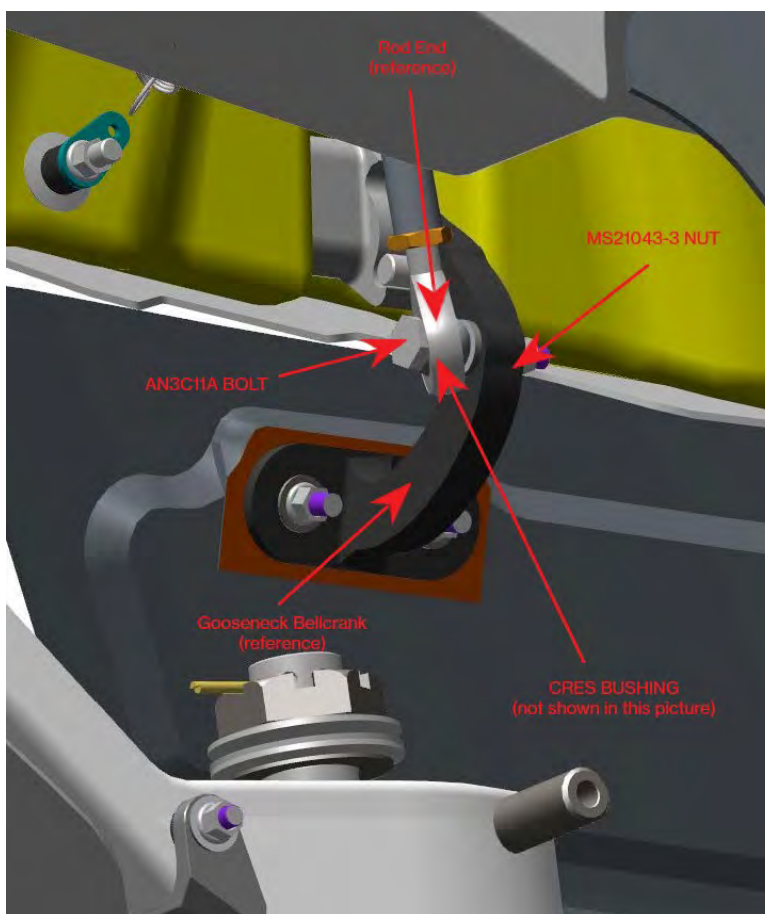


FIGURE 15-39
COMPONENTS TO DISENGAGE THE NLG DOORS

3. Attach 5lb weight (ITL012297) to NLG wheel. See Figure 15-40.

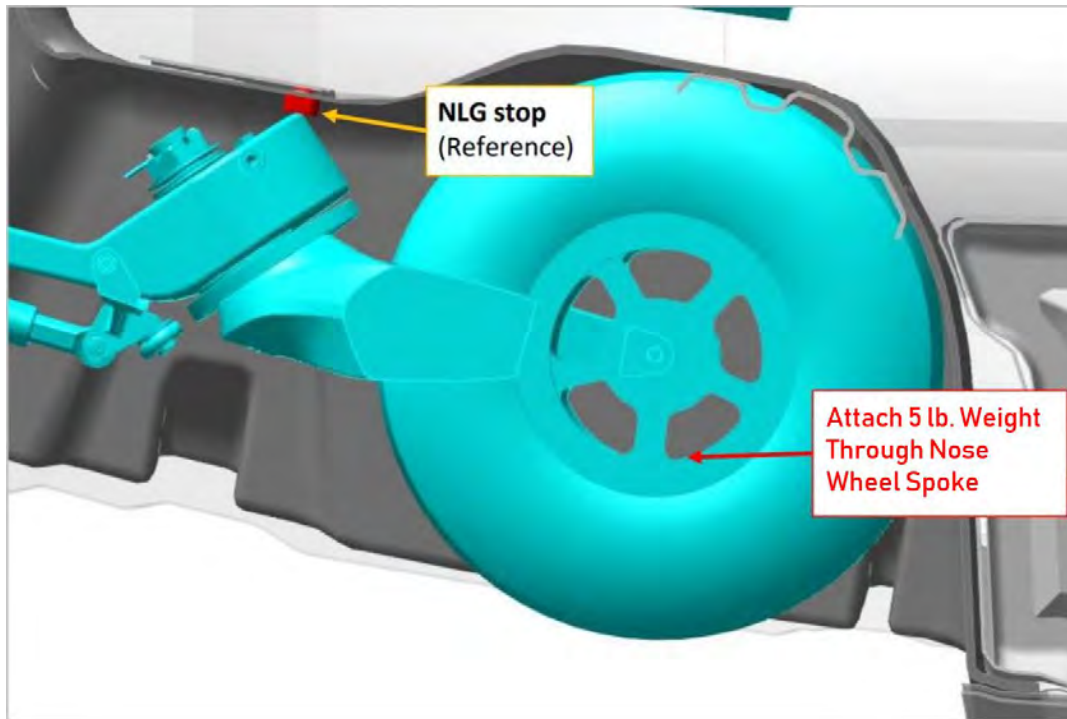


FIGURE 15-40
FIGURE OF ATTACHMENT OF WEIGHT

4. Verify MASTER switch is OFF and the landing gear is currently DOWN. Move LANDING GEAR switch to UP position then turn MASTER switch ON to allow the landing gear to retract fully. Turn MASTER switch OFF.
5. When in the UP position a single sheet of paper should slide with minimal drag between the NLG strut and stop.
6. See “Landing Gear Actuator Limit Switch Adjustment Procedure” on page 15-18 or “Landing Gear Actuator Limit Switch Adjustment Procedure” on page 15-20 for actuator rigging adjustment depending on Aircraft Serial Number.
7. Verify MASTER switch is OFF and the landing gear is UP. Move LANDING GEAR switch to DOWN position then turn MASTER switch ON to allow the landing gear to extend fully. Turn MASTER switch OFF.
8. Remove 5lb weight (ITL012297) from NLG wheel.
9. Reengage both NLG doors by removing both sets of AN3C11A Bolts, CRES Bushings, and MS21043-3 Nuts that attach the gooseneck bellcrank to the rod end.

VERIFICATION METHOD:

Operational Check – Once weight is removed and NLG doors are reengaged, retract NLG. Verify 7.5 amp NLG fuse does not blow and that the NLG doors are fully closed. If fuse blows or gear doors are not closed completely, adjust doors per “Aft Nose Landing Gear (NLG) Door Mechanism Removal, Installation, and Rigging” on page 15-88.

See NLG Rigging Check. (See "Nose Landing Gear (NLG) Rigging and Check with Landing Gear Down" on page 15-85.)

RELATED INFORMATION:

"Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-18

"Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-20

15.6.2.9 Nose Landing Gear (NLG) Rigging and Check with Landing Gear Down

Use this procedure to rig and check the NLG with the gear down.

TASK INFORMATION:

Applicable Aircraft Serial Number

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

ICA009750 (WING JACK POINT ADAPTER)

Rig Pin (Dia 0.163")

Rig Pin (Dia 0.1885")

Parts Required

None

Aircraft System and Number

11 – Landing Gear

Consumables

None

RIGGING

TASK INSTRUCTIONS:

1. Jack the aircraft up so that the nose gear is clear of the ground. (See "Empty Weight and CG Measurement While on Jackpoint Scales" on page 2-25.)

NOTE: Allow gear to extend under its own weight (no additional weight added).
2. If the landing gear is in the up position, verify MASTER switch is OFF and the landing gear is currently UP. Move LANDING GEAR switch to DOWN position then turn MASTER switch ON to allow the landing gear to extend fully. Turn MASTER switch OFF.

3. If adjustment is necessary, adjust the NLG extended position by adjusting the most forward limit switch. See "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-18 or "Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-20 depending on Aircraft Serial Number for actuator rigging and adjustment.

CAUTION: *Special care should be given to make sure this forward rig is set correctly.*

4. Insert RIG PIN through the hole, the stops on the NLG actuator extended travel position should be adjusted such that the RIG PIN fits. The looser the rig pin fits, the better the NLG rigging is.
5. Lower aircraft, to allow full aircraft weight on landing gear.

VERIFICATION METHOD:

Operational Check – Confirm that a 0.163 MIN diameter jig pin can be inserted into the rig pin hole. Verify that the landing gear indicates fully down.

RELATED INFORMATION:

"Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-18

"Landing Gear Actuator Limit Switch Adjustment Procedure" on page 15-20

15.6.2.10 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 15-62.)
 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 0.5-1 ounce 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 15-63.)
-

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 15-62
"Nose Landing Gear (NLG) Wheel Installation" on page 15-63

15.7 Aft Nose Landing Gear Door

15.7.1 Maintenance Instructions

15.7.1.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

See task procedures.

Aircraft System and Number

11 – Landing Gear

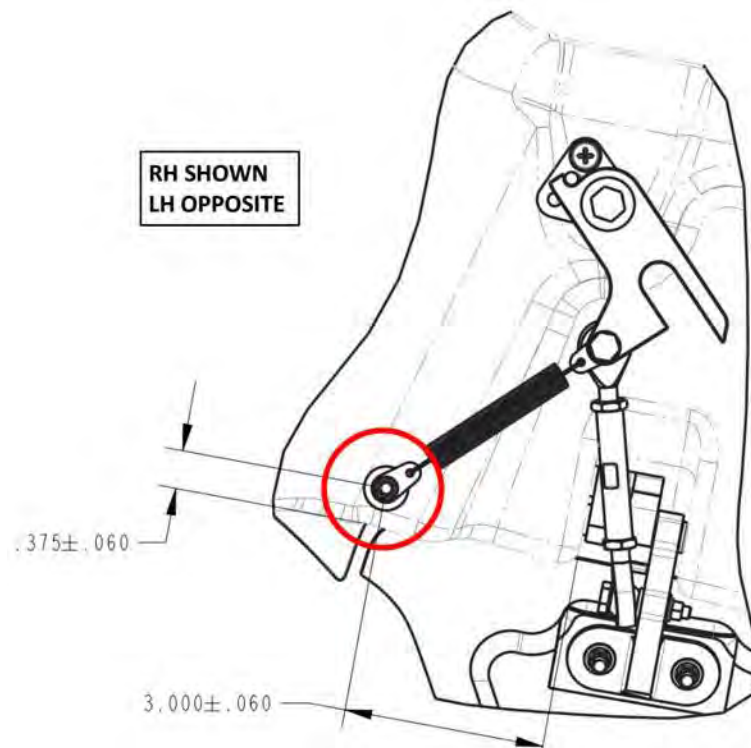
Consumables

None

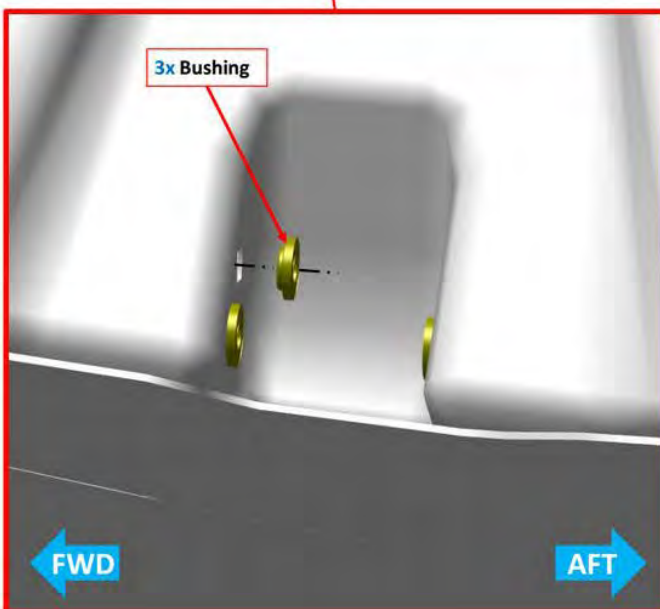
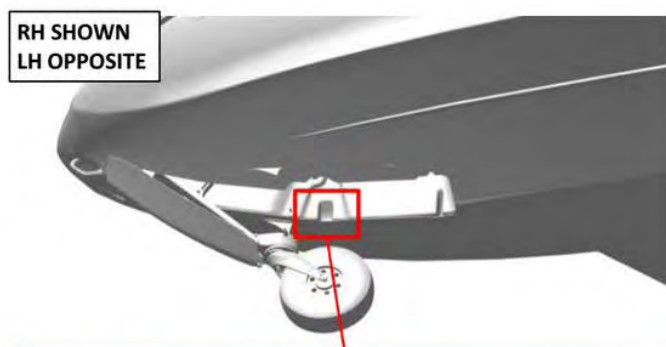
NOTE: Carefully inspect each part and any underlying parts or structure for serviceability prior to installation.

TASK INSTRUCTIONS:

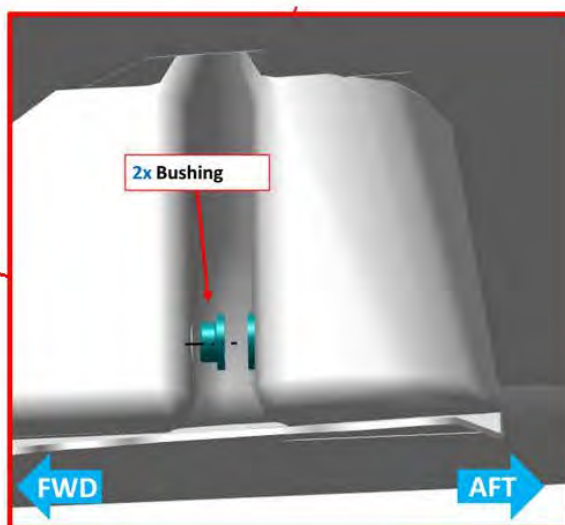
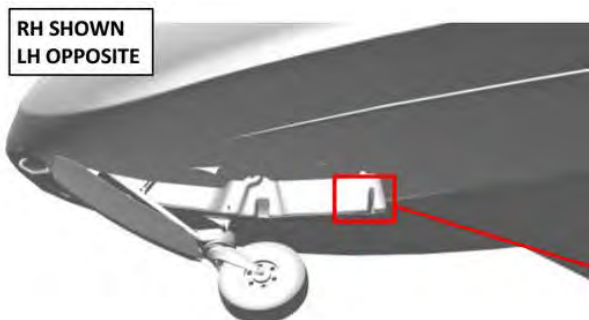
1. Use standard practices to remove and install the components of the Aft Nose Landing Gear Doors and mechanisms that need replacement or repair.
2. Verify Click Bond studs have been installed. The studs are bonded into the NLG box as shown. Repeat this step for both LH and RH sides.



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.

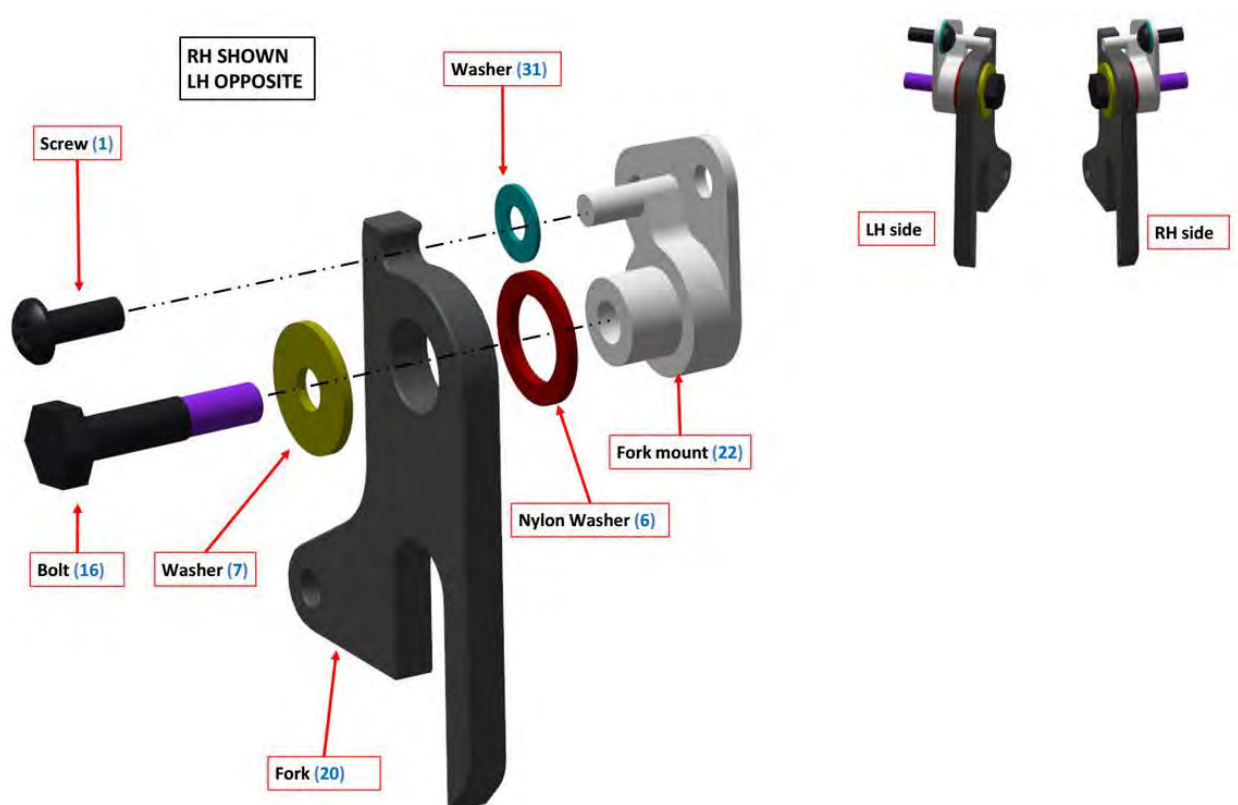


4. Verify that the door bushings have been installed into the aft bellcrank pockets as shown. Repeat this step for both LH and RH sides.



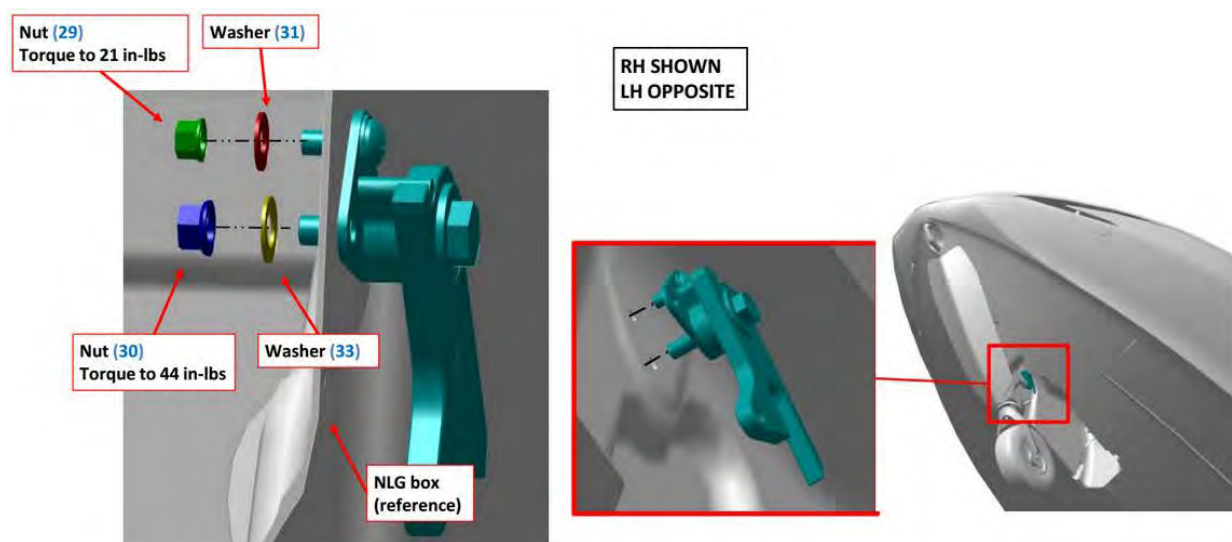
5. Prepare the door forks. Stack up door fork and fork mount with hardware as shown for the RH side. The LH side is a mirror image. Repeat for the LH side.

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



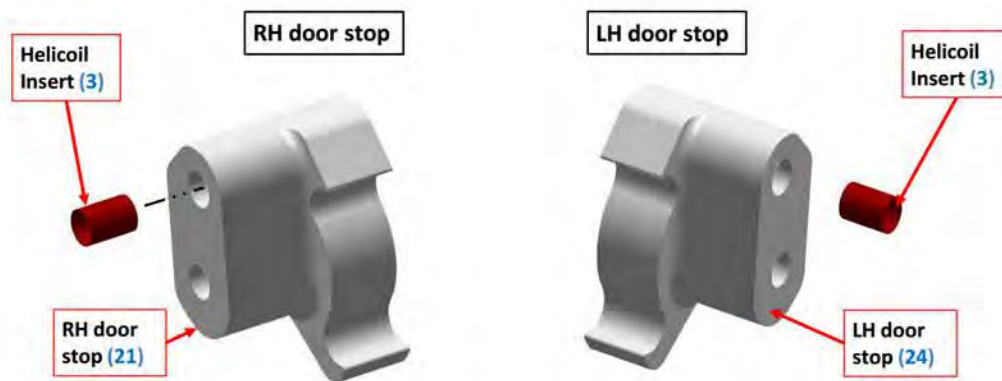
6. Install the door forks. Install the RH stack-up of hardware from the previous step into the RH side of the NLG box as shown with the specified hardware. Torque to the specification identified. The LH side is a mirror image. Repeat for the LH side.

Qty	Item No	Part No
1	(29)	MS21043-3
1	(30)	MS21043-4
1	(31)	NAS1149C0332R
1	(33)	NAS1149C0432R



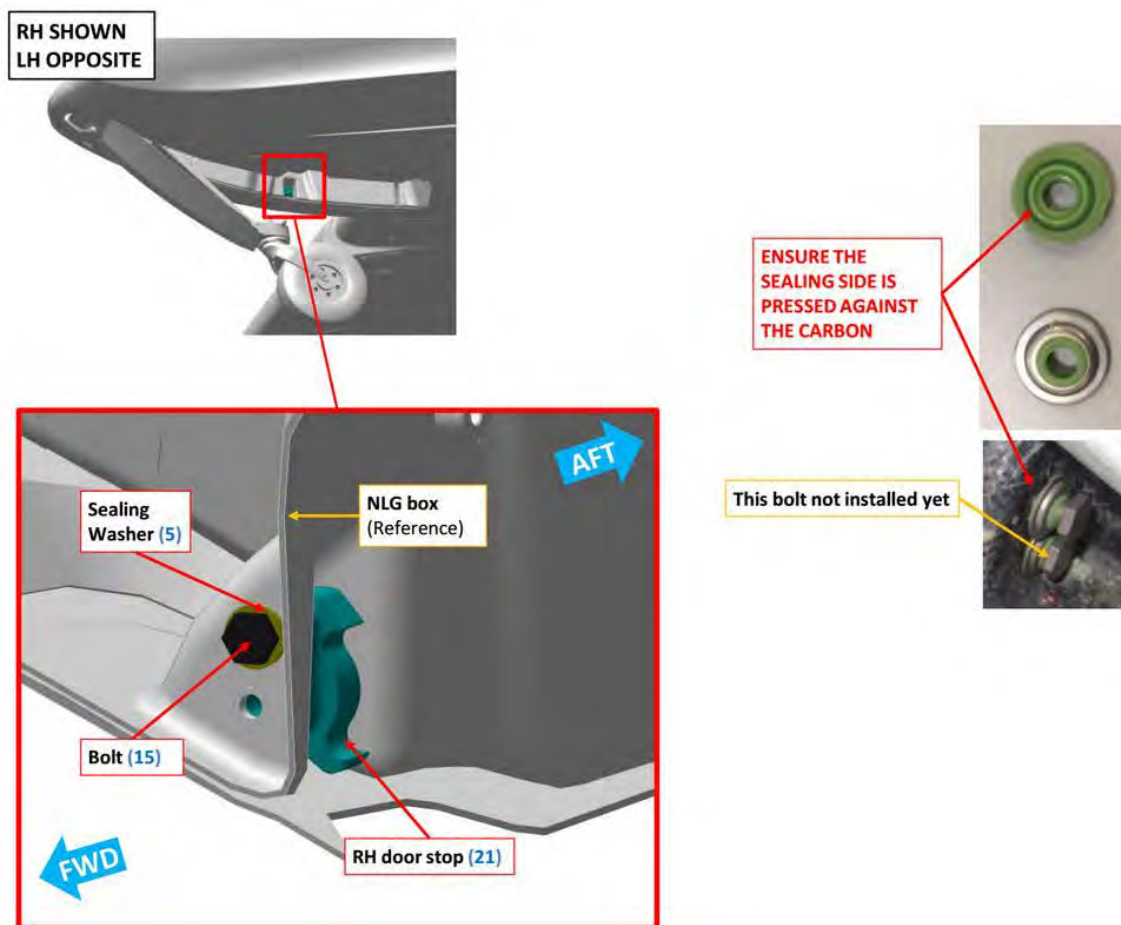
7. Prepare the door stops by installing one helicoil insert into the RH door stop. Repeat for the LH side.

Qty	Item No	Part No
1	(3)	3591-3N285
1	(21)	ICA010044
1	(24)	ICA010082



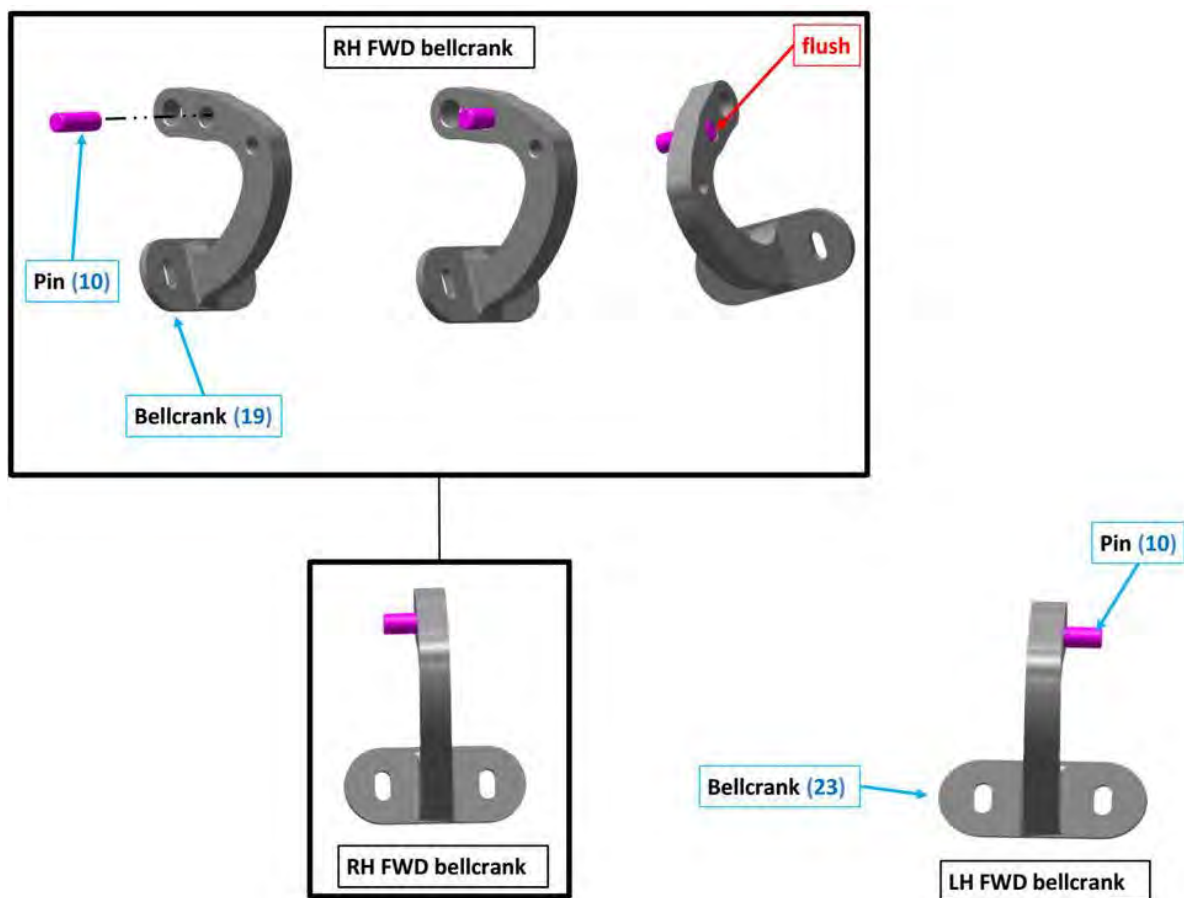
8. Install the door stops from the previous step into the NLG box with the hardware shown. Temporarily leave the hardware loose allowing the door stop to swing freely. Repeat for the LH side.

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.

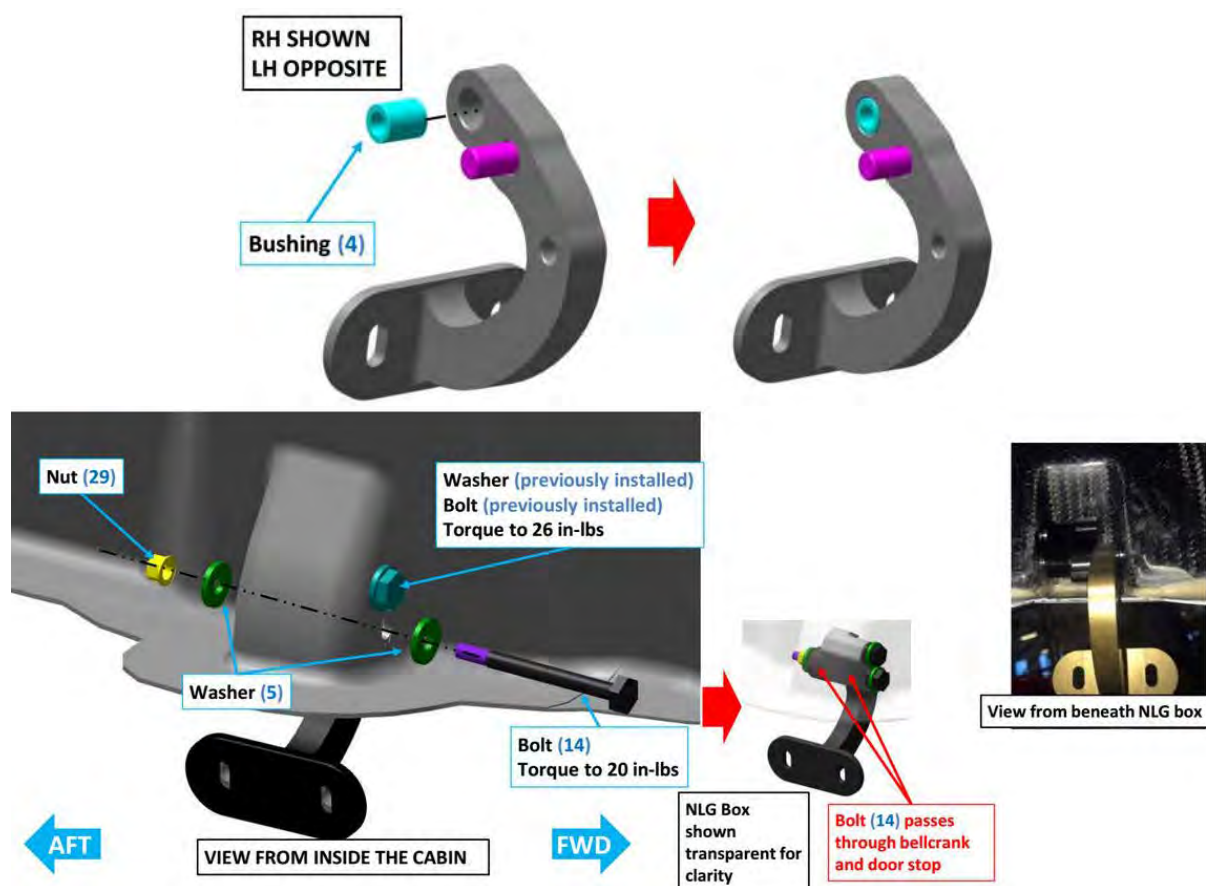
Qty	Item No	Part No
1	(10)	97395A485
1	(19)	ICA014424
1	(23)	ICA014425



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.

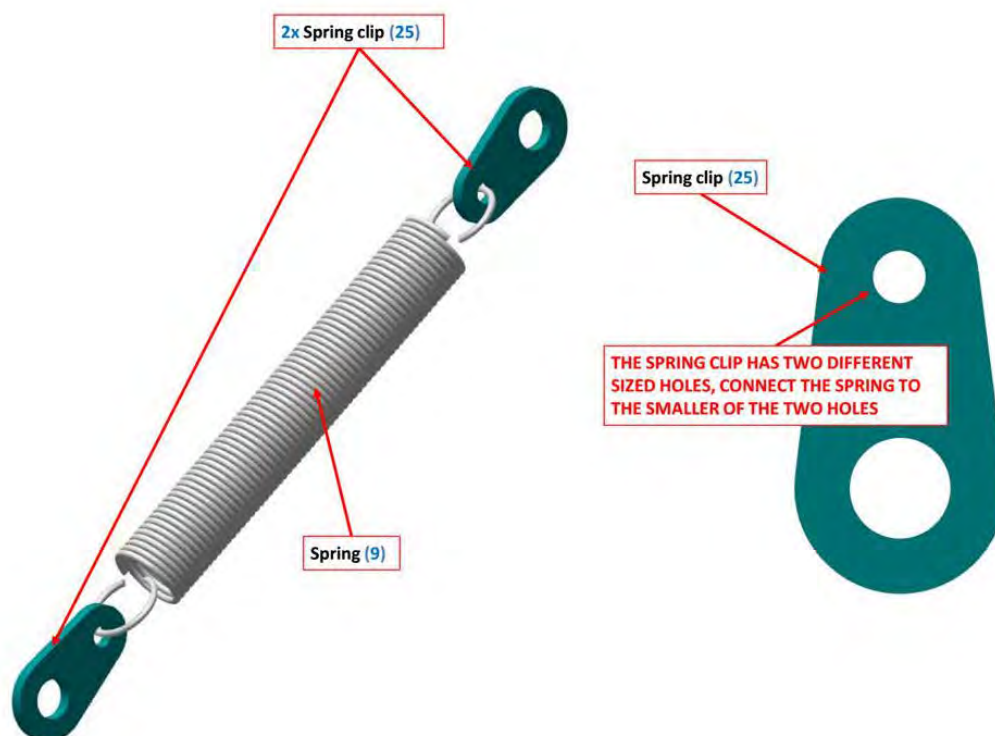
Qty	Item No	Part No
1	(4)	ICA014423
1	(5)	75101
1	(14)	AN3C30A
1	(29)	MS21043-3



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.

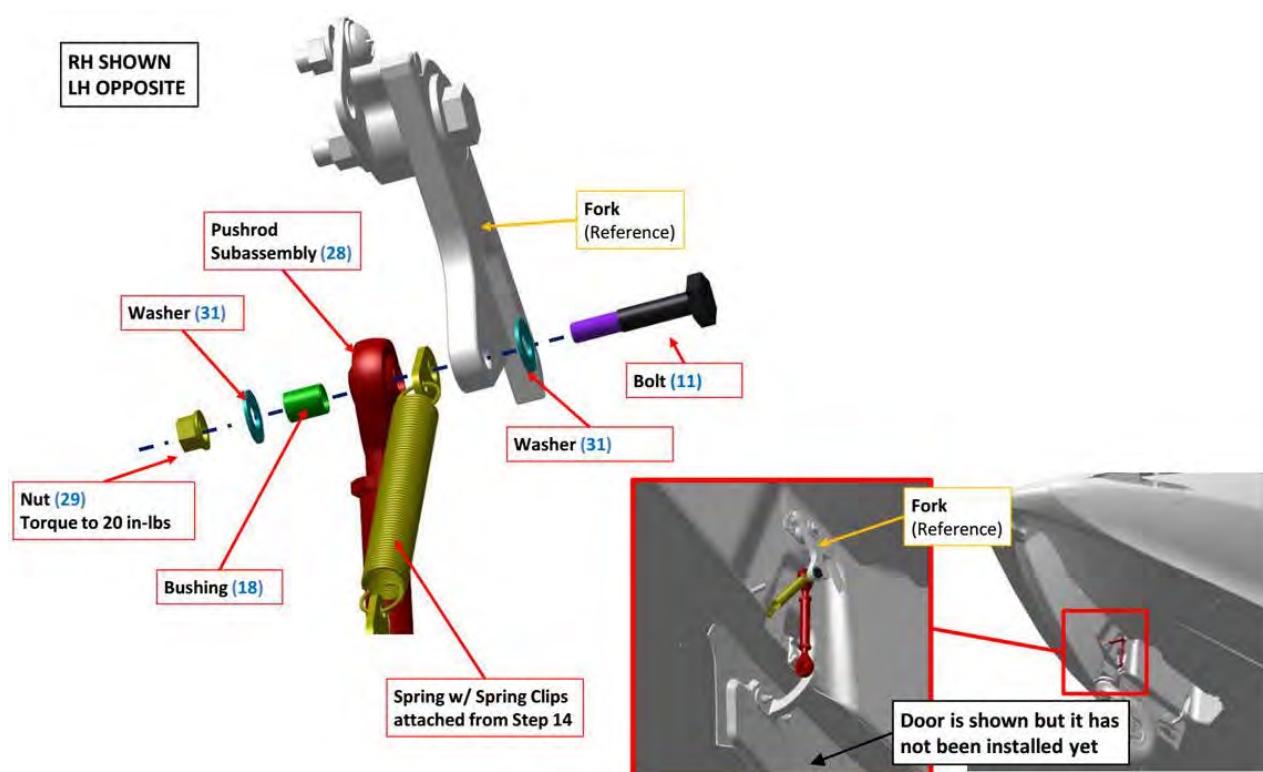
Qty	Item No	Part No
1	(9)	9654K196
2	(25)	ICA010385



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.

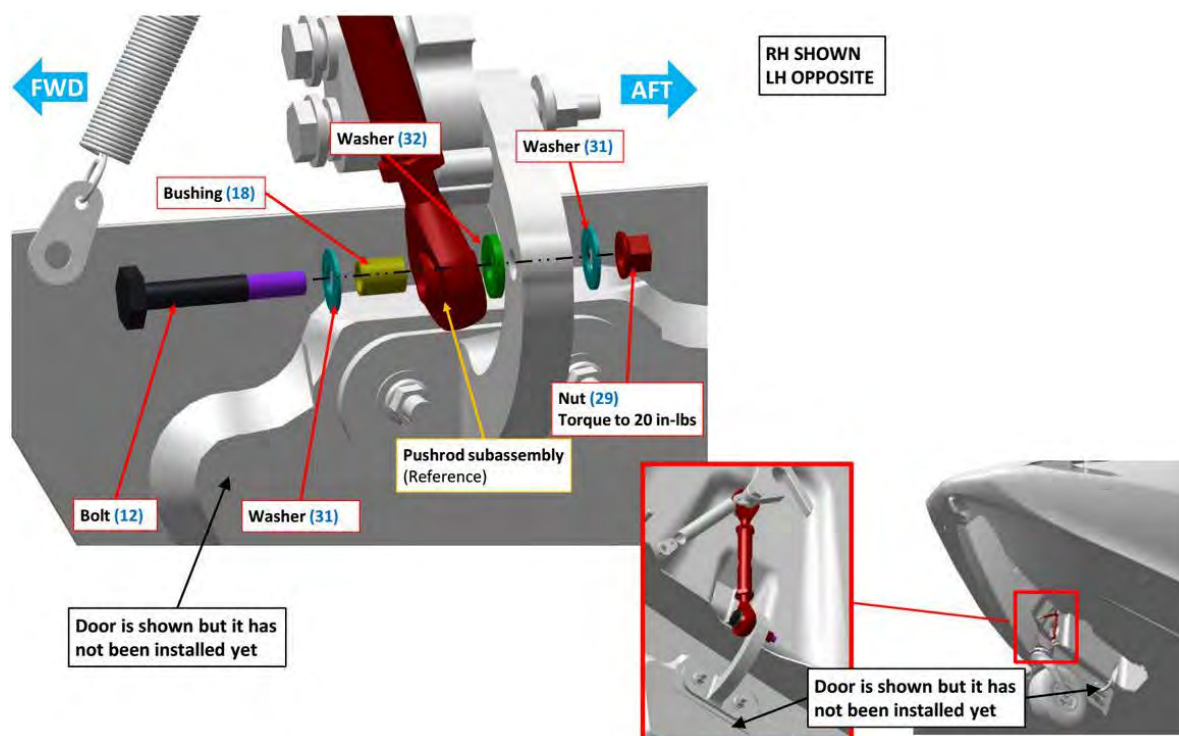
NOTE: Orient pushrod subassembly so that the RH threaded rod end is at the top and the LH threaded rod end is at the bottom.

Qty	Item No	Part No
1	(11)	AN3C10A
1	(18)	ICA008887
1	(28)	ME000270
1	(29)	MS21043-3
2	(31)	NAS1149C0332R



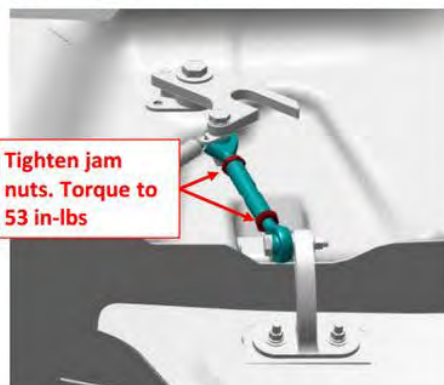
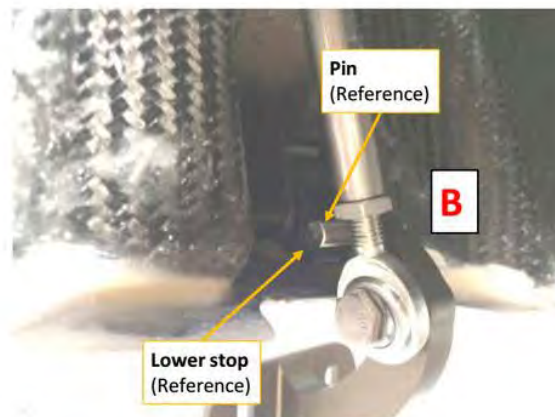
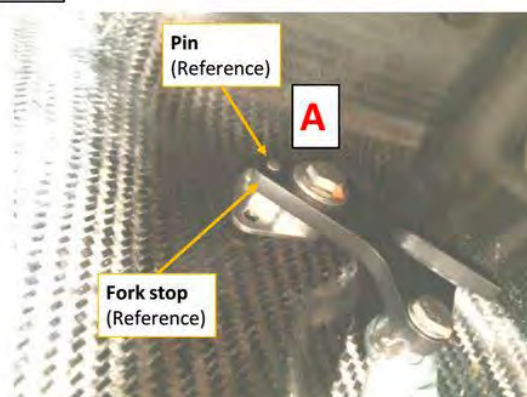
13. Install the pushrod subassembly to the forward bellcrank. Connect the opposite side of the pushrod subassembly to the RH forward bellcrank using the hardware shown. Torque to the specification listed. Repeat for the mirror-image LH side.

Qty	Item No	Part No
1	(12)	AN3C11A
1	(18)	ICA008887
1	(29)	MS21043-3
2	(31)	NAS1149C0332R
1	(32)	NAS620C10



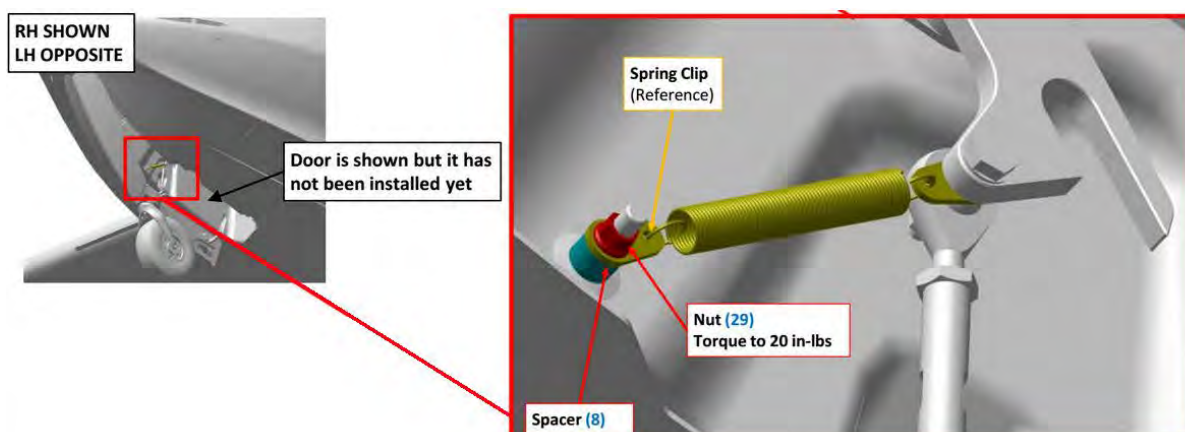
14. Set the pushrod length to the door lock position. Adjust the pushrod so that the fork stop hits the pin (see Point A in image) at the same time as the lower stop hits the pin (see Point B in the image). It may be necessary to keep pressure on the door in the open position so that the lower stop stays 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_f. Repeat this step for the mirror-image LH side.

**RH SHOWN
LH OPPOSITE**



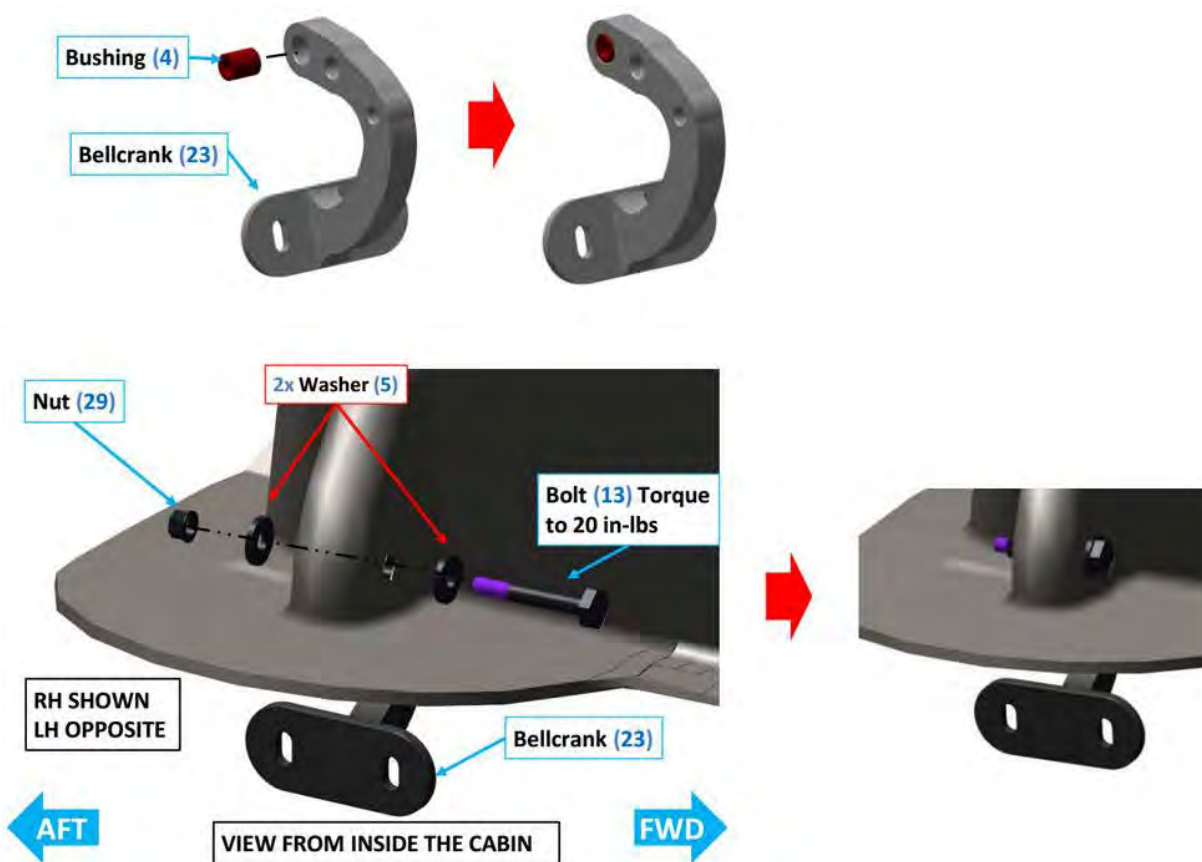
15. Install door spring to stud. Ensure that the CB200 applied to the click-bond stud is fully cured. Connect the spring clip to the Click Bond stud and secure with the hardware shown. Torque to the specification show. Repeat for the mirror-image LH side.

Qty	Item No	Part No
1	(8)	93013A605
1	(29)	MS21043-3



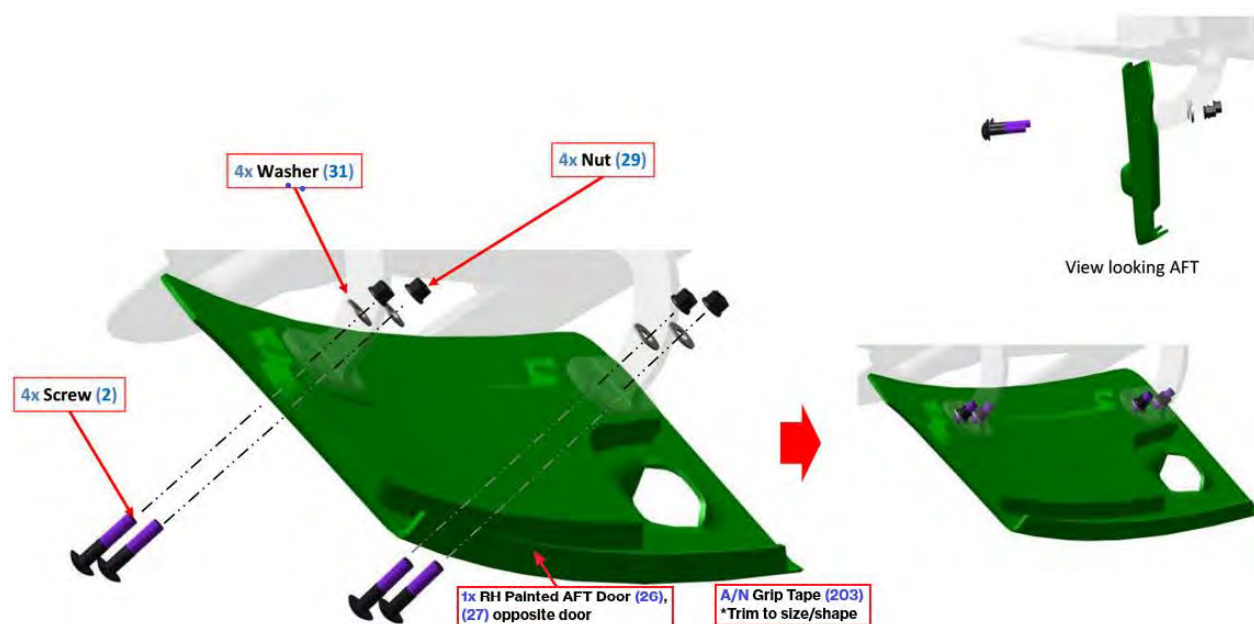
16. Insert bushings into the RH and LH aft bellcranks. Install the aft bellcranks into the RH and LH aft bellcrank pockets as shown using the hardware listed. Torque all hardware as specified.

Qty	Item No	Part No
1	(4)	6362K112
1	(23)	ICA010059
2	(5)	75101
1	(13)	AN3C12A
1	(29)	MS21043-3
1	(19)	ICA010035



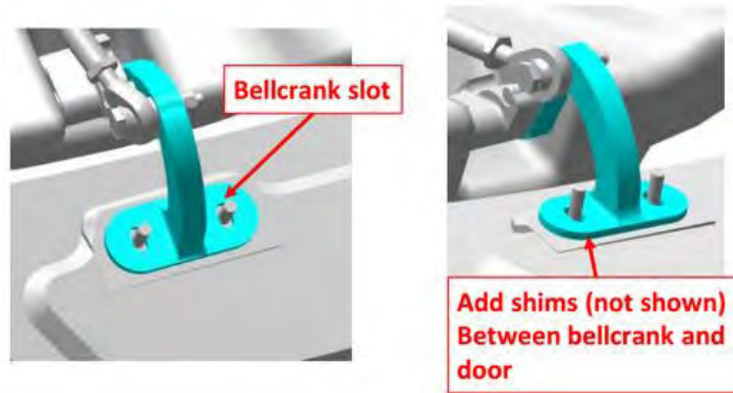
17. Install doors to the bellcranks by loosely installing the RH and LH doors to the bellcranks using the hardware shown.

Qty	Item No	Part No
4	(2)	10F87MTT3/50TL
1	(26)	ME000851
4	(29)	MS21043-3
4	(31)	NAS1149C0332R
1	(27)	ME000853
A/N	(203)	09-31645



18. Fit the doors to the aircraft per the conditions in the nose landing gear inspection procedure. (See “Nose Gear Inspection” on page 15-60.) 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 15-60.)

Operational Check – Extend NLG. Verify doors open fully and are locked into position. Retract NLG. Verify 7.5 amp NLG fuse does not blow and that the NLG doors are closed fully. If fuse does blow, repeat rigging steps until a successful trial.

RELATED INFORMATION:

"Nose Gear Inspection" on page 15-60

Chapter 16

PLACARDS AND MARKINGS

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16.1 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 Seawings™ non-slip step area surface finish.

16.2 Placards and Markings General Maintenance

16.2.1 General Placard Replacement

Use the following procedure to replace damaged or faded placards. Contact ICON Aircraft if placard is missing and a new placard requires locating.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Felt Edge Squeegee

Parts Required

108" 70070548808 (TAPE, SLIP-RESISTANT, MEDIUM RESILIENT, 2 INCH, BLACK, 3M)
 1X ICA009288 (PLACARD, DO NOT JUMP START)
 1X ICA009314 (PLACARD, FUSELAGE STATION)
 1X ICA008288 (PLACARD, OVERHEAD, CANOPY)
 1X ICA008289 (PLACARD, OPEN, CANOPY HANDLE, INTERIOR)
 2X ICA009728 (PLACARD, WARNING, WINDOW INSTALLATION PROCEDURE)
 1X ICA010229 (PLACARD, LOGO, RIGHT IP TOP)
 1X ICA008337 (PLACARD, BAGGAGE AREA WARNING)
 1X ICA008870 (PLACARD, SECURE LOOSE OBJECTS, CANOPY FRAME, RH)
 1X ICA008878 (PLACARD, SECURE LOOSE OBJECTS, CANOPY FRAME, LH)
 1X ICA009944 (PLACARD, PARKING BRAKE)
 1X ICA008873 (PLACARD, FUEL SHUTOFF, OVERHEAD CONSOLE)
 2X ICA008874 (PLACARD, KEEP HANDS CLEAR, CANOPY JAMB)
 1X ICA009287 (PLACARD, MAX AMPERAGE)
 2X ICA009727 (PLACARD, WARNING, WINDOW REMOVAL PROCEDURE)
 1X ICA008267 (Radio Stack Registration Number. Specify Registration Number when ordering.)
 1X ICA008343 (Graphic, Icon and Prop)
 2X ICA013368 (GRAPHIC, LIGHT SPORT, MEDIUM GRAY, W 18.77 X H 2.00)
 2X ICA008285 (PLACARD, NO STEP, WING)
 2X ICA008292 (PLACARD, LOCK INSTRUCTIONS, WING FOLD)
 1X ICA008291 (PLACARD, FUELING INFO)

2X ICA013379 (GRAPHIC, ICON)
1X ICA008856 (PLACARD, PROPELLER WARNING, LH)
1X ICA008986 (PLACARD, PROPELLER WARNING, RH)
2X ICA009946 (GRAPHIC, PROP, W 22.00 X H 19.13)
2X ICA009783 (REGISTRATION NUMBERS, EXTERIOR, GRAY, 5.5) On either side of tail, specify registration numbers when ordering.
1X ICA009822 (GRAPHIC, BLACKOUT, B PILLAR, CANOPY, LH)
1X ICA009821 (GRAPHIC, BLACKOUT, B PILLAR, CANOPY, RH)
1X ICA010580 (PLACARD, CANOPY HANDLE, EXTERIOR, BLACK)
4X ICA008686 (PLACARD WING RELEASE, WARNING)
2X ICA008867 (PLACARD, KEEP STATIC PORT CLEAR)
1X ICA008687 (PLACARD, PARACHUTE EGRESS PANEL OUTLINE)

Aircraft System and Number

NA

Consumables

Masking Tape

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

TASK INSTRUCTIONS:

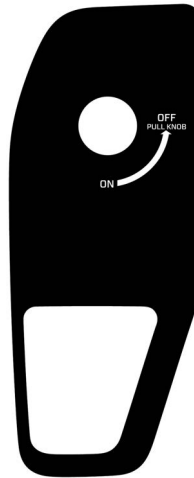
1. Place masking tape around perimeter of placard to accurately locate new placard, as required.
 2. Carefully remove old placard and discard.
 3. Clean the surface where the placards are to be replaced:
 - a. Use isopropyl alcohol and wipe clean with a lint-free cloth.
 - b. Ensure all adhesive is removed. If additional cleaning is required, see ICA010822, Structural Repair Manual section 11.1 and/or 11.2.
 4. Remove adhesive cover from placard.
 5. Starting from one end, carefully apply placard, using a felt edge squeegee to push out any bubbles to ensure a strong bond.
-

VERIFICATION METHOD:

Verify all edges of placard are completely adhered to surface.

16.2.2 Interior**16.2.2.1 Fuel Shutoff**

Located on the overhead console.



16.2.2.2 Max Amperage for USB and 12V Accessory Port

Located inside of arm rest in center console.



16.2.2.3 Maneuvering Speed

Located on the left side above the ignition and master switch.

MANEUVERING SPEED
 $V_0 = 76$ KIAS

16.2.2.4 Baggage Area

Located in the baggage compartment aft of the occupant seats.



16.2.2.5 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.



16.2.2.6 Parking Brake

Located next to the parking brake.



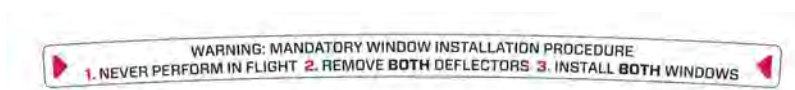
16.2.2.7 Window Removal Procedure

Located on the removable window. There are two per aircraft – one on the right side and one on the left side.



16.2.2.8 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.



16.2.2.9 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).



16.2.2.10 Window Out Warning

Located on inboard face of left hand wind deflector.



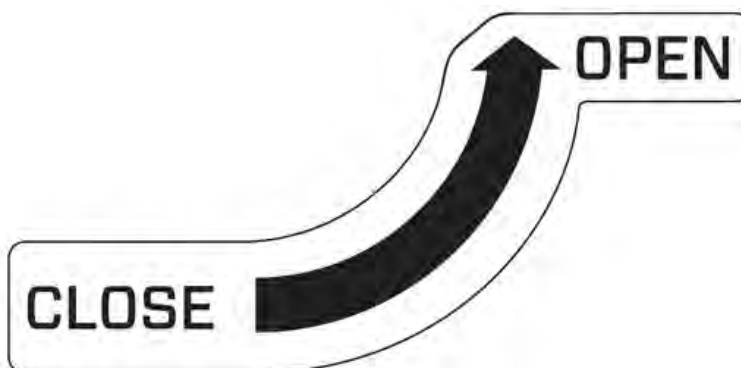
16.2.2.11 Keep Hands Clear

Located on the canopy jamb. There are two per aircraft – one on the right side and one on the left side.



16.2.2.12 Open Canopy

Located above the occupant seats under the canopy latch handle.



16.2.2.13 Passenger Warnings and Kinds of Operation

Located near the front of the overhead canopy.



16.2.2.14 Registration Numbers

Located on center console of cockpit.



NOTE: Registration numbers are for illustration only. Your aircraft registration number will be different.

16.2.2.15 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**

16.2.2.16 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**

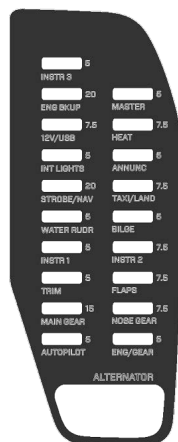
16.2.2.17 Fuses

Located on overhead console.

Garmin aera 796 and Garmin G3X Touch™

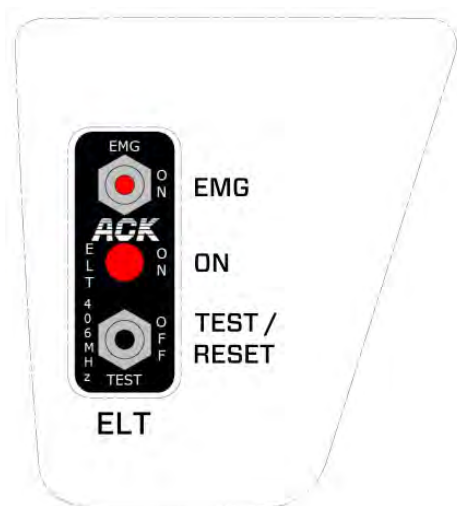


Garmin G3X Touch™ with Autopilot



16.2.2.18 ELT Remote Switch

Located on overhead console on ELT remote control.



16.2.2.19 Parachute Handle

Located on the parachute handle.



16.2.2.20 Parachute Activation Instructions

Located on the overhead console just in front of the parachute activation handle.

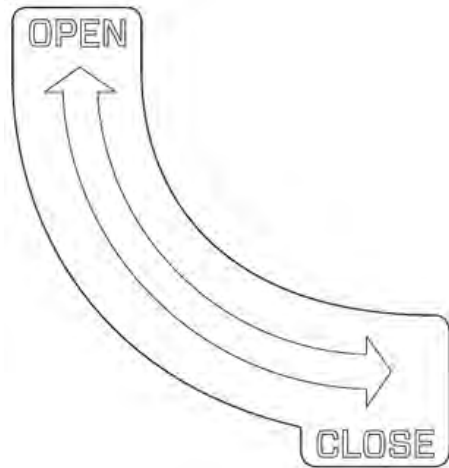
PARACHUTE DEPLOYMENT

1. SAFETY PIN - REMOVE BEFORE FLIGHT
2. PARACHUTE **HANDLE** - FIRM **PULL**
3. IGNITION KEY - OFF

16.2.3 Exterior

16.2.3.1 Canopy Handle

Located on the center of the canopy; top side, next to the canopy release lever.



16.2.3.2 Danger Explosive

Located on the parachute egress panel adjacent to the engine on the root of the right wing.



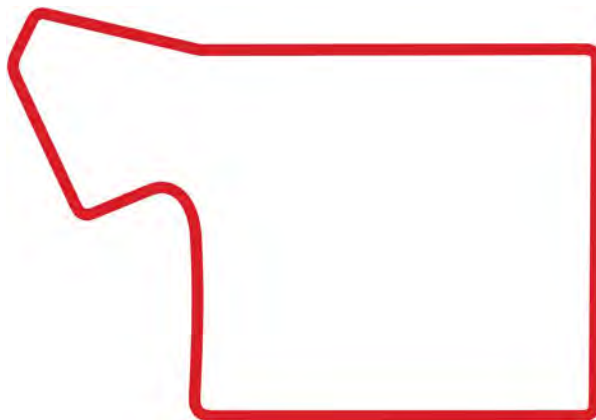
16.2.3.3 Ballistic Parachute Passenger Warning

Located near each entrance to the cockpit.



16.2.3.4 Parachute Egress

Located around the perimeter of the parachute installation adjacent to the engine on the root of the right wing.



16.2.3.5 Wing Release

Located on both wing tips near the trailing edge on top and bottom surfaces (total of four locations).



16.2.3.6 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.



16.2.3.7 Tire Pressure

Located on main and nose landing gear legs.



16.2.3.8 Keep Static Port Clear

Located on both sides of the vertical tail.



16.2.3.9 Aircraft Data Plate

Located on the left rear of the empennage below the vertical tail.



NOTE: Serial, PC, and TC numbers are for illustration only. Your aircraft serial, PC, and TC numbers will be different.

16.2.3.10 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.

16.2.3.11 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

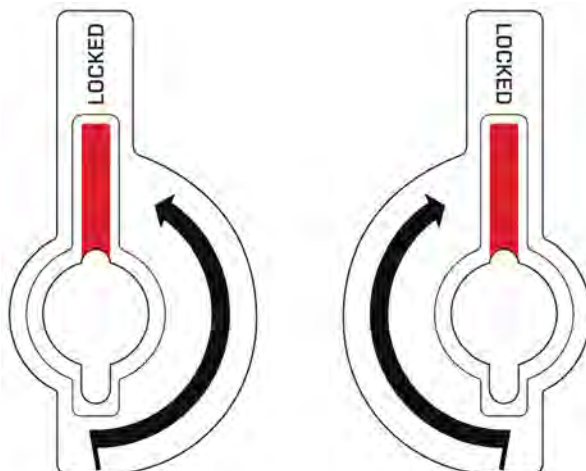
16.2.3.12 No Step Wing

Located on the upper center wing, left and right side toward the leading edge.



16.2.3.13 Horizontal Stabilizer Tip Locks

Located on the underside of the horizontal tail tips, left and right sides.



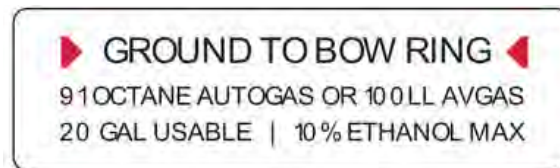
16.2.3.14 Keep AOA Port Clear

Located next to the AOA ports on the left wing, top and bottom leading edge.



16.2.3.15 Fueling Information

Located behind the canopy on the pilot side near the fuel filler cap.



16.2.3.16 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 17

PROPULSION

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17.1 Engine

17.1.1 Engine Description

The A5-B is powered by the Rotax 912iSc2 Sport fuel injected 4-cylinder engine, rated at 100 hp (74.5 kW) at 5,800 RPM. The 912iSc2 Sport 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 912iSc2 Sport 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.

17.1.2 Diagram/Schematic

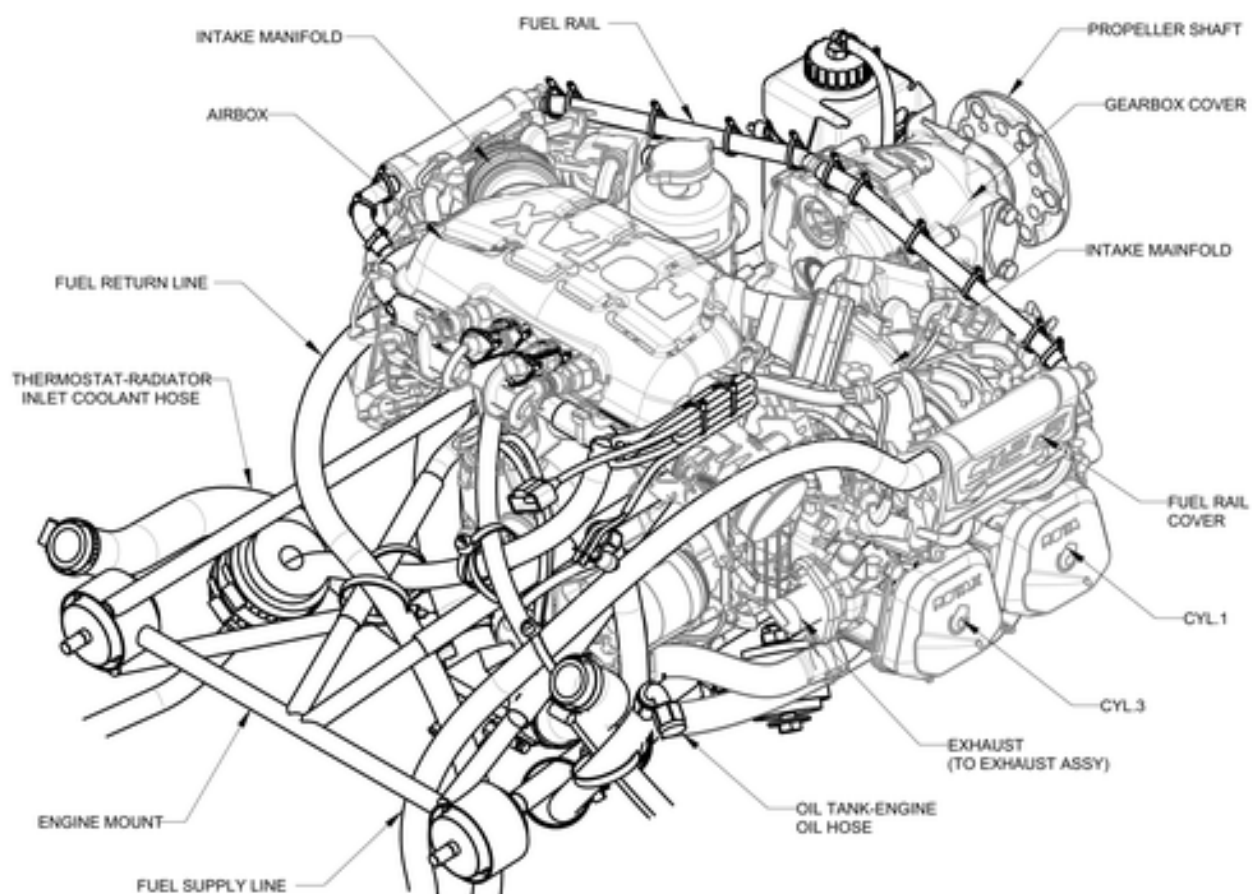


FIGURE 17-1
VIEW LOOKING DOWN, AFT, RHS (OIL TANK NOT SHOWN)

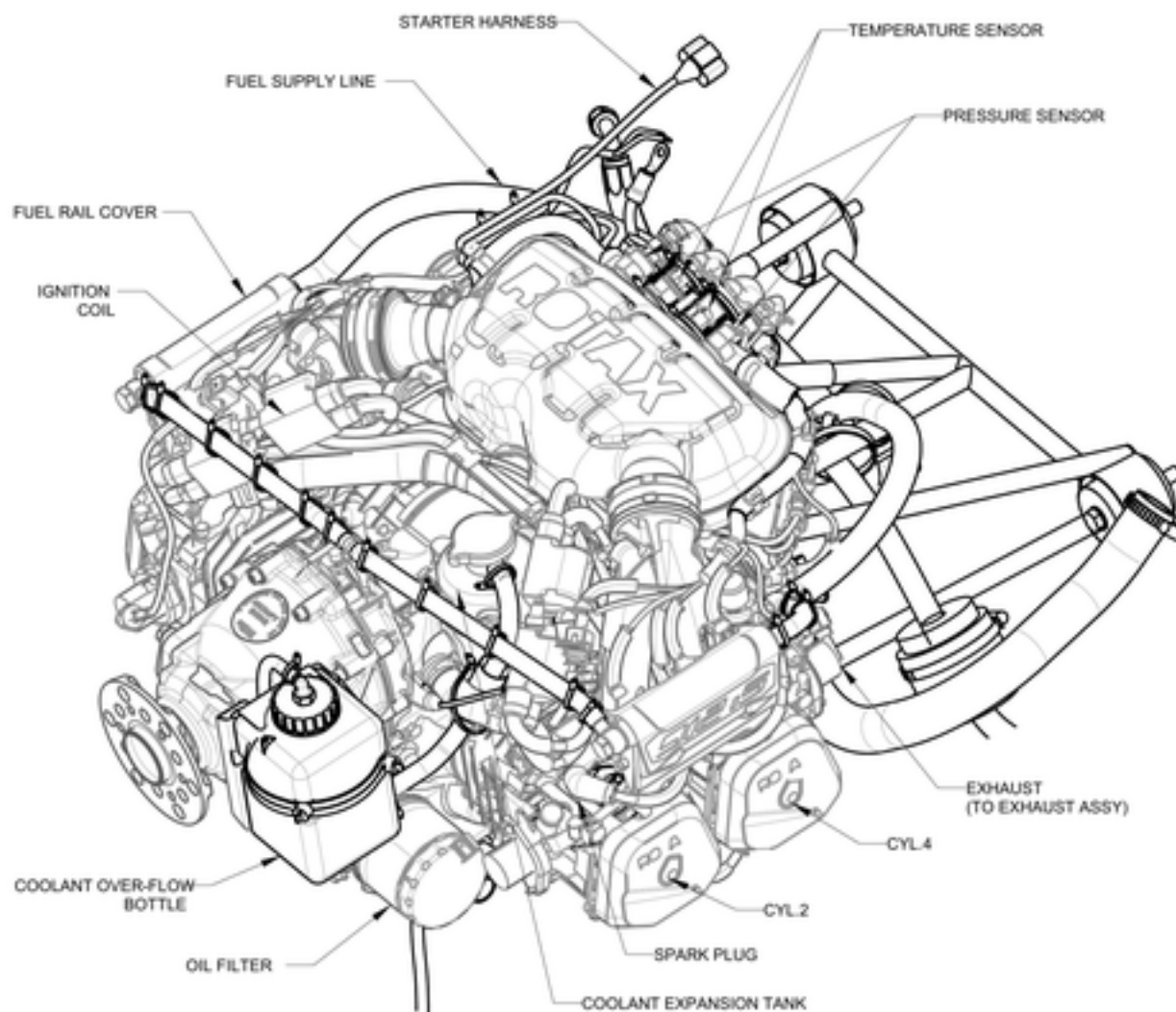


FIGURE 17-2
VIEW LOOKING DOWN, FWD, LHS (OIL TANK NOT SHOWN)

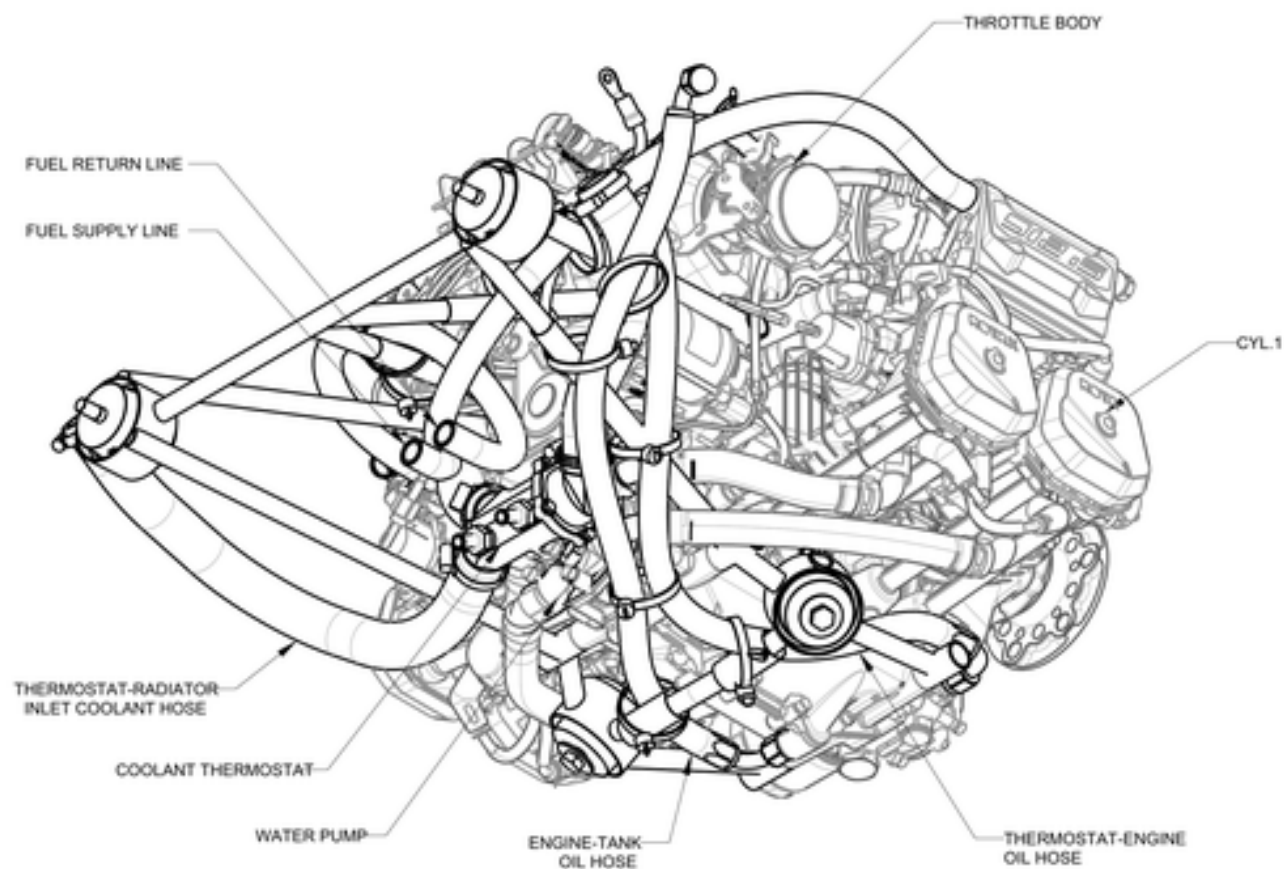


FIGURE 17-3
VIEW LOOKING UP, FWD, RHS (ENGINE HARNESS NOT SHOWN)

17.1.3 Troubleshooting

17.1.3.1 Engine Test Run

Instructions to perform a test run on the Rotax 912 iS Sport (912 iS 2) engine.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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 the ignition check is complete, 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 the 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 removed.

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 on 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 2-35
 "Install Engine" on page 17-24
 "Grease Coil Pack Connections" on page 17-43
 "Install Fuse Box and Regulators" on page 17-90
 "Install Fine Fuel Filter" on page 11-40

17.1.3.2 ECU Troubleshooting

Use the following table for ECU error message diagnostics.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-1: 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 17-43.
		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.

Table 17-1: ECU Error Message Troubleshooting (Continued)

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 “Install Exhaust System” on page 17-53. See “Remove Exhaust System” on page 17-52.
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 17-36.
Engine Ambient Pressure		Defective connection sensor connection	Check the wiring and connections of the AAPTS sensor. Remove the AAPTS sensor and inspect for debris or oily residue. If problem persists, replace AAPTS 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 17-51.

Table 17-1: ECU Error Message Troubleshooting (Continued)

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. Contact ICON Aircraft Owner Support.

17.1.3.3 Extract ECU Data

Use the following procedure to extract ECU Data using the Rotax BRP Utility and Diagnostic Software (B.U.D.S.) version 3.0.1.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

B.U.D.S. Diagnostics Dongle

Parts Required

None

Aircraft System and Number

13 – Propulsion

Consumables

None

NOTE: When starting B.U.D.S. Aircraft the first time, enter the serial number and the activation key and select "OK". The serial number, which is printed on the B.U.D.S. Aircraft Set, must be entered numeric without any dots, special characters or letters (e.g. "1234567"). The activation key is a 16-digit code containing letters and digits. Only use capital characters. It does not matter if the special character "-", which is separating the key into four blocks is entered or not. The activation is uniquely assigned to one B.U.D.S. Aircraft Set serial number and can be found on the lid of the B.U.D.S. Aircraft Set packaging, which should not be discarded for this reason.

NOTE: It is recommended to connect a battery charger to the A5-B battery charging studs while extracting ECU data. (See "Charge Battery" on page 7-66.)

TASK INSTRUCTIONS:

1. Remove baggage panel cover. (See "Removal and Installation of Inspection Panels and Fairings" on page 4-27.)
2. Plug USB extension cord into the maintenance port on the relay panel (to the upper left looking AFT).
3. Plug the dongle into your computer USB port and open B.U.D.S. 3.0.1.

4. Verify landing gear switch is down and flaps switch is at 0°.
5. Turn ignition key to "Both".
6. Turn on Master Power.
7. In B.U.D.S., wait for both lane indicators to turn green (in top left corner).
8. Select "Logs".
9. Select "Extract Logs".
10. A prompt will appear that says, "Extracting logs requires Maintenance Mode-Switch ECU off and wait".
11. Turn off Master Power.
12. Turn ignition key to off, remove key, and wait until everything shuts down.
13. When note says, "Switch ECU on and wait", reinsert key into ignition.
14. Turn ignition key to "Both".
15. Turn master power on.
16. Wait for extractions options window to appear.
17. Verify both "Lane A and Lane B" and "Faults and Data" are selected.
18. Choose where you want files to be saved.
19. Select OK.
20. The data will now be extracted and may take up to 20 minutes.
21. Data extraction is complete when the window says, "Extracting log-Power cycle ECU now". You will also now see populated data in main B.U.D.S. window.
22. Turn off Master Power, remove aircraft key, and disconnect B.U.D.S. dongle from computer.

VERIFICATION METHOD:

Task is complete when the ECU data is properly extracted.

RELATED INFORMATION:

"Charge Battery" on page 7-66

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

17.1.4 Engine General Maintenance

17.1.4.1 Remove Engine Cowlings

Use the following instructions to remove top engine cowl, fan shrouds, and exhaust fairings.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-4.)

NOTE: The fasteners stay attached to the top engine cowl.

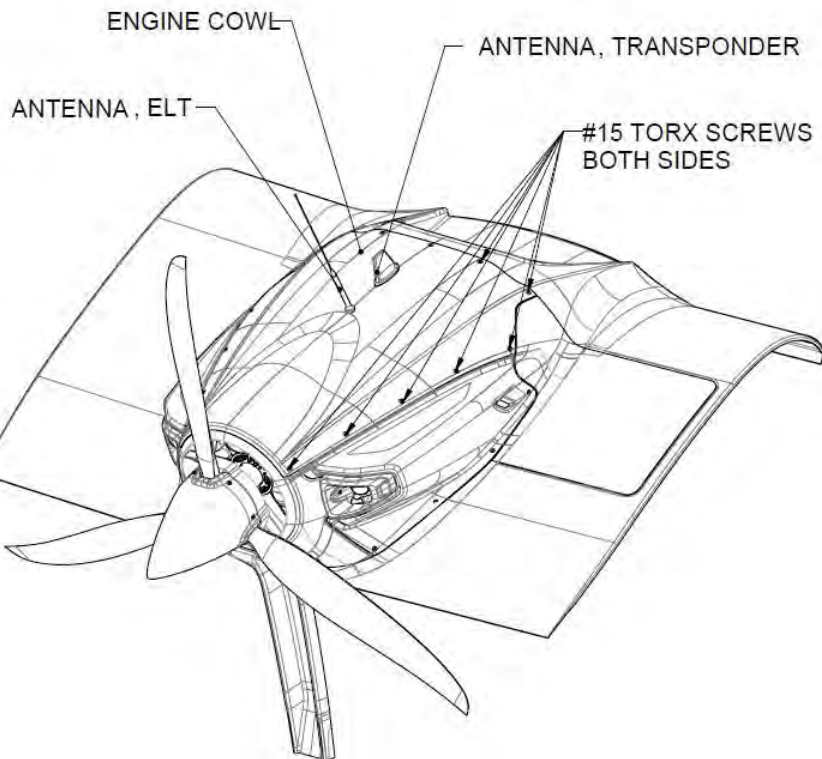


FIGURE 17-4
REMOVING TOP ENGINE COWL

2. Lift the cowl upward.
3. Disconnect the GPS, 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 17-5.)

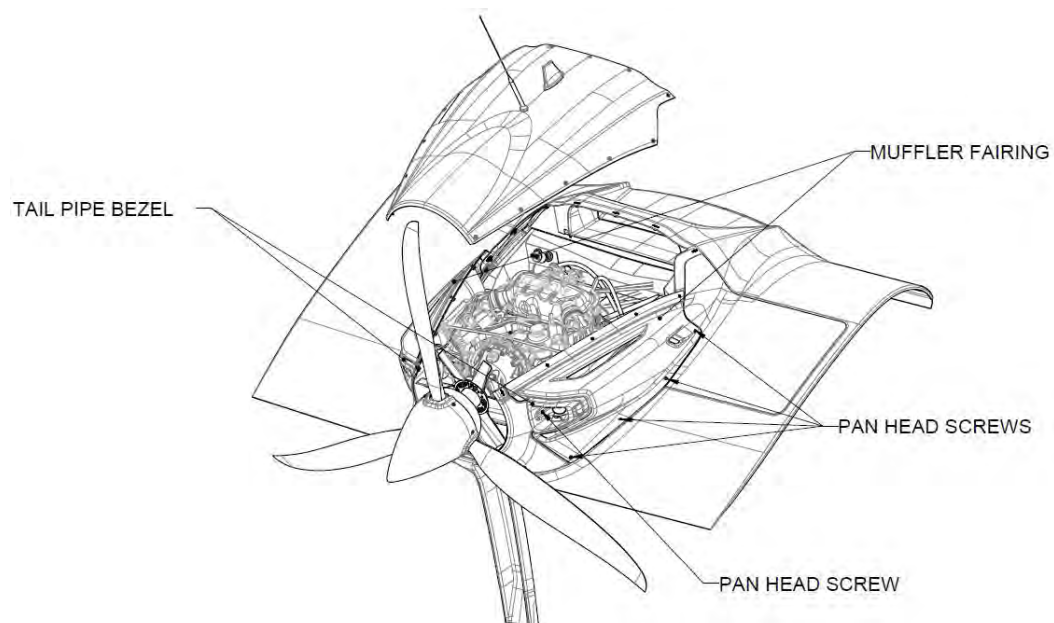


FIGURE 17-5
REMOVING EXHAUST FAIRINGS

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.

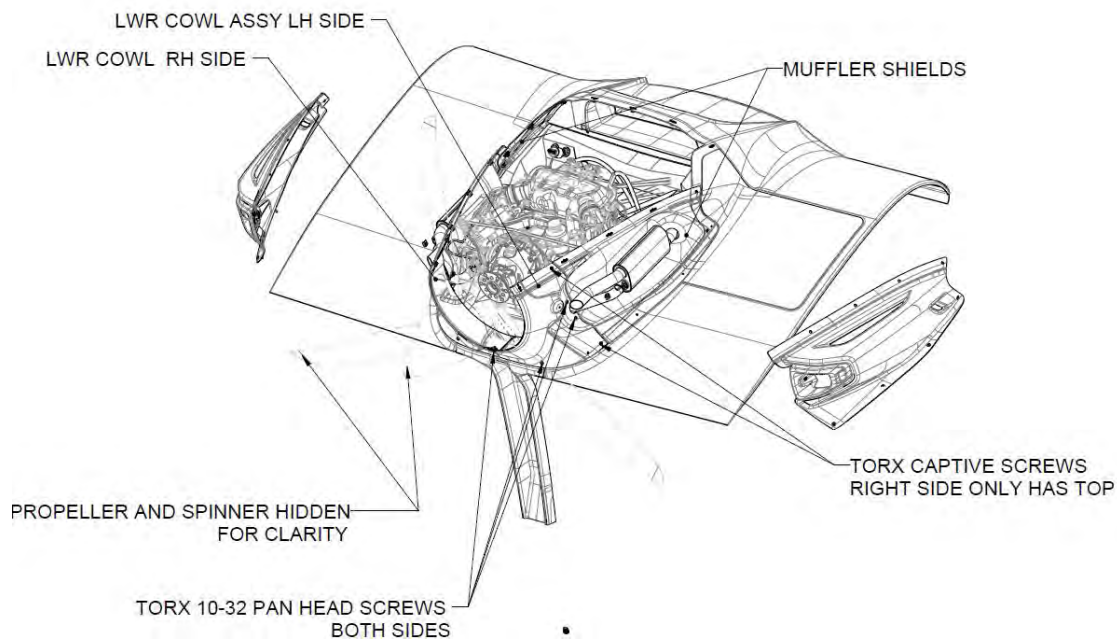


FIGURE 17-6
REMOVING FAN SHROUD ASSEMBLY

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 17-52.)

VERIFICATION METHOD:

Check the engine cowls and exhaust fairings removed for any damage.

RELATED INFORMATION:

"Inspect Engine Mount" on page 17-33
"Oil Cooler and Radiator Condition Inspection" on page 17-56
"Inspect Throttle Control for Proper Travel and Security" on page 17-36
"General Engine Line Maintenance" on page 17-29
"Install Engine" on page 17-24
"Engine Removal" on page 17-22
"Remove Oil Cooler and Thermostat" on page 17-79
"Install Oil Cooler and Thermostat" on page 17-82
"Coolant Overflow Bottle Removal" on page 17-61
"Coolant Overflow Bottle Installation" on page 17-62
"Engine Coolant Replacement" on page 17-57
"Grease Coil Pack Connections" on page 17-43
"Inspect, Repair, and Secure Wiring Harness with Signs of Chafing" on page 7-43
"Balance Propeller" on page 17-95
"Remove Exhaust System" on page 17-52
"G3X Equipped Aircraft Transponder Troubleshooting" on page 14-22
"796 Equipped Aircraft Transponder Troubleshooting" on page 14-25

17.1.4.2 Install Engine Cowlings

Use the following instructions to install top engine cowl, fan shrouds, and exhaust fairings.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-7.)
 - 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.

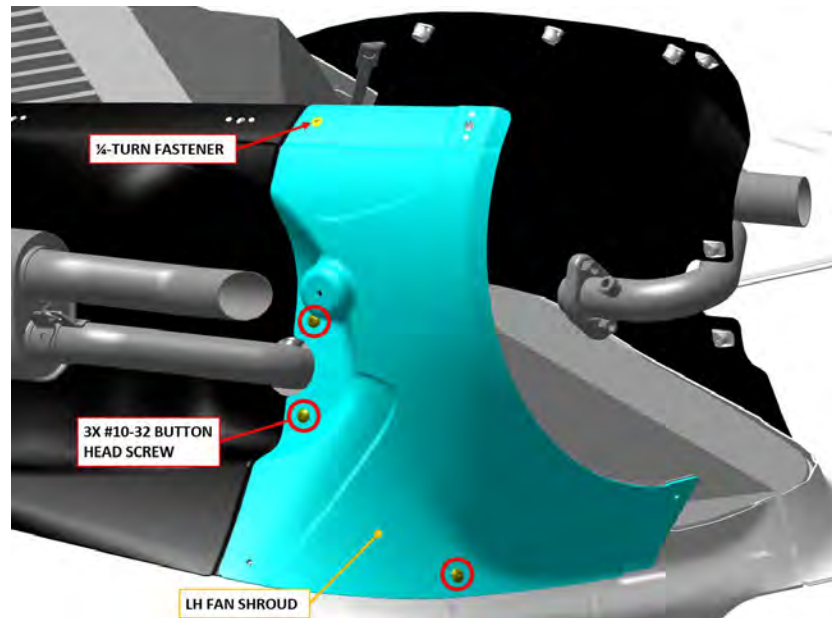


FIGURE 17-7
LH FAN SHROUD INSTALLATION

2. Install RH fan shroud. (See Figure 17-8.)
 - 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.

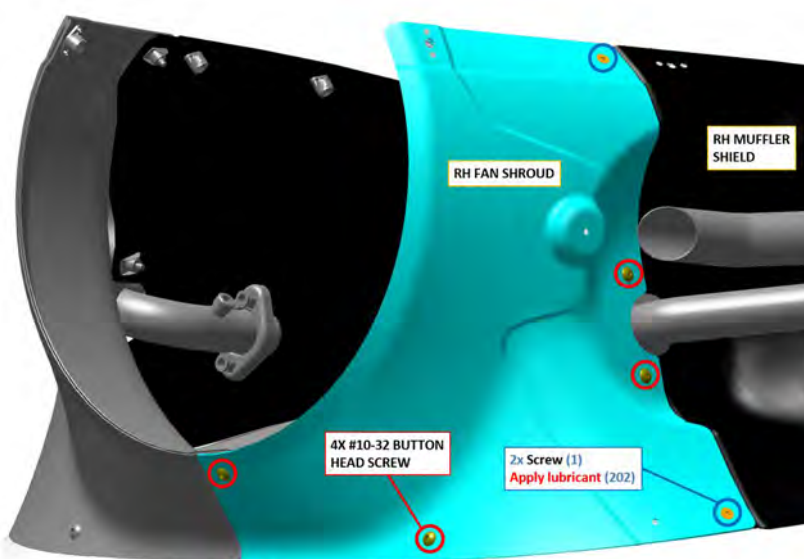


FIGURE 17-8
RH FAN SHROUD INSTALLATION

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 GPS, 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.

For Aera 796 aircraft, see Verification Method steps 1 and 4 from “Install ADS-B GPS Antenna” on page 14-160 for GPS system.

For G3X aircraft, see Verification Method from “Install G3X ADS-B Antenna” on page 14-166 for GPS system.

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 14-71.

NOTE: Reference SAFO 17002 as needed within performing transponder maintenance tasks.

For Aera 796 aircraft, perform a transponder functional test for transmission on 121.5 MHz and 406 MHz. If the control unit was replaced, configure the transponder. See 00560-00-AQ--TRiG TT21/TT22 Mode S Transponder Installation Manual.

For G3X aircraft, perform a transponder functional test for transmission on 121.5 MHz and 406 MHz. If the control unit was replaced, configure the transponder. See 190-01499-10 Garmin GTX 34R/45R Installation Manual and 190-01115-01 Garmin G3X/G3X Touch Installation Manual.

RELATED INFORMATION:

- "Inspect Engine Mount" on page 17-33
- "Oil Cooler and Radiator Condition Inspection" on page 17-56
- "Inspect Throttle Control for Proper Travel and Security" on page 17-36
- "General Engine Line Maintenance" on page 17-29
- "Install Engine" on page 17-24
- "Engine Removal" on page 17-22
- "Coolant Overflow Bottle Removal" on page 17-61
- "Coolant Overflow Bottle Installation" on page 17-62
- "Engine Coolant Replacement" on page 17-57
- "Balance Propeller" on page 17-95
- "G3X Equipped Aircraft Transponder Troubleshooting" on page 14-22
- "796 Equipped Aircraft Transponder Troubleshooting" on page 14-25

17.1.4.3 Engine Removal

This task should be used to safely remove the engine from the aircraft.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Heavy

Level of Certification

A&P

Specific Tools Required

3/8" Anchor Shackle (x2)

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 17-14.)

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 AAPTS 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 17-77.)
 8. Drain engine oil. (See "Engine Oil Check and Replenish" on page 17-77.)
 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 17-57.)
 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 3/8" Anchor Shackle (x2) 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 3/8" Anchor Shackle (x2).
 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 17-24
- "Engine Oil Check and Replenish" on page 17-77
- "Remove Engine Cowlings" on page 17-14
- "A5-B Specific Oil Change Procedures" on page 17-78
- "Engine Coolant Replacement" on page 17-57
- "Engine Mount Removal" on page 17-30
- "Install Engine Cowlings" on page 17-19
- "Remove Oil Tank" on page 17-72
- "Install Oil Tank" on page 17-76

17.1.4.4 Install Engine

Use the following procedure to install the into the aircraft.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Heavy

Level of Certification

A&P

Special Tools Required

3/8" Anchor Shackle (x2)

Parts Required

None

Aircraft System and Number

13 – Propulsion

Consumables

- ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®
- DEX-COOL 50-50 (COOLANT, ENGINE)

TASK INSTRUCTIONS:

1. Verify the orientation on the oil return line fitting at the engine prior to installation. (See Figure 17-9.) 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 17-10.)

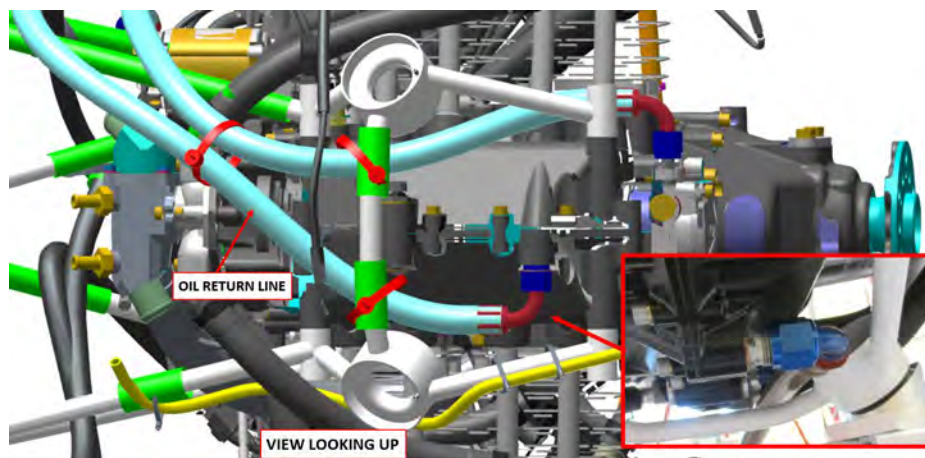


FIGURE 17-9
OIL RETURN LINE FITTING LOCATION



FIGURE 17-10
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 3/8" Anchor Shackle (x2) 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 17-11.) 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.

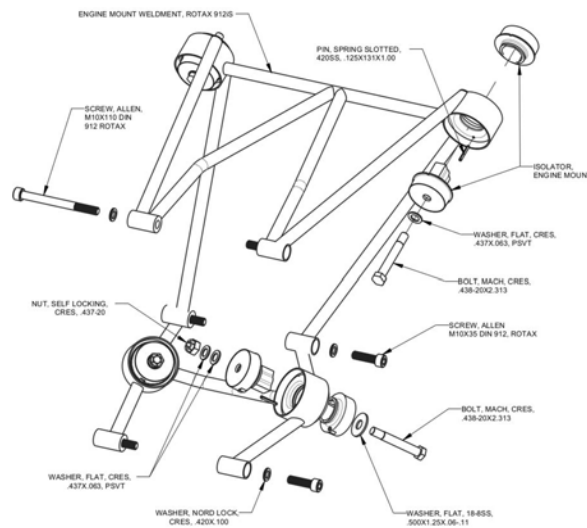


FIGURE 17-11
RETURN LINE FITTING AND FIREWALL CLEARANCE

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 17-12.) 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 17-13.)
14. Remove the spacer.

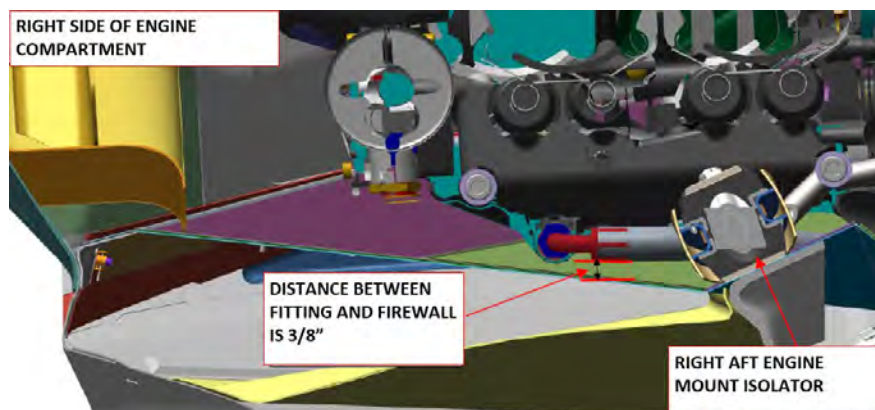


FIGURE 17-12
RETURN LINE FITTING AND FIREWALL CLEARANCE

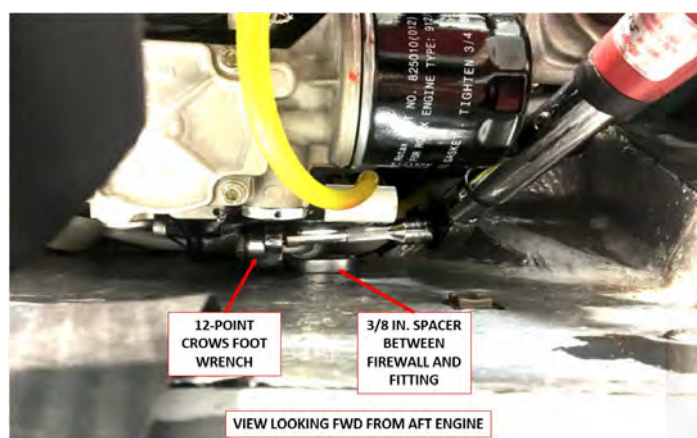


FIGURE 17-13
ENGINE OIL RETURN LINE FITTING TORQUEING EXAMPLE

15. Torque the FWD and then AFT engine mount bolts to 330-350 in-lb.
16. Remove the engine hoist and 3/8" Anchor Shackle (x2).
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 Maintenance Manual: (Line Maintenance) For Rotax Engine Type 912 i Series
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 17-36.)
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 17-14.) Torque B nut to 300-350 in-lb if using Method A or 290-330 in-lb if using Method B. (See Figure 17-10.)

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.

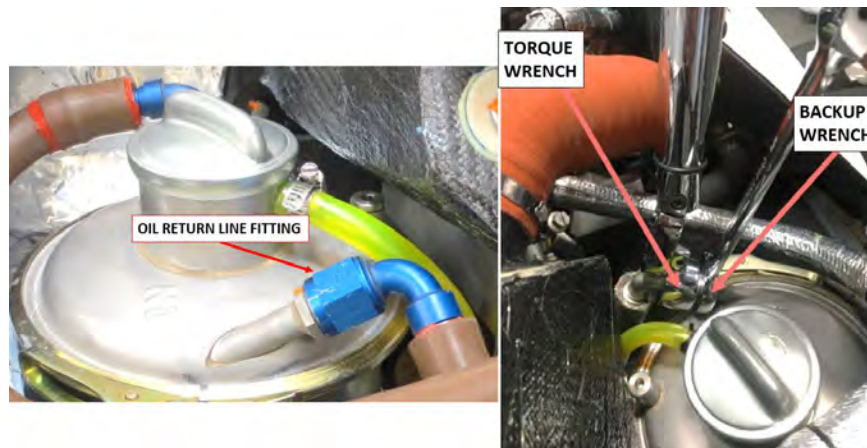


FIGURE 17-14
ENGINE OIL TANK RETURN HOSE FITTING TORQUEING AND 7/8" 12-POINT CROWS
FOOT SPECIAL TOOL

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 17-77.)
33. Purge the engine oil system per the latest Maintenance Manual: (Line Maintenance) For Rotax Engine Type 912 i Series.
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 17-53.)
39. Install engine cowlings and fan shroud. (See "Install Engine Cowlings" on page 17-19.)
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 17-7.)

RELATED INFORMATION:

- "Engine Removal" on page 17-22
- "Remove Engine Cowlings" on page 17-14
- "Engine Oil Check and Replenish" on page 17-77
- "Inspect Throttle Control for Proper Travel and Security" on page 17-36
- "Engine Test Run" on page 17-7
- "Engine Mount Installation" on page 17-32
- "Install Engine Cowlings" on page 17-19

17.1.4.5 General Engine Line Maintenance

Use the following procedure to preform general engine line maintenance.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 Maintenance Manual: (Line Maintenance) For Rotax Engine Type 912 i Series for verification methods.

RELATED INFORMATION:

- "Interval Maintenance – Operational Hours" on page 4-3
- "Interval Maintenance – Calendar Intervals" on page 4-4
- "Remove Engine Cowlings" on page 17-14
- "Install Engine Cowlings" on page 17-19
- "Remove Oil Tank" on page 17-72
- "Install Oil Tank" on page 17-76

17.1.4.6 Engine Mount Removal

Use the following procedure to remove the engine mount.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Heavy

Level of Certification

A&P

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 17-22.)
2. Disconnect the two coolant hoses where they attach to the lower water pump fittings as shown in the upper image of Figure 17-15.

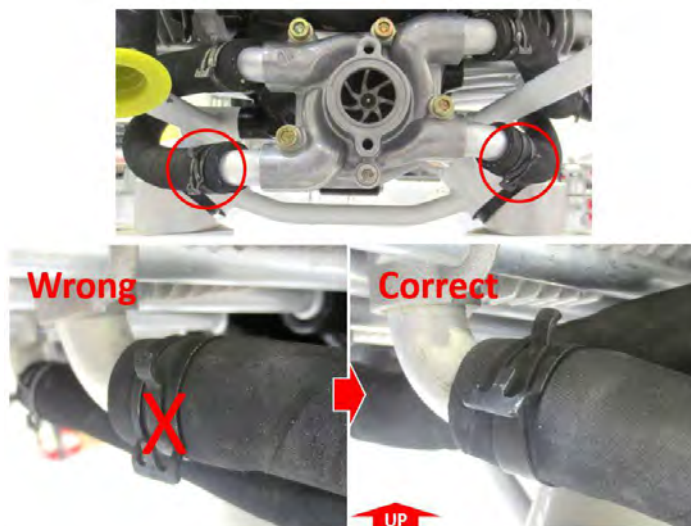


FIGURE 17-15
THERMOSTAT SHOWN REMOVED FOR CLARITY.

3. Loosen the hose clamp and remove thermostat-radiator coolant hose where it attaches to the lower-right fitting at the thermostat (Figure 17-16).



FIGURE 17-16
LOWER-RIGHT FITTING AT THE THERMOSTAT

4. Remove the six M10 screws that attach the ICA007128 engine mount to the engine case (see Figure 17-17).

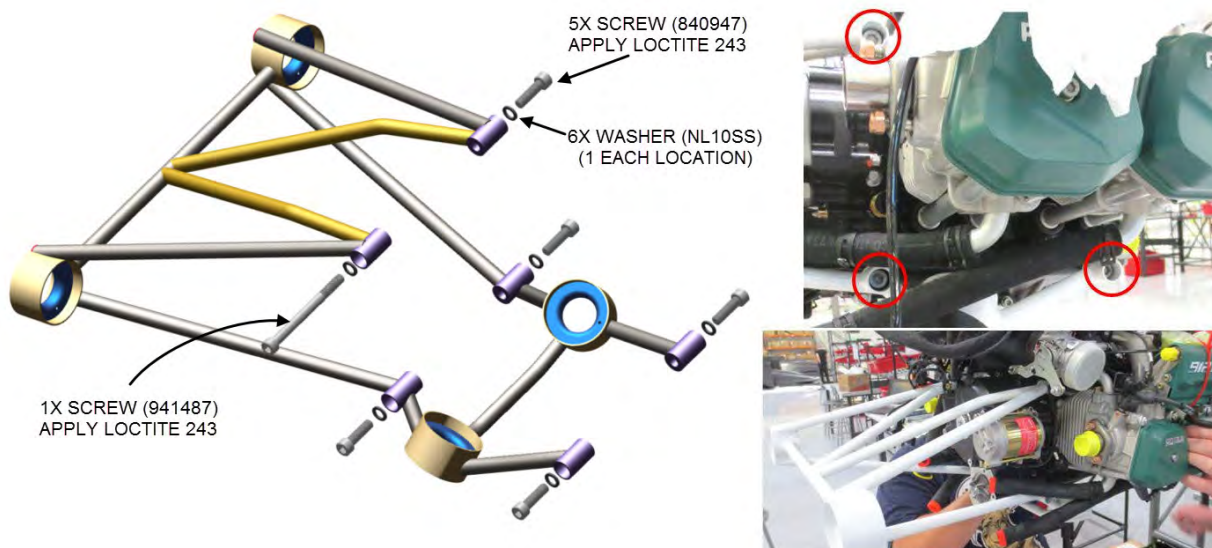


FIGURE 17-17
ENGINE MOUNT TO THE ENGINE CASE

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 17-22

17.1.4.7 Engine Mount Installation

Use the following procedure to install the engine mount.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Heavy

Level of Certification

A&P

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 17-17. 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_f.

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 17-16).
 3. Connect the two coolant hoses where they attach to the lower water pump fittings as shown in the upper image of Figure 17-15. Rotate the hose clamps on the hoses so the tabs are on top as shown in the lower graphic in Figure 17-15 (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 17-24.)

RELATED INFORMATION:

"Install Engine" on page 17-24

17.1.4.8 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:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

13 – Propulsion

Safety Equipment

As Needed

Consumables

None

TASK INSTRUCTIONS:

1. Remove engine cowl, muffler, exhaust headers, and exhaust shields. (See “Remove Engine Cowlings” on page 17-14.)
2. Visually inspect the engine mount and all its inclusive hardware for any failure, malfunction, excessive wear, or other anomalies. Figure 17-18 shows the engine mount with all its inclusive hardware.

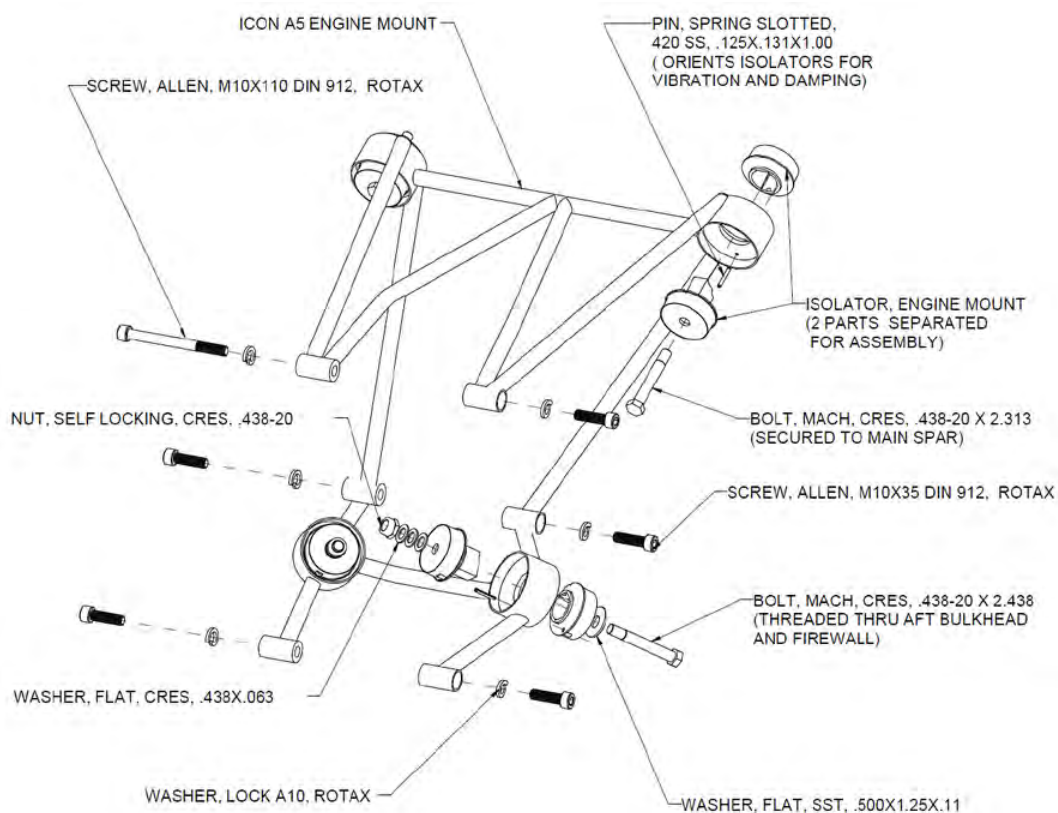


FIGURE 17-18
ENGINE MOUNT EXPLODED VIEW

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 17-19.
 - 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 17-19
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 17-14.)

VERIFICATION METHOD:

Completion of the instructions above verify that the engine mount is acceptable.

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Operational Inspection" on page 4-25
 "Remove Engine Cowlings" on page 17-14
 "Install Engine Cowlings" on page 17-19
 "Remove Oil Tank" on page 17-72
 "Install Oil Tank" on page 17-76

17.1.4.9 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Second person

Parts Required

None

Aircraft System and Number

13 – Propulsion

Safety Equipment

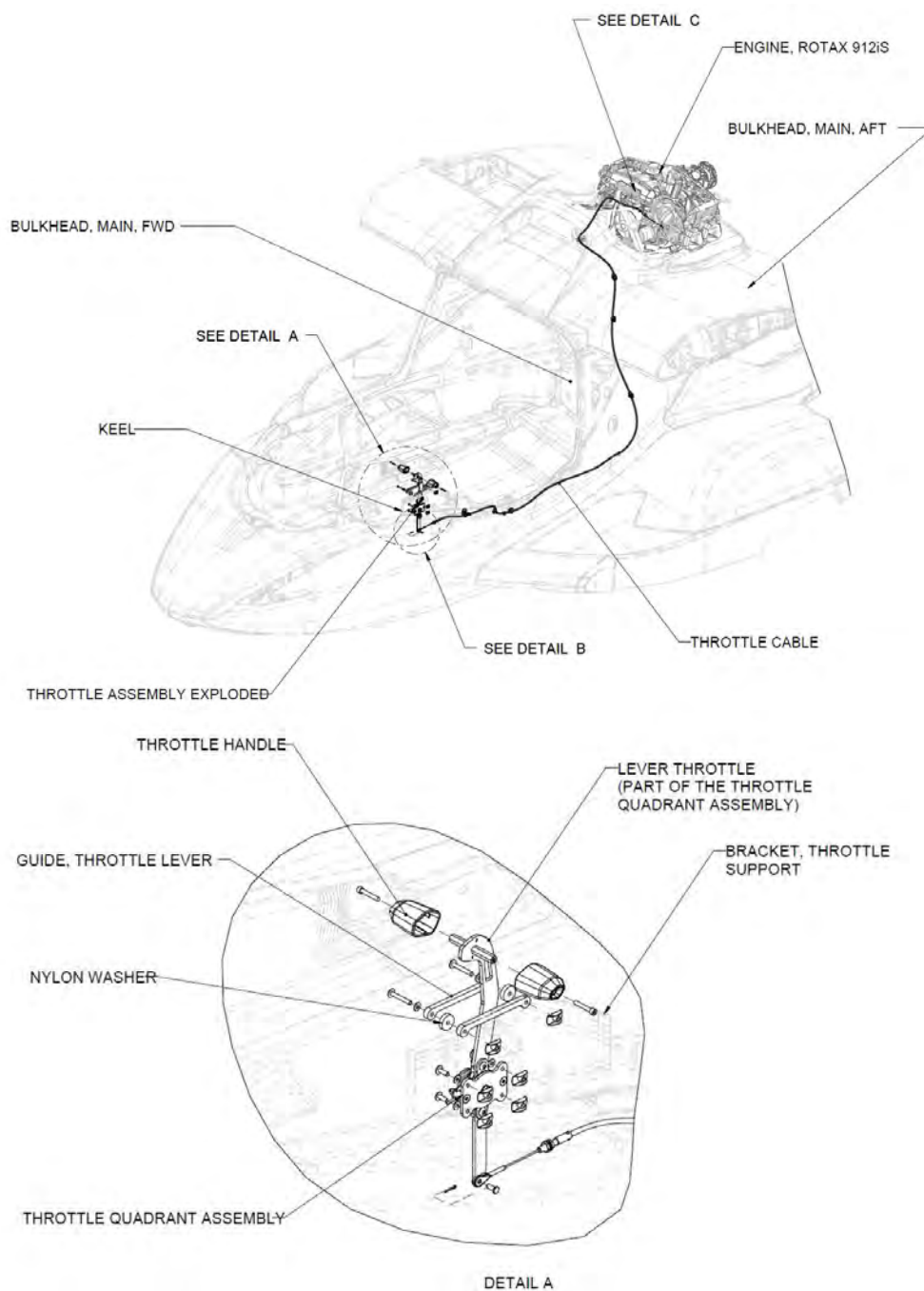
As Needed

Consumables

None

TASK INSTRUCTIONS:

1. Remove engine cowling. (See “Remove Engine Cowlings” on page 17-14.) It is necessary to access the engine throttle lever inside the cockpit and the cable lever on the engine. (See Figure 17-20.)



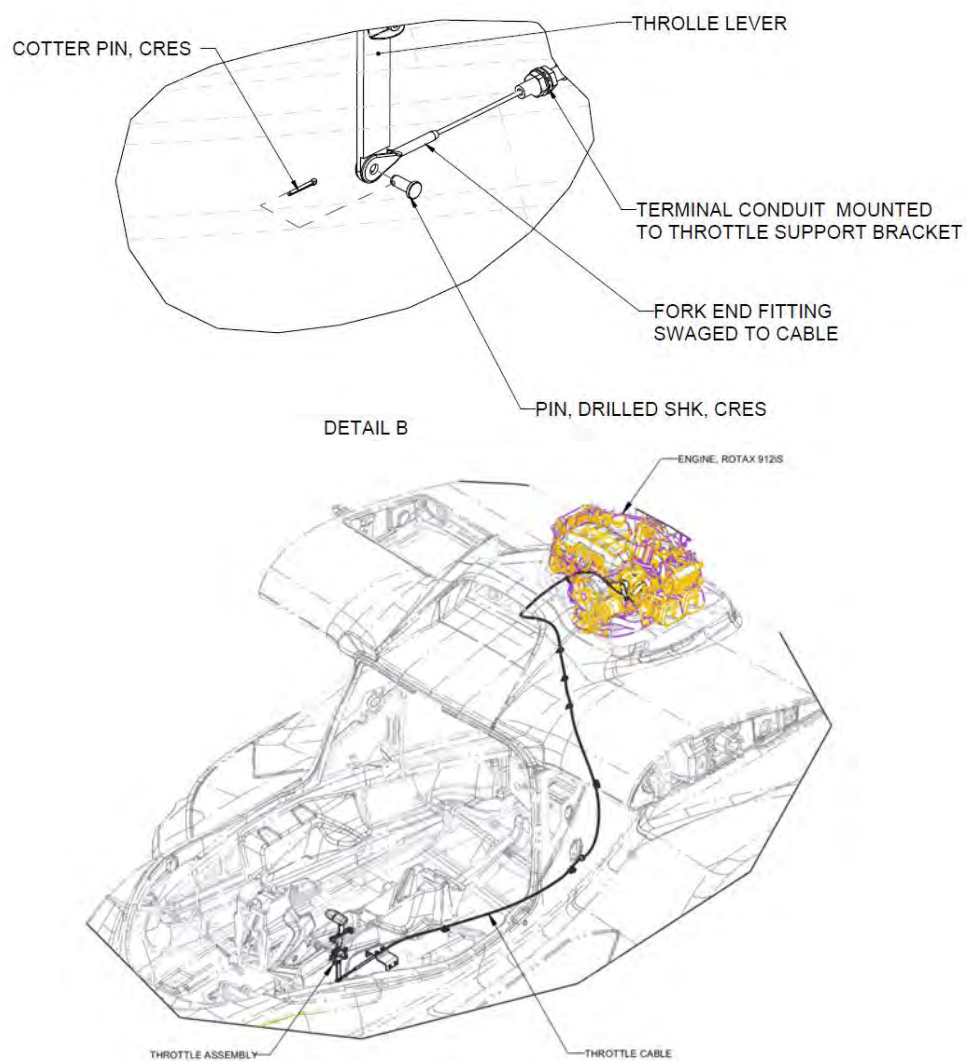


FIGURE 17-20
THROTTLE ASSEMBLY

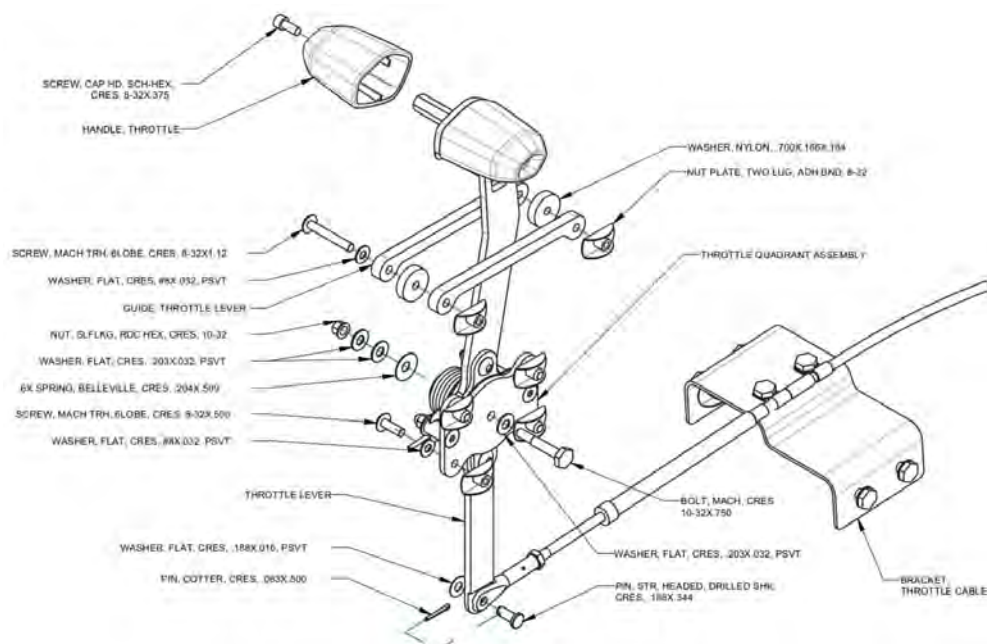


FIGURE 17-21
THROTTLE ASSEMBLY – EXPLODED VIEW.

2. Remove throttle bezel. (See “Throttle Handle and Bezel Removal” on page 9-10.)
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 17-21. See Figure 17-24.)
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 17-22.)

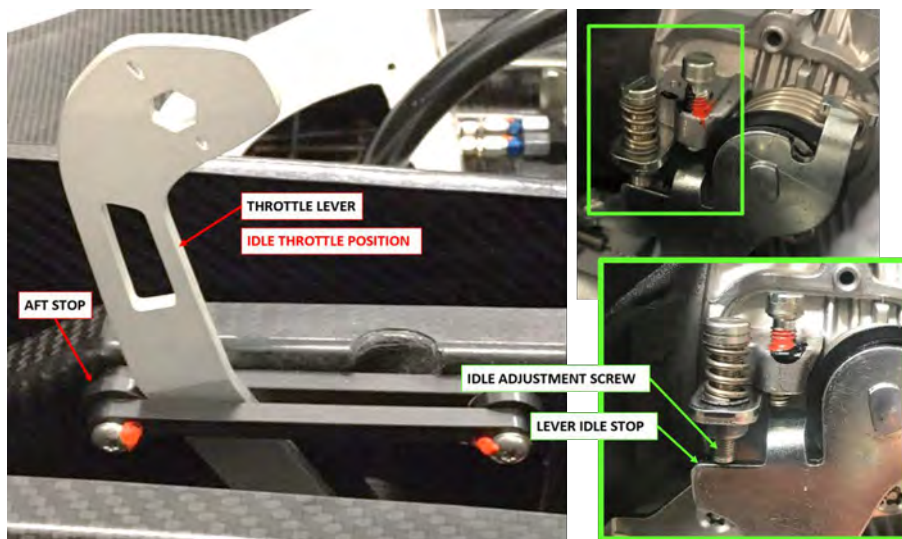


FIGURE 17-22
IDLE POSITION ADJUSTMENT

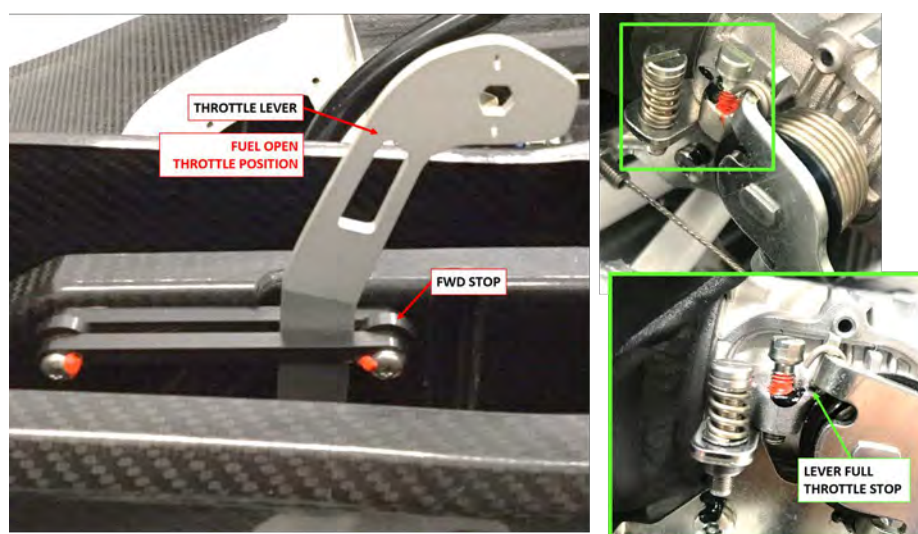


FIGURE 17-23
FULL THROTTLE POSITION ADJUSTMENT

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 17-23.)

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 17-24.)

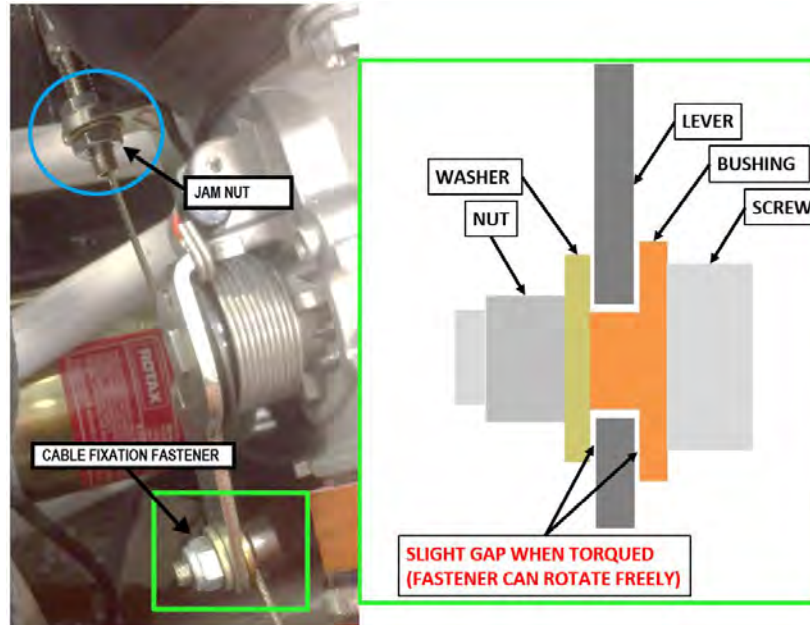


FIGURE 17-24
THROTTLE CABLE FIXATION FASTENER

9. When cable adjustment is complete, torque cable fixation fastener to 35 ± 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 17-21.)
11. Replace throttle bezel. (See "Throttle Handle and Bezel Removal" on page 9-10.)
12. Replace engine cowl. (See "Remove Engine Cowlings" on page 17-14.)

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:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21

"Remove Engine Cowlings" on page 17-14

"Install Engine" on page 17-24

"Install Engine Cowlings" on page 17-19

17.1.4.10 Grease Coil Pack Connections

These instructions should be used to reapply conductive grease to the primary side of the ignition coil packs.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

03 – Electrical System

Consumables

8481 MG Chemicals Premium Carbon Conductive Grease

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 17-25.

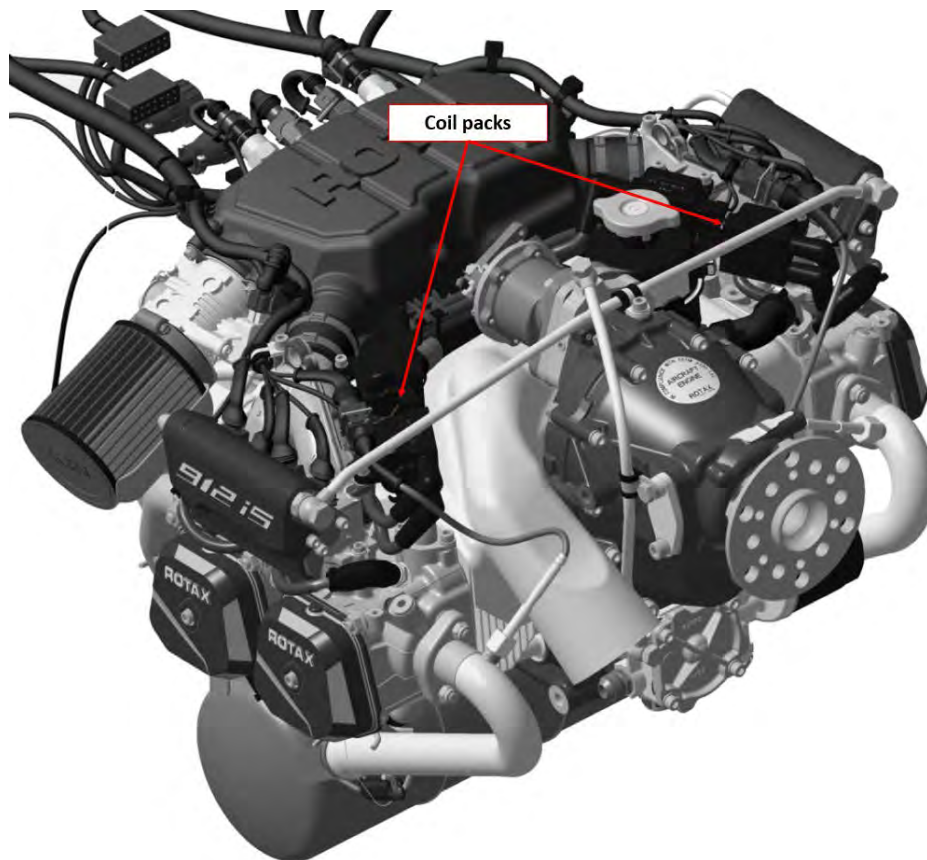


FIGURE 17-25
ENGINE SHOWN WITH IGNITION COIL PACKS IDENTIFIED.

TASK INSTRUCTIONS:

1. Turn master switch OFF. Remove ignition key.
2. Remove engine cowl. (See "Remove Engine Cowlings" on page 17-14.)
3. Remove two M5 Allen mounting screws on each engine ignition coil pack as shown in Figure 17-26.

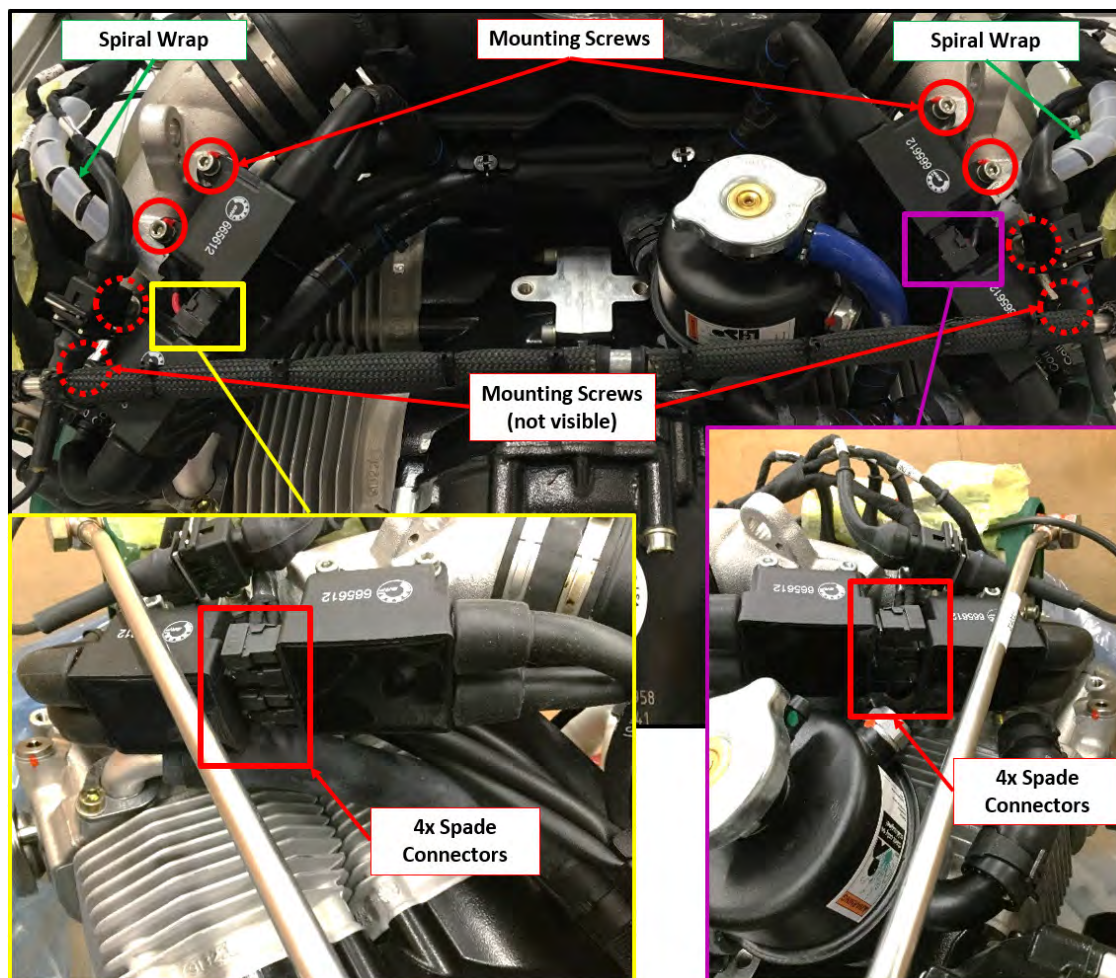


FIGURE 17-26
TOP VIEW OF ENGINE

4. Remove all four engine ignition coil packs enough to gain access to the primary side of the coil pack (Figure 17-27). Remove spiral wrap as necessary.

NOTE: *The secondary side may not need to be disconnected to perform this operation.*

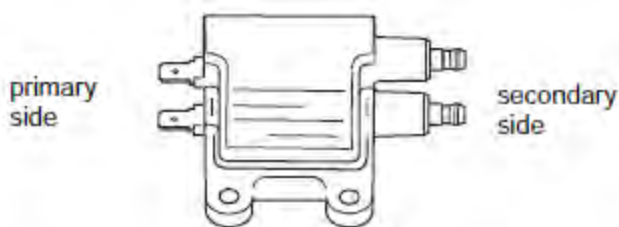
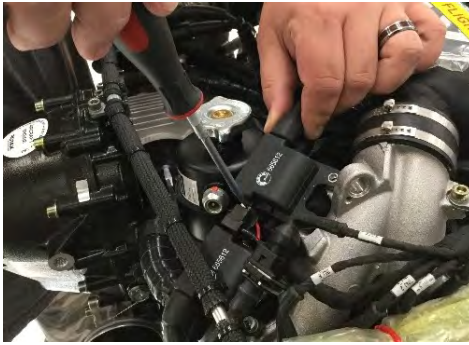


FIGURE 17-27
ENGINE IGNITION COIL PACK.

5. Use a flat head screwdriver to push the connectors out of the coil pack terminals (Figure 17-28). Take extreme caution not to damage the connectors.

**FIGURE 17-28**

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 MG Chemical 8481 conductive grease 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. Reinstall 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 17-14.)

VERIFICATION METHOD:

Complete the engine test run. (See "Engine Test Run" on page 17-7.)

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21

"Remove Engine Cowlings" on page 17-14

"Engine Test Run" on page 17-7

17.1.5 Engine Air Filter

17.1.5.1 Inspection Instructions

17.1.5.1.1 Air Filter Cleanliness Inspection

The following should be used to inspect and evaluate the cleanliness of the air filter.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Parts Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Aircraft System and Number

13 – Propulsion

Consumables

None

TASK INSTRUCTIONS:

1. See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series.

VERIFICATION METHOD:

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21

"Clean Engine Air Filter" on page 17-49

"Replace Engine Air Filter" on page 17-51

17.1.5.1.2 Air Filter Security Inspection

The following should be used to evaluate the air filter for security of connection.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Parts Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Aircraft System and Number

13 – Propulsion

Consumables

None

TASK INSTRUCTIONS:

1. See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

VERIFICATION METHOD:

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21

17.1.5.2 Maintenance Instructions

17.1.5.2.1 Clean Engine Air Filter

Cleaning instructions for the K&N engine air filter.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Parts Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Aircraft System and Number

13 – Propulsion

Consumables

None

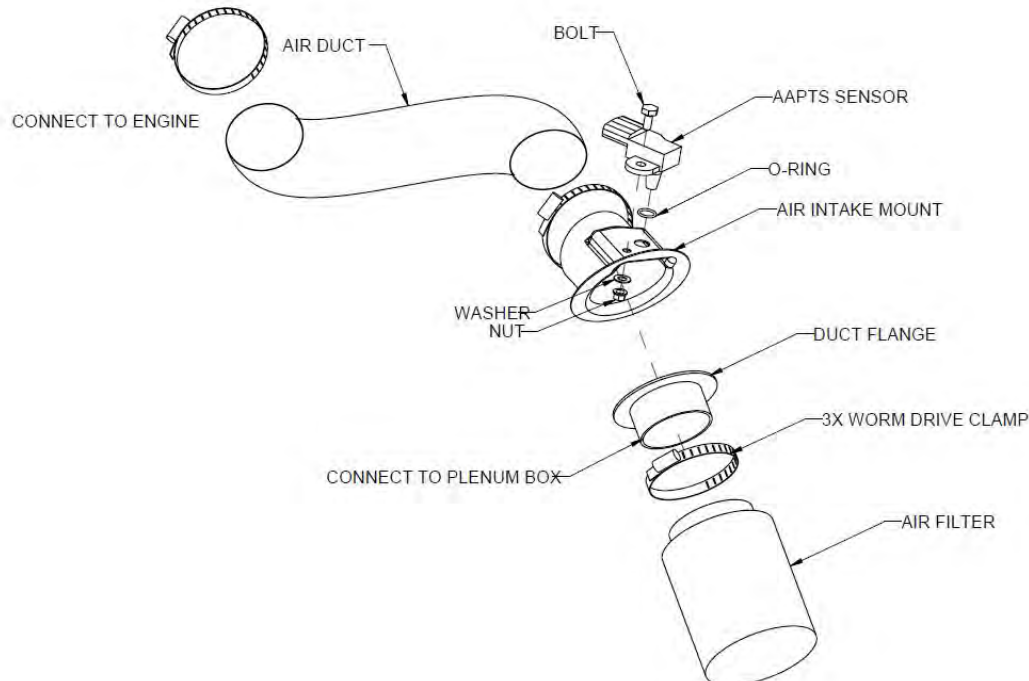


FIGURE 17-29
AIR FILTER AND ENGINE INTAKE INSTALLATION DETAIL.

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. See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series
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:

"Replace Engine Air Filter" on page 17-51

"Air Filter Cleanliness Inspection" on page 17-47

17.1.5.2.2 Replace Engine Air Filter

Replace the K&N air filter.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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 17-49

"Air Filter Cleanliness Inspection" on page 17-47

17.1.6 Exhaust System

17.1.6.1 Maintenance Instructions

17.1.6.1.1 Remove Exhaust System

Use the following procedure to remove components of the Exhaust System.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Type of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

13 – Propulsion

Consumables

None

NOTE: Most inspections do not require the removal of the FWD headers.

TASK INSTRUCTIONS:

1. Remove Top Engine Cowl, Outer Muffler Fairings, and Lower Cows. (See "Remove Engine Cowlings" on page 17-14.)
2. If required, remove AFT EGT sensors with a 17mm wrench. If EGT sensors are not removed, place header on top of engine, being careful not to twist or stress EGT wire (header removal in next steps).
3. Remove the two M8 lock nuts securing AFT header to the Engine with a 12 mm socket.

NOTE: M8 lock nuts are not reusable. Discard and replace.

4. Remove AFT header by pulling away from cylinder, careful not to damage cylinder stud threads.
5. Plug the exposed exhaust ports on the Engine.
6. Remove T-15 Torx countersunk screw at FWD corner of Inner Muffler Shield.
7. Remove Muffler/Inner Muffler shield as one assembly separating Muffler from FWD header slip joint.
8. Remove FWD EGT sensors with a 17mm wrench. If EGT sensors are not removed, place header on top of Engine, being careful not to twist or stress EGT wire.
9. Remove the two M8 lock nuts securing FWD header to the engine with a 12mm socket.
10. Remove FWD header by pulling away from cylinder, being careful not to damage cylinder stud.
11. Plug the exposed Exhaust Ports on the Engine.
12. Repeat steps 2-11 for the LH/RH Exhaust.

VERIFICATION METHOD:

The task is complete when required exhaust components are removed.

RELATED INFORMATION:

"Remove Engine Cowlings" on page 17-14

"Install Exhaust System" on page 17-53

17.1.6.1.2 Install Exhaust System

Use the following procedure to install components of the Exhaust System.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Type of Certification

A&P

Special Tools Required

None

Parts Required

842950 (LOCK NUT M8-WS12)

Aircraft System and Number

13 – Propulsion

Consumables

ICA012067 (LUBRICANT, ANTI-SEIZE, NICKEL GRADE)

TASK INSTRUCTIONS:

1. Install FWD header on cylinder, being careful not to damage cylinder stud threads.
2. Install new M8 lock nuts and tighten until snug. Do not torque yet.
3. Apply a thin coat of anti-seize to FWD header slip joint interface.
4. Install Muffler/Inner Muffler Shield assembly onto FWD header and install T-15 Torx countersunk screw at FWD corner of Inner Muffler Shield.
5. Apply a thin coat of anti-seize to AFT header slip joint interface.
6. Install AFT header on cylinder, being careful not to damage cylinder stud threads.
7. Install new M8 lock nuts and tighten until snug. Do not torque yet.
8. Temporarily install Outer Muffler fairing and verify tailpipe is centered in exhaust bezel. Adjust headers/muffler assembly as necessary. The tailpipe should align with the counter bezel.(See Figure 17-30. While outer muffler fairing is temporarily installed, verify there is ample space between muffler and fairing to avoid burning fairing substrate.)



FIGURE 17-30
EXHAUST SYSTEM

9. Torque FWD and AFT header lock nuts to 133 in-lbs.

10. If EGT sensors were removed, apply anti-seize to EGT header boss and install EGT sensors. Torque to 228 in-lbs.
11. Reinstall Lower Cowls, Outer Muffler Fairings, and Top Engine Cowl. (See "Install Engine Cowlings" on page 17-19.)

VERIFICATION METHOD:

Perform Engine Test Run paying particular attention to exhaust leaks. (See "Engine Test Run" on page 17-7.)

RELATED INFORMATION:

"Remove Exhaust System" on page 17-52

17.1.7 Cooling System

17.1.7.1 Inspection Instructions

17.1.7.1.1 Cooling System Inspection

Perform the maintenance inspections on the cooling system.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Parts Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

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 cowling.

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. See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series
3. Tighten the radiator cap.

NOTE: *The radiator cap must be tightened until the stop lug is contacted.*

VERIFICATION METHOD:

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

RELATED INFORMATION:

"Approved Engine Coolant Grades and Capacity" on page 2-35

17.1.7.1.2 Oil Cooler and Radiator Condition Inspection

The following should be used for inspecting the oil cooler and radiator for leaks and condition. The engine cowling needs to be removed for this inspection. See Related Information.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Parts Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Aircraft System and Number

13 – Propulsion

Consumables

None

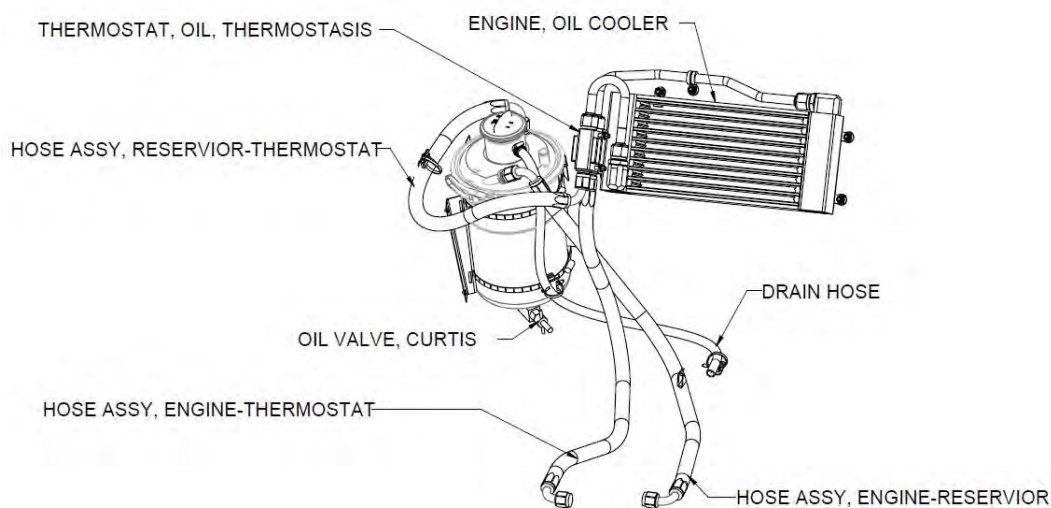


FIGURE 17-31
OIL SYSTEM INSTALLATION WITH HOSES AND HARDWARE SHOWN.

TASK INSTRUCTIONS:

1. Remove engine cowling. (See "Remove Engine Cowlings" on page 17-14.)
2. See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series
3. Replace engine cowling.

VERIFICATION METHOD:

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Operational Inspection" on page 4-25
 "Remove Engine Cowlings" on page 17-14
 "Install Engine Cowlings" on page 17-19

17.1.7.2 Maintenance Instructions

17.1.7.2.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 2-33.)*

NOTE: *The following instructions are airframe specific to the A5-B. For additional context see Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series.*

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 17-32.

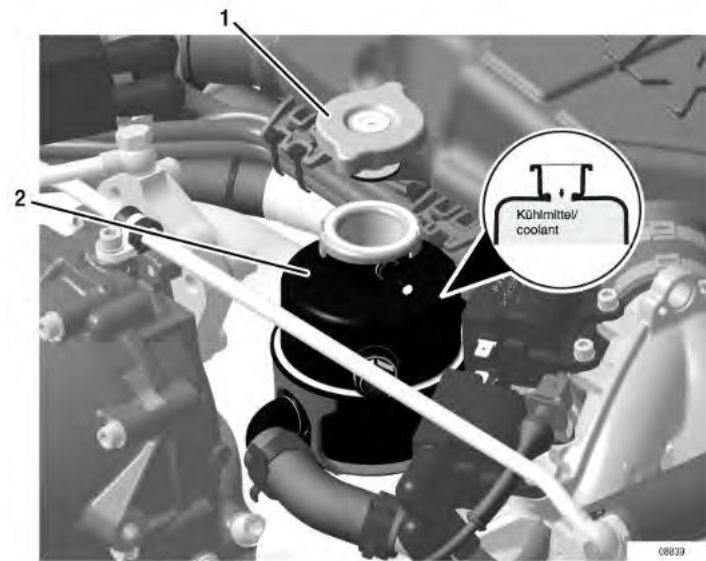


FIGURE 17-32
ENGINE COOLANT REPLACEMENT

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 17-33). 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.

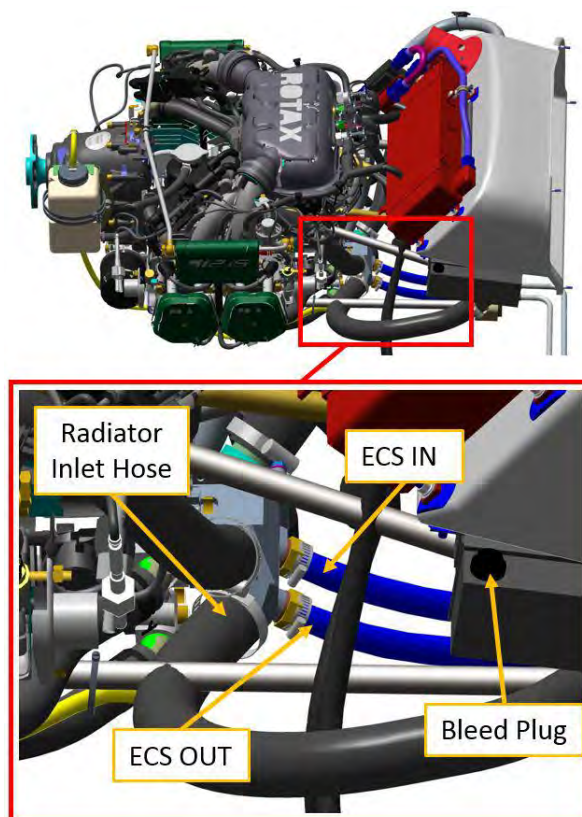


FIGURE 17-33
ENGINE COOLANT REPLACEMENT

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 17-33)
 - 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 17-33).
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 17-32), 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 from 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 2-33

"Remove Engine Cowlings" on page 17-14

"Engine Removal" on page 17-22

"Install Engine Cowlings" on page 17-19

17.1.7.2.2 Coolant Overflow Bottle Removal

Use the following procedure to remove the coolant overflow bottle.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-14.)
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 17-62.)

RELATED INFORMATION:

"Remove Engine Cowlings" on page 17-14

"Install Engine Cowlings" on page 17-19

17.1.7.2.3 Coolant Overflow Bottle Installation

Use the following procedure to install the coolant overflow bottle.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

CB9120V5 (CABLE TIE)

922327 (COOLANT OVERFLOW BOTTLE)

AN316C49 (NUT)

51135K21 (SILICONE TUBING)

TY24MX (CABLE TIE)

552K25 (TYGON TUBING)

3804 (HOSE CLAMP)

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 17-34.
 - 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.

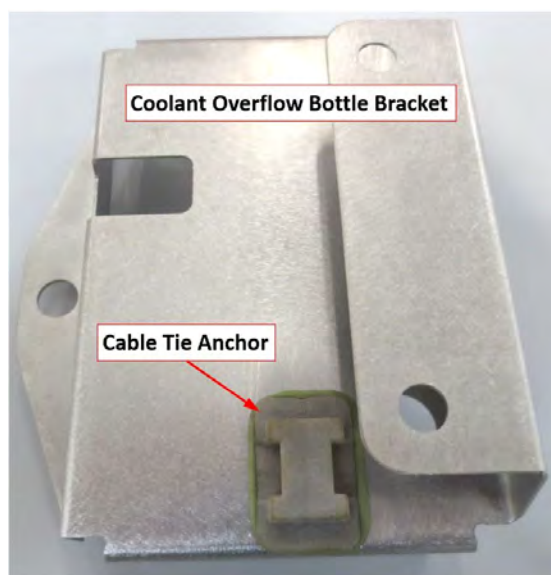


FIGURE 17-34
COOLANT OVERFLOW BOTTLE

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 17-35.
 - c. Secure the hose fitting using an AN316C49 nut torqued to 44 in-lb_f.
 - d. Reinstall cap on bottle.

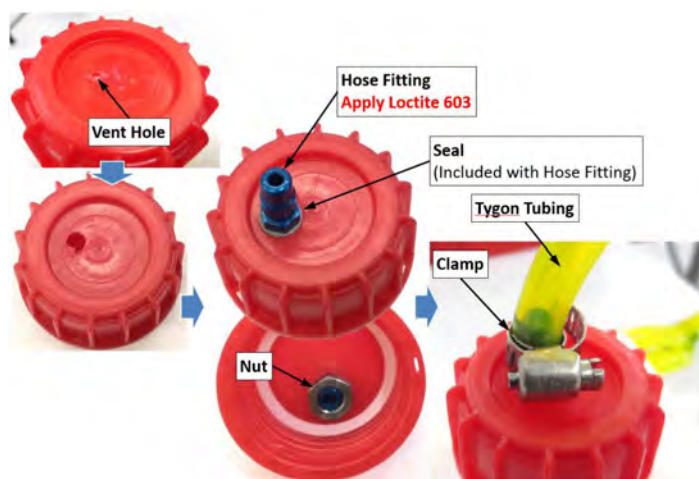


FIGURE 17-35
COOLANT OVERFLOW BOTTLE

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 17-36.
 - b. Cut a 42-inch length of 552K25 Tygon tubing and install tubing on the bottle cap hose fitting using a 3804 hose clamp.

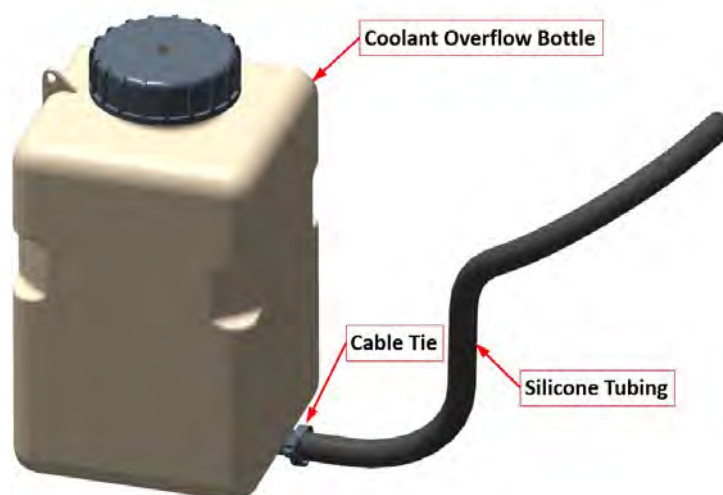


FIGURE 17-36
COOLANT OVERFLOW BOTTLE

4. Install the coolant overflow bottle bracket on the engine as shown in Figure 17-37. using the noted hardware. Apply LOCTITE® 243™ to the screw threads.

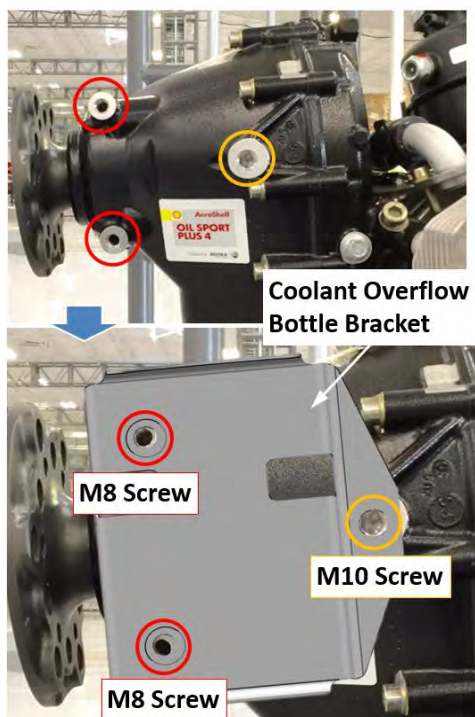


FIGURE 17-37
COOLANT OVERFLOW BOTTLE

5. Torque the two M8 bolts to 17.7 ft-lb_f (212 in-lb_f). Torque the M10 bolt to 25.8 ft-lb_f (310 in-lb_f).
6. Install the coolant overflow bottle on the bracket using two TY29MX cable ties as shown in Figure 17-38. 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 17-38):
 - 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 17-39 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.

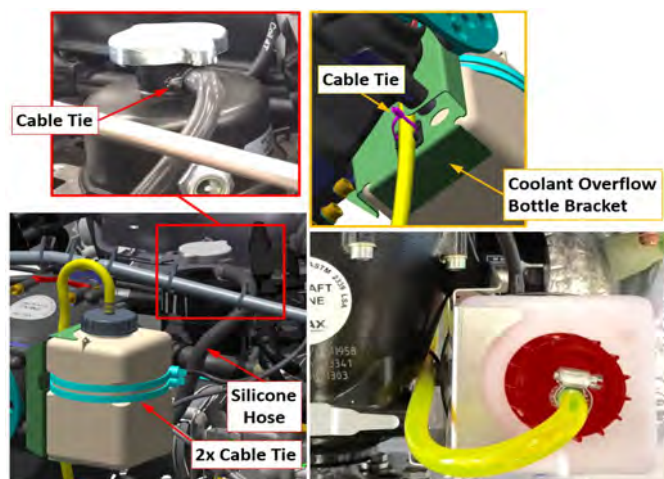


FIGURE 17-38
COOLANT OVERFLOW BOTTLE

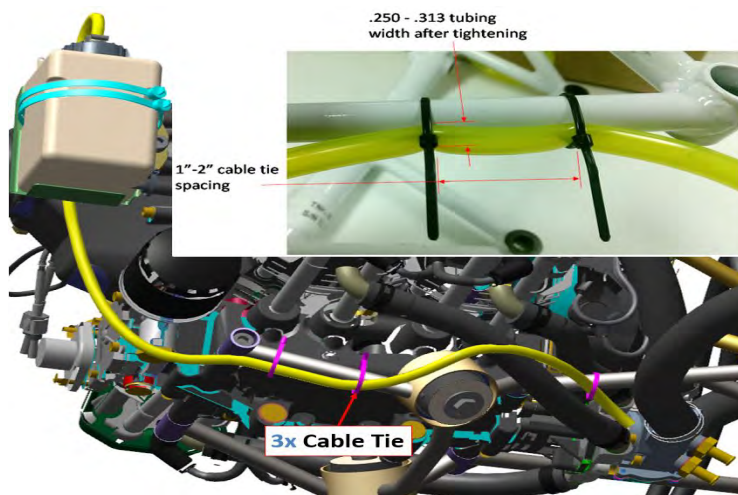


FIGURE 17-39
COOLANT OVERFLOW BOTTLE

8. Fill the overflow bottle to the mid-range level with new coolant. (See “Approved Engine Coolant Grades and Capacity” on page 2-35.)
9. Install the engine top cowlings. (See “Remove Engine Cowlings” on page 17-14.)

VERIFICATION METHOD:

Procedure is complete when steps are finished.

RELATED INFORMATION:

"Remove Engine Cowlings" on page 17-14

"Install Engine Cowlings" on page 17-19

17.1.7.2.4 Remove Coolant Radiator

Use the following procedure to remove the coolant radiator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

13 – Propulsion

Consumables

None

TASK INSTRUCTIONS:

1. Remove the 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 AAPTS sensor.
3. Disconnect the one ground and two power wires from the starter solenoid.
4. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to remove the Tank-Thermostat Hose at the bottom of the Thermostat.
5. Use a 13/16 wrench to hold the Adapter fitting and a 7/8 wrench to turn the AN-8 B-nut to remove the Thermostat-Engine Hose.
6. Drain the coolant (See "Engine Coolant Replacement" on page 17-57.), being sure to reinstall the hose and tighten the hose clamp used in the procedure.
7. Remove the two coolant hoses at the Radiator by loosening their hose clamps and pulling the hoses off the radiator.
8. Use a 3/8 wrench to remove the four bolts and washers attaching the Plenum Box to the Airframe.

9. 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.
10. Use a 1/4 wrench to remove the four nuts and washers that attach the Radiator to the Plenum Box.
11. Remove the Radiator. Retain any shim washers used in prior installations.

VERIFICATION METHOD:

The procedure is complete when the Radiator has been removed.

RELATED INFORMATION:

"Engine Oil Check and Replenish" on page 17-77

17.1.7.2.5 Install Coolant Radiator

Use the following procedure to install the coolant radiator.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA011877 (RADIATOR)

Aircraft System and Number

13 – Propulsion

Consumables

ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®

TASK INSTRUCTIONS:

1. Ensure that the bulb seal on the Plenum Box is in good condition, then attach the Radiator to the Plenum Box with four #10-32 nuts and washers. (Use washers to shim Radiator if there is any interference with Plenum Box.) Torque each nut to 20 in-lbs.
2. Place the Plenum Box assembly into position on the Airframe.

3. Coat four #10-32 bolts with Lubricant and, with a washer under each bolt head, install the bolts in the four attach locations. Torque to 26 in-lbs.
4. Remove any plugs from the Radiator connections, then connect the two coolant hoses to the Radiator and tighten their hose clamps.
5. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to install the Thermostat-Engine Hose. Torque B-nut to 200±50 in-lbs.
6. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to install the Tank-Thermostat Hose. Torque B-nut to 200±50 in-lbs.
7. Connect the one ground and two power wires to the starter solenoid. Torque to 36 in-lbs.
8. Install the Induction Air Hose by flexing it onto the Throttle Valve and Plenum fitting. Tighten its hose clamps.
9. Replenish and bleed the Cooling System. (See "Engine Oil Check and Replenish" on page 17-77.)
10. Purge the Oil System per the procedure in the Rotax Installation Manual For Rotax Engine Type 912 i Series.
11. Check Engine oil level. (See "Engine Oil Check and Replenish" on page 17-77.)

VERIFICATION METHOD:

Complete an Engine Test Run. (See "Engine Test Run" on page 17-7.)

Inspect for fluid leaks.

After installing the Coolant Radiator and purging the Oil System, the task is complete.

RELATED INFORMATION:

"Engine Oil Check and Replenish" on page 17-77

17.1.8 Oil System

17.1.8.1 Oil System Description

The oil system in the A5-B 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.

CAUTION: *Allow the engine to cool down before working on the oil system.*

17.1.8.2 Oil System Diagram/Schematic

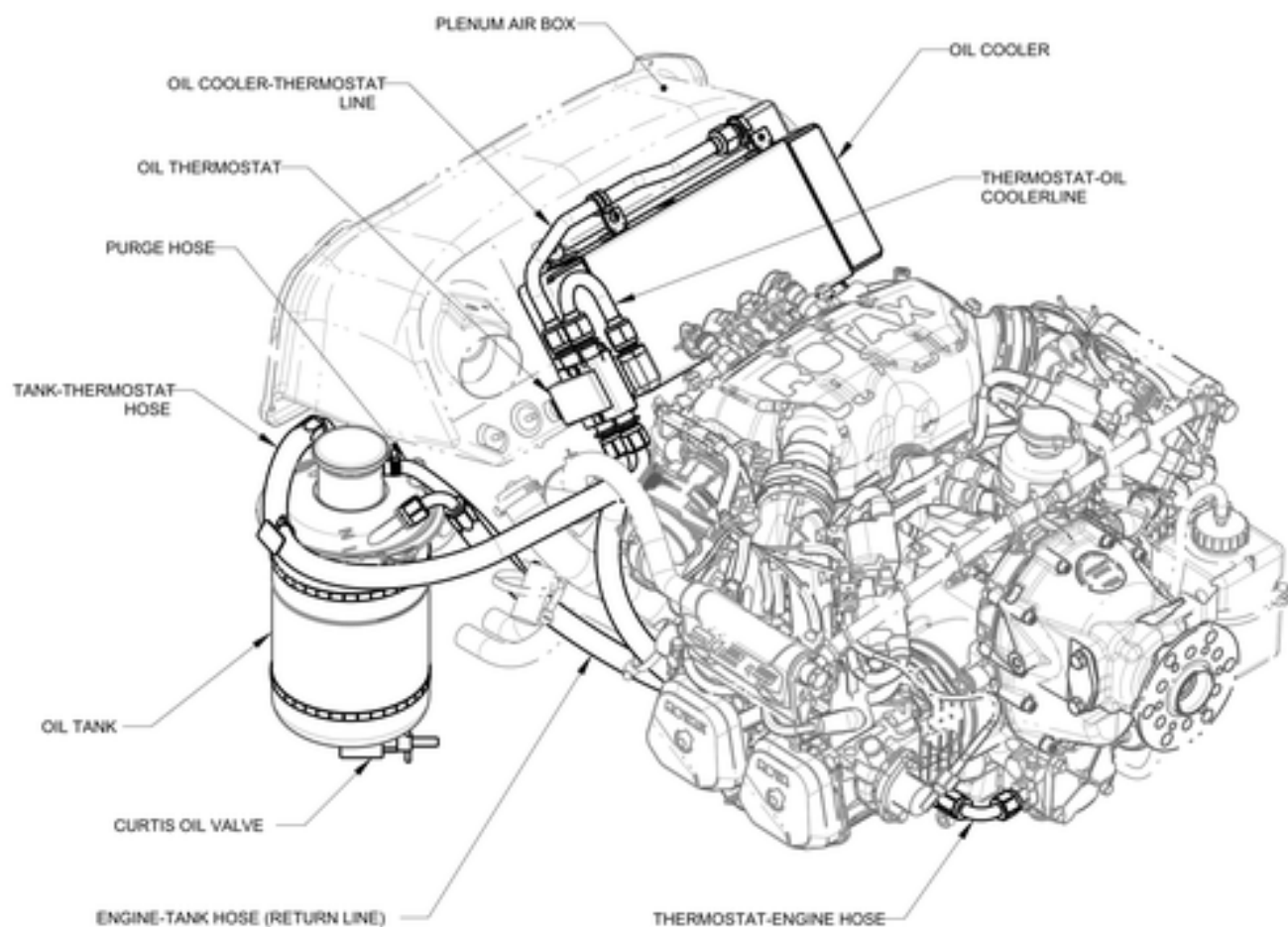


FIGURE 17-40
OIL SYSTEM COMPONENTS – TOP, FWD, LHS VIEW

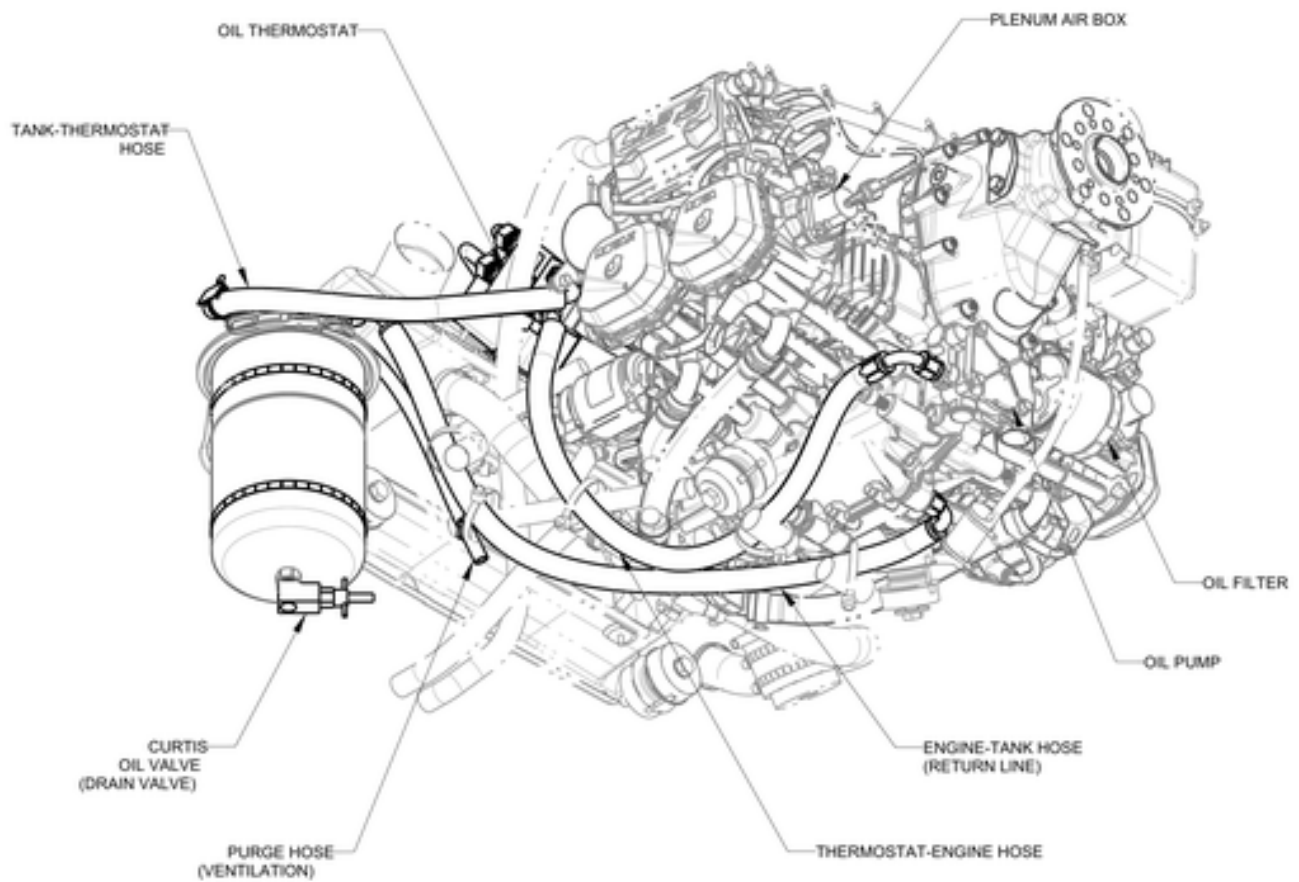


FIGURE 17-41
OIL SYSTEM COMPONENTS – BOTTOM, FWD, LHS VIEW

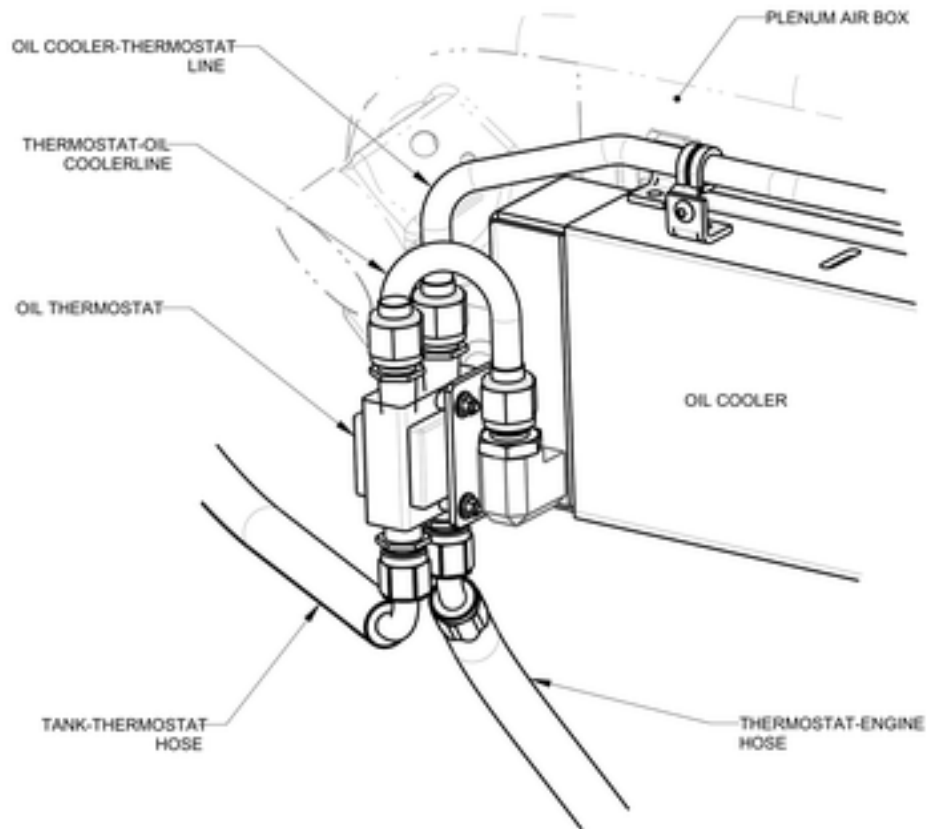


FIGURE 17-42
OIL THERMOSTAT CONNECTIONS

17.1.8.3 Maintenance Instructions

17.1.8.3.1 Remove Oil Tank

Use the following instructions to remove the oil tank.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-14.)
2. Burp engine. (See “Engine Oil Check and Replenish” on page 17-77.)
3. Drain engine oil. (See “Engine Oil Check and Replenish” on page 17-77.)
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 17-44.)
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 17-44.
6. Cut the cable tie securing the reservoir-thermostat hose shown in Figure 17-43.
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.

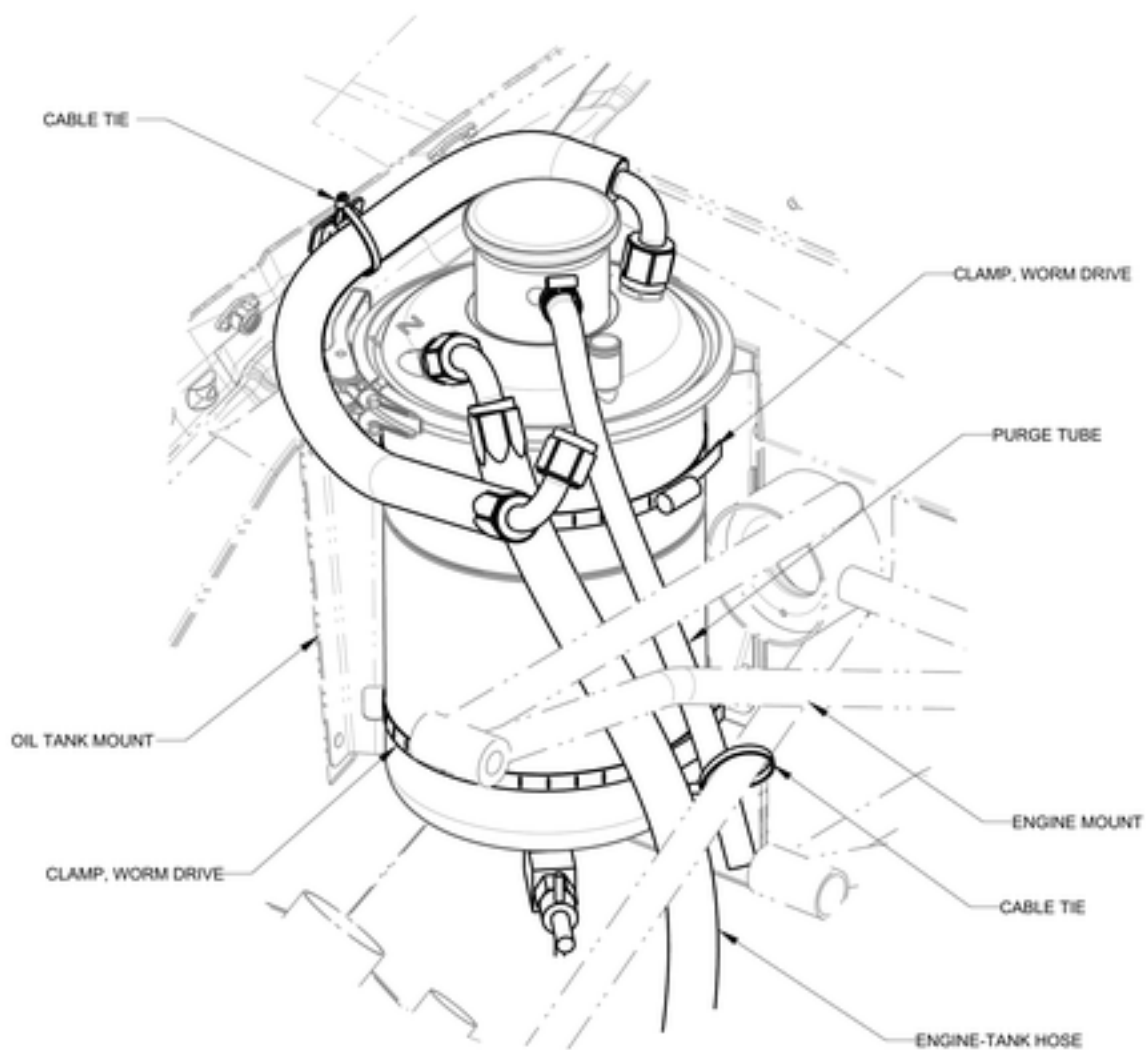


FIGURE 17-43
OIL TANK INSTALLATION. SOME COMPONENTS NOT SHOWN FOR CLARITY.

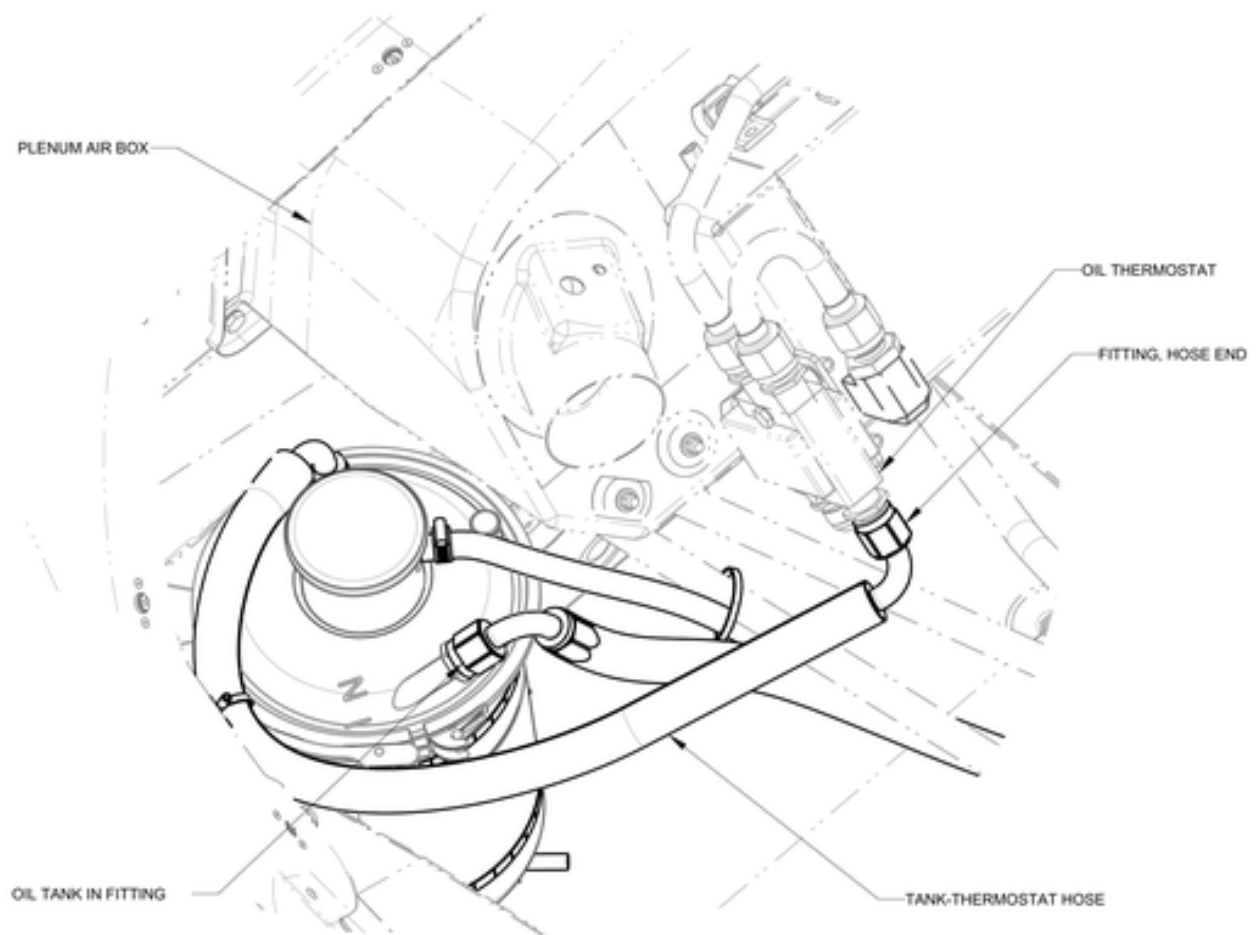


FIGURE 17-44
OIL TANK INSTALLATION. SOME COMPONENTS NOT SHOWN FOR CLARITY.

VERIFICATION METHOD:

The task is complete when the oil tank has been removed.

RELATED INFORMATION:

- "Inspect Engine Mount" on page 17-33
- "General Engine Line Maintenance" on page 17-29
- "Engine Removal" on page 17-22
- "Install Oil Tank" on page 17-76

17.1.8.3.2 Install Oil Tank

Use the following instructions to install the oil tank.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-44 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 17-14.) Torque B nut to 300-350 in-lbs if using Method A or to 290-330 in-lbs if using Method B. (See Figure 17-10.)

CAUTION: *Ensure a back-up wrench is used on the oil tank fitting while torquing. 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 17-14.)
6. Fill the oil tank with correct quantity and type of oil. (See "Engine Oil Check and Replenish" on page 17-77.)
7. Purge the engine oil system per the latest Maintenance Manual: (Line Maintenance) For Rotax Engine Type 912 i Series.
8. Install top engine cowl. (See "Install Engine Cowlings" on page 17-19.)

VERIFICATION METHOD:

Complete the engine test run. (See "Engine Test Run" on page 17-7.)

RELATED INFORMATION:

"Inspect Engine Mount" on page 17-33
"General Engine Line Maintenance" on page 17-29
"Engine Removal" on page 17-22
"Remove Oil Tank" on page 17-72

17.1.8.3.3 Engine Oil Check and Replenish

Check and replenish the engine lubrication system

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

Special Tools Required

None

Parts Required

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

Aircraft System and Number

13 – Propulsion

Consumables

None

See A5-B directions regarding checking and changing the oil. (See "A5-B Specific Oil Change Procedures" on page 17-78.)

TASK INSTRUCTIONS:

1. Open oil tank access door on the engine cowling and remove the oil tank cap.
 2. See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series
-

VERIFICATION METHOD:

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

RELATED INFORMATION:

"A5-B Specific Oil Change Procedures" on page 17-78

"Approved Engine Oils and Capacity" on page 2-33

"Install Engine" on page 17-24

"Engine Removal" on page 17-22

"Remove Coolant Radiator" on page 17-67

"Install Coolant Radiator" on page 17-68

17.1.8.3.4 A5-B Specific Oil Change Procedures

There are unique oil change procedures for the A5-B. These steps are used to drain the oil.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 on the bottom of oil tank and the other end to a bucket or oil receptacle.
 2. Place padding on ground and carefully lower tail until tail jacking point fully rests on padding.
 3. Open valve and refer to the Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series for complete oil change directions.
-

VERIFICATION METHOD:

See Maintenance Manual: (Line Maintenance) for Rotax Engine Type 912 i Series

RELATED INFORMATION:

"Engine Oil Check and Replenish" on page 17-77

"Engine Removal" on page 17-22

17.1.8.3.5 Remove Oil Cooler and Thermostat

Use the following procedure to remove the Oil Cooler and Thermostat.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

13 – Propulsion

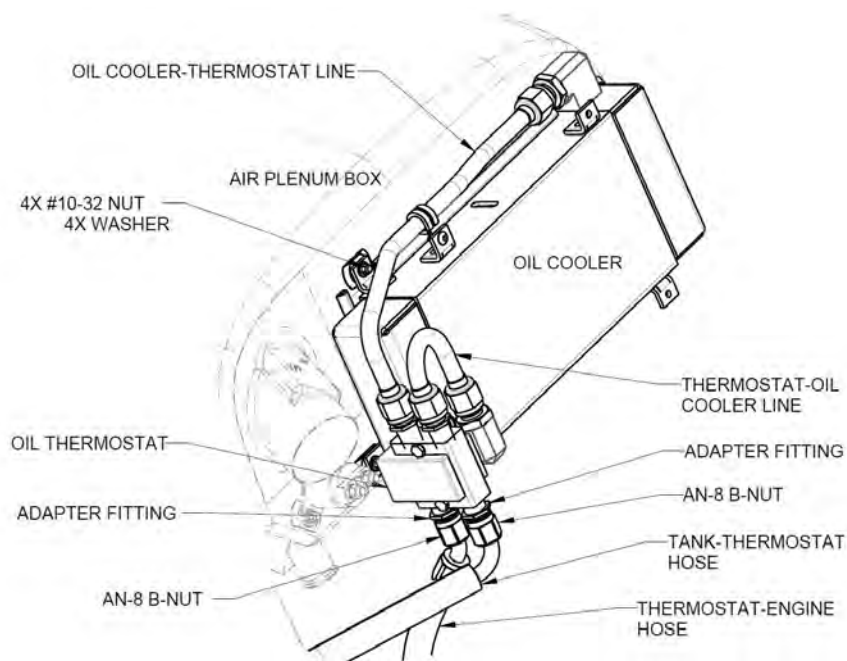
Consumables

None

TASK INSTRUCTIONS:

1. Remove the top Engine Cowling. (See "Remove Engine Cowlings" on page 17-14.)

2. Have a rag ready to catch any oil.
3. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to remove the Tank-Thermostat Hose. (See Figure 17-45.)

**FIGURE 17-45**

OIL COOLER AND THERMOSTAT INSTALLED ON AIR PLENUM BOX

4. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to remove the Thermostat-Engine Hose.
5. Use a 1/4 wrench to remove the #10-32 nuts and washers from the 4X Oil Cooler mounting studs.
6. Remove the Oil Cooler assembly from the Aircraft. Take note of any washers use to shim gap between Oil Cooler tabs and studs.
7. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to remove the aluminum Thermostat-Oil Cooler Line from the Thermostat. (See Figure 17-46.)

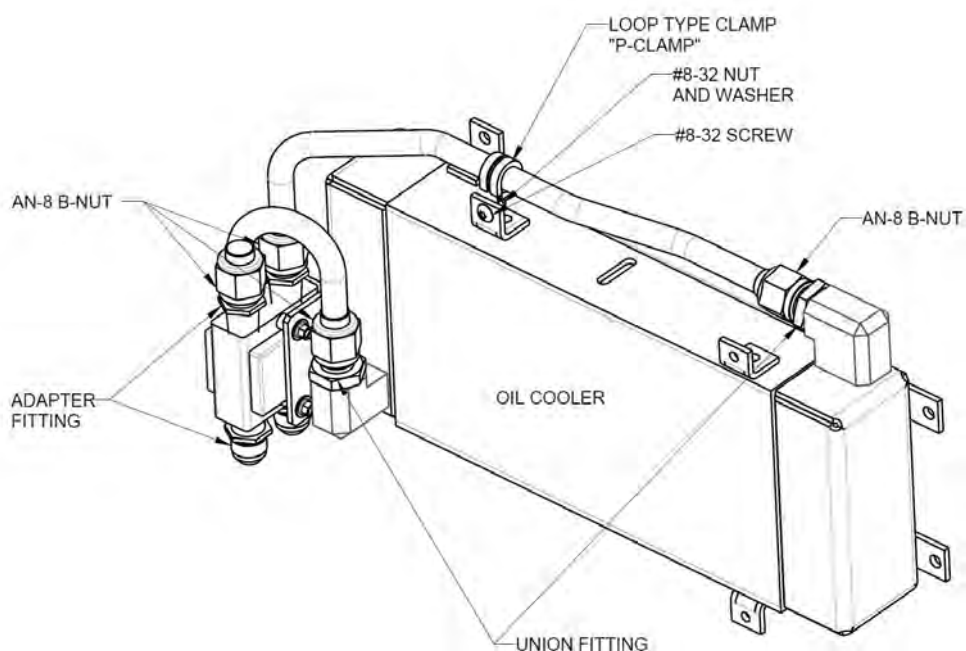


FIGURE 17-46
OIL COOLER AND THERMOSTAT ASSEMBLY

8. Use a 1-inch wrench to hold the Union Fitting and a 7/8 wrench to turn the AN-8 B-nut to remove the aluminum Thermostat-Oil Cooler Line from the Oil Cooler.
9. Remove the #8-32 nut, washer, and P-clamp securing the Oil Cooler-Thermostat Line to the Oil Cooler.
10. Use a 3/8 and a 1/4 wrench to remove the two #10-32 bolts, spacers, nuts, and six washers that attach the Thermostat to the Oil Cooler. Remove the Thermostat. (Figure 17-47)

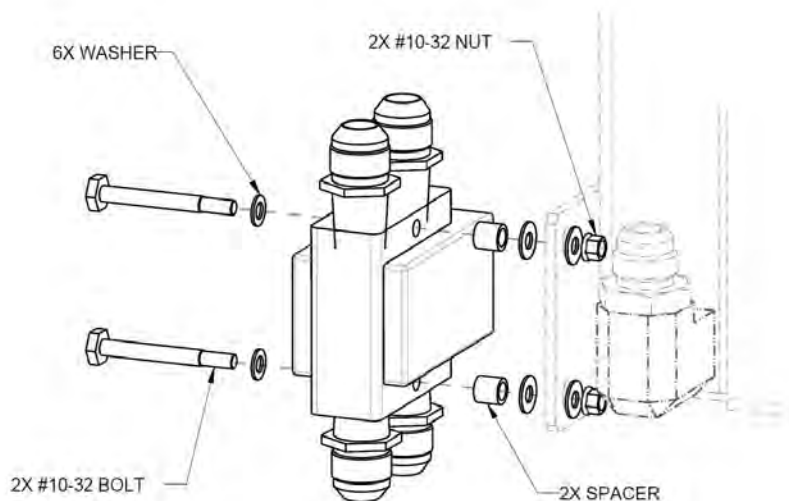


FIGURE 17-47
THERMOSTAT HARDWARE

11. If needed, use a 13/16 wrench to remove the 4X Adapter Fittings from the Thermostat.
12. Use a 1-inch wrench to remove the two Union Fittings and O-rings from the Oil Cooler.
13. Plug the openings in the Oil Cooler if it is to be reused.

VERIFICATION METHOD:

This procedure is complete when the Oil Cooler and Thermostat have been removed. Install Oil Cooler and Thermostat. (See "Install Oil Cooler and Thermostat" on page 17-82.)

RELATED INFORMATION:

"Remove Engine Cowlings" on page 17-14

17.1.8.3.6 Install Oil Cooler and Thermostat

Use the following procedure to install the Oil Cooler and Thermostat.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA011703 (OIL COOLER)

AN815-8D (FITTING, UNION, .500 TBG, AL)

9752K118 (O-RING, VITON, .644 ID x .087 W #908)

P6-H-190 (THERMOSTAT, OIL, THERMOSTATIS)

AN816-8D (FITTING, STRAIGHT, .500 TUBE TO .750-16 PIPE)

Aircraft System and Number

13 – Propulsion

Consumables

OLUBE 844-2 (LUBRICANT, ORING, PARKER O'LUBE)

LOCITITE® 243™ (THREADLOCKER, PRIMERLESS, OIL TOL, REMOVABLE MED STR, BLUE)

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

TASK INSTRUCTIONS:

1. Apply LUBRICANT to two O-RINGS and install them on the two UNION FITTINGS.
2. Use a 1-inch wrench to install UNION FITTINGS into OIL COOLER. Torque to 468-514 in-lbs.
3. If THERMOSTAT does not have 4X STRAIGHT FITTINGS installed, then clean fittings thread with ISOPROPYL.
4. Apply THREADLOCKER to STRAIGHT FITTING threads. Use a 13/16 wrench to install STRAIGHT FITTING. Torque to 1.5-2.5 turns past finger tight.
5. Install THERMOSTAT onto OIL COOLER as shown in Figure 17-47.
NOTE: It is easier to torque fasteners after oil lines are installed.
6. Install the two aluminum oil lines between OIL COOLER and THERMOSTAT. Use a 1-inch wrench to hold UNION FITTING on the OIL COOLER, a 13/16 wrench to hold STRAIGHT FITTING on THERMOSTAT, and a 7/8 wrench to turn the AN-8 B-nuts. Torque the B-nuts to 200±50 in-lbs.
7. Use 3/8 and 1/4 wrenches to torque the two Thermostat mounting fasteners to 20 in-lbs.
8. Install the P-clamp as shown in Figure 17-46. Torque hardware to 20 in-lbs.
9. Ensure the Bulb Seal on the Air Plenum Box is in good condition. Use a 1/4 wrench to install the Oil Cooler assembly to the Air Plenum Box with four #10-32 nuts and washers as shown in Figure 17-45. Torque to 20 in-lbs.
10. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to install the Thermostat-Engine Hose. Torque B-nut to 200±50 in-lb. (See Figure 17-45.)
11. Use a 13/16 wrench to hold the Adapter Fitting and a 7/8 wrench to turn the AN-8 B-nut to install the Tank-Thermostat Hose. Torque B-nut to 200±50 in-lbs.

12. Purge the Engine Oil system per the latest Rotax Installation Manual for Rotax Engine Type 912 i Series.
13. Run the Engine. Check for leaks and the oil pressure. Replenish the oil level as required.
14. Install the top Engine Cowling. (See "Install Engine Cowlings" on page 17-19.)

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. (See "Engine Test Run" on page 17-7.)

RELATED INFORMATION:

"Remove Engine Cowlings" on page 17-14

17.1.9 Fuse Box

17.1.9.1 Fuse Box Description

The fuse box contains a fuse panel for the engine and two rectifier regulators on either side.

17.1.9.2 Fuse Box Diagram/Schematic

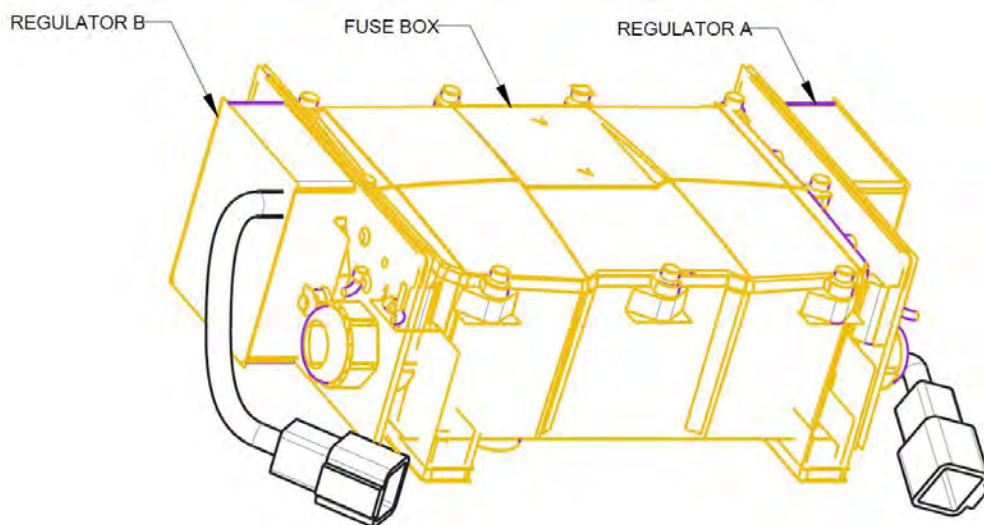


FIGURE 17-48
FUSE BOX

17.1.9.3 Inspection Instructions

17.1.9.3.1 Inspect Regulator Wires

Use the following procedure to inspect both Regulator A and B wires near the Regulator connectors.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.)
2. Locate the fuse box in front of the AFT bulkhead, LH as shown in Figure 17-49.

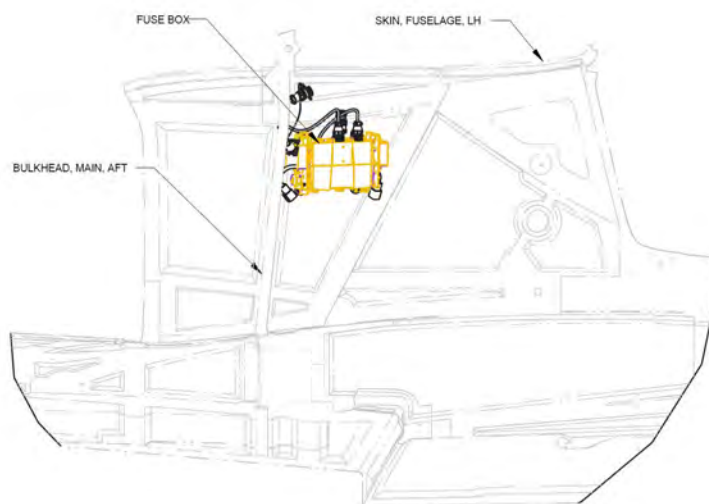


FIGURE 17-49
LEFT VIEW OF FUSELAGE, FUSE BOX AND AFT BULKHEAD

3. Inspect the Regulator A and B wires near the connectors (Figure 17-50). Replace the Regulator if any signs of discoloration (browning) are apparent. (See “Remove Fuse Box and Regulators” on page 17-87.)

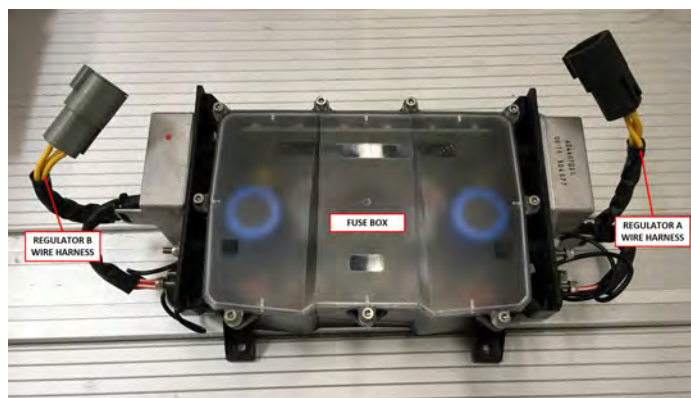


FIGURE 17-50
FUSE BOX, REGULATOR A AND REGULATOR B

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 4-27

"Remove Fuse Box and Regulators" on page 17-87

17.1.9.4 Maintenance Instructions

17.1.9.4.1 Remove Fuse Box and Regulators

Use the following procedure to remove the fuse box and the two regulators.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27.)
2. Locate the fuse box forward of the AFT bulkhead, LH. See Figure 17-51.

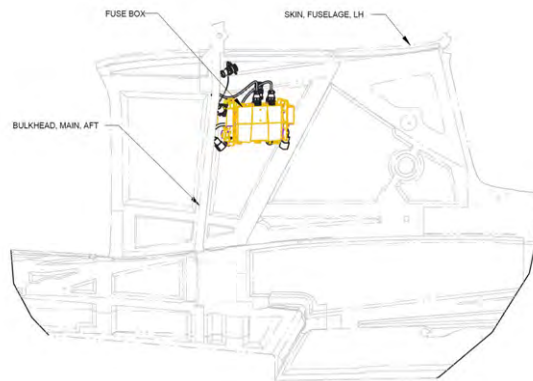


FIGURE 17-51
LEFT VIEW OF FUSELAGE, FUSE BOX, AND AFT BULKHEAD

3. Disconnect the three connectors as shown in Figure 17-52. 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

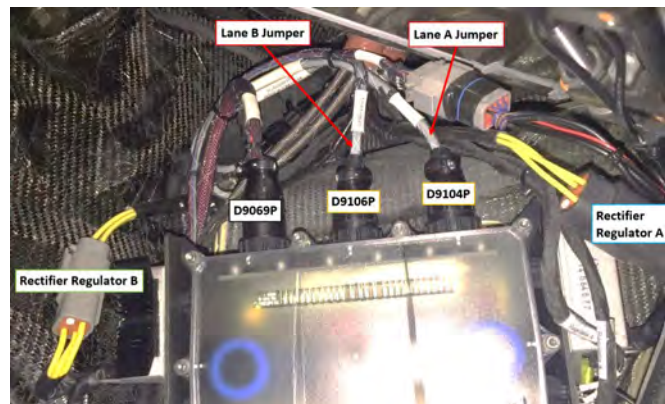


FIGURE 17-52
FUSE BOX AND CONNECTORS

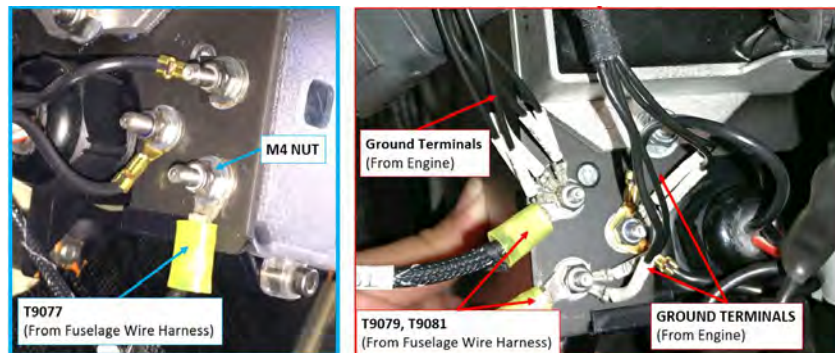


FIGURE 17-53
REGULATOR B SIDE GROUND TERMINALS (LEFT). REGULATOR A SIDE GROUND TERMINALS (RIGHT).

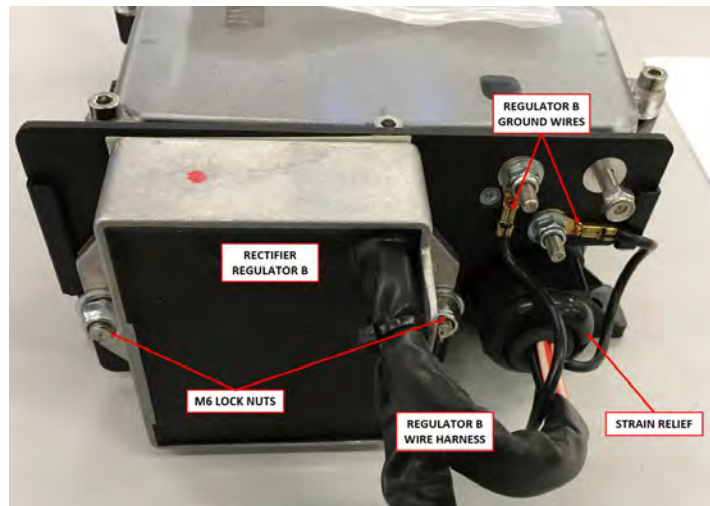


FIGURE 17-56
REGULATOR B SIDE OF FUSE BOX

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 4-27
 "Inspect Regulator Wires" on page 17-85

17.1.9.4.2 Install Fuse Box and Regulators

Use the following task to install the fuse box and both regulators.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-54.
2. Secure the terminals with M5 lock nut (15), M4 lock nuts (16), and washers (14,17). See Figure 17-54.
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 17-57.

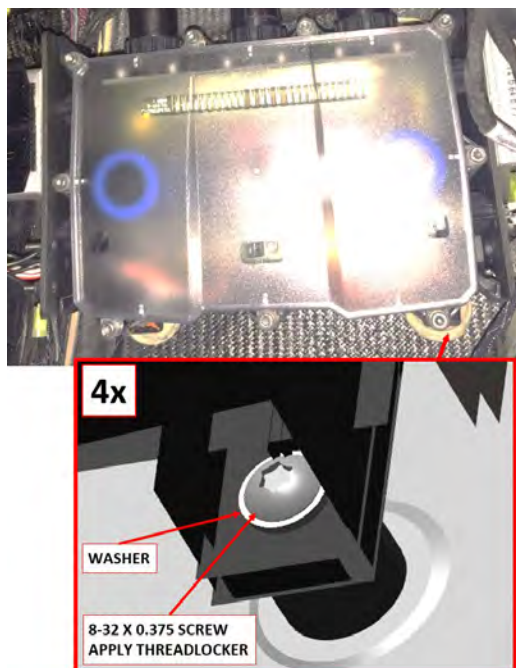


FIGURE 17-57
CLOSE-UP VIEW OF FUSE BOX MOUNTING SCREWS

9. Ensure O-rings are installed and connect the three cannon connectors. See Figure 17-52.
 - 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 17-53.
 - 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 4-27.)

VERIFICATION METHOD:

Complete the engine test run. (See "Engine Test Run" on page 17-7.)

RELATED INFORMATION:

"Engine Test Run" on page 17-7

"Removal and Installation of Inspection Panels and Fairings" on page 4-27

17.2 Propeller

17.2.1 Description

The A5-B 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.

17.2.2 Diagram/Schematic

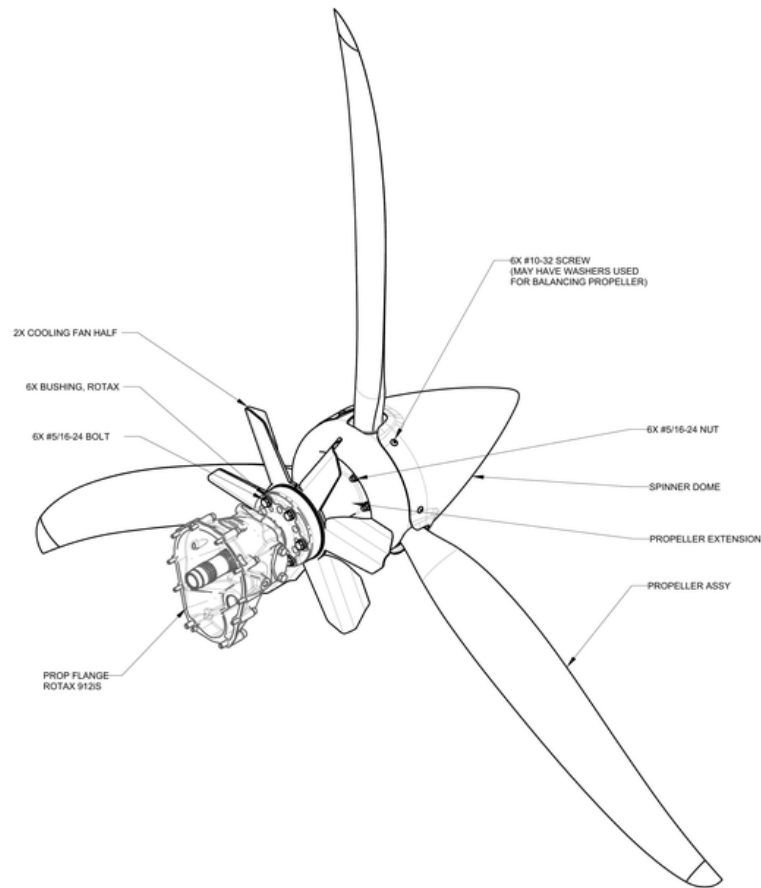


FIGURE 17-58
PROPELLER INSTALLATION – VIEW LOOKING AFT, LHS

17.2.3 Propeller General Maintenance

17.2.3.1 Propeller Inspection

Instructions for the inspection of the Sensenich propeller.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21

17.2.3.2 Balance Propeller

Use the following procedure to balance the propeller.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-112.)
2. Remove the top engine cowl only. (See “Remove Engine Cowlings” on page 17-14.)
3. Install accelerometer (vibration sensor) onto the gearbox per Propeller Balance System manual. Ensure sensor is secured tightly and oriented vertically. See Figure 17-59 as an installation example.

**FIGURE 17-59**

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 17-60 and “Install Engine Cowlings” on page 17-19.)

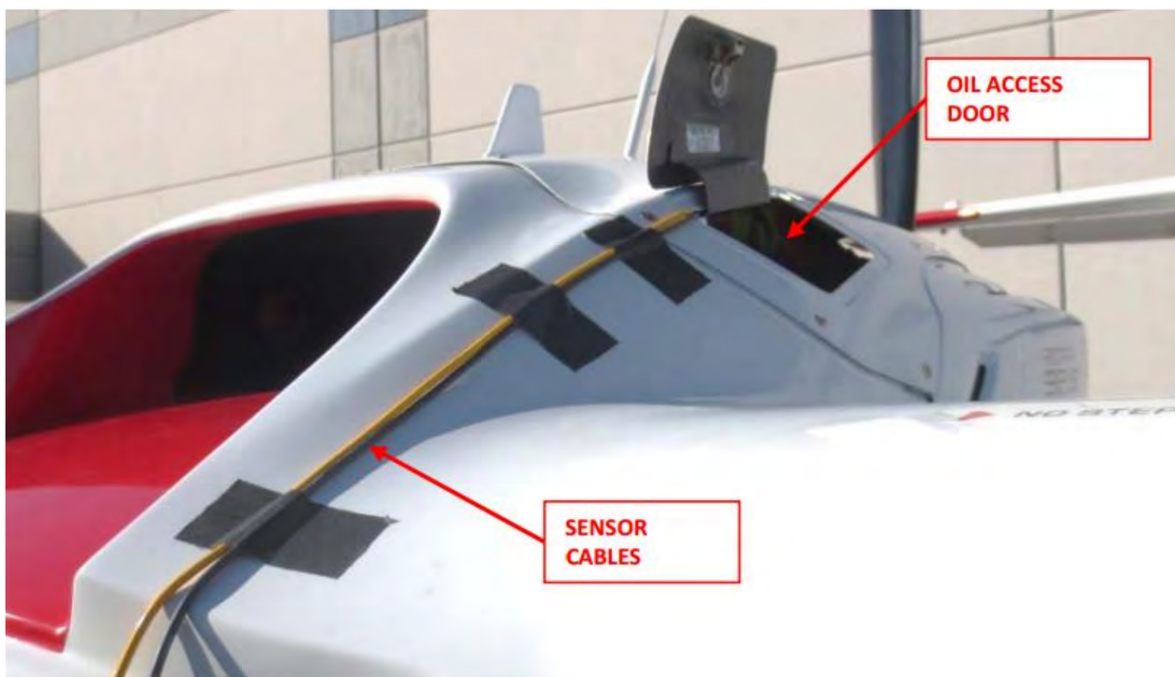


FIGURE 17-60
ACCELEROMETER WIRE ROUTED THROUGH THE OIL ACCESS DOOR

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 17-61.)



FIGURE 17-61
PHOTO TACHOMETER LOCATION

6. Run the optical tachometer and accelerometer wire together to the front of the aircraft. Secure with SpeedTape. (See Figure 17-60.)

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 17-62.)

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 17-62
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 17-63 to select one of the six holes that best matches the suggested location for installing washers.

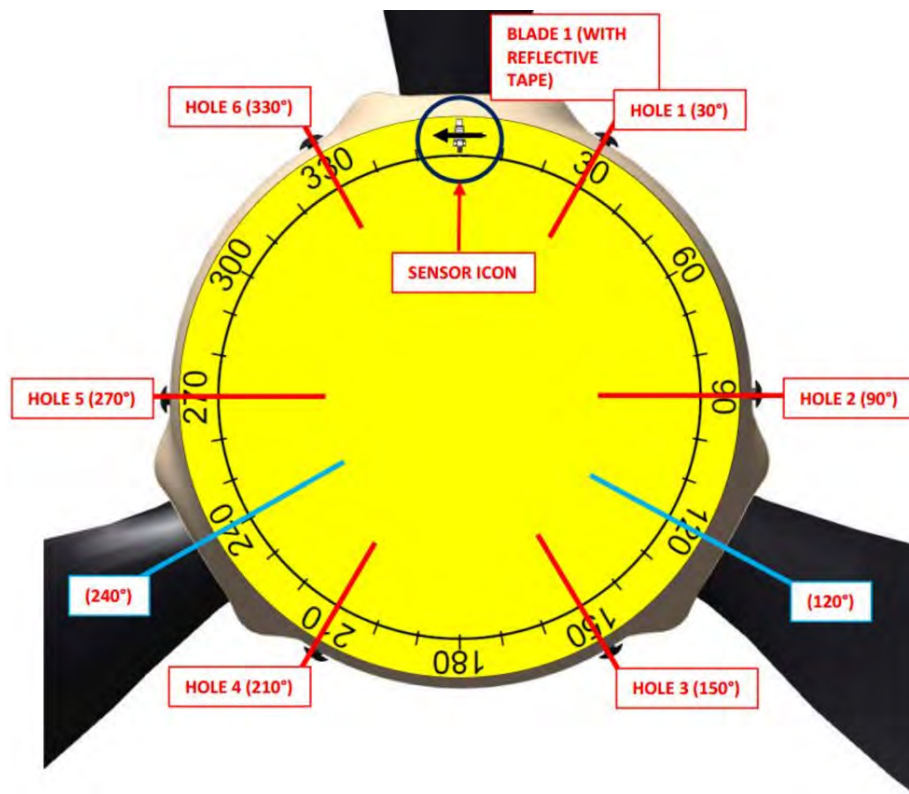


FIGURE 17-63
EXAMPLE OF PROPELLER PROTRACTOR ALIGNMENT AFT LOOKING FWD

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 17-64.)

NOTE: *The original screws may be replaced with longer screws, but the additional weight must be accounted for. Ensure there are at least one thread protruding out of the nut plate.*

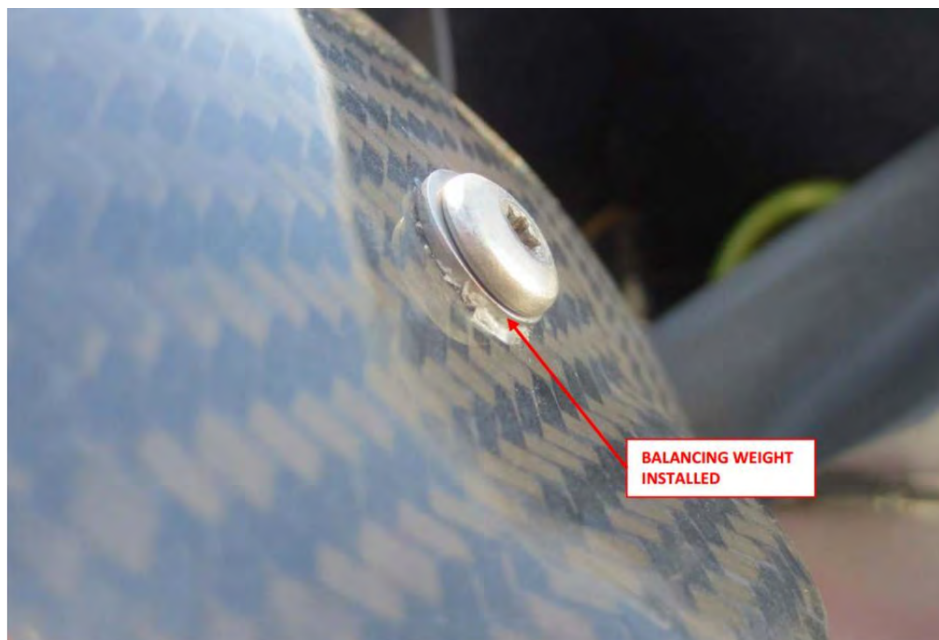


FIGURE 17-64
BALANCING WEIGHT (WASHER) INSTALLED ON SPINNER DOME

14. Repeat Steps 9 through 13 until the vibration magnitude is less than 0.15 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 17-19.)

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 17-111
"Install Spinner Dome" on page 17-112
"Remove Engine Cowlings" on page 17-14
"Install Engine Cowlings" on page 17-19

17.2.3.3 Adjust Propeller Pitch

Use the procedure to adjust the Propeller Pitch.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Digital Protractor

ITL002081 Pitch Adjustment Tool

Parts Required

None

Aircraft System and Number

13 – Propulsion

Consumables

TT-I-735A (ISOPROPYL ALCOHOL, OR EQUIVALENT)

Masking Tape

Rubber Bands

Powder-Free Gloves

Torque Stripe

NOTE: Make sure to measure from center of hub to center of the propeller blade.

TASK INSTRUCTIONS:

1. On all three blades, use tape measure to measure 25.5 inches outward from center of the hub. Place a piece of masking tape on the blade with the outer edge of the tape at 25.5 inches to mark the location. See Figure 17-65.



FIGURE 17-65
POSITION PITCH ADJUSTMENT TOOL ON BLADE

2. On one blade, place Pitch Adjustment Tool on blade with inner face aligned to the 25.5 inch mark. Secure tool to blade using rubber bands. See Figure 17-65.
3. Rotate one blade on the left side looking forward and make sure it is level with the ground and to the trailing edge of the wing. See Figure 17-66.



FIGURE 17-66
BLADE ORIENTATION TO THE GROUND

NOTE: Perform the following steps as required until all 3 blade pitch angles are 19.2° - 19.6° with attachment bolts tight. For optimal balance, all 3 pitch angles should differ from one another by no more than 0.1° .

4. Zero the digital protractor vertically on the propeller extension. See Figure 17-67.



FIGURE 17-67
CALIBRATE DIGITAL PROTRACTOR

NOTE: Do not bump the aircraft after calibration.

5. Carefully move the digital protractor and put the digital protractor on the pitch adjustment tool in the same vertical orientation and measure angle of blade. See Figure 17-68.

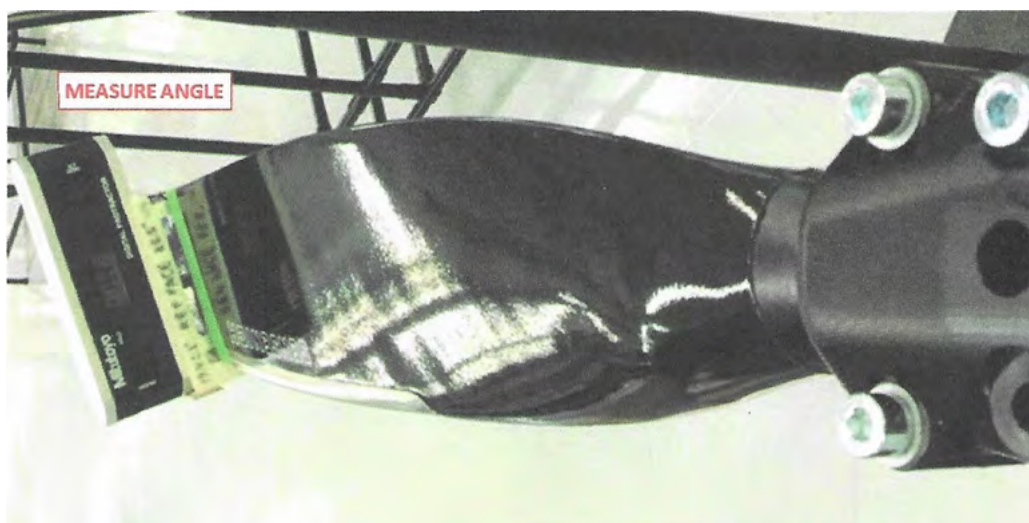


FIGURE 17-68
MEASURE ANGLE OF BLADE

6. Continue to verify pitch angle of all blades through Step 4 and Step 5 and record the angles.
7. If the blade angle is not within the optimal pitch angles or differ from one another by more than 0.1° then proceed to Step 8 for adjustment.

8. Using a fine tip silver marker, draw small witness mark across the blade/hub interface as shown and loosen the bolt. See Figure 17-69.

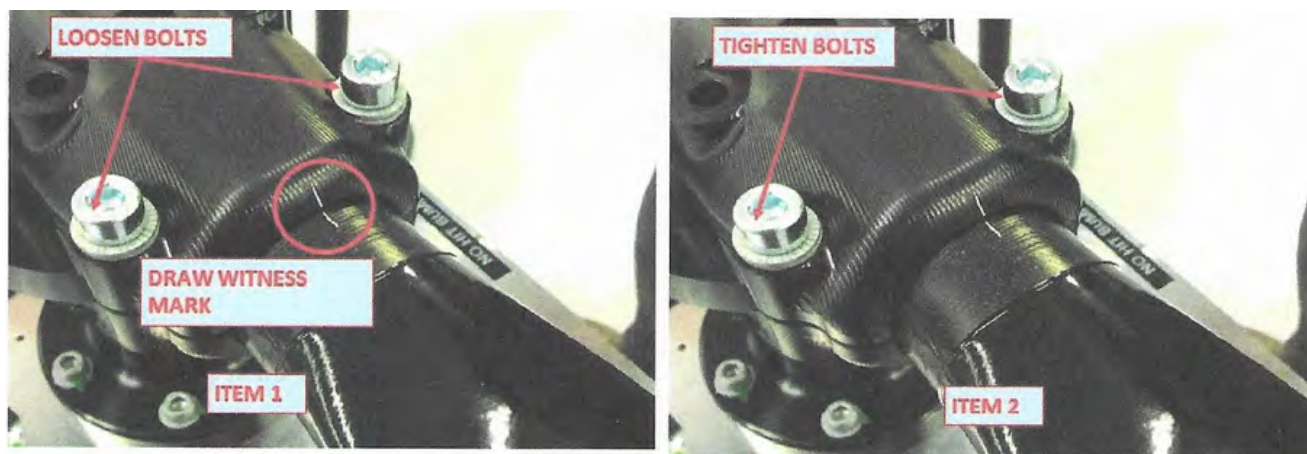


FIGURE 17-69
ADJUST ANGLE OF BLADE

9. Rotate blade to adjust pitch angle to 19.4°.
10. Tighten the bolts incrementally to ensure the blade in hub is secure.
11. Move tool to the next blade and repeat Step 8 for the next blade.
12. Verify pitch angle of all blades throughout process.
13. Torque 6x fasteners according to the sequence. Measure pitch angle of each blade periodically throughout the sequence to ensure it stays between 19.2°-19.6°. See Figure 17-70.

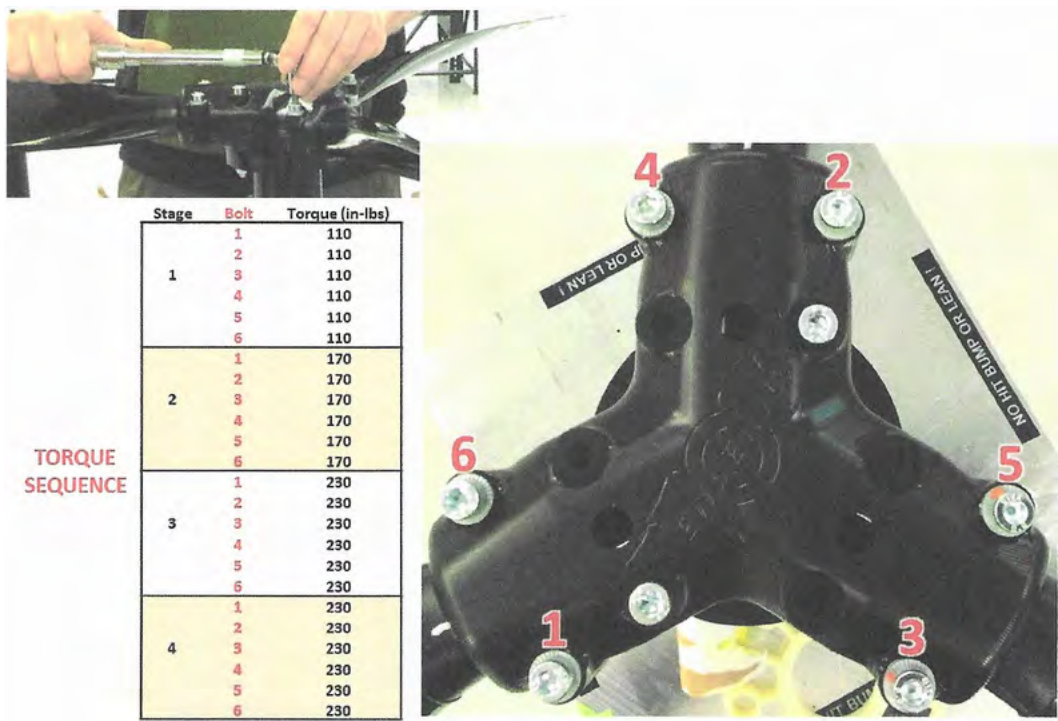


FIGURE 17-70
TORQUE AND SEQUENCE

14. Apply torque stripe to 6x bolts.

VERIFICATION METHOD:

Verify propeller tracking is within 3/16 inch.

17.2.3.4 Propeller Assembly

Instructions for assembling the Sensenich propeller prior to installation onto the Rotax engine.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Calibrated Torque Wrench

Parts Required

None

Aircraft System and Number

13 – Propulsion

Consumables

None

TASK INSTRUCTIONS:

1. See "Adjust Propeller Pitch" on page 17-101 for proper propeller pitch setting.
 2. Assemble propeller per 'PROPELLER ASSEMBLY' task in the latest revision of Sensenich Propellers document 3B0R5.
-

VERIFICATION METHOD:

Verify proper torquing of clamping fasteners and proper pitch setting. (See "Adjust Propeller Pitch" on page 17-101.)

RELATED INFORMATION:

"Propeller Installation Onto Engine" on page 17-109

"Propeller – Minor Blade or Hub Repair" on page 17-110

17.2.3.5 Propeller Removal From Engine

Instructions for removing the Sensenich propeller onto the Rotax engine.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-110

17.2.3.6 Propeller Installation Onto Engine

Instructions for installing the Sensenich propeller onto the Rotax engine.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-107.)
 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:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21

"Propeller Assembly" on page 17-107

"Propeller – Minor Blade or Hub Repair" on page 17-110

17.2.3.7 Propeller – Minor Blade or Hub Repair

Instructions for minor repairs to Sensenich propeller blades and hubs.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 17-108.)
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 17-109.)

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 17-108
"Propeller Assembly" on page 17-107
"Propeller Installation Onto Engine" on page 17-109

17.2.4 Spinner Dome

17.2.4.1 Inspection Instructions

17.2.4.1.1 Remove Spinner Dome

Use the following procedure to remove an existing spinner dome.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21
 "Balance Propeller" on page 17-95

17.2.4.1.2 Install Spinner Dome

Use the following task to reinstall the spinner dome.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

13 – Propulsion

Consumables

Tef-Gel®

TASK INSTRUCTIONS:

1. Slide dome onto bulkhead 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:

"Annual and 100-Hour Inspection – Engine and Propeller" on page 4-21
"Balance Propeller" on page 17-95

Chapter 18

WING

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18.1 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.

18.2 Wing General Maintenance

18.2.1 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

18.2.2 Wing Skins Delaminate/Voids

Use the following steps in conjunction with tap tests to inspect wing skins for voids.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

See Manual Tap Test

Parts Required

None

Aircraft System and Number

14 – Wing

Consumables

None

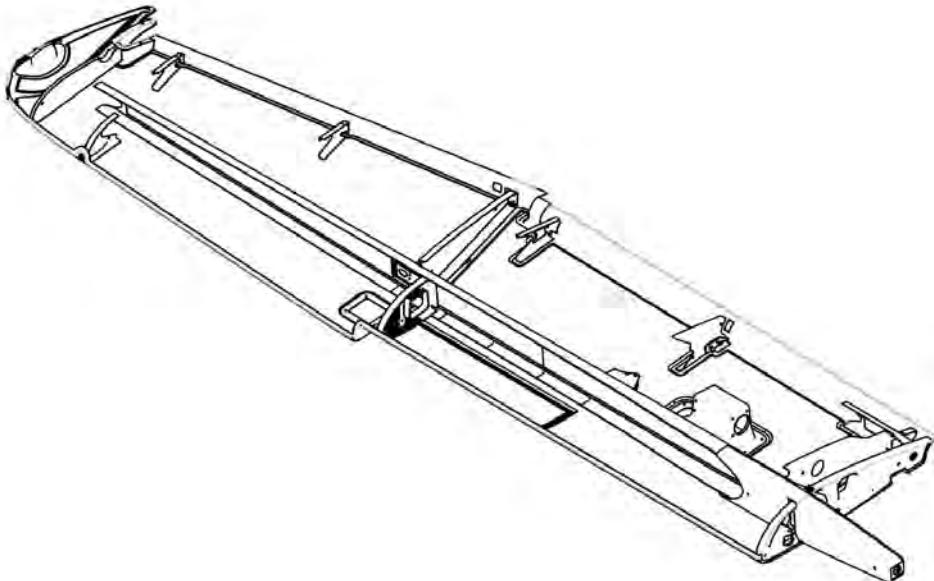


FIGURE 18-1
INTERNAL STRUCTURAL LAYOUT OF WING

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 4-56.)
 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 4-56

18.2.3 Exterior/Interior Wing Control Surfaces

The following can be used for the general inspection of the exterior and interior wing control systems.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 10-66.)
 2. Ensure rigging is complete on ailerons. (See "Inspect Roll Rigging" on page 10-17.)
 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 10-17

"Inspect Flap Rigging" on page 10-66

18.2.4 Wing Bonded Joints, Cracks, or Delaminations

The following is to be used for inspecting the wing bonded joints, cracks, or delaminations.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

18.2.5 General Wing Inspection

The following should be used to inspect the left and right wings of the A5-B.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

14 – Wing

Safety Equipment

As Needed

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.

18.2.6 Remove Left Wing

Instructions for taking the left wing off of the airplane.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

A second person and a ladder are needed to hold the wing.

Parts Required

None

Aircraft System and Number

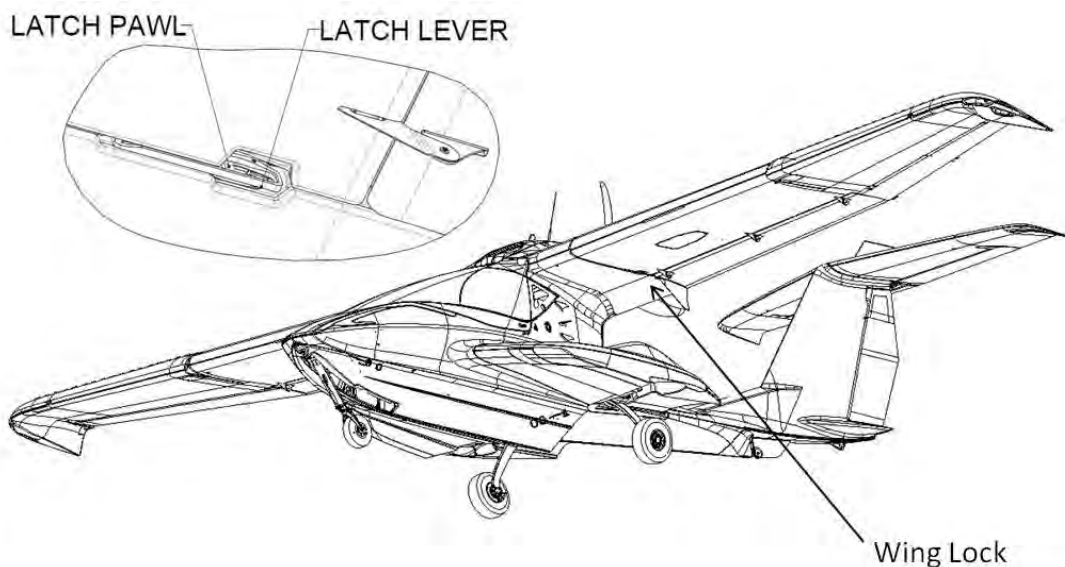
14 – Wing

Consumables

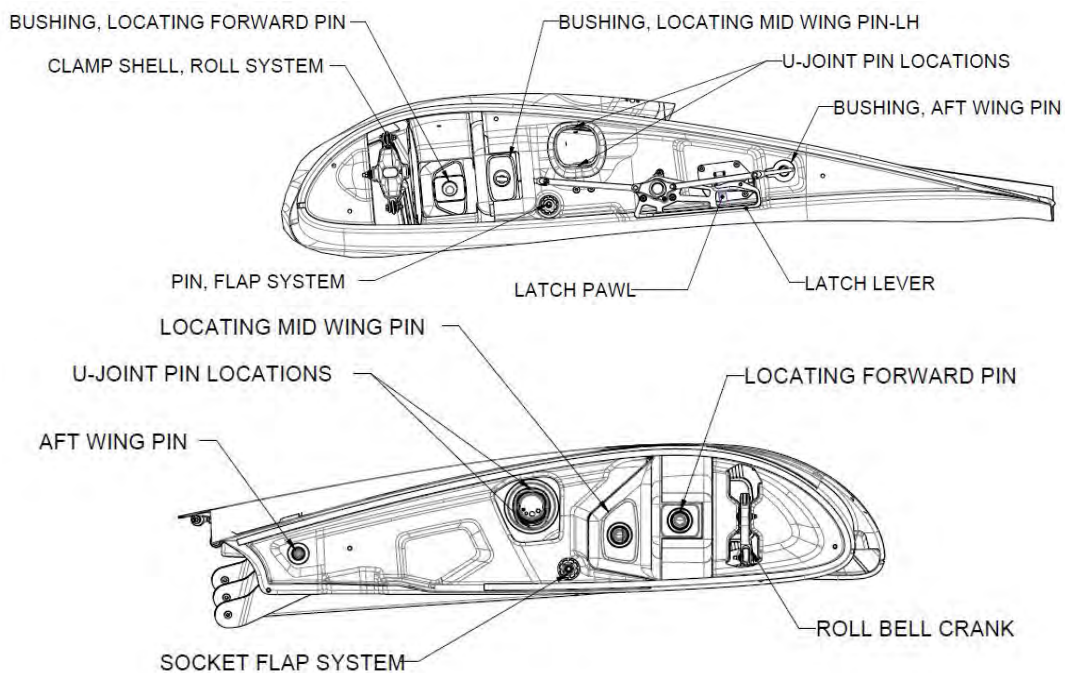
None

TASK INSTRUCTIONS:

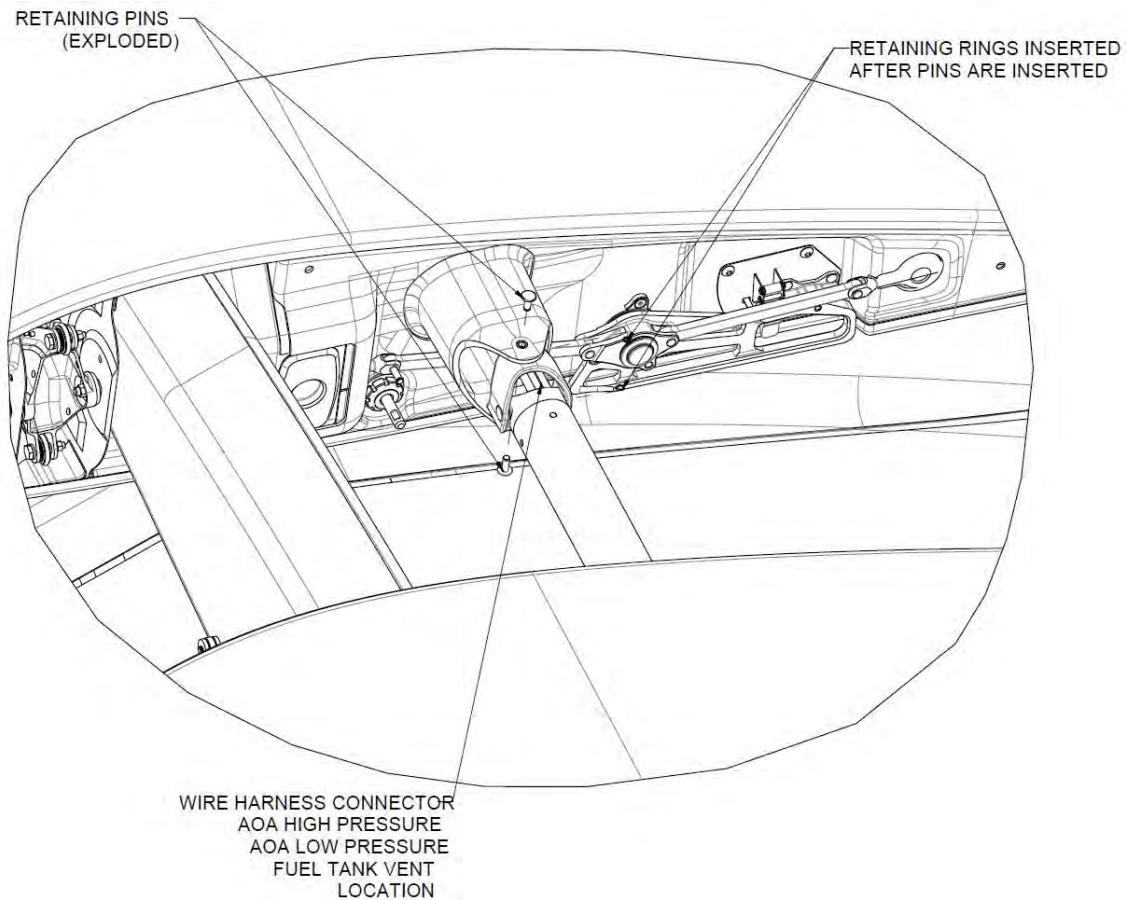
1. Unlock the wing locking mechanism by pressing the latch pawl on the wing lock switch, then simultaneously pull the wing handle lock down all the way to unlock both locking pins.



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.

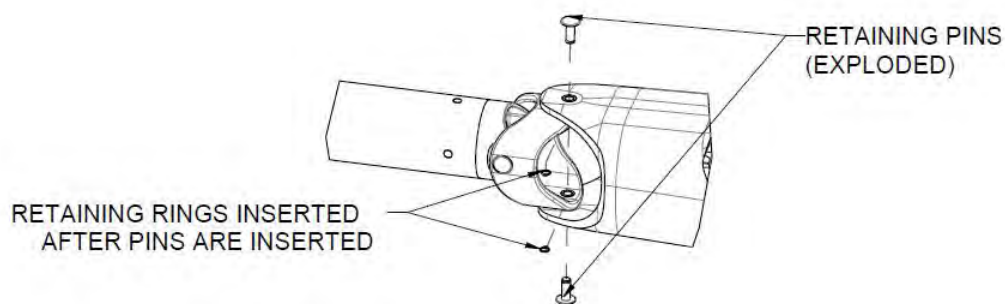


3. Locate the avionics tubes, electrical harness for lights, and fuel vent tube inside the hinge.



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.

18.2.7 Install Left Wing

Use the following procedure to install the left wing onto the airplane.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.
 14. Perform AOA system leak check. (See "AOA System Testing" on page 14-192.)
-

VERIFICATION METHOD:

Carefully inspect wing fold joint to ensure proper latching and security. Power on master switch and check annunciator panel to confirm no light indicating to secure wing/tail (horizontal tail tips must also be installed).

RELATED INFORMATION:

"AOA System Testing" on page 14-192

18.2.8 Remove Right Wing

Instructions for taking the right wing off of the airplane.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

18.2.9 Install Right Wing

Instructions for installing the right wing onto the airplane.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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. Power on master switch and check annunciator panel to confirm no light indicating to secure wing/tail (horizontal tail tips must also be installed.)

18.2.10 Remove Center Wing EPDM Foam

Use the following procedure to remove the EPDM foam on the center wing.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required**Parts Required**

No

Aircraft System and Number

14 – Wing

Consumables

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

TASK INSTRUCTIONS:

1. Fold the wing(s) with the damaged EPDM foam.

2. Remove the damaged EPDM foam on the center wing completely and discard.
 3. Clean with ISOPROPYL ALCOHOL and wipe clean with lint free cloth.
-

VERIFICATION METHOD:

Once the EPDM is removed completely, this task is complete.

18.2.11 Install Center Wing EPDM Foam

Use the following procedure to install the EPDM foam on the center wing.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

93725K52 (EPDM FOAM, ADHESIVE BACKED, .125X.375X600)

Aircraft System and Number

14 – Wing

Consumables

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

TASK INSTRUCTIONS:

1. With the wing folded, prepare bonding surface of center wing:
 - a. Clean bonding surface with mild soap and water solution.
 - b. Dry surface.
 - c. Wipe surface with ISOPROPYL ALCOHOL.
 - d. Dry surface using a lint-free cloth.
2. Apply foam seal (93725K52) to tangency of center wing skin \pm .100" (inch) on fuselage side.
3. Locate ends of the seal according to the dimensions shown in reference to the trailing edge. See Figure 18-2 and Figure 18-3.

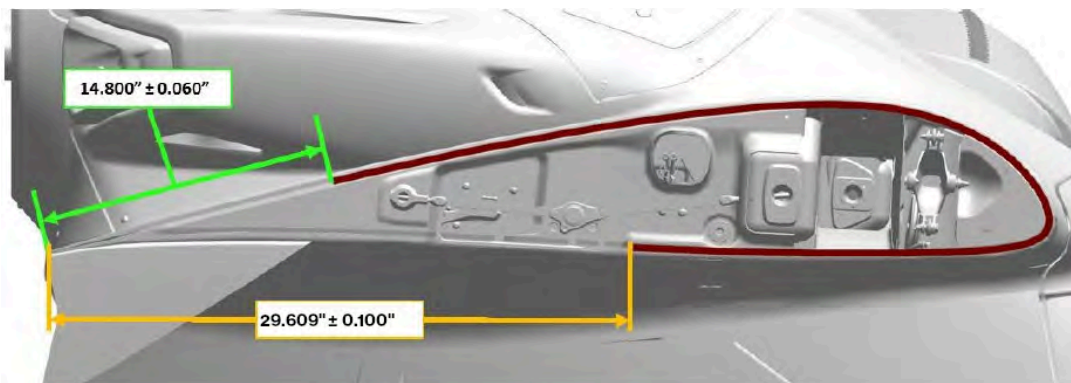


FIGURE 18-2
RIGHT SIDE SHOWN

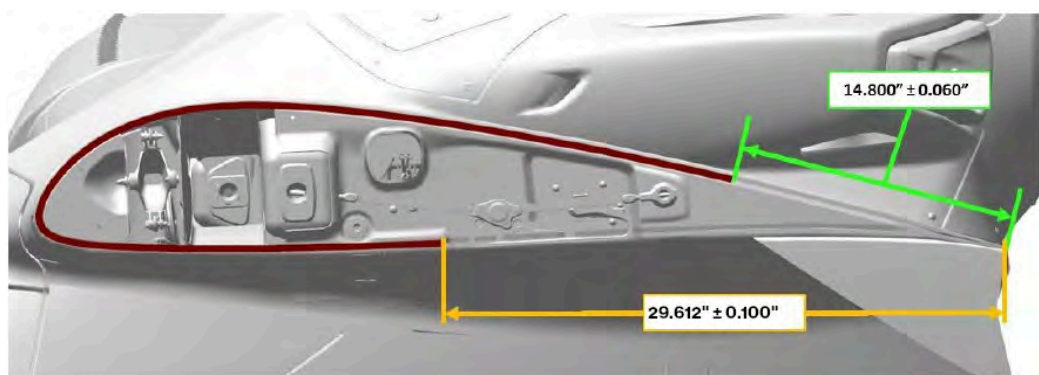


FIGURE 18-3
LEFT SIDE SHOWN

VERIFICATION METHOD:

Once the EPDM foam is installed on the center wing, the task is complete.

18.2.12 Wing Hang Pin Replacement

Use the following procedure to replace the left hand, right hand, or both wing hang pins.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

91732A213 (HELICOIL)

ICA013760 (WING HANG PIN)

Aircraft System and Number

14 – Wing

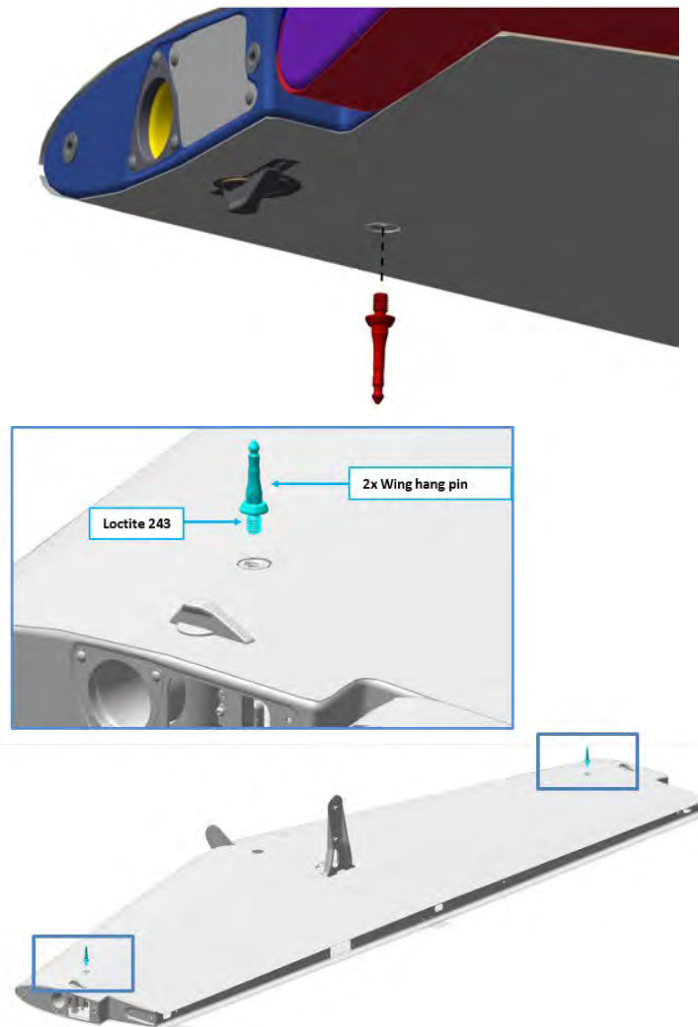
Consumables

LOCTITE® 243™

TASK INSTRUCTIONS:

1. Use a 5/16 wrench to remove the wing hang pin from its receptacle in the horizontal tail, turning it like a bolt.
2. If during removal, Helicoil was damaged then follow the step below:
 - a. Remove damaged Helicoil.
 - b. Replace insert (91732A213): Place insert onto installation tool and drive it a quarter to half-turn below the material's surface.
3. Install new wing hang pins (ICA013760) into the Horizontal Tail. Apply LOCTITE® 243™ to the threads of the replacement pin and thread it into the receptacle in the horizontal tail. Torque to 150 in-lbs.

NOTE: Do not apply any Tef-Gel or Lubricant to the new wing hang pins.

**VERIFICATION METHOD:**

The procedure is finished when all the steps have been completed.

18.2.13 Wing Trailing Edge Light Fence Replacement

Use the following procedure to replace the trailing edge light fence.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

14 – Wing

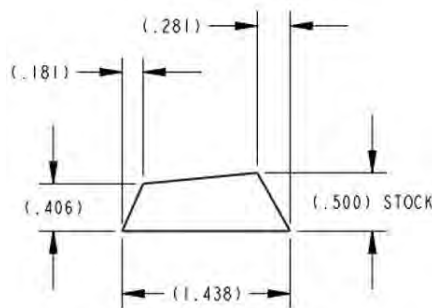
Consumables

None

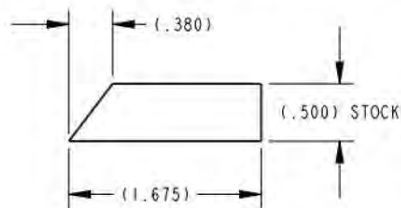
NOTE: Throughout this procedure, apply the methods of the general VHB tape procedure (See Related Information).

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.

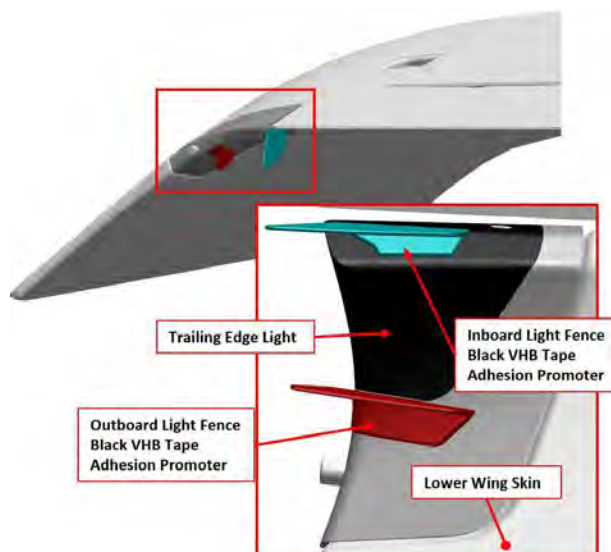


TAPE FLAT PATTERN - INBOARD



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 5-10

18.3 Flaps

18.3.1 Maintenance Instructions

18.3.1.1 Flap Surface Removal

Use the following procedure to remove the flap surface from the wing.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 18-25

18.3.1.2 Flap Surface Installation

Use the following procedure to install the flap surface on the wing.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 18-4. 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 18-4). An NAS1149C0332R washer should be used under each cotter pin.

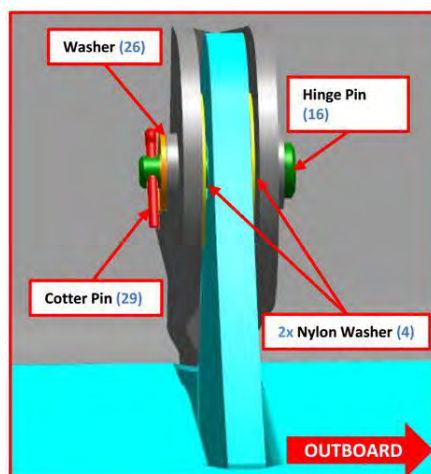


FIGURE 18-4
FLAP SURFACE

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 18-5).

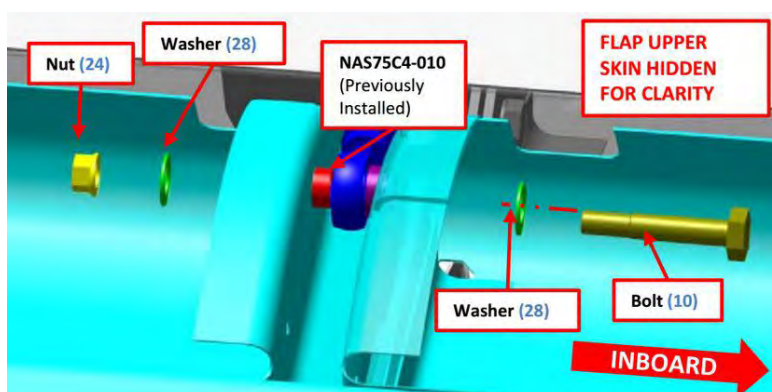


FIGURE 18-5
FLAP SURFACE

VERIFICATION METHOD:

Verify correct flap operation and rigging. (See “Inspect Flap Rigging” on page 10-66.)

RELATED INFORMATION:

"Inspect Flap Rigging" on page 10-66

"Flap Hinge Repair Procedure" on page 18-25

18.3.1.3 Flap Hinge Repair Procedure

If excess free play is identified upon inspection of the flap hinges, perform the following procedure.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 .175", 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 .195" 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 18-22.)
 - 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. Insert correct pin to ensure proper alignment of bushings while curing.
 - j. Wipe off any excess adhesive.
 - k. Allow the adhesive to cure.
 - l. Reinstall the flap. (See "Flap Surface Installation" on page 18-23.)
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 10-66.)

RELATED INFORMATION:

"Inspect Flap Rigging" on page 10-66

"Flap Surface Removal" on page 18-22

"Flap Surface Installation" on page 18-23

18.4 Wing Lock

18.4.1 Maintenance Instructions

18.4.1.1 Wing Lock Switch Mounting Plate Removal

Use the following procedure to remove the wing lock switch mounting plate.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 18-31.)

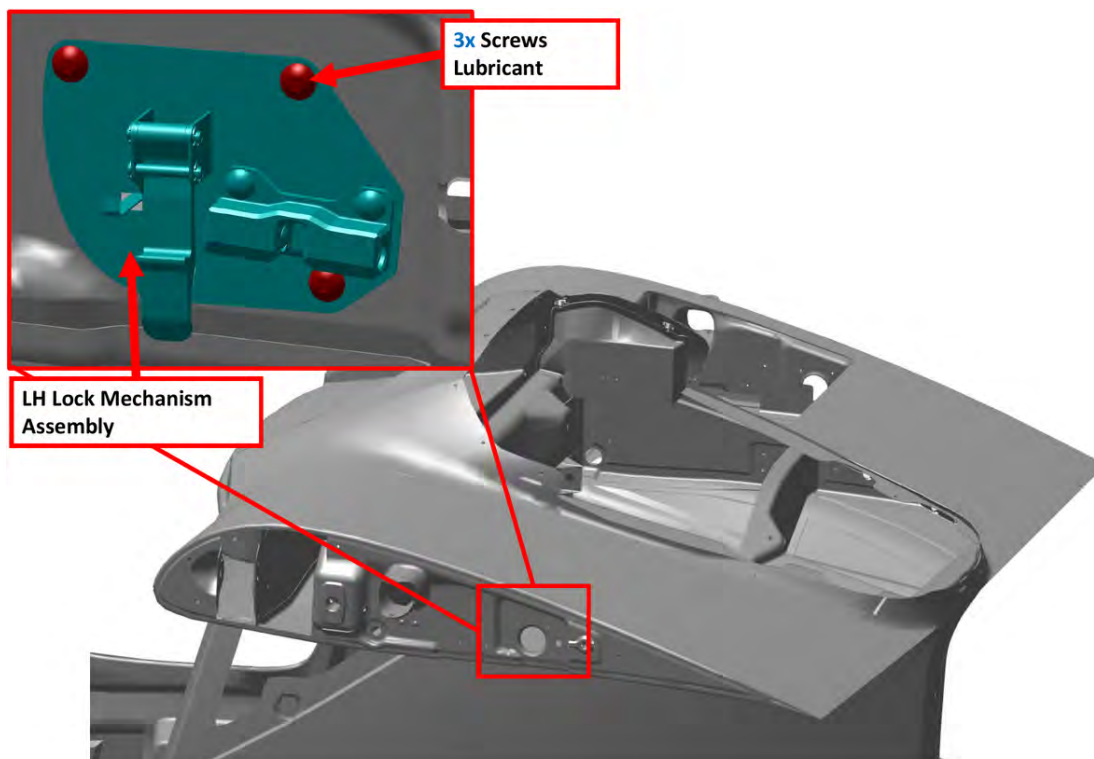


FIGURE 18-6
REMOVE WING LOCK SWITCH PLATE

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 18-6.
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 18-31

"Wing Lock Mounting Plate Component Replacement" on page 18-36

18.4.1.2 Wing Lock Switch Mounting Plate Installation

Use the following procedure to install the wing lock switch mounting plate.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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)

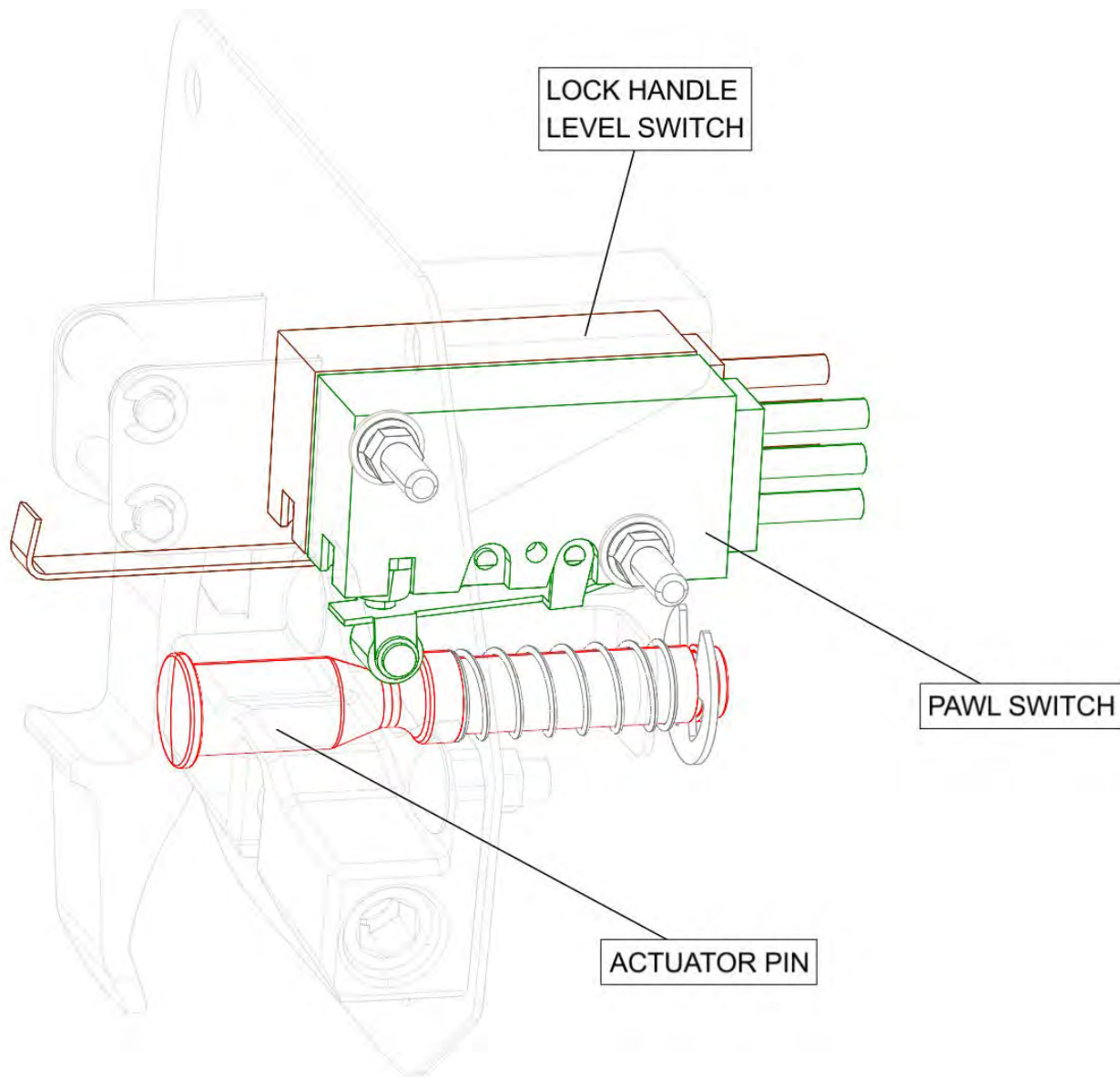


FIGURE 18-7
LH WING LOCK SWITCH MECHANISM (RH OPPOSITE)

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 18-7.
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 18-33.)

VERIFICATION METHOD:

See verification method from "Wing Lock Handle Installation" on page 18-33

RELATED INFORMATION:

"Wing Lock Handle Installation" on page 18-33

"Wing Lock Mounting Plate Component Replacement" on page 18-36

18.4.1.3 Wing Lock Handle Removal

Use the following procedure to remove the wing lock handle.

TASK INFORMATION:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

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 19-3.)

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 18-8)
 - 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 18-8
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 18-27

"Wing Lock Mounting Plate Component Replacement" on page 18-36

18.4.1.4 Wing Lock Handle Installation

Use the following procedure to install the wing lock handle.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

3408A112 (SPRING DETENT)

ICA008149 (WING LOCK BUSHING)

ICA011209 (WING LOCK MOUNTING, RH)

ICA022210 (WING LOCK MOUNTING, LH)

ICA007497 (WING LOCK HANDLE, RH)

ICA007500 (WING LOCK HANDLE, LH)

98090A365 (PLASTIC SHIM)

9714K999 (WAVE SPRING)

ICA011333 (RETAINING RING)

ICA008147 (SPACER)

ICA008144 (PIVOT PIN)

8C62MTF3/100 (FLUSH-HEAD SCREWS)

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 18-10).
 - 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 18-11. 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 18-12. 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 18-8).
 - 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 18-9 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.

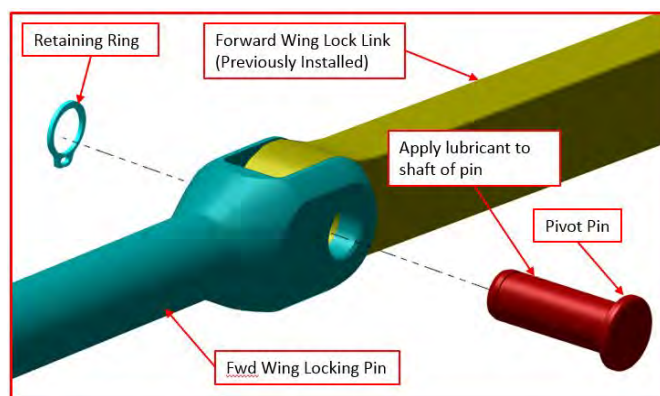


FIGURE 18-9
WING LOCK HANDLE INSTALLATION

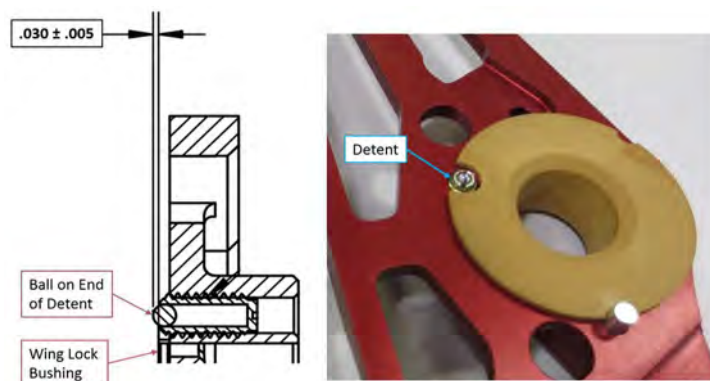


FIGURE 18-10
WING LOCK HANDLE



FIGURE 18-11
WING LOCK HANDLE

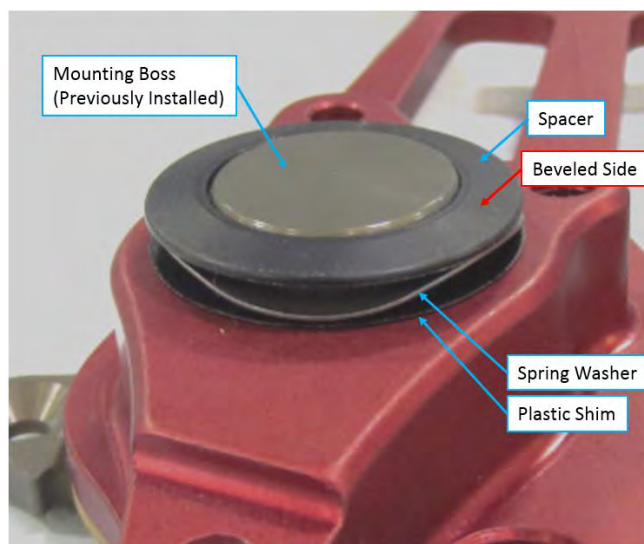


FIGURE 18-12
WING LOCK HANDLE

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_f.
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_f. If not, then the wing lock catch may need to be adjusted. (See "Wing Lock Catch Adjustment" on page 18-40.)
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_f. If not, then the wing lock catch may need to be adjusted. (See "Wing Lock Handle Installation" on page 18-33.)

RELATED INFORMATION:

"Wing Lock Switch Mounting Plate Installation" on page 18-28

"Wing Lock Catch Adjustment" on page 18-40

"Wing Lock Mounting Plate Component Replacement" on page 18-36

18.4.1.5 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA009260 (LOCK MECHANISM HOUSING, RH)
ICA009261 (LOCK MECHANISM HOUSING, LH)
6C37MTT3 (SCREW)
MS21043-06 (NUT)
ICA009633 (LEVER SWITCH, RH)
ICA009632 (LEVER SWITCH, LH)
ICA009635 (PAWL SWITCH, LH)
ICA009634 (PAWL SWITCH, RH)
92949A118 (SCREW)
98019A309 (WASHER)
90715A005 (NUT)
ICA008397 (ACTUATING PIN)
9435K520 (SPRING)
98408A120 (RETAINING CLIP)
ICA010840 (EXTENDED LATCH PAWL)
ICA008395 (PIN)
98408A116 (RETAINING RING)
95630A234 (WASHER)

Aircraft System and Number

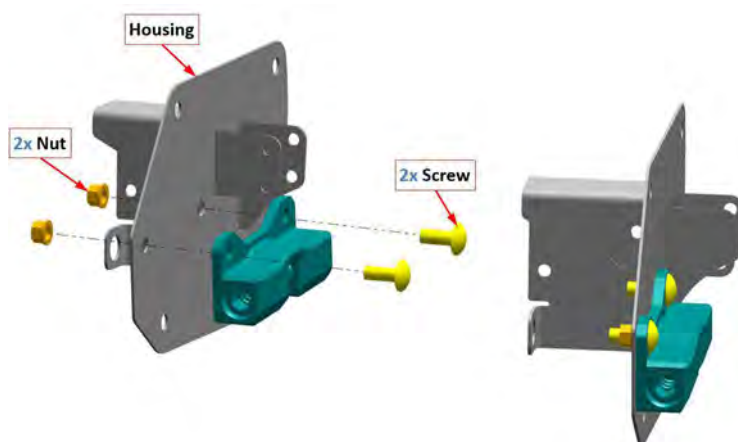
14 – Wing

Consumables

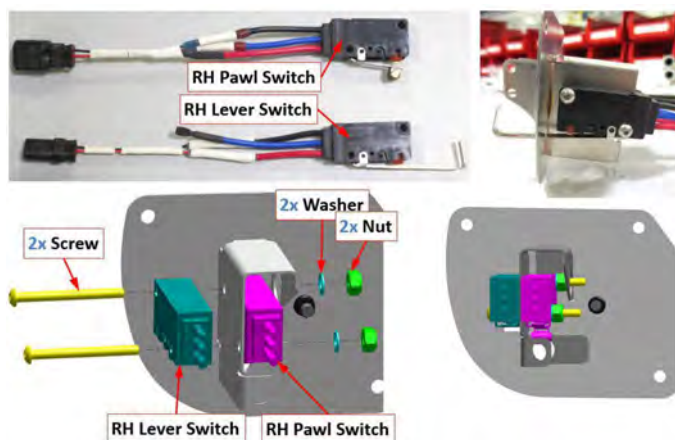
None

TASK INSTRUCTIONS:

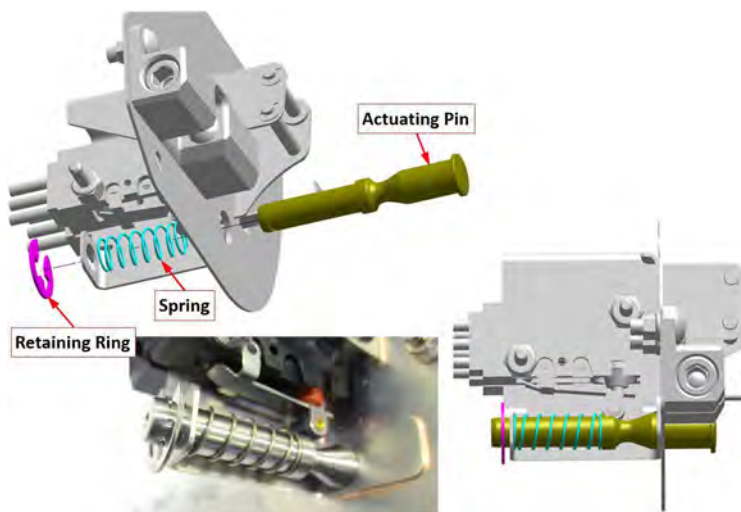
1. Remove the wing lock handle. (See “Wing Lock Handle Removal” on page 18-31.)
2. Remove the wing lock switch mounting plate. (See “Wing Lock Switch Mounting Plate Removal” on page 18-27.)
3. Remove the affected components from the wing lock switch mounting plate, discarding any retaining clips.
4. 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.



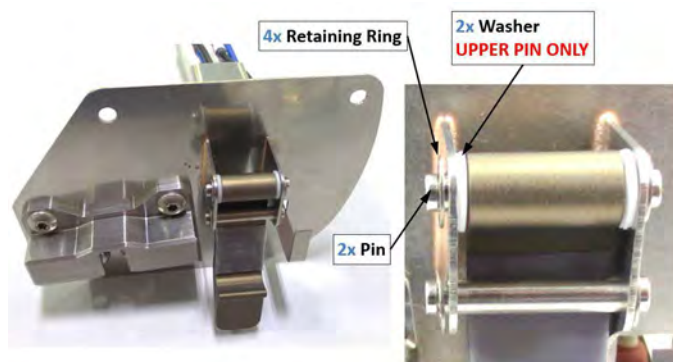
6. Install ICA008397 actuating pin, 9435K520 spring and new 98408A120 retaining clips. Ensure that new retaining clips are used.



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 18-28.)
10. Install the wing lock handle. (See “Wing Lock Handle Installation” on page 18-33.)

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 18-27
- "Wing Lock Switch Mounting Plate Installation" on page 18-28
- "Wing Lock Handle Removal" on page 18-31
- "Wing Lock Handle Installation" on page 18-33

18.4.1.6 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_f. If not, then the wing lock catch may need to be adjusted using the procedure below.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 18-13).

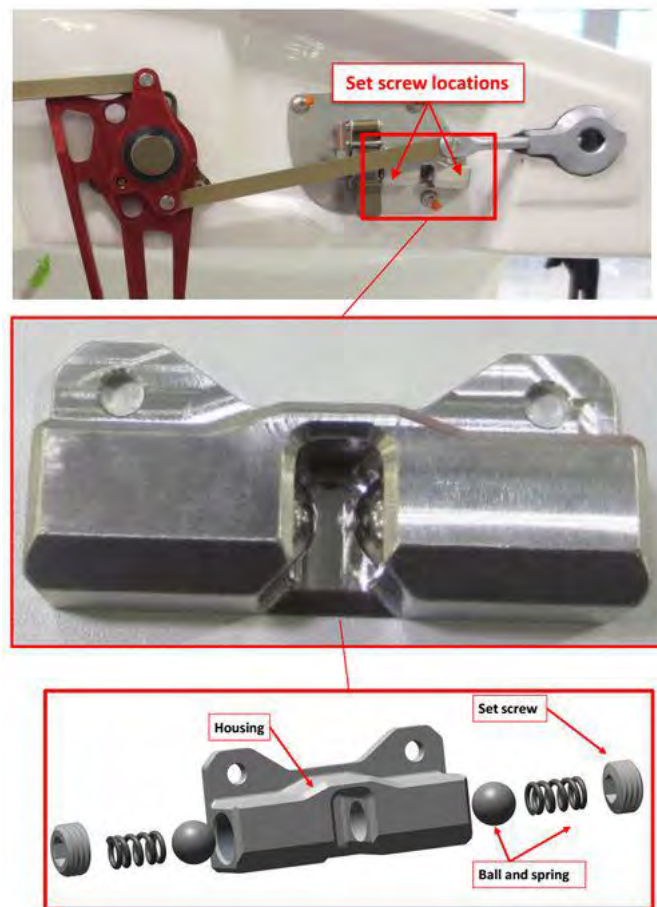


FIGURE 18-13
WING LOCK CATCH

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 18-14).

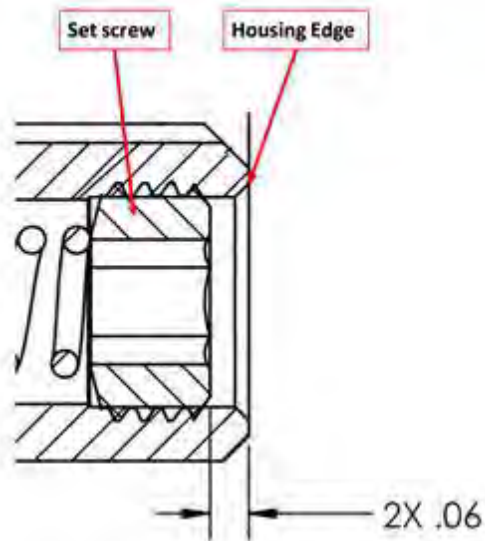


FIGURE 18-14
SET SCREW

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 ± 2 lb_f. Adjust the housing set screws equally, together in or out, to achieve this force.

RELATED INFORMATION:

"Wing Lock Handle Installation" on page 18-33

Chapter 19

WING FOLD MECHANISM

Wing Fold Mechanism Description.....	19-2
Wing Fold Mechanism General Maintenance	19-3
Wing Fold Procedure.....	19-3
Wing Extend Procedure	19-4
Wing Fold/Extend Additional Information.....	19-6
Inspect Wing Pins.....	19-6
Wing Fold Roll Bellcrank Roller Replacement	19-9
Wing Fold Mechanism Security	19-11
Remove Double Lock Wing Hang Assembly	19-13
Install Double Lock Wing Hang Assembly.....	19-14

19.1 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.

19.2 Wing Fold Mechanism General Maintenance

19.2.1 Wing Fold Procedure

Instructions to fold the wings.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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-B 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 19-6.)

VERIFICATION METHOD:

Verify security of the wing on the horizontal tail latches.

RELATED INFORMATION:

"Wing Fold/Extend Additional Information" on page 19-6

"Wing Fold Roll Bellcrank Roller Replacement" on page 19-9

19.2.2 Wing Extend Procedure

Use the following procedure to extend the wing.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

Owner/Pilot

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 19-6.)
-

VERIFICATION METHOD:

Verify wing lock handle is fully latched and the cockpit annunciators are extinguished.

RELATED INFORMATION:

"Wing Fold/Extend Additional Information" on page 19-6

19.2.3 Wing Fold/Extend Additional Information

Helpful reference information about the wing folding system on the A5-B. 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 19-4

"Wing Fold Procedure" on page 19-3

19.2.4 Inspect Wing Pins

Check for excess play in the wing pins.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Outside Micrometer for outside diameters

Precision Pin Gauges for inside diameters

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

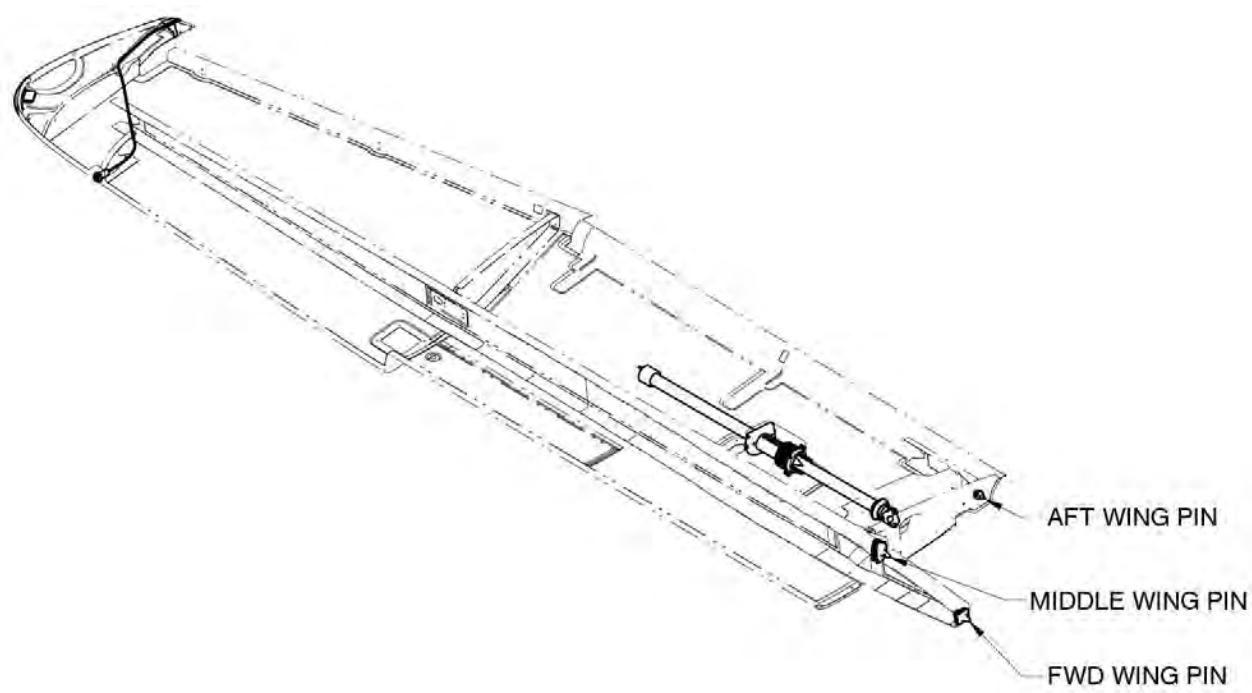


FIGURE 19-1
WING PINS LOCATION.

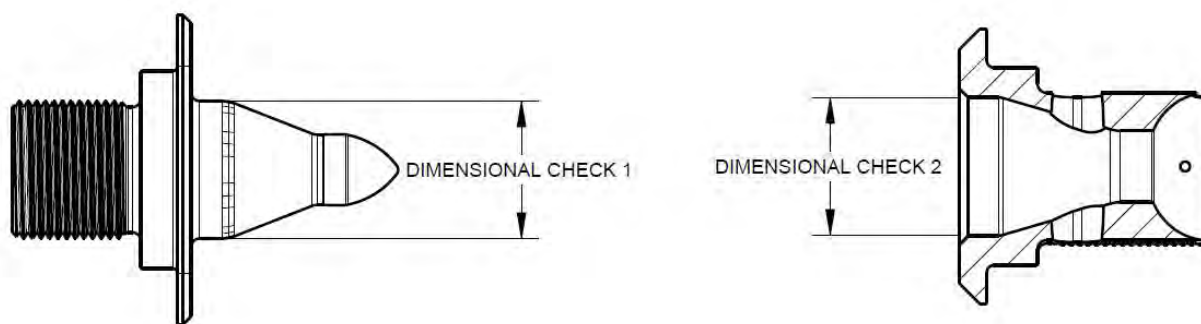


FIGURE 19-2
WING PIN DIMENSIONAL CHECKS.

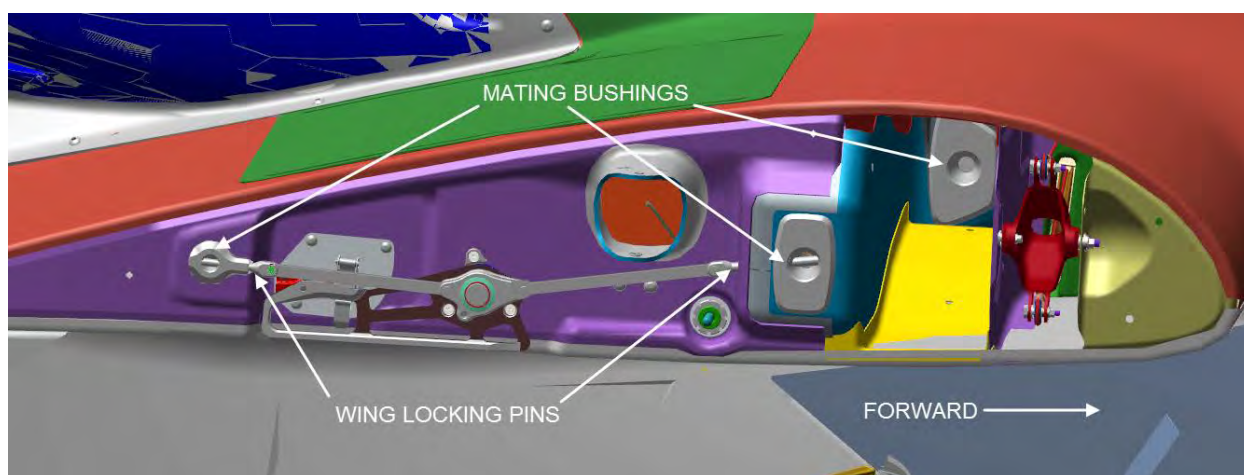


FIGURE 19-3
WING PIN MATING BUSHINGS AND WING LOCKING PINS.

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:

1. 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.*

2. 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 0.9908	Ø 1.0153
Middle Wing Pin	Ø 0.9952	Ø 1.0129
Aft Wing Pin	Ø 0.4702	Ø 0.5431

3. Visually inspect all wing pins and bushings for wear or damage.
4. Measure the locking pin diameters 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 Locking Pin	Ø 0.3035	NA
Aft Wing Locking Pin	Ø 0.2400	NA

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. (See "Wing Lock Handle Removal" on page 18-31. Step 4.)

RELATED INFORMATION:

"Annual and 100-Hour Inspection – Wings" on page 4-11

19.2.5 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:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

ICA009410 (PIN)

MS27640-3A (BEARING)

98410A110 (RETAINING PIN)

Aircraft System and Number

15 – Wing Fold Mechanism

Consumables

MOLYKOTE™

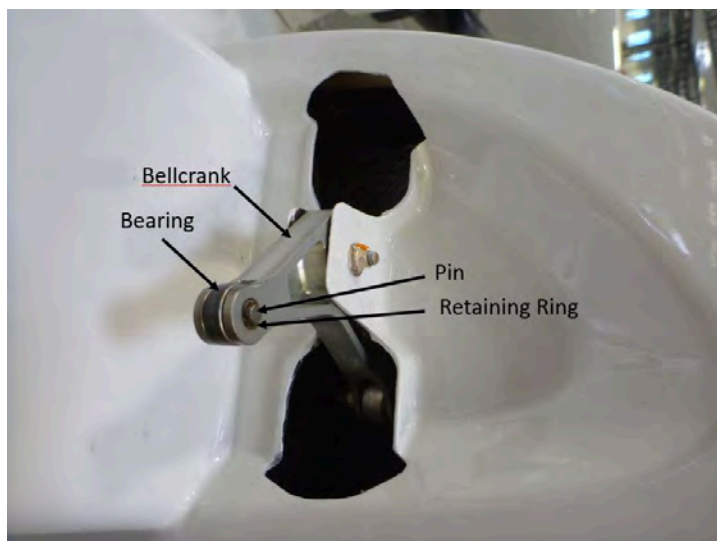


FIGURE 19-4
BELLCRANK AND RETAINING RING

TASK INSTRUCTIONS:

1. Fold the wing to gain access to the ICA008375 bellcrank. (See "Wing Fold Procedure" on page 19-3.)
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 19-3

19.2.6 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:**Applicable Aircraft Serial Numbers**

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

15 – Wing Fold Mechanism

Safety Equipment

As Needed

Consumables

None

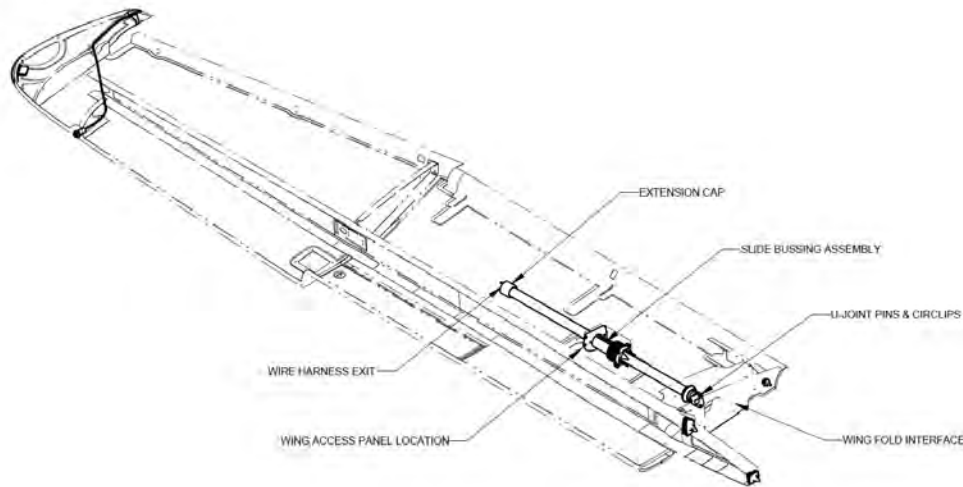


FIGURE 19-5
INTERIOR WING ACCESS PANEL

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.

19.2.7 Remove Double Lock Wing Hang Assembly

Use the following procedure to remove the LH or RH double lock wing hang assembly.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

15 – Wing Fold Mechanism

Consumables

None

TASK INSTRUCTIONS:

1. Remove screw securing trailing edge strobe light.
2. Remove trailing edge strobe light.
3. Remove set screw from TE light assembly holding cable in position.
4. Remove snap ring on LE of wing securing double lock assembly.
5. Use flat tip on socket assembly to remove assembly from wing.

NOTE: *Attach a long piece of string to the button side of the cable assembly so the parts can easily be fed back through upon assembly.*

6. If wing hang housing needs repaired, contact ICON. (See "Continued Operational Safety Reporting" on page 23-3.)
-

VERIFICATION METHOD:

The double lock wing assembly has been removed.

19.2.8 Install Double Lock Wing Hang Assembly

Use the following procedure to install the LH or RH double lock wing hang assembly.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Wing Hang Tool (or similar)
ITL001572-Tool Setting Die
Tooling Aid
Press

Parts Required

(2) VH-81-S16 (RETAINING RING, PLAIN, LIGHT DUTY, .812X.026)
ME000670 (DOUBLE LOCK WING HANG ASSEMBLY)
2-011 N674-70 (O-RING, PARKER, .313 ID, .438 OD)
90251A141 (SET SCREW, CUP POINT, 6-32 X .125)
(3) 9642K21 (BALL, .0625, 440C)
(6) 9642K29 (BALL .125, 440C)
ICA010117 (DUST SHIELD, WING HANG)
ICA010118 (CAP, BALL RETAINER)
ICA010119 (BALL SLEEVE)
ICA010120 (BUTTON, WING HANG)
ICA010122 (SPRING CAP)
ICA010123 (CABLE ASSY, WING HANG)
ICA010124 (CABLE CONDUIT ASSY)
ICA010125 (SPRING, WING HANG SLEEVE)
LC 029C 09 S (COMP SPRING, OD .24, WIRE DIA. .029, F.L. .875, CRES 302)

Aircraft System and Number

15 – Wing Fold Mechanism

Consumables

Loctite® 263 (THREADLOCKER, PRIMERLESS, HIGH STR, HEAT REMOVAL, RED)
ICA012078 (LUBRICANT, GENERAL PURPOSE) Tef-Gel®

NOTE: If Double Lock Wing Hang Assembly is not assembled, follow Steps 1-13 to assemble prior to installation. If pre-assembled, proceed to Step 14 to install Wing Hang Assembly.

TASK INSTRUCTIONS:

1. Insert the cable assembly (ICA010123) through the tooling aid and make sure the cable seats flush with the bushing. (See Figure 19-6.)

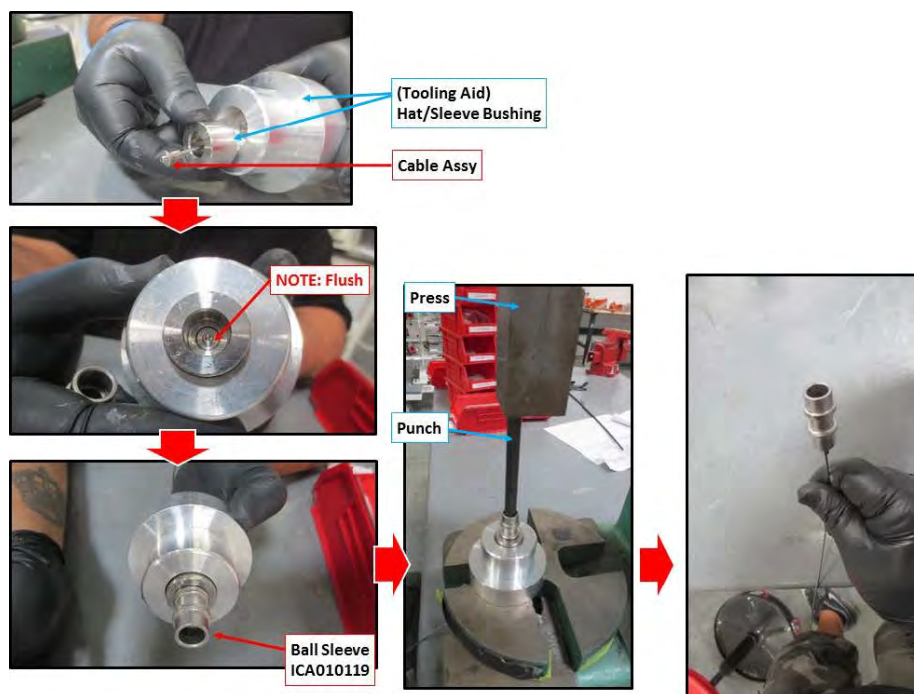


FIGURE 19-6
CABLE AND TOOL

CAUTION: Be cautious while pressing the ball sleeve. Excessive force might lead to cracking.

2. Load the ball sleeve (ICA010119) onto the bushing.(See Figure 19-6.)
3. Press the ball sleeve to the cable using a punch and a press. (See Figure 19-6.)
4. Assemble the Cap assembly using one cap (ICA010118), one spring cap (ICA010122), one dust shield (ICA010117), and one spring (LC029C09S). (See Figure 19-7.)



FIGURE 19-7
CAP ASSEMBLY

5. Lock the assembly by pressing the spring cap using a punch and a press.
6. Use the deep side of ITL001572-Tool Setting Die, or similar, on the cap assembly to create curvature using the press. (See Figure 19-8.)



FIGURE 19-8
TOOL SETTING FOR CAP

7. Use the shallow side of the ITL001572-Tool Setting Die, or similar, on the cap assembly to create the curvature using the press. (See Figure 19-8.)
8. Use Tef-Gel to stick 5 balls-big (964K29) on the lower area and 3 balls-small (964K21) on the upper area of the cap assembly. (See Figure 19-9.)

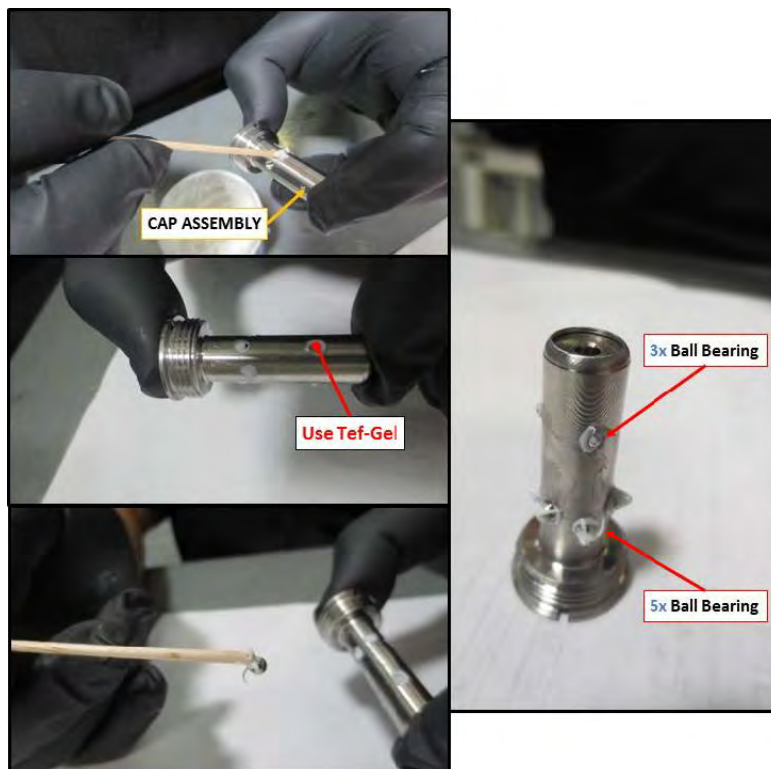


FIGURE 19-9
BEARING INSTALLATION

9. Cap Assembly Installation (See Figure 19-10.):
 - a. Use a punch to hold the cap assembly and press it down.
 - b. Push 8 ball bearings inside the cap assembly.
 - c. Install spring (ICA010125) and then the cable assembly.
 - d. Push the cable assembly down till it passes the bearing slot and release to lock it.



FIGURE 19-10
CAP ASSEMBLY

10. Insert the other end of the cable assembly through the cable assembly conduit.
11. Apply Loctite 263 on the threads of the cap and lock it using wing Hang Receptacle Flat Head Driver or similar tool. (See Figure 19-11.)

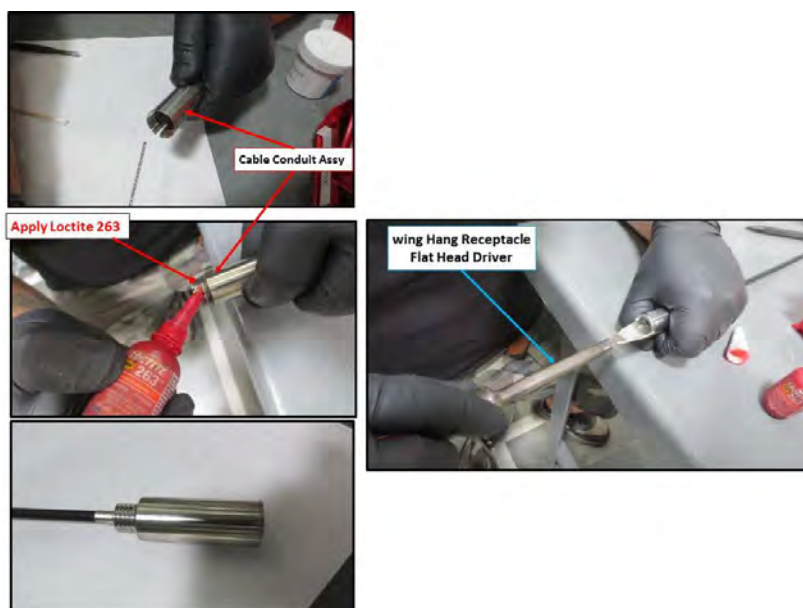


FIGURE 19-11
CABLE CONDUIT ASSEMBLY

NOTE: Make sure the cable is relaxed in a straight length before proceeding below.

12. Install O-Ring (2-011 N674-70) and cut cable assembly to length. (See Figure 19-12.)

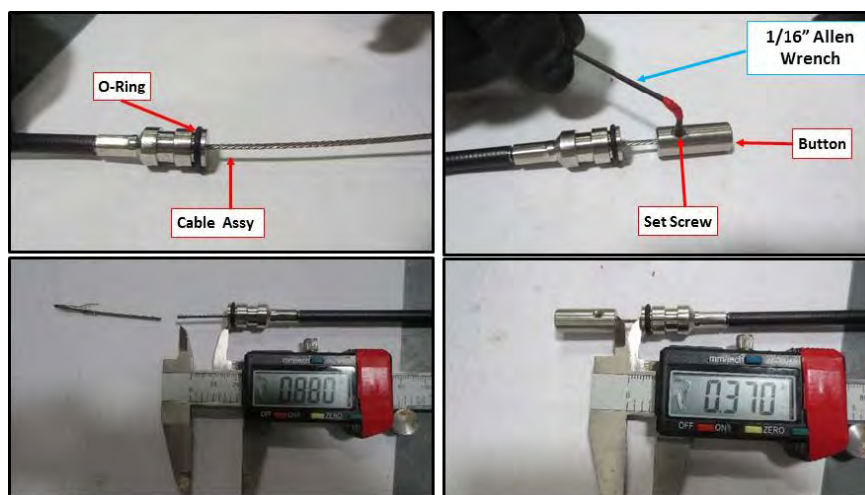


FIGURE 19-12
END OF CABLE INSTALLATION – BUTTON

13. Once the gap is set, install the set screw (90251A141) into the button and tighten it with 1/16" Allen wrench. (See Figure 19-12.)

14. Slide the Wing Hang Assembly through the Wing Hang Housing and feed the cord through the Trailing Edge (TE) light bucket. (See Figure 19-12.)
15. Use the Wing Hang Tool or similar and screw the Wing Hang into the Wing Hang housing. (See Figure 19-13.)

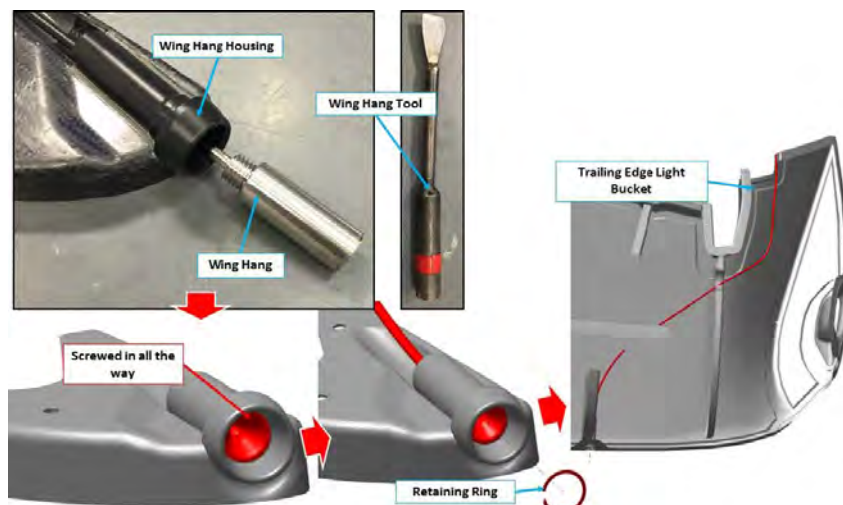


FIGURE 19-13
WING HANG INSTALL

NOTE: Screw the wing hang in until it will not screw in anymore.

16. Install 1 Retaining Ring (VH-81-S16) over the wing hang.

VERIFICATION METHOD:

Test function of wing hang and manually roll aircraft around rough terrain with wings folded to ensure components have been successfully installed.

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ICON PARACHUTE SYSTEM (IPS)

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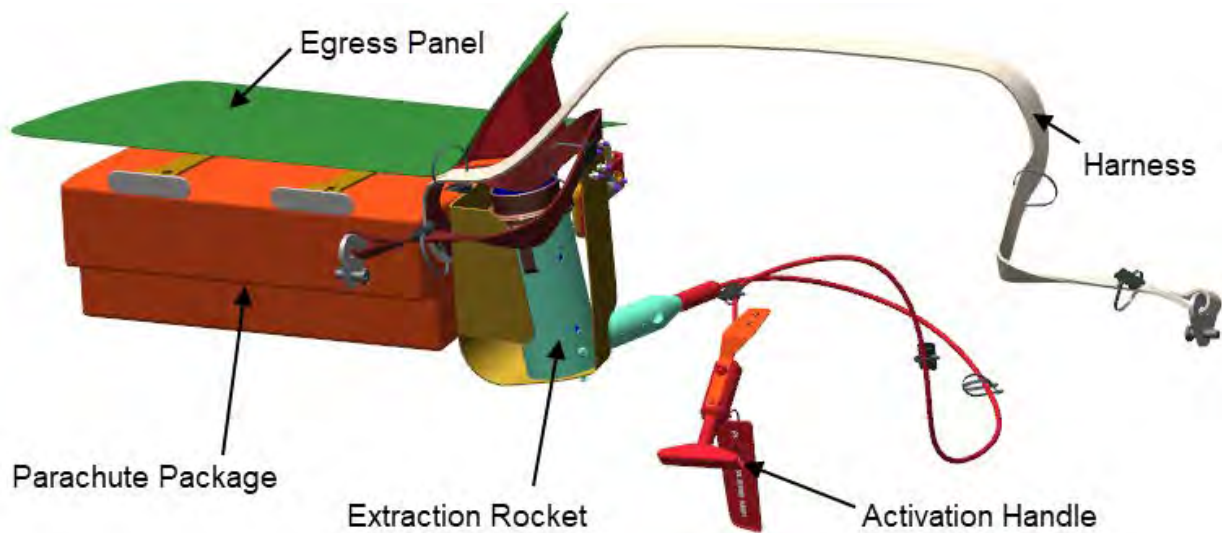
RELATED INFORMATION:

 "Annual and 100-Hour Inspection – Parachute" on page 4-18

20.1 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.

20.2 Diagram/Schematic



20.3 IPS General Maintenance

20.3.1 Basic Parachute Inspection

Use the following tasks to inspect the parachute.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 activation 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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

20.3.2 Remove Parachute Egress Panel

Use the following procedure to remove the Parachute Egress Panel.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

Plastic Scraper

Parts Required

None

Aircraft System and Number

16 – ICON Parachute System (IPS)

Consumables

None

TASK INSTRUCTIONS:

1. If necessary, remove the engine cowling. (See “Remove Engine Cowlings” on page 17-14.)
2. Inspect the area around the IPS interface for any damage or wear. If any anomalies are detected, stop and report to ICON Aircraft.
3. Inspect the parachute egress area for any cracks or displacement of the bond between the fuselage and the IPS egress panel.
4. Use a plastic scraper to cut into, and pry apart, the bond between the IPS Egress Panel and the fuselage of the aircraft.
5. Remove the IPS Egress Panel.

WARNING: Handle the BRS Recovery System with extreme care. Injury and property damage may occur if BRS Recovery System is fired accidentally. Aircraft will render it and the aircraft unusable until the factory can service it. Do not fire it on the ground. Install the detent pin with “REMOVE BEFORE FLIGHT” flag into the activation handle before further inspection.

6. Inspect the front and rear harness with a flashlight and mirror for evidence of leakage, stains, or moisture.
 7. Check for dents, breaks, and/or corrosion of metal components.
 8. Inspect condition and tension of the parachute retaining straps, straps should be taut. Check for chaffing where straps go through mounts.
 9. Check routing and connection of all harness traps and security of bolts and locknuts.
 10. Ensure mounting screws are tight.
 11. After the inspection is complete, remove the detent pin with the “REMOVE BEFORE FLIGHT” flap from the activation handle.
-

VERIFICATION METHOD:

Panel has been removed.

20.3.3 Install Parachute Egress Panel

Use the following procedure to install the Parachute Egress Panel.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Special Tools Required

None

Parts Required

None

Aircraft System and Number

16 – ICON Parachute System (IPS)

Consumables

Powder-Free Nitrile Gloves (As Required)

TT-I-735-A, or equivalent (ISOPROPYL ALCOHOL) (As Required)

Sharpie, Fine Point (As Required)

Aluminum Speed Tape (As Required)

Popsicle Sticks (As Required)

CA Superglue (As Required)

QA-6 NCF Quick-aerosol (CA Glue Accelerator) (As Required)

3M Firebarrier 2000 PLUS (FIRE BARRIER SILICONE SEALANT, 3M) (As Required)

TASK INSTRUCTIONS:

1. Best-fit the IPS Egress Panel in the joggles of the Upper Center Wing Skin such that there is a consistent joggle-edge gap all around. Check that a consistent bond-gap of 0.005 to 0.020 inch is achievable while the a-surface of the IPS Egress Panel is approximately flush (flush \pm 0.020 inch) with the outer surfaces of the Upper Center Wing Skin.
2. Prepare the bond surfaces of the Upper Center Wing Skin and IPS Egress Panel. (See "Paint Touch Up Procedures" on page 1-3.)

NOTE: Ensure adhesive does not contact the parachute or rocket components.
3. Apply a continuous bead of adhesive (3M Fire Barrier 2000+, maintain a circular bead diameter of approximately 0.0625-0.125 inch) upon the Upper Center Wing Skin all-around the IPS Egress Panel Bond Interface. Center, as best as possible, the bead upon the joggled bond flange. Use a

fixture, if necessary to maintain the consistent bond-gap of 0.005 to 0.020 inch and to ensure the a-surface of the IPS Egress Panel is approximately flush (flush \pm 0.020 inch) with the outer surfaces of the Upper Center Wing Skin. Ensure adhesive squeezes out beyond the exterior edge of the IPS Egress Panel into the joggle-edge-gap. Fillet the adhesive.

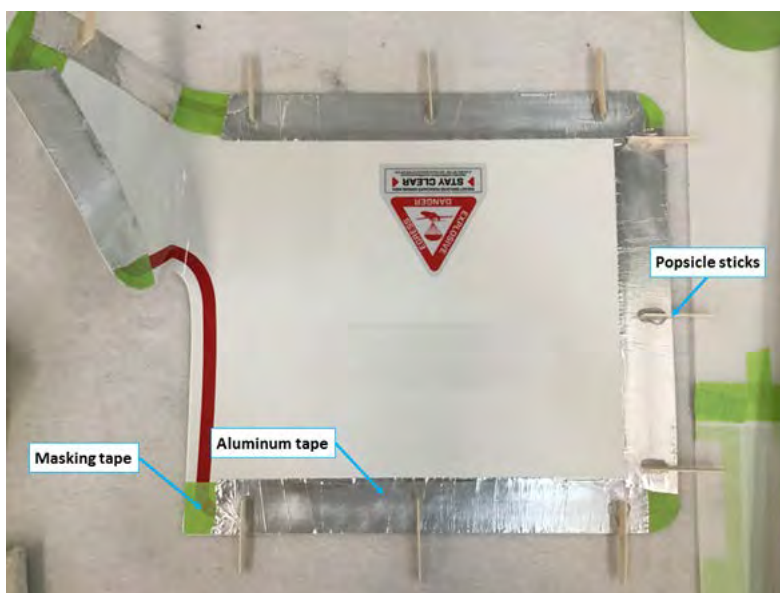


FIGURE 20-1
EGRESS PANEL BONDING

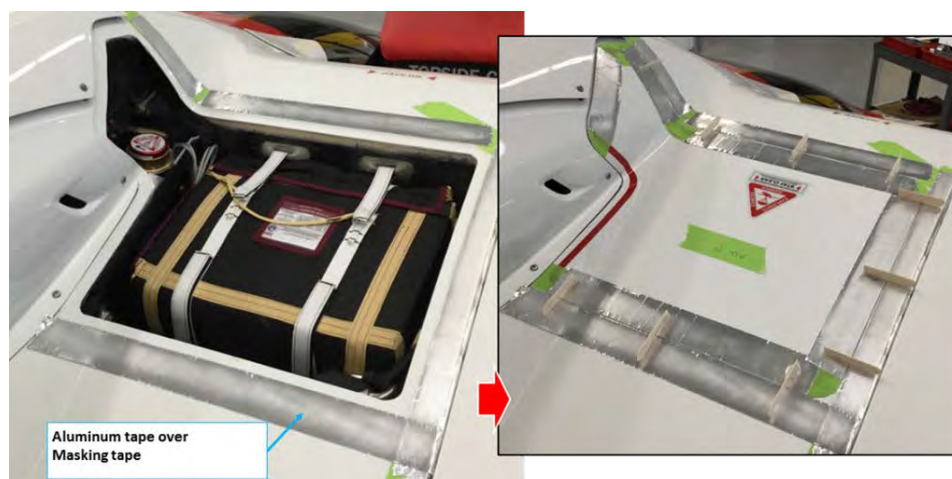


FIGURE 20-2
EGRESS PANEL PREP

4. Allow adhesive to cure for 24 hours.
5. Minimally apply a continuous bead of adhesive (3M Fire Barrier 2000+) as required to fill joggle-edge-gap. Wipe away and smooth excess adhesive to create an approximately flush (flush \pm 0.020 inch) transition from the Upper Center Wing Skin to the IPS Egress Panel. Ensure the adhesive is applied such that there is a clean edge, with a maximum profile tolerance of 0.020 inch. (Consider masking the extents of the joggle gap with masking tape to provide a means to produce a clean edge following the filling operation. Remove the masking tape while the adhesive is still wet.

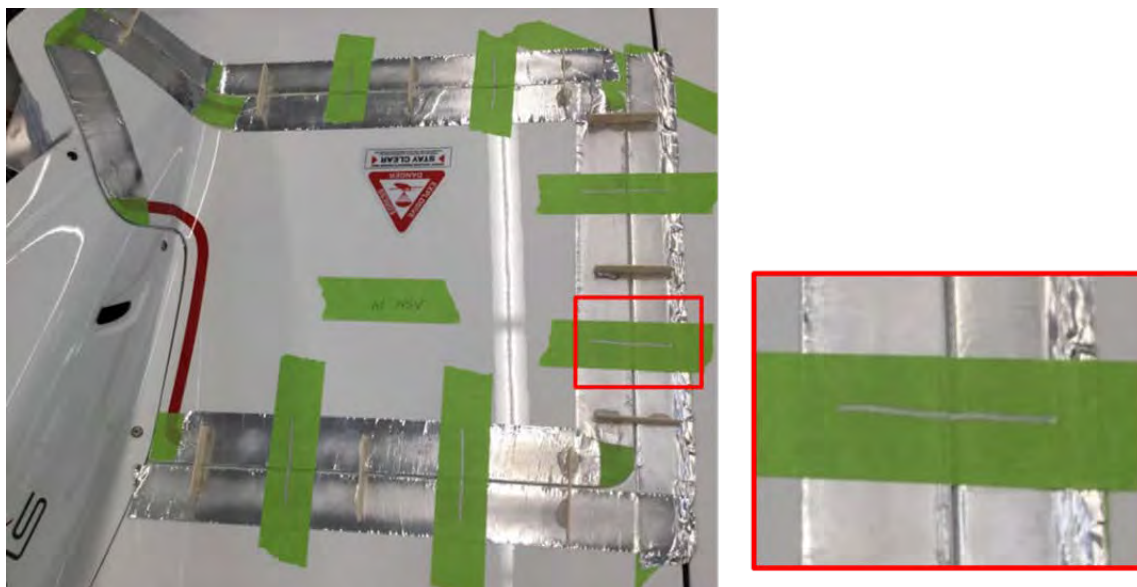


FIGURE 20-3
FIT CHECK

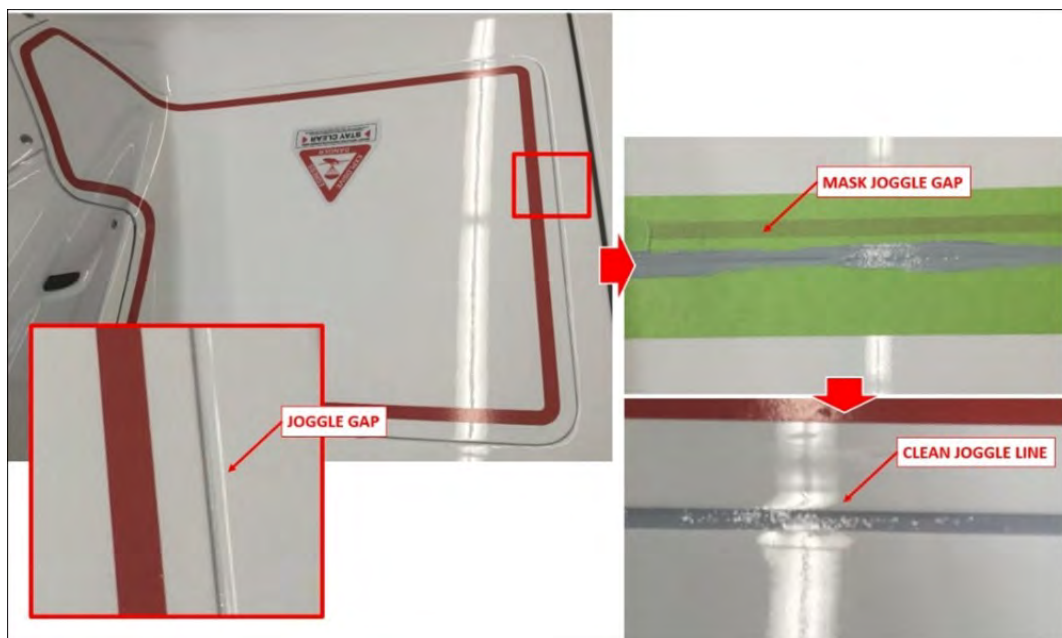


FIGURE 20-4
FINAL PREP

6. Solvent clean any excess adhesive with Isopropyl Alcohol.

7. Allow adhesive to cure for 24 hours.
 8. Install engine cowlings, if necessary. (See "Install Engine Cowlings" on page 17-19.)
-

VERIFICATION METHOD:

Check that a consistent bond-gap of 0.005 to 0.020 inch is achievable while the a-surface of the IPS Egress Pane is approximately flush (flush \pm 0.020 inch) with the outer surfaces of the Upper Center Wing Skin.

20.4 Parachute Package

20.4.1 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.

20.4.2 Parachute Package Diagram



FIGURE 20-5
PARACHUTE PACKAGE INSIDE OF PARACHUTE BAY

20.4.3 Inspection Instructions

20.4.3.1 Parachute Package Inspection

Use the following tasks to inspect the BRS parachute package.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

20.4.4 Maintenance Instructions

20.4.4.1 Parachute Package Removal

Use the following tasks to remove the parachute package.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

WARNING: *At the igniter, only 25-30 lb_f 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 4-27
"Cockpit Panels Removal and Installation" on page 4-29

20.4.4.2 Parachute Package Installation

Use the following tasks to install the parachute package.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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[®] tapes on the retaining straps to restrain parachute into parachute bay.



FIGURE 20-6
SECURING PARACHUTE DEPLOYMENT BAG

2. The packed parachute is delivered from BRS with the pin tether and/or curved release pins installed in its grommet and loop as seen in Figure 20-7. If the release pin tether and/or curved release pins have been removed during installation or are not secured, they will need to be reinstalled and secured. If required, secure the pins with a “2 and 1 knot” using Type 2 GLAZED, 4 ply thread.

NOTE: Release pins are installed by BRS prior to delivery.



FIGURE 20-7
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 20-8
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[®] along the top left edge of the parachute deployment bag.



FIGURE 20-9
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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

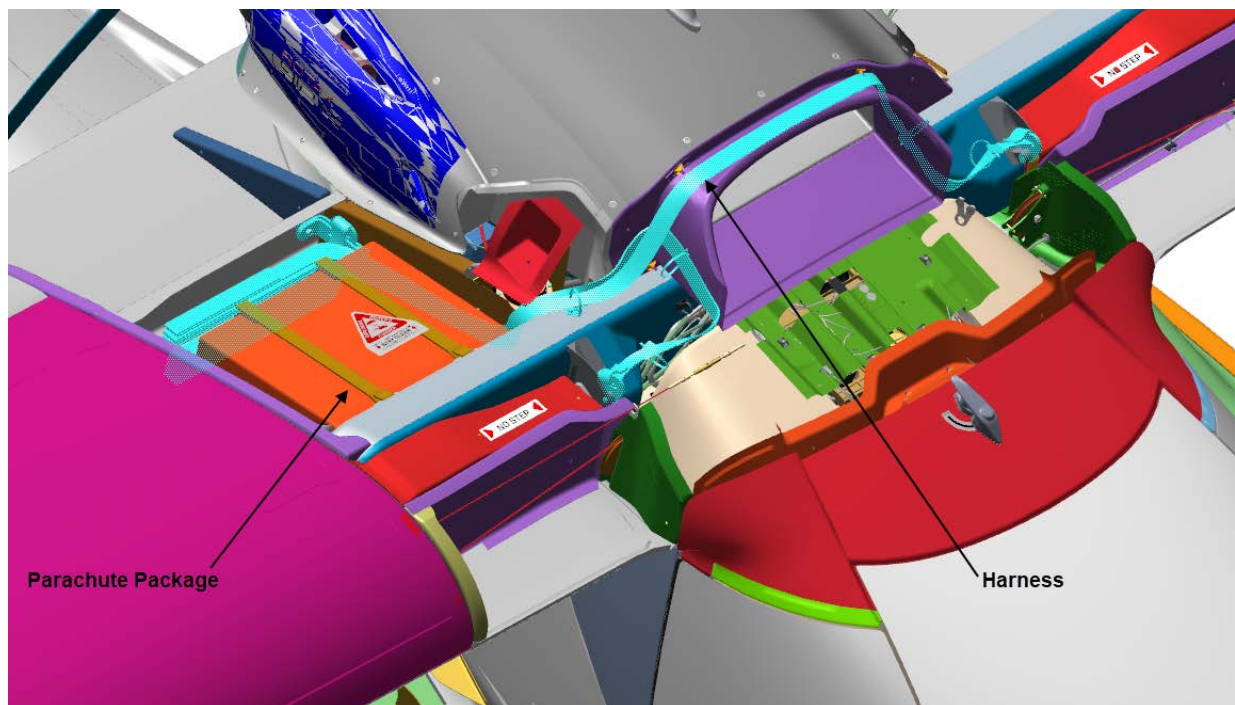
"Harness Installation" on page 20-21

20.5 Harness

20.5.1 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.

20.5.2 Harness Diagram/Schematic



20.5.3 Inspection Instructions

20.5.3.1 Harness Inspection Instructions

Use the following tasks to inspect the harness system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

20.5.4 Maintenance Instructions

20.5.4.1 Harness Installation

Use the following tasks to place and route the harness system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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)

5X 004000-01 (Cable Tie, 10.75")

Aircraft System and Number

16 – ICON Parachute System (IPS)

Consumables

LOCTITE® 242

red zip tie

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.

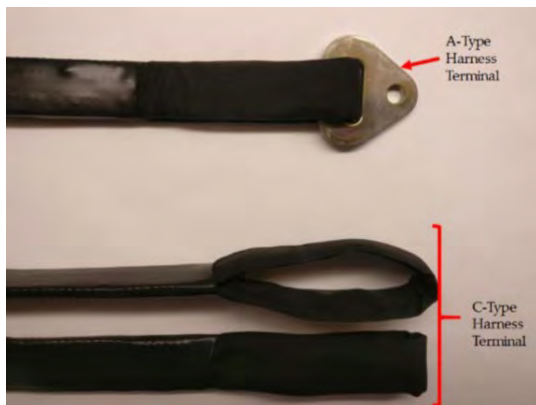


FIGURE 20-10
HARNESS ASSEMBLY ATTACHMENT POINTS, COMPONENT VIEW



FIGURE 20-11
"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 20-12
"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 20-13**

“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.)

**FIGURE 20-14**

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.

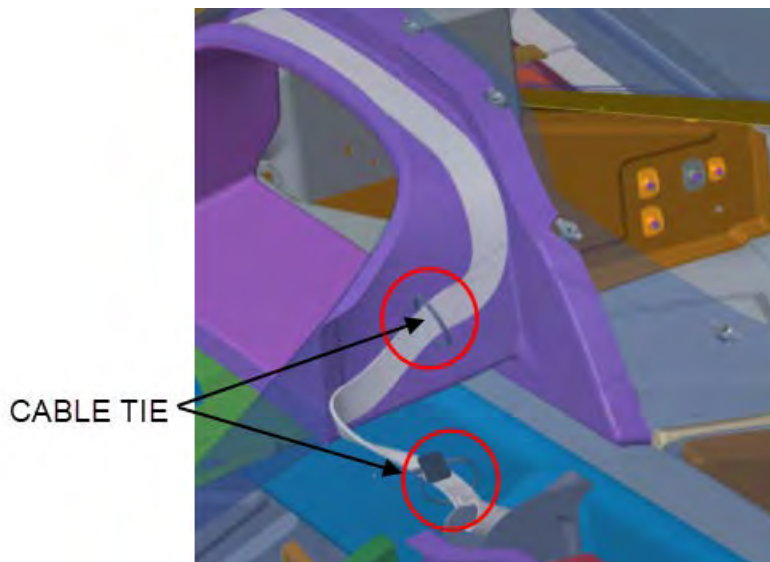


FIGURE 20-15
FORWARD PORT HARNESS MOUNT LOCATIONS

7. FORWARD STARBOARD harness mount locations, total 3.

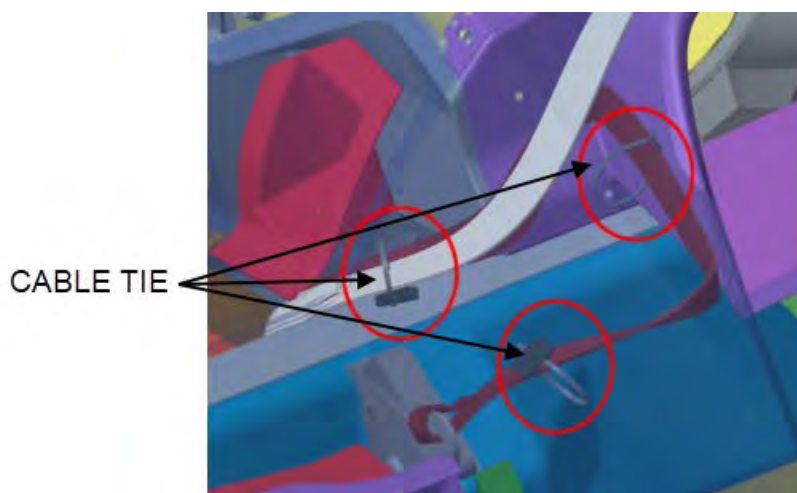


FIGURE 20-16
FORWARD STARBOARD HARNESS MOUNT LOCATIONS

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 20-17**

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 20-18**

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 (004001-01), into the parachute bay.

NOTE: Only approved cable ties can be used to secure harnesses.

NOTE: Use care to ensure that harnesses are neatly S-folded and will be free from restrictions during recovery system deployment.

NOTE: Ensure only the noted 004001-01 cable ties are present when installation is COMPLETE.

11. Route the two forward parachute harnesses over the rocket mount, over the chicken track, and then down through the side of the parachute.
12. Fold and secure aft harnesses. Measure 16" from the "C" end of the aft harness. Place the "C" end of the harness on the outboard side of the parachute box. From here begin the "S fold. S-Fold the harness so that the "C" end is on top of the stack. S-Fold the aft harness so that each layer is 16" in length. Use temporary cable ties to hold this bundle while the other harnesses are folded. With this bundle made, loosely attach a temporary red cable tie to the "C" end so that it can easily be identified.
13. Fold and secure RH fwd harness. Measure 14" from the "C" end of the RH forward harness. Place the "C" end of the harness on the outboard side of the parachute box. From here begin the S-Fold. S-Fold the harness so that the "C" end is on the top of the stack. S-Fold the RH forward harness so that each layer is 14" in length. Use temporary cable ties to hold this bundle while the other harnesses are folded. With the bundle made, loosely attach a temporary red cable tie to the "C" end so that it can be easily identified.
14. Fold and secure LH fwd harness. Measure 16" from "C" end of the LH forward harness. Place the "C" end of the harness on the outboard side of the parachute box. From here begin the S-Fold. S-Fold the harness so that the "C" end is on the top of the stack. S-Fold the LH forward harness so that each layer is 16" in length. Use temporary cable ties to hold this bundle while the other harnesses are folded. With the bundle made, loosely attach a temporary red cable tie to the "C" end so that it can be easily identified.
15. 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 20-19
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.

16. With the three harnesses neatly S-folded and stacked on top of one another secure all three folded harness stacks to the cable tie mounts together as a package fixed with 2X Cable Tie (004000-01).

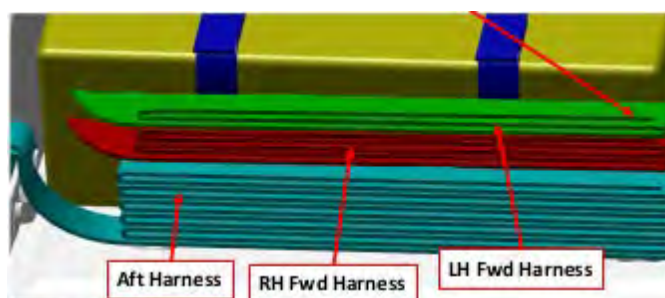


FIGURE 20-20
HARNESS STACKS IN ORDER



FIGURE 20-21
PHOTO EXAMPLE

17. Attach "C" ends of LH fwd RH fwd, and aft harnesses o 1/2" quick link.
18. Using isopropyl alcohol, clean surfaces where threadlocker will be applied. Apply threadlocker to threads of 1/2" quick link. Torque to 240 in-lbs.
19. Remove and discard temporary red cable ties.

VERIFICATION METHOD:

Verify that the release pins have not been damaged and have not been tampered with. The procedure is complete when the harness has been successfully installed and all components are secure.

RELATED INFORMATION:

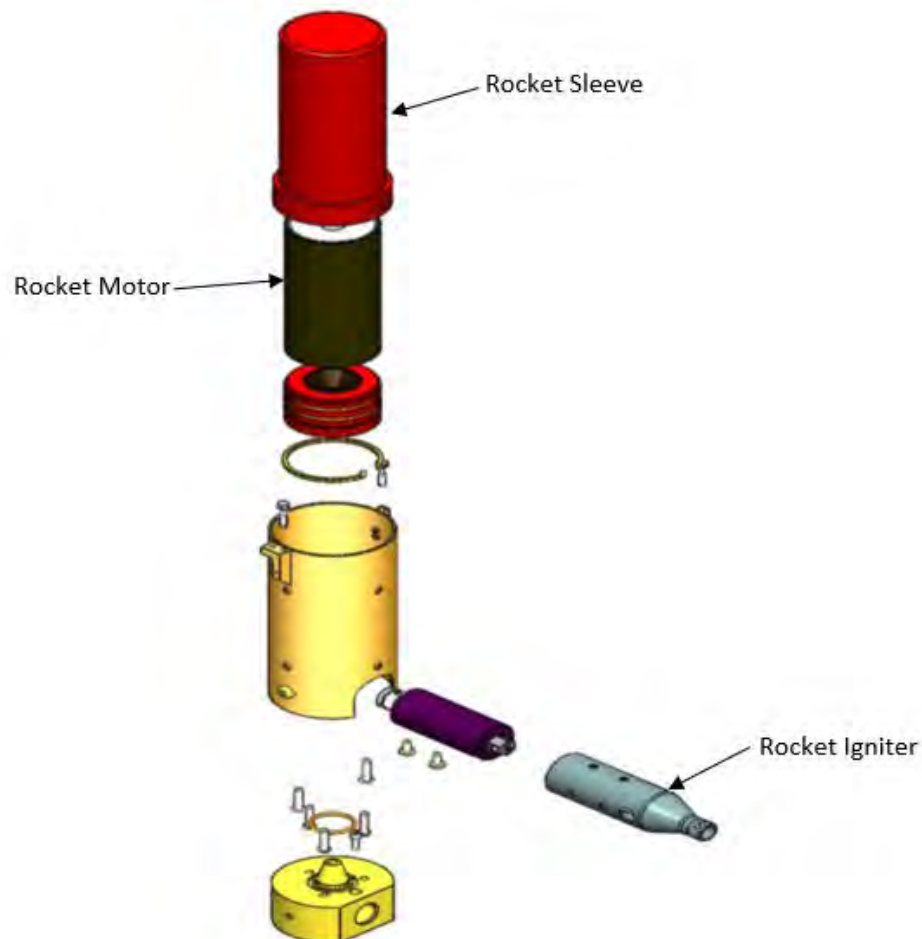
- "Removal and Installation of Inspection Panels and Fairings" on page 4-27
- "Cockpit Panels Removal and Installation" on page 4-29
- "Parachute Package Installation" on page 20-15

20.6 Extraction Rocket

20.6.1 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.

20.6.2 Extraction Rocket Diagram/Schematic



20.6.3 Inspection Instructions

20.6.3.1 Extraction Rocket Inspection

Use the following tasks to inspect the extraction rocket system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

20.6.4 Maintenance Instructions

20.6.4.1 Extraction Rocket Removal

Use the following tasks to remove the extraction rocket system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

20.6.4.2 Extraction Rocket Assembly and Installation

Use the following tasks to install the extraction rocket system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 20-22

SECURE ROCKET TO ICON A5 ROCKET MOUNT BRACKET

2. Fasten the rocket mount into the proper location in the ICON A5-B. Four AN3 bolts secure the rocket mount to the starboard center root rib.

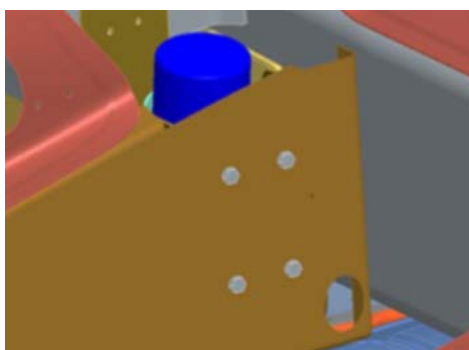


FIGURE 20-23

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-B airframe electrical system.

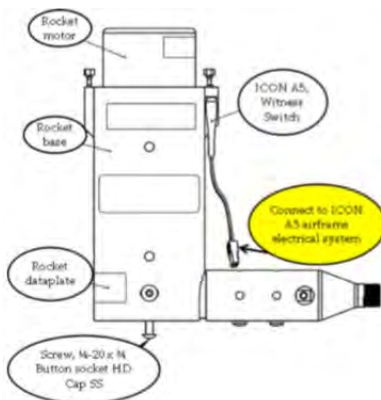


FIGURE 20-24
90° ROCKET ASSEMBLY

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-B 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 20-25
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 20-26
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.

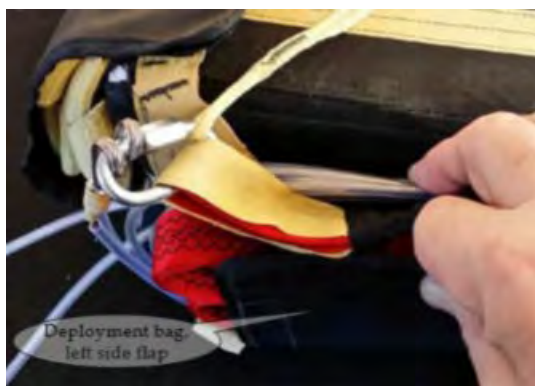


FIGURE 20-27
DEPLOYMENT BAG, LEFT SIDE FLAP

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 20-28
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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

20.6.4.3 Arming Extraction Rocket

Use the following tasks to arm the extraction rocket.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 20-29
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 20-30
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.

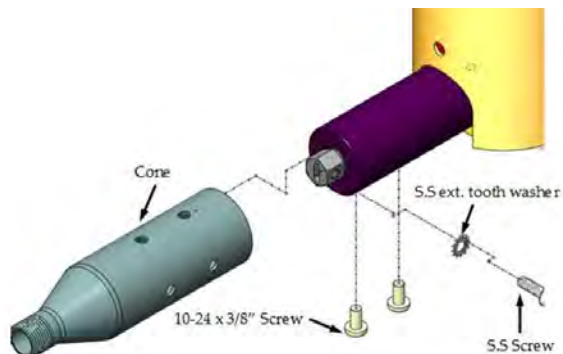


FIGURE 20-31
REINSTALLATION OF LAUNCH TUBE CONE

4. Insert non-threaded plug into access hole to protect it from the elements.



FIGURE 20-32
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 4-27

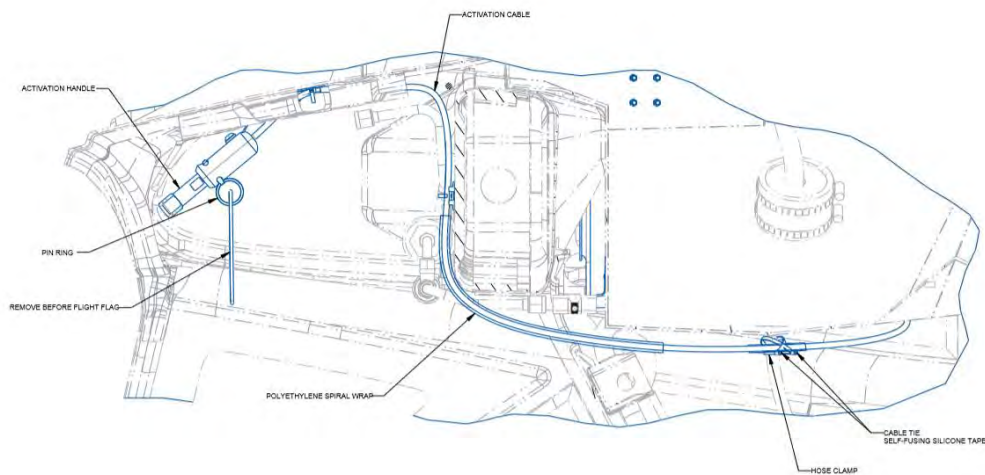
"Cockpit Panels Removal and Installation" on page 4-29

20.7 Activation System

20.7.1 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.

20.7.2 Activation System Diagram/Schematic



20.7.3 Inspection Instructions

20.7.3.1 Activation System Inspection

Use the following tasks to assemble and install the extraction rocket system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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 4-27

"Cockpit Panels Removal and Installation" on page 4-29

20.7.4 Maintenance Instructions

20.7.4.1 Activation System Installation

Use the following tasks to install the parachute activation system.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

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.

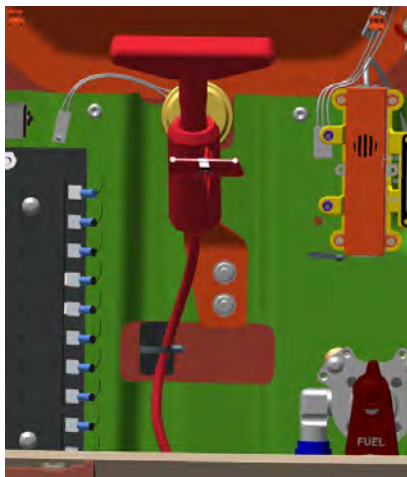


FIGURE 20-33
ACTIVATION HANDLE, COCKPIT INSTALLATION

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.

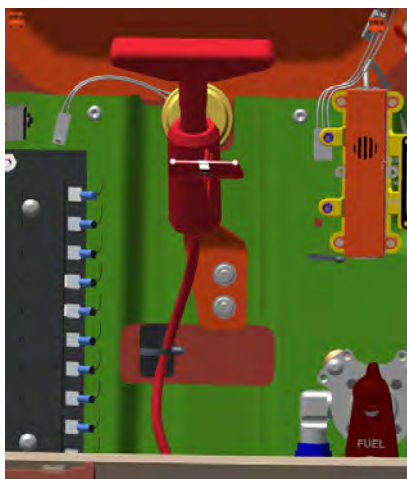


FIGURE 20-34
SECURING ACTIVATION CABLE ROUTING

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.

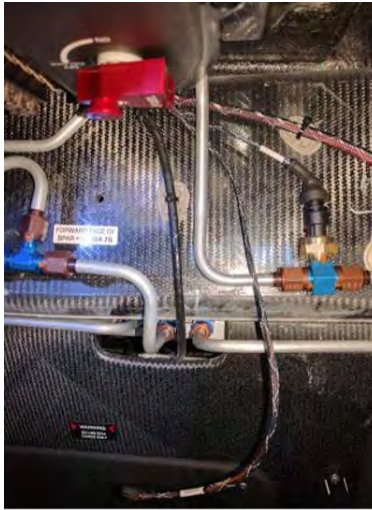


FIGURE 20-35
SECURING ACTIVATION CABLE ROUTING

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 20-36
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 4-27
- "Cockpit Panels Removal and Installation" on page 4-29

Chapter 21

STRUCTURAL REPAIR

Description..... 21-2

General Bonded Fastener Replacement 21-3

 General Bonded Fastener Removal 21-3

 General Bonded Fastener Installation 21-5

21.1 Description

ICON Aircraft allows for some structural repairs, in addition to what is included in this chapter, to be made to the aircraft without prior consent. Those repairs must conform to the ICON A5 Structural Repair Manual (ICA010822) and can be completed without ICON's involvement. Any needed structural repairs that do not adhere to the requirements of ICA010822 must be coordinated and approved by the FAA through submission of FAA Form 337.

RELATED INFORMATION:

"Remove Seawings™ Platform Tip" on page 12-7

21.2 General Bonded Fastener Replacement

Use the following procedure to remove and install general bonded fasteners.

RELATED INFORMATION:

"General Bonded Fastener Removal" on page 21-3

"General Bonded Fastener Installation" on page 21-5

21.2.1 General Bonded Fastener Removal

Remove disbonded or damaged bonded fasteners and any remaining adhesive using the procedure below.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Specific Tools Required

None

Parts Required

Many bonded fasteners are used in the A5-B. 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

NA

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 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 21-3

21.2.2 General Bonded Fastener Installation

Install disbonded or damaged bonded fasteners and any remaining adhesive using the procedure below.

TASK INFORMATION:

Applicable Aircraft Serial Numbers

All

Type of Maintenance

Line

Level of Certification

A&P

Specific Tools Required

None

Parts Required

Many bonded fasteners are used in the A5-B. 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

NA

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® 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 and install in accordance with Click Bond® 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 21-3

Chapter 22

PAINTING AND COATINGS

Description.22-2

22.1 Description

The A5-B 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 A5-B may cause damage to the airframe. It is recommended that any alterations be communicated to ICON Aircraft to avoid the potential for damage.

Chapter 23

FEEDBACK FORMS

Feedback Forms23-2

Continued Operational Safety Reporting.....23-3

Continued Operational Safety Reporting Form.....23-4

Change of Address/Ownership Form23-5

Manual Improvement or Correction Form.....23-6

23.1 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:

"Directives and Continued Operational Safety" on page 2-11

23.2 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 Owner Support can also be reached via the following channels:

ICON Aircraft, Inc.

Attention: Owner Support

2141 ICON Way

Vacaville, California 95688

1-855-FLY-ICON (359-4266)

Email: support@iconaircraft.com

23.2.1 Continued Operational Safety Reporting Form



2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – 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"/>	<input type="text"/>
	Postal / Zip Code	Country
PHONE NO.:	<input type="text"/>	
	Main	Alternate
EMAIL ADDRESS:	<input type="text"/>	

AIRCRAFT INFORMATION

MODEL:	<input type="text"/>	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

ICA009720-D

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23.2.2 Change of Address/Ownership Form



2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – 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

USA

Postal / Zip Code Country
 PHONE NO.:
Main Alternate
 EMAIL ADDRESS:

NEW INFORMATION

NAME:
First Last
 COMPANY:
 ADDRESS:
Street Address

Street Address 2

City State

USA

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

ICA009721-D

PAGE 1 of 1

23.2.3 Manual Improvement or Correction Form



2141 ICON Way, Vacaville, CA 95688 - Tel: 707.564.4000 – 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:		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

ICA009722-D

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