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Liberty Technical Document

Document Number: 135A-970-100

Revision: E

Liberty XL-2 Airplane Maintenance Manual

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Preface

Liberty Aerospace provides Instructions for Continued Airworthiness based on the design, testing, and certification of the XL-2 aircraft which Liberty Aerospace is the holder of the Type Certificate (TC) issued by the Federal Aviation Administration (FAA). Instructions in this Liberty manual, which include maintenance, repair limits, overhaul, and installation, are applicable only to the Liberty XL-2 model aircraft.

This manual, applicable service documents, and other related publications constitute the Instructions for Continued Airworthiness (ICA) prepared by Liberty Aerospace and reviewed by the FAA. Pursuant to Federal Aviation Regulation (FAR) § 43.13, each person performing maintenance, alteration, or preventive maintenance on the airframe, engine or accessories must use methods, techniques, and practices prescribed in the Instructions for Continued Airworthiness.

Except for FAR part 43.3 authorized owner maintenance, Liberty Aerospace has written the ICA for exclusive use by FAA (or equivalent authority) licensed mechanics or FAA (or equivalent authority) certified repair center employees working under the supervision of an FAA licensed mechanic. Information and instructions contained in this manual anticipate the user possesses and applies the knowledge, training, and experience commensurate with the requirements to meet the prerequisite FAA license and certification requirements. No other use is authorized.

Installation of parts deviating from Liberty Aerospace approved type-design criteria is not allowed. Liberty Aerospace accepts no liability for the suitability, durability, longevity, or safety of such parts installed on the XL-2 aircraft. Installation of parts deviating from type design must be performed using Instructions for Continued Airworthiness prepared by the part manufacturer and approved by the FAA for the subject installation. Do not use Liberty Aerospace ICA for such parts.

Service Documents may contain advance changes to the ICA. It is the responsibility of the organization/person maintaining or operating the aircraft to verify that current and complete information, including Service Bulletins, FAA Airworthiness Directives (AD), and publications are used.

To facilitate the use of current data, Liberty Aerospace provides information via the Internet on www.libertyaircraft.com. The information available includes a listing of the latest manual versions, service bulletins, FAA ADs, and other information applicable to the Instructions for Continued Airworthiness. This information is free of charge to owners of Liberty Aerospace aircraft by registering through Owner Support.

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Supersede Notice

This manual supersedes and renders obsolete Liberty Aerospace Maintenance Manual 135A-970-006 revision A dated October 2008.

List of Effective Pages

Use this page(s) to determine current revision and effective date for each page in the Maintenance Manual. As revisions are issued this list of effective pages will be amended.

PAGE	REVISION	DATE	PAGE	REVISION	DATE
Preface i - xvi	E	07/14/11	12-01 thru 12-02	E	07/14/11
01-01 thru 01-20	E	07/14/11	12-03 thru 12-13	~	07/31/09
01-05 thru 01-06	~	07/31/09	12-13 thru 12-14	E	07/14/11
01-07 thru 01-18	E	07/14/11	12-15 thru 12-16	~	07/31/09
01-18 thru 01-20	~	07/31/09	20-01 thru 20-02	D	02/16/11
03-01 thru 03-10	E	07/14/11	20-03 thru 20-06	~	07/31/09
04-01 thru 04-2	D	02/16/11	20-07 thru 20-16	D	02/16/11
04-03 thru 04-6	~	07/31/09	20-17 thru 20-26	~	07/31/09
04-07 thru 04-20	D	02/16/11	21-01 thru 21-40	~	07/31/09
04-21 thru 04-22	~	07/31/09	23-01 thru 23-04	D	02/16/11
05-01 thru 05-02	D	02/16/11	23-05 thru 23-08	~	07/31/09
05-03 thru 05-08	~	07/31/09	23-09 thru 23-38	D	02/16/11
05-09 thru 05-34	D	02/16/11	23-39 thru 23-44	~	07/31/09
05-35 thru 05-42	~	07/31/09	24-01 thru 24-02	E	07/14/11
05-43 thru 05-52	C	06/21/10	24-03 thru 24-04	E	07/14/11
06-01 thru 06-08	~	07/31/09	24-05 thru 24-08	E	07/14/11
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07-03 thru 07-04	~	07/31/09	24-17 thru 24-44	E	07/14/11
07-05 thru 07-14	E	07/14/11	24-45 thru 24-62	D	02/16/11
08-01 thru 08-16	~	07/31/09	25-02 thru 25-04	C	06/21/10
09-01 thru 09-12	~	07/31/09	25-05 thru 25-10	~	07/31/09
10-01 thru 10-12	~	07/31/09	25-11 thru 25-66	D	02/16/11
11-01 thru 11-2	E	07/14/11	27-01 thru 27-02	E	07/14/11
11-03 thru 11-12	~	07/31/09	27-03 thru 27-06	~	07/31/09
11-13 thru 11-34	E	07/14/11	27-07 thru 27-34	D	02/16/11
11-34 thru 11-38	~	07/31/09	27-35 thru 27-60	E	07/14/11
			27-61 thru 27-76	D	02/16/11
			27-77 thru 27-84	D	02/16/11
			27-84 thru 27-100	D	02/16/11
			27-101 thru 27-120	~	07/31/09

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28-01 thru 28-02	E	07/14/11	70-01 thru 70-06	~	07/31/09
28-03 thru 28-17	B	01/30/10	71-01 thru 71-02	E	07/14/11
28-17 thru 28-36	E	07/14/11	71-03 thru 71-64	~	07/31/09
28-37 thru 28-56	~	07/31/09	71-65 thru 71-76	E	07/14/11
30-1 thru 30-20	C	06/21/10	71-77 thru 71-74	~	07/31/09
31-01 thru 31-54	~	07/31/09	72-01 thru 72-30	~	07/31/09
32-01 thru 32-02	E	07/14/11	73-01 thru 73-38	~	07/31/09
32-03 thru 32-18	~	07/31/09	74-01 thru 74-02	B	01/30/10
32-19 thru 32-78	E	07/14/11	74-03 thru 74-12	~	07/31/09
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33-01 thru 33-02	C	01/30/10	75-01 thru 75-08	~	07/31/09
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33-07 thru 33-22	B	01/30/10	77-01 thru 77-02	C	06/21/10
33-23 thru 33-40	C	06/21/10	77-03 thru 77-06	~	07/31/09
34-01 thru 34-02	B	01/30/10	77-07 thru 77-34	C	06/21/10
34-03 thru 34-52	~	07/31/09	78-01 thru 78-16	~	07/31/09
34-53 thru 34-78	B	01/30/10	79-01 thru 79-28	~	07/31/09
34-79 thru 34-116	~	07/31/09	80-01 thru 80-04	B	01/30/10
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52-01 thru 52-30	~	07/31/09	80-09 thru 80-14	E	07/14/11
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55-05 thru 55-06	~	07/31/09			
55-07 thru 55-28	D	02/16/11			
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57-01 thru 57-34	D	02/16/11			
61-01 thru 61-12	~	07/31/09			

Highlight of Revisions

Revision	Revision Date	Chapter	Description
IR	07/31/2009	ALL	Initial release of the entire manual 135A-970-100.
A	10/28/2009	04	Incorporated approved firewall blanket life extension.
B	01/30/2010	00	Updated the chart to indicate the inclusion of SID-09-001. Stepped through all chapters and matched the table on page x of the Preface (Chapter 00). Added Highlight of Revisions table.
		05	Updated exhaust system inspection procedure.
		23	Updated antenna mounting hardware callout in compliance with current design.
		25	Updated ELT antenna remove/install procedures.
		27	Added drawing and procedure steps to clarify control yoke ground installation.
		28	Updated fuel boost pump remove/install and test procedure. Added procedure steps for boost pump control switch remove/install. Added fuel system operational check procedure steps. Added Fuel System Troubleshooting chart. Updated the flow of the procedures to match other chapter is the manual.
		33	Updated strobe power supply circuit breaker call out in compliance with current design and SID-09-001.
		34	Added note to compass swing procedure for identification of northern and southern hemisphere compass units.
		53	Added belly panel remove/install procedure steps.
		55	Added horizontal stabilizer inspection steps.
		56	Removed procedure steps duplicated elsewhere and directed reader to the steps.
		74	Added pointer to FADEC system checks procedure.
		75	Chapter removed as content is redundant to another chapter.
		77	Deleted note incorporating hardware call out in work step.
		80	Added cold start steps in accordance with TCM operations procedures.
		91	Drawings updated in accordance with current approved design changes.

Revision	Revision Date	Chapter	Description
C	06/21/2010	00	Updated the List of effected Pages to include new chapter 30.
		04	Added Life Limits for Fire Extinguisher. Re-formatted the tables for readability .
		05	Added inspection points for fire extinguisher. Added inspection points for bolts associated with the stabilizer. Added inspection points for the alternate air valve cabling. Clarified the 500 hour engine inspection.
			Added definitions to Hard Landing and Crash.
		30	All new chapter.
		33	Added procedures for the LED Wing Tip Light Fixtures.
		55	Add inspection information and inspection notes for stabilizer bolt length.
		77	Removed procedures for the Pitot/Static Blade and heater. Procedures were moved to Chapter 30.
		91	Updated Schematic Figure 91-18 to include the LED Wing Tip Light Fixture.
D	02/16/2011	00	Added information about incorporation of SSI-10-001.
		04	Added Life Limits for the exhaust.
			Added part numbers for the replacement exhaust. muffler to table 04-3.
			Added mandatory inspection for the aft weldment clevis pins for both port and starboard.
			Added additional mandatory inspection for the aft weldment clevis pins for both port and starboard on SN 0009, 0116, 0117, and 0119.
		05	Redefined the inspections for the batteries in the ELT and the ELT Remote Switch.
			Split the inspections requirements for the wing pins, wing box, and aileron quick disconnect assemblies to account for the 100-hour inspections that does not remove the wings and the annual inspection that does remove the wings.
			Breaking out inspections for the spar attachment lugs, pins, flap-spigot, and the locking mechanisms.
		20	Updated the procedures to torque castellated nuts.
		23	Added reference to Chapter 27 for the remove and installation of the push-to-talk switch/button.
		24	Added information on the F3 Alternator Fuse (SSI-10-001).
			Added a procedure to replace the F3 Fuse.
			Added information to clarify what instruments will continue to operate in the event of a primary battery failure.

Revision	Revision Date	Chapter	Description
		25	Correctly point to the battery limits for the ELT batteries to Chapter 05 (was Chapter 04).
		27	Updated the procedures to torque castellated nuts.
			Added procedures to the section for the yoke control to remove and install the push-to-talk switch/button.
		55	Updated the procedures to torque castellated nuts.
		57	Rewrote the entire chapter with a new layout of the sections.
			Added information in the removal and installation of the anti-chafing tape for the wing root fairing.
E	07/14/2011	01	Updated Information in the Revision Tracking paragraph.
			Updated table with new AFM part numbers.
			Corrected Figure 01-1.
			Rewrote Section 01-40.
		03	Rewrote entire chapter.
		07	New images, graphics and photos.
			Updated the procedure for lifting airplane.
		11	Added the part numbers for the Japanese placards.
			Figure 11-23 – Updated figure.
			Figure 11-25 – Corrected the S/N for factory gross weight.
		12	Added wing pins to Table 12-3.
		24	Figure 24-4 Redrew figure.
			Figure 24-12 Corrected battery callout in figure.
			Page 38 – Reworded paragraph
		27	Pages 52 and 56 corrected battery callout for secondary battery.
		28	Correct relay callout on page 34
		32	Added procedures to cover new parking brake.
			Updated graphics.
		53	Corrected battery callout for secondary battery.
		56	Page 16 – removed broken link.
			Page 34 – New step added for correct callout of post install inspections.
		71	Added new procedures for alternate air valve.
		80	Pages 12 and 14 Corrected callouts for the primary and secondary batteries.

Record of Revision

Use this checklist to record and control of all of the revisions you put in this Airplane Maintenance Manual (AMM). Put the affected pages of the revision into the AMM as soon as you get them. Remove and destroy the pages which are superseded. Complete the table below when you have put the revision in the AMM.

Record of Revisions							
Revision	**Date Issued**	**Inserted On**	**Inserted By**	**Revision**	**Date Issued**	**Inserted On**	**Inserted By**
A	10/28/2009	10/28/2009	LAI				
B	01/30/2010	01/30/2010	LAI				
C	06/21/2010	06/21/2010	LAI				
D	02/16/2011	02/16/2011	LAI				
E	07/14/2011	07/14/2011	LAI				

List of Service Bulletins

Service documents and technical information are incorporated in this edition of the Liberty Aerospace Maintenance Manual 135A-970-100 and are listed in the chart below. Information relevant to the XL-2 model aircraft from these service documents has been incorporated in this manual. The full content of all Liberty Aerospace service documents is available on www.libertyaircraft.com , support section.

Service Documents Incorporated in this Manual			
Service Bulletin	**Subject**	**Section Title**	**Affected Chapter**
SSI-10-001	Alternator Fuse F3	Electric Power	Chapter 24
SID-09-001	Strobe Power	Lights Wiring Diagrams and Schematics	Chapter 33 Chapter 91
AD2009-08-05	Exhaust Muffler Cracks	Exhaust System Troubleshooting	Chapter 78 Chapter 05
CSB-08-003	Aileron pushrod	Flight Controls Inspections	Chapter 27 Chapter 05
CSB-08-002	Aileron pushrod	Flight Controls Inspections	Chapter 27 Chapter 05
RKI-SIL-08-001	Gross weight increase compliance	Fuselage Wing Navigation & Pitot static Flight Controls Leveling & Weighing	Chapter 53 Chapter 57 Chapter 34 Chapter 27 Chapter 08
SB-08003, Rev B	Rudder Pushrod clearance	Flight Controls	Chapter 27
SB-08-002	Toe brake rudder clearance adjustment	Landing Gear	Chapter 32
SB-08-001	Possible nose wheel shimmy	Landing Gear	Chapter 32
CSB-08-001	Fuel tank vibration	Fuel System Inspection	Chapter 28 Chapter 05
SIL-08-002	Footstep placard installation	Placards and Markings	Chapter 11
CSB-07-002 REV B	Aileron Skeleton Inspection and Installation Clearance	Inspection	Chapter 05
RKI-CSB-07-003 REV B	Replacement of Aileron Ribs and Gusset reinforcement	Flight Controls	Chapter 27
CSB-07-002 REV C	Flap rib 2 & wing rib ‘1’ aft inspection	Inspection	Chapter 05
RKI-CSB-07-002 REV C	Inboard flap rib reinforcement	Flight Controls	Chapter 27
SIL-O7-012 *UPDATED REV	Wheel fairing installation	Landing Gear	Chapter 32

Service Documents Incorporated in this Manual			
Service Bulletin	**Subject**	**Section Title**	**Affected Chapter**
SIL-07-011 *UPDATED REV	Nose gear wheel bearing jam nut	Landing Gear	Chapter 32
CSB-07-001 REV C	Rear spar aileron closeout	Wing Inspection	Chapter 57 Chapter 05
RKI-CSB-07-001, Rev B	Rear spar aileron closeout & mass balance enclosure flange	Wing	Chapter 57
SIL-07-008	EDI-200 revision upgrade	Indicators & Recording Equipment	Chapter 31
SIL-07-003 REV B	Footstep installation	Fuselage	Chapter 53
SIL-07-006	Nose landing gear leg inspection	Inspection Landing Gear	Chapter 05 Chapter 32
SIL-07-002 REV C	Mt propeller installation	Propeller	Chapter 61
SIL-06-008	Increase life limit of the Liberty XL-2 from 3,333 hours to 5,000 hours.	Airworthiness Limitations	Chapter 04
SIL-06-007	Cabin Heat and Defog System	Environmental Systems	Chapter 21
SIL-06-002	IOF-240-B4B engine conversion	Power Plant	Chapter 71
SIL-06-006	TCM EDI-200 light weight FADEC data recorder installation	Indicators & Recording Equipment	Chapter 31
SIL-06-005	Increase life limit of the Liberty XL-2 from 1,666 hours to 3,333 hours.	Airworthiness Limitations	Chapter 04
SIL-06-001	Reports from the field that cracks are being found in certain P/N 653924, Teledyne Continental Motors (TCM), Revision "F" or earlier.	Inspections	Chapter 05
SIL-06-004	Increase life limit of the Liberty XL-2.	Airworthiness Limitations	Chapter 04
SIL-06-003	Aircraft Weight and Balance Check	Leveling and Weighing	Chapter 08
SIL-06-002	FADEC system health status annunciator indications	Engine Indicating	Chapter 77
SB-06-001	135A-910-105 rev E, VM1000FX electronic engine display – Software upgrade	Engine Indicating	Chapter 77
SB221-006	Potential Cracks in XL-2 Acrylic Windshield.	Inspection	Chapter 05

Service Documents Incorporated in this Manual			
Service Bulletin	**Subject**	**Section Title**	**Affected Chapter**
CSB-06-007	Routing of electrical wiring from fuse holder to emergency battery terminal	Inspection Electrical Power	Chapter 05 Chapter 24
CSB-06-002	Potential fatigue cracks of the propeller extension Liberty PN: 4ARP.	Propeller	Chapter 61
CSB-06-001	135A-10-145 rev C control stick boot installation	Flight Controls	Chapter 27

Service Bulletins Released After Publication

Liberty Aerospace strives to provide clear, concise, and accurate information and instructions based on the best available engineering data at the time of publication. Ongoing process improvements at Liberty may change specification or procedure after manual release. Service documents expedite customer notification and serve as the prevailing instruction over conflicting information until the new information is incorporated in the manual text. As bulletins are received, note the bulletin's number, title and applicable section affected by the bulletin in the blank cells provided below. Insert a copy of the Service Bulletin behind the last page of this section.

The following bulletins, released after this manual, affect and supplement the procedures herein. When performing procedures affected by the bulletins, review the bulletin content prior to commencing the task to ensure compliance with the most current information. Review of service documents is required prior to start of any procedure in this manual.

Service Documents Published After this Manual			
Service Bulletin	**Subject**	**Section Title**	**Affected Chapter**

Table of Chapters

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CHAPTER 01

INTRODUCTION

Table of Contents

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Section 01-00 General

Liberty Aerospace, Inc. is releasing this manual as a brand new manual. The purpose of the Maintenance Manual is to furnish maintenance personnel with all data required for normal maintenance of the Liberty XL-2 airplane. It comprises detailed system and subsystem descriptions, troubleshooting tables, component removal, installation procedures, and detailed maintenance procedures.

Unless otherwise specified, This Maintenance Manual contains only removal and installation instructions for specific components for example: alternator, fuel system components, instruments, etc. Obtain the detailed maintenance and service instructions for individual components from the applicable component manufacturer's maintenance manual, website, or service department. Contact Liberty Aircraft, Customer Support to request special assistance.

The performance of all maintenance work including inspections, routine maintenance, and repairs will be in accordance with the procedures set forth in this Maintenance Manual.

IT IS THE RESPONSIBILITY OF THE OWNER AND MAINTENANCE TECHNICIAN TO CHECK THAT OPERATING PROCEDURES, INSPECTION, REPAIR OR MAINTENANCE PRACTICES, ARE CORRECTLY FOLLOWED, USING THE MOST UP-TO-DATE FAA APPROVED VERSIONS OF THE COMPONENT MANUFACTURERS MANUALS NOTED ABOVE.

Section 00-01 The Maintenance Manual Style

This new release of the maintenance manual contains a new style and a new look and feel for the Liberty Aerospace, Inc. Maintenance Manual. The new style should make the manual more user-friendly.

One of the most obvious changes came to the header and footer on each page.

The header contains the chapter title and Liberty Aerospace, Inc. logo. The footer contains the current section number (for example 01-00), the part number of the maintenance manual, the revision of that particular section (for example Rev. ~), the page number and total pages. The tilde symbol, ~, indicates an initial release of the section. A revision provided on the manual cover page indicates the latest revision package incorporated. Details of the other changes to the maintenance manual and the chapters are in the remaining sections of this chapter.

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Section 01-10 Revision systems

This section details the methods used to track revisions and changes to the chapters in this manual. In the initial release of the manual and the chapters, revisions were tracked in the front matter sections of the manual. With the changes to the format of this manual, the tracking of changes and revisions moved to the end of the front matter behind the Table of Contents and Table of Chapters.

Section 10-01 Reformatted Chapters Revision Tracking

Revisions to this manual are applied on a section by section basis. The Footer of each page of a section provides a revision letter representing the latest revision package applied to that section. On initial release each page will show as Revision ~. Thereafter, each section shows the latest revision by letter that has been applied to that section. Maintenance manual revisions are released as packages of changed sections that can span a number of chapters. Each of these packages and the sections in them are marked with the same revision package letter. Revision packages are labeled with letters that are sequential (A, B, C and so on). A new maintenance manual cover page marked with the latest revision package letter is issued with each release. Each book owner must replace pages or add pages and the cover page provided by the revision package and log incorporation in the Record of Revision provided in the manual Preface. To assist in this process an amended List of Effective Pages table is provided with each revision package and must be incorporated in the manual Preface.

When amended the List of Effective Pages table provides a breakdown of which pages changed with each Revision package. It is important to review this list any time work is performed to assure the latest information is being used. Figure 01-1 below provides an example of a List of Effective Pages amendment.

PAGE	REVISION	DATE	PAGE	REVISION	DATE
Preface i - xiv	C	06/21/10	27-01 thru 27-02	B	01/30/10
01-01 thru 01-20	~	07/31/09	27-03 thru 27-76	~	07/31/09
03-01 thru 03-10	~	07/31/09	27-77 thru 27-84	B	01/30/10
04-01 thru 04-2	C	06/21/10	27-84 thru 27-120	~	07/31/09
04-03 thru 04-6	~	07/31/09	28-01 thru 28-36	B	01/30/10
04-07 thru 04-20	C	06/21/10	28-37 thru 28-56	~	07/31/09
04-21 thru 04-22	~	07/31/09	30-1 thru 30-20	C	06/21/10
05-01 thru 05-02	C	This graphic is provide		~	07/31/09
05-03 thru 05-08	~	to show an example of		~	07/31/09
05-09 thru 05-34	C	of the List of Effective Pages.		C	01/30/10
05-35 thru 05-42	~	07/31/09	33-03 thru 33-06	~	07/31/09
05-43 thru 05-52	C	See the Preface Section for		B	01/30/10
06-01 thru 06-08		the current List of Effective Pages.			06/21/10
07-01 thru 07-14	~	07/31/09	34-01 thru 34-02	B	01/30/10
08-01 thru 08-16	~	07/31/09	34-03 thru 34-52	~	07/31/09
09-01 thru 09-12	~	07/31/09	34-53 thru 34-78	B	01/30/10
10-01 thru 10-12	~	07/31/09	34-79 thru 34-116	~	07/31/09
11-01 thru 11-38	~	07/31/09	51-01 thru 51-74	~	07/31/09
12-01 thru 12-16	~	07/31/09	52-01 thru 52-30	~	07/31/09

Figure 01-1 – List of Effective Pages Example

Changes that are on any particular page will be indicated by a revision bar along the outside edge, such as those that are evident on this page.

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Section 01-20 Publications

This section describes the different documents that are published.

Section 20-01 Service Documents

Liberty Aerospace, Inc. has adopted a service document format which will provide the user with an explanation of the compliance criticality of the document. This format was developed by the General Aviation Manufacturers Association (GAMA) to standardize service documents used by aviation manufacturers. The documents can be presented in six categories as defined below. Each revision to the service document will be noted in the information block located at the bottom of each page. This information will include the date of original issuance, revision date, page number and revision number. The most recent revisions to the document will be identified by a solid bold vertical line on the outside edge of the page, adjacent to the revised sentence, paragraph, drawing, etc. As applicable, each service document's content is incorporated into the maintenance manual in the appropriate chapter and section. Release packages incorporating service documents will include an amended List of Service Documents. This list is incorporated in the manual Preface by the book owner as part of the update process.

SERVICE DOCUMENT CATEGORY DEFINITION

CATEGORY 1: "MANDATORY SERVICE BULLETIN" (MSB)

Service documents, relating to known or suspected hazards to safety, that have been incorporated in whole or in part in an Airworthiness Directive (AD) issued by the FAA or have been issued, at the direction of FAA, by the manufacturer, in order to allow compliance with an already issued AD (or an equivalent issued by another country's airworthiness authority).

CATEGORY 2: "CRITICAL SERVICE BULLETIN" (CSB)

Service documents (not included in Category 1) that have been determined by the product manufacturer to constitute a threat to continued safe operation of an aircraft or to persons or property on the ground unless some specific action (inspection, repair, replacement, etc.) is taken by the product owner or operator. Documents in this category are candidates for incorporation in an Airworthiness Directive issued by the FAA (but may not be).

CATEGORY 3: "SERVICE BULLETIN" (SB)

Service documents (not included in Categories 1 and 2) considered by the product manufacturer to constitute a substantial improvement to the inherent safety of an aircraft or component of an aircraft. This "Service Bulletin" category also includes the most recent updates of instructions for continued airworthiness.

CATEGORY 4: "SERVICE INFORMATION DIRECTIVE" (SID)

Serviced documents (not included in Categories 1, 2 or 3) that have been determined by the manufacturer to be of value to an owner/operator in the use of a product by enhancing safety, maintenance or economy.

CATEGORY 5: "SERVICE INFORMATION LETTER" (SIL)

This category includes all information (not included in Category 1-4) that may be of use to the owner, operator or maintainer of the aircraft

CATEGORY 6: "SPECIAL SERVICE INSTRUCTION" (SSI)

This category is used to address an issue on specific aircraft serial numbers. Liberty Aerospace will distribute SSI notification directly to the owners of the affected aircrafts. SSI's will not be included in the general service bulletin set but will be made available through Liberty Customer Service to owners of the affected aircrafts only. An SSI may contain updates to the Instructions for Continued Airworthiness applicable only to the listed aircrafts.

CATEGORY 7: "REWORK KIT INSTRUCTION" (RKI)

Detailed written technical procedures stating how to conduct and complete a repair required by a Service Document. A Rework Kit Instruction may also be part of optional upgrades and installation.

Section 20-02 Related Publications

The chart below lists related publications, source and accessibility relevant to maintaining the Liberty XL-2 model aircraft.

USE ONLY THE LATEST REVISION OF ALL PUBLICATIONS. USING INFORMATION THAT HAS BEEN SUPERSEDED, JEOPARDIZES AIRCRAFT AIRWORTHINESS.

Publication Name	Publication Number	Supplied With Aircraft	Internet via Liberty Aircraft web site	Order From Liberty Aircraft Inc.	Available From Manufacturer
Liberty Aircraft					
XL-2 Maintenance Manual	135A-970-100	YES	YES	YES	N/A
XL-2 Airplane Flight Manual – Standard	135A-970-300	YES	NO	YES	N/A
XL-2 Airplane Flight Manual – Gross Weight	135A-970-200	YES	NO	YES	N/A
XL-2 Airplane Flight Manual – EASA	135A-970-500	YES	NO	YES	N/A
XL-2 Airplane Flight Manual – EASA Gross Weight	135A-970-600	YES	NO	YES	N/A
Engine Documents					
IOF-240-B Engine Installation and Operation Manual	OI-22	YES	NO	NO	TCM
IOF-240-B Overhaul Manual	OH-22	YES	NO	NO	TCM

Publication Name	Publication Number	Supplied With Aircraft	Internet via Liberty Aircraft web site	Order From Liberty Aircraft Inc.	Available From Manufacturer
IOF-240-B Maintenance Manual	M-22	YES	NO	NO	TCM
Accessory Documents[1]					
GNS 430 User Guide	190-00140-00	YES	N0	NO	GARMIN
GNS 430 Installation Manual	190-00140-05	YES	NO	NO	GARMIN
GNS 530 User Guide	190-00181-00	YES	NO	NO	GARMIN
GNS 530 Installation Manual	190-00181-02	YES	NO	NO	GARMIN
GNS 430W User Guide	190-00356-00	YES	NO	NO	GARMIN
GNS 430W Installation Manual	190-00356-02	YES	NO	NO	GARMIN
GNS 430W ICA Manual	190-00356-65	YES	NO	NO	GARMIN
GNS 530W User Guide	190-00357-00	YES	NO	NO	GARMIN
GNS 530W Installation Manual	190-00357-02	YES	NO	NO	GARMIN
GNS 530W ICA Manual	190-00357-65	YES	NO	NO	GARMIN
SL30 User Guide	190-00846-00	YES	NO	NO	GARMIN
SL30 Installation Manual	560-0404-03a	YES	NO	NO	GARMIN
SL40 User Guide	190-06488-00	YES	NO	NO	GARMIN
SL40 Installation Manual	560-0956-03	YES	NO	NO	GARMIN
GMA 340 Installation Manual	190-00149-01	YES	NO	NO	GARMIN
GMA 340 User Guide	190-00149-10	YES	NO	NO	GARMIN
SAE-35 Installation Manual	305186-00	YES	NO	NO	SANDIA
M803 Installation Manual	M803	YES	NO	NO	DAVTRON
GTX 327 User Guide	190-00187-00	YES	NO	NO	GARMIN
GTX 327 Installation Manual	190-00187-02	YES	NO	NO	GARMIN
Gi-106A Installation Manual	190-00180-00	YES	NO	NO	GARMIN
MD200-306 Installation Manual	8017972	YES	NO	NO	GARMIN
W69EK7-63G Propeller Operation & Maintenance	WOOD-CF-REV-A	YES	NO	NO	Sensenich Wood Propeller
MT175R127-2Ca Propeller – Operation & Installation	E-112	YES	NO	NO	MT-Wood-Composite Propeller
RG-25 Maintenance Manual	5-0142	YES	NO	NO	Concord Battery

Table 01-1 Related Publications

1 Documents supplied with aircraft as equipped.

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Section 01-30 Chapter Format and Layout

Along with the changes to the style of the chapters, there were changes to the format and layout of pages. This section describes the different changes to Changed Text, Blank Pages, Notes, Cautions, and Warnings Callouts, Section Headings and Section Text, Headers and Footers, Figure and Table Captions, and Procedures.

Section 30-01 Changes to Text

Because the new look and feel made changes that affected the entire chapter, the first release of the chapters will not indicate the changes by the use of a revision bars. However, subsequent releases of the reformatted chapters will indicate any changes (other than grammatical or spelling) with revision bars located in the outside margin of the page (left margin on even pages and right margin on odd pages).

Section 30-02 Blank Pages

Identification of a blank page is by the legend, "**PAGE LEFT INTENTIONALLY BLANK**", in the center of each page.

Section 30-03 Notes, Cautions and Warnings

In the reformatted release of the maintenance manual, Notes, Cautions, and Warnings are depicted with the appropriate icon, with the text on the next line. Below are examples of these. The appearance of the message is such to highlight the importance of the message.

AN OPERATING PROCEDURE, INSPECTION, REPAIR, OR MAINTENANCE PRACTICE, WHICH IF NOT CORRECTLY FOLLOWED, COULD RESULT IN PERSONAL INJURY OR LOSS OF LIFE.

An operating procedure, inspection, repair or maintenance practice, which if not strictly observed could result in damage or destruction of equipment.

An operating procedure, inspection, repair, or maintenance condition, etc, which is deemed essential to highlight.

Section 30-04 Section Headings and Section Text

The section headings were given a specific font size and weight (Bold and Italics), and were left justified to the margin. The primary heading will have the chapter number followed by the section number. The primary heading will start on an odd page. A subsection heading will have the section number followed by the subsection number.

Section information is also in the footer of each page. The footer contains the chapter and section number on the outside margin. See the section on footer information.

The text within a section is fully justified and indented by 0.4 inches. This will aid the reader to scan quickly the document for headings and for Notes, Cautions, and Warnings, which run from margin to margin.

Section 30-05 Table and Figure Captions

Figures will have the designation that includes the chapter number, a serial number that restarts with each chapter and a description of what is in the figure. This designation appears below the figure. For example:

Figure 01-1 This is an example of a figure caption

Likewise, tables will have a similar formatted callout and caption and will appear below the table. For example:

Table 01-1 This is an example of a table caption

Section 30-06 Headers and Footers

The headers and footers have changed to aid the reader in identifying the page and the information on that page. This change allows the document to be more scanning friendly to the reader.

The headers contain the logo for Liberty Aerospace, Inc. along the inside edge of each page. The outside edge identifies the chapter by title (for example *INTRODUCTION*) and the subject airplane (for example XL-2 Airplane).

The footer has additional information for the reader. On the inside margin, is the top-level part number for the maintenance manual, P/N 135A-970-100. Below the part number is the revision applied to this page.

On the outside edge, the footer has the chapter number and the section of the chapter covered on that page. The subsection does not appear, as a single page can contain more than a single subsection. The page number and the page count are presented directly below chapter and section number.

Looking at Figure 01-1, the page that has the upper footer is part of Chapter 01, Section 20 and this is page 10 of 16. Directly below the manual part number is the latest revision applied to this page which in this case is “~” indicating initial release. The page that has the lower footer is part of Chapter 01, Section 30, and this is page 11 of 16. Below the manual part number, is the revision of the page, in this case revision A is the latest revision applied to this page.

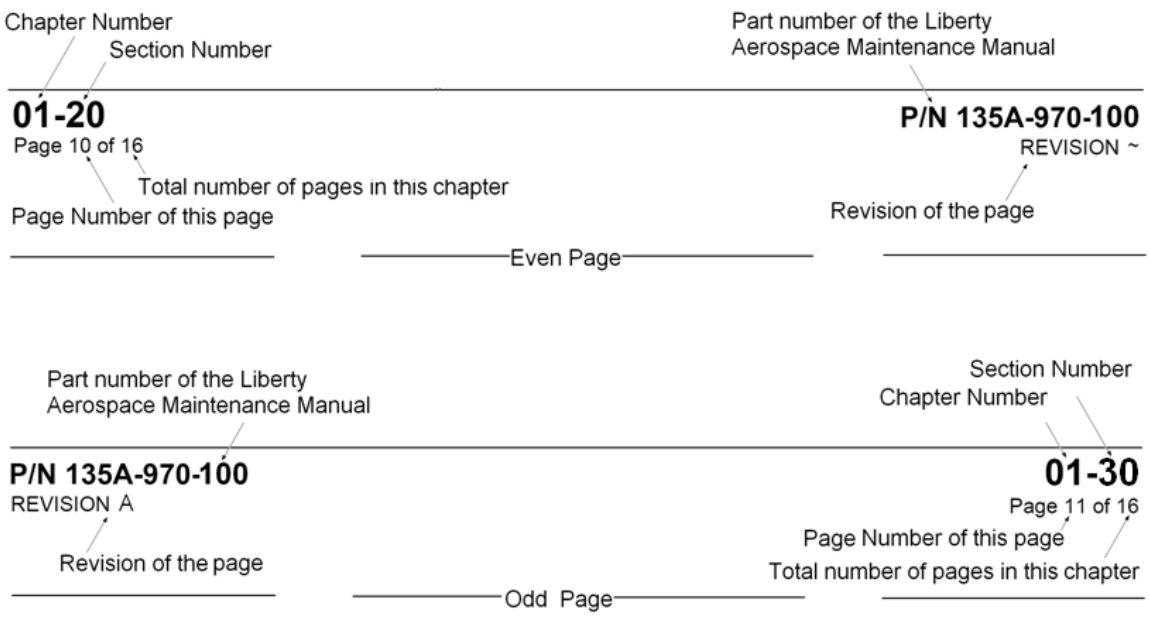

Figure 01-1 Examples of the Maintenance Manual Footer

Section 30-07 Procedures

Procedures will have an unnumbered heading that is in the center on the page. Each procedure will begin on a new page to distinguish it from a preceding procedure. Long or involved procedures will come as a series of smaller procedures with a table showing a list of the procedures that are involved. The end of a procedure will have a sentence stating the procedure has been completed successfully.

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Section 01-40 Manual Arrangements

The overall arrangement of this Maintenance Manual is in accordance with the Air Transport Association of America (ATA) Specification number 100. In addition, the manual complies with the General Aviation Manufacturers Association (GAMA) Specification number 2 issue in January 1978 - *Specification for Manufacturers Maintenance Data*.

In the general Table of Contents, located in the front of the manual, is the title of each chapter. Each chapter covers a specific main system; sub-sections describe relevant subsystems.

Changes to the format, as noted in the above sections of this chapter, are such to comply with most of provisions of GAMA Specification number 9 (Version 2.0), dated March 1999 – *Electronic Publication Standard*.

In addition, the preparation of this manual starts the process of moving the publications for the airplane towards electronic documentation. Within the pages of this manual are software links such that when a reader is viewing the manual with a computer, the reader can quickly move to the information that is needed. When viewing this manual on a computer, the title of each chapter in the general Table of Contents is a link to the first page of that chapter. From there, the reader can go to the chapter table of contents (always starts on page 3 of the chapter) and find links to the sections and subsections within that chapter.

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Section 01-50 Main Chapter Groups

The maintenance manual combines the chapters in to five groups. This grouping brings together chapters that cover similar information about the airplane. Shown in Table 01-2 are the five groups, and the chapters that are in that group.

Table 01-2 Group Chapters

Manual Group	Chapters in Group
General	01 – 12
Equipment	20 – 34
Airframe	51 – 57
Propeller	61
Power Plant (Engine)	71 – 91

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CHAPTER 03

GENERAL DESCRIPTION

Table of Contents

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Section 03-00 General

The Liberty XL-2 airplane is manufactured by Liberty Aerospace, Inc. and is approved in the normal airworthiness category. The company address is listed below.

Liberty Aerospace, Inc.
100 Aerospace Drive
Melbourne, Florida, USA, 32901
Phone: 321-752-0332

Section 00-01 Description

The Liberty XL-2 airplane is a low-wing two-place aircraft with tricycle landing gear. Its central structural element is a welded steel tubing frame or “chassis” which has the following components attached:

- Engine and Propeller
- Wings (conventional aluminum construction)
- Main Landing Gear (aluminum construction)
- Nose Landing Gear (steel construction)
- Fuselage (composite construction)
- AFT Fuselage with Vertical Fin (composite construction)
- Rudder and Stabilator (aluminum construction)
- Center Fuselage including crew/passenger cabin, fuel tank, and baggage compartment
- Engine Cowlings

The wings are riveted aluminum semi-monocoque structures which are secured to the chassis by means of heavy steel pins in attach fittings. With the wing or wings removed, the fuselage remains supported by the landing gear. The aluminum horizontal tail is a stabilator type in which the entire unit moves to change pitch on the aircraft. The only movable surfaces on the horizontal tail are the anti-servo tabs that have both pitch trim and anti-servo functions. Integrated into the fuselage is the composite vertical fin; the rudder is an aluminum structure. Ailerons and stabilators operate by pushrods from cockpit control sticks.

The rudder also operates by pushrods attached to adjustable cockpit rudder pedal assemblies. Aluminum trailing edge flaps operate electrically.

The power for the Liberty XL-2 is from an air-cooled Teledyne Continental Motors IOF-240B four cylinder, horizontally opposed, fuel injected engine. The rating of the engine is 125 continuous SAE horsepower at 2800 RPM. The engine is equipped with a Full Authority Digital Engine Control (FADEC) system to control ignition timing and fuel mixture without pilot intervention.

Fuel for the engine is from a single 28-gallon (106-liter) usable capacity aluminum tank. The tank is installed in the fuselage between the pilot/passenger seatbacks and the baggage compartment. The preferred propeller is the MT Propeller, which is a two-blade, fixed pitch, wood composite propeller with spinner assembly (including spacer, and supporting hardware) is model MT175R127-2Ca and manufactured by MT-Propeller Entwicklung GmbH. The permissible propeller is the Sensenich propeller, which is a fixed pitch, constructed of wood and fiberglass, part number: W69EK7 63G.

Section 03-01 Vender Documentation

This manual may refer to the following vendors, and their documentation.

Engine	IOF-240 B Teledyne Continental Motors 2039 Broad Street, Bldg. # 96 Mobile, AL. 36601 Tel: 251-438-8291 Fax: 251-432-7352 Website#: http://www.tcmlink.com
Propeller	MT175R127-2Ca MT-Propeller Entwicklung GmbH Flugplatzstr.1 D-04348 Atting, Germany Tel: +49-(0)9429-9409-0 Fax: +49-(0)9429-8432 Website: http://www.mt-propeller.com
Propeller	W69EK7-63G Sensenich Wood Propeller 2008 Wood Court Plant City. FL 33563 Tel: 813-752-3711 Fax: 813-752-2818 Website http://sensenichprop.com
Main Wheel Brakes	Parker Hannifin, Aircraft Wheel & Brakes 1160 Center Road Avon, OH. 44011-0158 Tel: 440-937-6211 Fax: 440-937-6416 Website: http://www.parker.com
Navigation/Communication Eq.	Garmin International Inc. 1200 East 151st Street Olathe, KS. 66062 Tel: 913-397-8200 Fax: 913-397-8282 Website: http://www.garmin.com

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Section 03-02 Aircraft Measurements

This section contains the measurements of the Liberty XL2 airplane.

Section 02-01 Reference Planes

As a standard, the measurements are from three reference planes. These planes are the Waterline, Station, and the Butt Line, also known as the centerline. Figure 03-1 shows the location of the three planes. Two of these planes (Waterline and Station) can be hard to define and/or impossible to measure from.

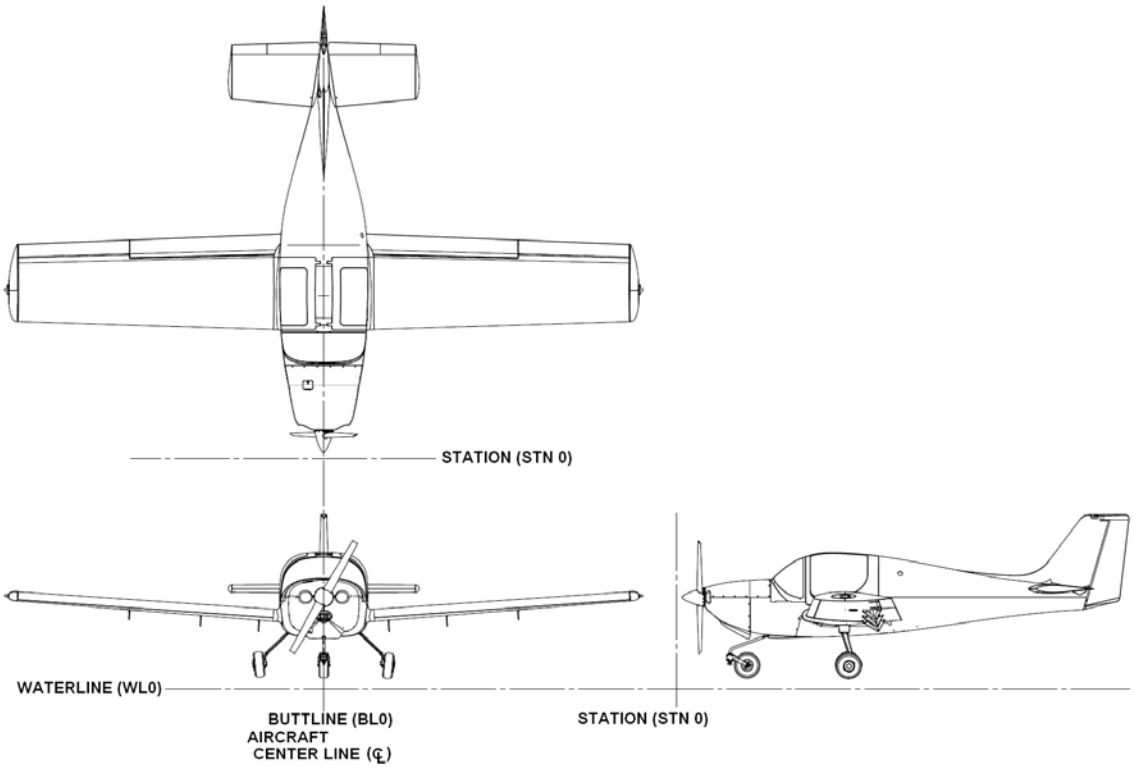

Figure 03-1 Location of the Waterline and Station Planes

There are various reference points on the airplane that may be used to locate other points on the airplane from either the Waterline or Station. Figure 03-2 shows the location and description of two of these reference points.

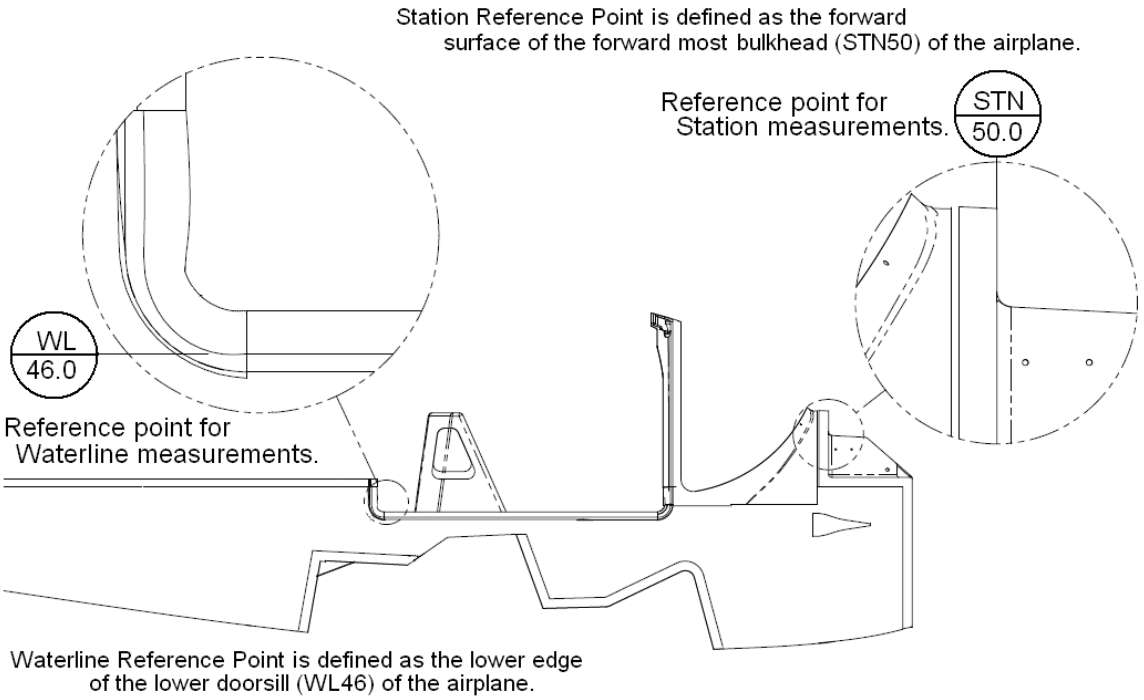

Figure 03-2 Waterline and Station Reference Points

Section 02-02 Measurements from the Butt Line

Measurements from the Butt Line are measurements port or starboard from the center of the airplane. See Figure 03-3 for various measurements that are left and or right of the butt line. This figure also has that span from the left side of the airplane to the right side.

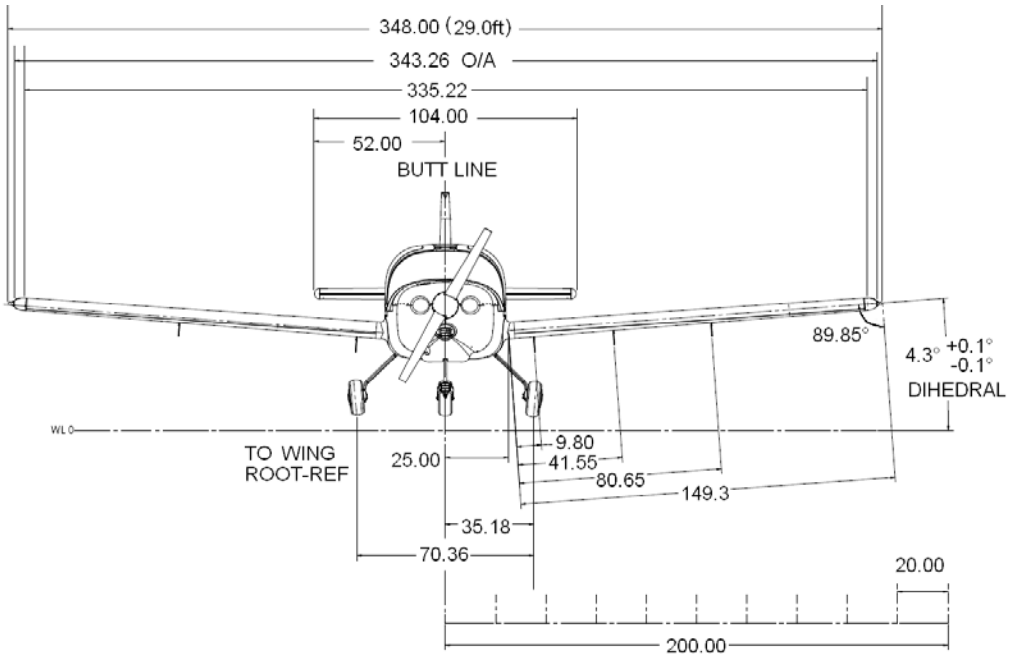

Figure 03-3 Measurements from the Butt Line

Section 02-03 Measurements from the Waterline and Station

Measurements for Waterline and Station are from an imaginary plane below the landing gear and forward of the propeller. That is the reason that on the airplane there are points defined as the Waterline and Station reference points. See Section 02-01 Reference Planes in this chapter. Figure 03-4 shows various Waterline and Station points on the airplane. These points are location of critical items (bulkheads, control surface axis, weight and balance, etc.) The numbers in the figure are aft of the Station 0 plane or above the Waterline 0 plane.

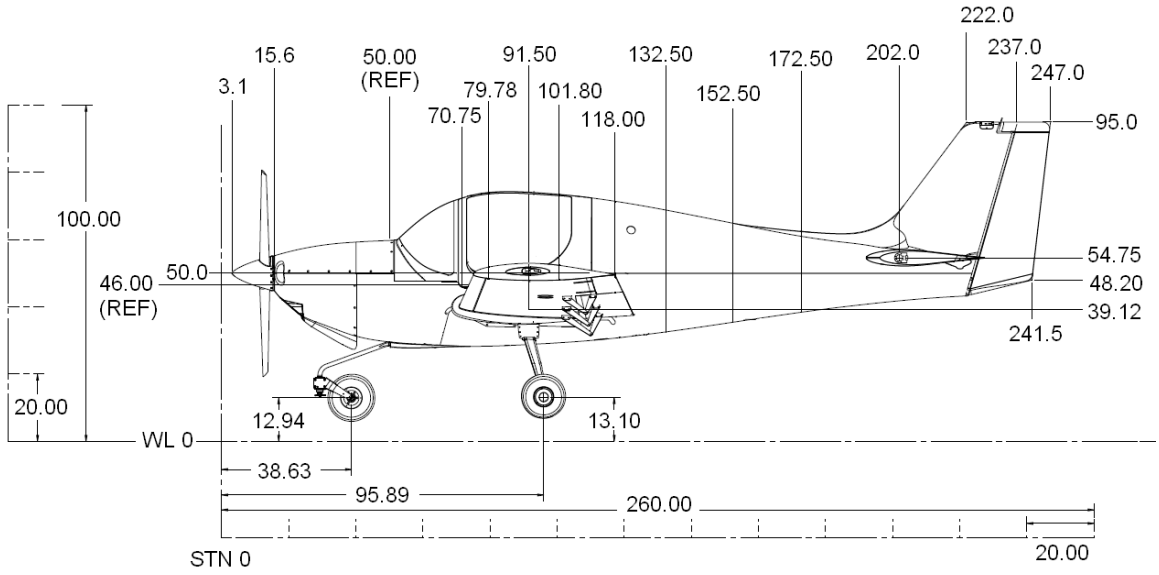

Figure 03-4 Measurements from the Waterline and Station

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Section 03-03 Aircraft Access Panels and Cowlings

This section describes the type and location of the various cowlings, panels and access panels on the exterior and interior of the airplane. Figure 03-5, Figure 03-6, Figure 03-7, and Figure 03-8 show the detail of the location of the access panels. There are three major cowlings or panels. These are:

- Upper Engine Cowling
- Lower Engine Cowling
- Belly Panel

The exterior of the airplane has the following access panels

- Fuel Filler Access Panel
- Wing Access Panels (two panels on the underside of each wing)
- Three Access Panels on the starboard side by the tail
  - Upper Torque Tube Access Panel
  - Lower Torque Tube Access Panel
  - Trim Motor Access Panel
- Engine Oil Filler Access Panel
- Port and starboard wing root fairings

The interior of the airplane has the following access panels:

- Fuel Tank Sender Access Panel (located in the pilot's seat back)
- Baggage Floor Access Panel (center of the baggage compartment)
- Baggage Bay Aft Bulkhead Access Panel

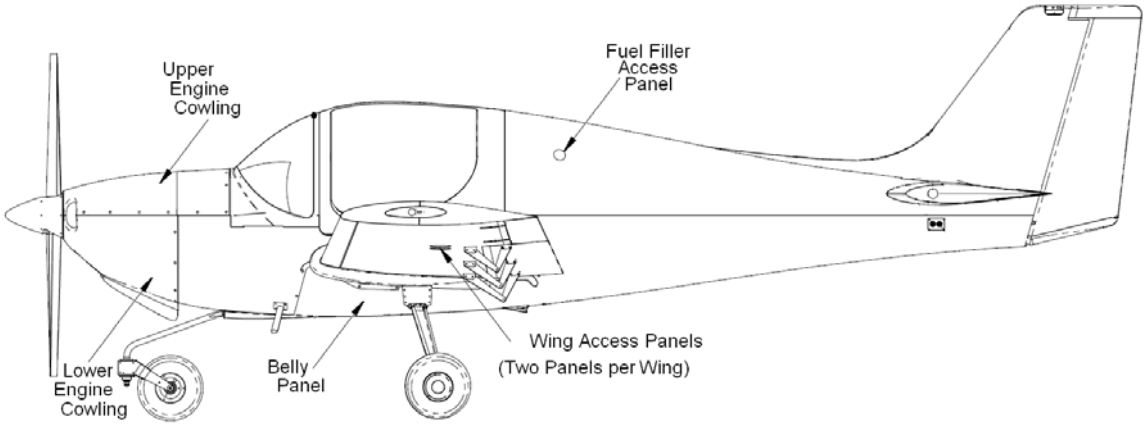

Figure 03-5 Access Panels Port

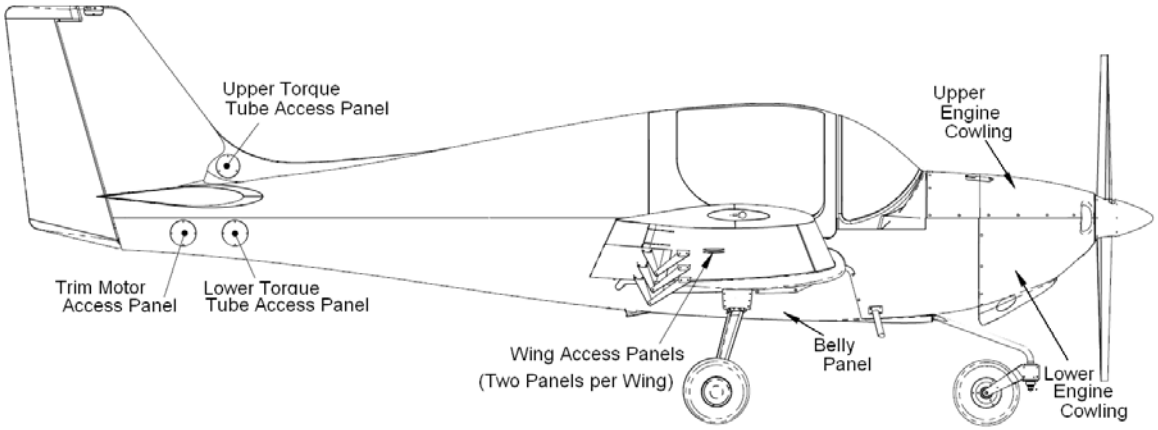

Figure 03-6 Access Panels Starboard

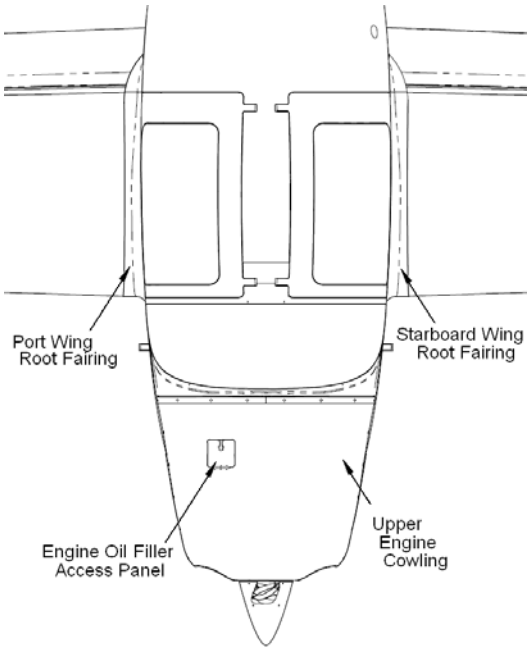

Figure 03-7 Wing Root and Engine Oil Filler Access Panel

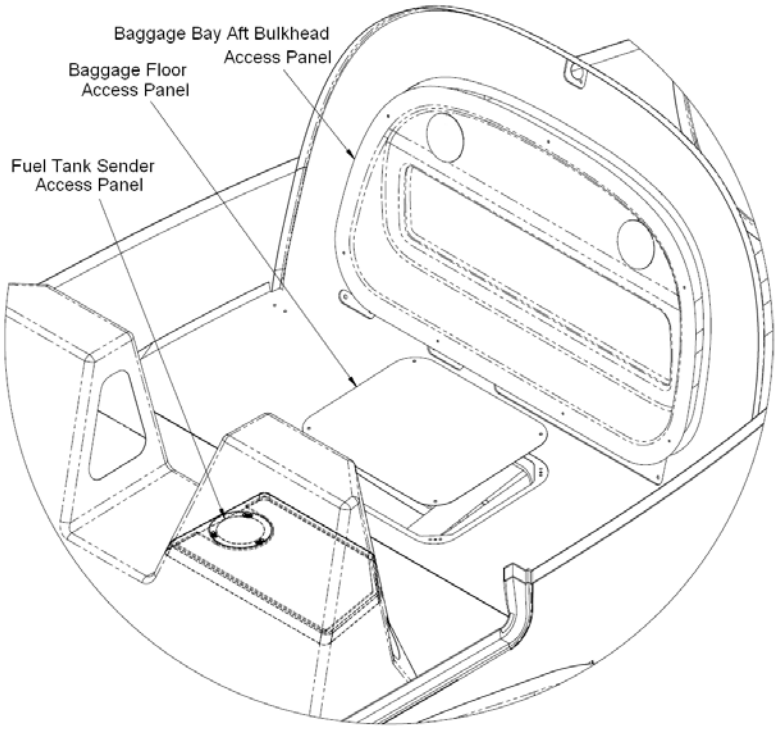

Figure 03-8 Interior Access Panels Aft of the Cockpit

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CHAPTER 04

AIRWORTHINESS LIMITATIONS

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Section 04-00 General

The Airworthiness Limitations section contains the following requirements:

Life Limits and Mandatory Inspections:

- Structure and Components Subject to Life Limits
- Mandatory Inspections
- Battery Replacement Requirements
- External Surface Paint Requirements

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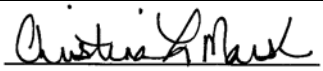
Section 04-01 Airworthiness Limitations

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

This section is also EASA approved by the FAA on behalf of the European Aviation Safety Agency (EASA) using the bilateral agreement between the FAA and the DGAC-France. This section was prepared in accordance with the EASA requirements and any variations must be EASA approved in accordance with CS23.1529.

REV	DATE	APPROVED
~	07/31/09	 For: Melvin D Taylor, Manager Atlanta Aircraft Certification Office Federal Aviation Administration Central Region
A	10/28/09	 For: Melvin D Taylor, Manager Atlanta Aircraft Certification Office Federal Aviation Administration Central Region
B	02/02/2010	 For: Melvin D Taylor, Manager Atlanta Aircraft Certification Office Federal Aviation Administration Central Region
C	06/21/2010	 For: Melvin D Taylor, Manager Atlanta Aircraft Certification Office Federal Aviation Administration Central Region

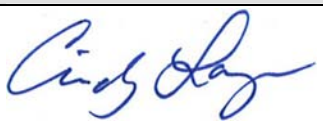
REV	DATE	APPROVED
D	02/16/2011	 For: Melvin D Taylor, Manager Atlanta Aircraft Certification Office Federal Aviation Administration Central Region

Table 04-1 FAA Approvals

Section 04-02 Life Limits and Mandatory Inspections

This section details items that are subject to life limits and mandatory inspections.

Section 02-01 Items Subject to Life Limits

The items listed in Table 04-2 are life-limited items with mandatory replacement times. Remove these items from service at the replacement times indicated. Render the out-of service items unserviceable and discard them to prevent re-use.

Date of removal and replacement of life-limited components, including flight hours, must be recorded in aircraft maintenance records to ensure correct observation of the stated interval(s).

Component	P/N	Mandatory Replacement Time
Composite Fuselage	135A-10-105	5000 hours
Wing Skin and Internal Structure	135A-20-005[1] 135A-20-006[1] 135A-20-007[1] 135A-20-008[1]	15000 hours
Wing Root Fitting (Spar Tang)	135A-20-501	3220 hours
Space Frame Assembly	135A-10-075	15000 hours
Nose Lock Pin	135A-40-565	500 hours
Tail Plane Attachment Lug	135A-30-615	500 hours
Firewall Blanket	33M1154-301	2000 hours
Induction Air Filter	R-1260 [2]	500 hours
Dawley Exhaust	DEL-200201-005, DEL-200201-006	1000 hours
Fire Extinguisher	RT A600[3]	12 years

[1]This does not include Wing Root Fitting (Spar Tang), 135A-20-501.
[2]Reference TCM - Installation and Operation Manual OI-22, Chapter 5
[3]Reference H3R, Inc. Service Manual for the RT A1200, RT A600, RTA400 Fire Extinguisher

Table 04-2 Structure and Components Subject to Life Limits

Section 02-02 Items Subject to Mandatory Inspections

Table 04-3 details those components that are subject to mandatory inspection.

Component	P/N	Inspection Type	Inspection Interval
Throttle Control System	135A-50-017	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Annual for all aircraft and 100 hour as applicable per Part 91
Tail Plane Mass Balance Drive Arm	135A-45-291	Visual Inspection: Inspect the control circuit connection for the elevator from the forward, lower trim motor access panel. Refer to Chapter 05.	Annual for all aircraft and 100 hour as applicable per Part 91
Wing Skin and Internal Structure	135A-20-005 135A-20-006 135A-20-007 135A-20-008 This does not include Wing Root Fitting (Spar Tang), 135A-20-501.	Refer to Chapter 05 Control Surfaces Inspection Checklist	Annual for all aircraft and 100 hour as applicable per Part 91
Wing Root Fittings	135A-10-085 135A-10-086 135A-20-501	Refer to Chapter 05 Control Surfaces Inspection Checklist	Annual for all aircraft and 100 hour as applicable per Part 91
Space Frame Assembly	135A-10-075	Refer to Chapter 05 Control Surfaces Inspection Checklist	Annual for all aircraft and 100 hour as applicable per Part 91
Composite Fuselage	135A-10-105	Visual Inspection of All: Fuselage Bond Lines and Bonded Composite Laminate Structures to Fuselage as listed in Table 04-4 through Table 04-7 Give attention to joints between Baggage Bay Floor Supports and Fuselage. See Figure 04-5 for the location of these supports Tap Test and/or other Inspection method(s) delineated in Chapter 51 on All Bonded Composite Laminated Structures: Horizontal Center Line Between Upper and Lower Fuselage Between Upper Fuselage Headline Structure and Lower Fuselage Hoop Reinforcement Structure All Bonded Composite Laminate Structures to Fuselage See Figure 04-4 through Figure 04-9 Refer to Chapter 05.	Annual for all aircraft and 100 hour as applicable per Part 91

Component	P/N	Inspection Type	Inspection Interval
For airplanes equipped with a standard exhaust system and the optional bypass scat tube has not been installed	Dawley Drawing 200201-002	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Inspect every 25 hours Time-In-Service or every 12 months, whichever occurs first, see FAA AD 2009-08-05
For airplanes equipped with a standard exhaust system and the optional bypass scat tube has been installed	Dawley Drawing 200201-002	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Inspect every 50 hours Time-In-Service or every 12 months, whichever occurs first, see FAA AD 2009-08-05
For airplanes equipped with a reduced sound exhaust system and the optional bypass scat tube has been installed	Dawley Drawing 200201-003	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Inspect every 50 hours Time-In-Service or every 12 months, whichever occurs first, see FAA AD 2009-08-05 for placard requirements for the cabin heater
For airplanes equipped with a reduced sound exhaust system and the optional bypass scat tube has not been installed	Dawley Drawing 200201-003	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Inspect within 10 hours Time-In-Service after April 20, 2009, see FAA AD 2009-08-05
For airplanes equipped with a reinforced standard or reduced sound exhaust system and the optional bypass scat tube has not been installed	Standard Dawley Drawing 200201-006 Or Reduced Sound Dawley Drawing 200201-005	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Inspect every 50 hours Time-In-Service or every 12 months, whichever occurs first Report inspection results to Liberty Customer Service
For airplanes equipped with a reinforced standard or reduced sound exhaust system and the optional bypass scat tube has been installed	Standard Dawley Drawing 200201-006 Or Reduced Sound Dawley Drawing 200201-005	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Inspect every 50 hours Time-In-Service or every 12 months, whichever occurs first Report inspection results to Liberty Customer Service
Nose Lock Pin	135A-40-565	Refer to Chapter 05 Landing Gear Inspection Checklist	Annual for all aircraft and 100 hr as applicable per Part 91

Component	P/N	Inspection Type	Inspection Interval
Tail Plane Attachment Lug	135A-30-615	Refer to Chapter 05 Control Surfaces Inspection Checklist	Annual for all aircraft and 100 hour as applicable per Part 91
Firewall Blanket	33M1154-301	Refer to Chapter 05 Engine (Firewall Forward) Checklist	Annual for all aircraft and 100 hour as applicable per Part 91
For All Airplanes, Port-side Clevis Aft Spar Weldment	135A-10-235 (Part of Space Frame Assy., 135A-10-075)	Refer to Chapter 05 Control Surfaces Inspection Checklist	Inspect every 100 hours of time in service.
For All Airplanes, Starboard-side Clevis Aft Spar Weldment	135A-10-236 (Part of Space Frame Assy., 135A-10-075)	Refer to Chapter 05 Control Surfaces Inspection Checklist	Inspect every 100 hours of time in service.

[1]This does not include Wing Root Fitting (Spar Tang), 135A-20-501.

Table 04-3 Components Subject to Mandatory Inspections

Section 02-03 Bonded Composite Laminates

An uncured “pre-preg” cloth is a fiber, either carbon or glass, impregnated with an epoxy resin. Layers of pre-preg will determine the thickness. The increases in thickness can come from the insertion of foam between the layers to create sandwich constructions. Cured composite pre-preg plies produce laminates, which are Solid, or Sandwich. Different thicknesses of laminates are used to form a structural support to distribute stresses through the structure. The majority of the Liberty XL-2 fuselage is sandwich construction. There are areas of the structure like the “rollover” hoop structure that are solid laminate. Bond lines are areas of solid laminates joined together with a permanent two-part epoxy paste adhesive.

Figure 04-1, Figure 04-2, and Figure 04-3 shows the three types of joints.

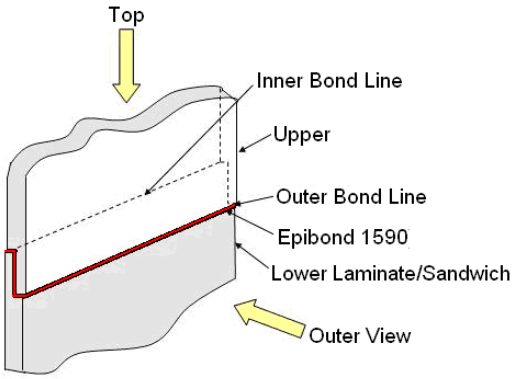


Figure 04-1 Lap Joint

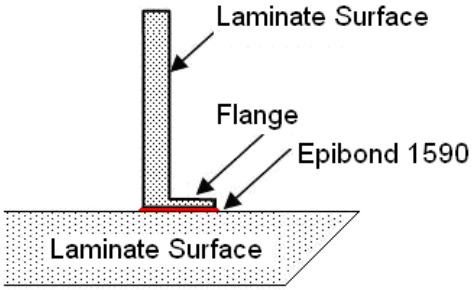


Figure 04-2 Flange Joint

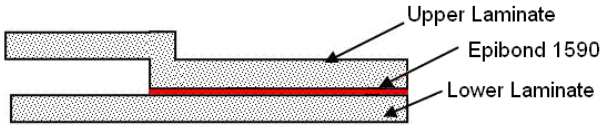


Figure 04-3 Face-to-Face Joint

Table 04-4 through Table 04-6 details the fuselage bond lines and the fuselage composite laminates. Table 04-7 gives the details of the additional fuselage bond lines for gross weight 1750 lbs. compliance. See Figure 04-4 through Figure 04-9 for details of the location of the bond joints.

Figure Callout	Description	Bond Joint
1	Horizontal Center Line between Upper and Lower Fuselage	Lap Joint
2	Bulkhead Baggage Bay between Upper and Lower Fuselage	Flange Joint
3	Bulkhead Mid Fuselage and the Upper and Lower Fuselage	Flange Joint
4	Battery Braces (Main and Backup) and Lower Fuselage	Face-to-Face Joint
5	Fin Spar and Upper and Lower Fuselage	Flange Joint
6	Fin Rib 1 and Upper Fuselage	Flange Joint
7	Fin Rib 2 and Upper Fuselage	Flange Joint
8	Fin Rib 3 and Upper Fuselage	Flange Joint
9	Fin Closeout-Vertical Closeout and Upper and Lower Fuselage	Flange Joint
10	Bond Line between Headliner and Upper & Lower Fuselage	Face-to-Face Joint

Table 04-4 Bond Line Callouts for Figure 04-4

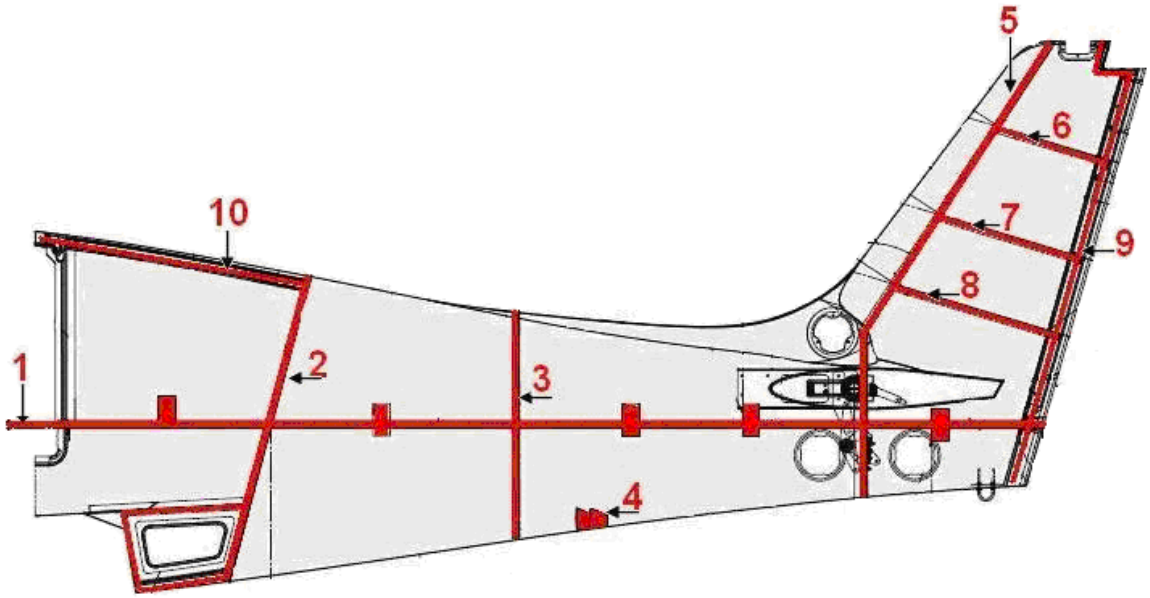


Figure 04-4 Upper and Lower Fuselage Bond Lines

NOTE

During inspections, give attention to joints between the fuselage and baggage bay floor supports (item number 12 in Figure 04-5); which can be viewed through the floor access panel. There are two baggage bay floor supports (Port and Starboard), which are bonded to the fuselage. See Figure 04-5 for the location of the baggage bay supports.

Figure Callout	Description	Bond Joint
2	Bulkhead Baggage Bay between Upper and Lower Fuselage	Flange Joint
3	Bulkhead Mid Fuselage and the Upper and Lower Fuselage	Flange Joint
5	Fin Spar and Upper and Lower Fuselage	Flange Joint
6	Fin Rib 1 and Upper Fuselage	Flange Joint
7	Fin Rib 2 and Upper Fuselage	Flange Joint
8	Fin Rib 3 and Upper Fuselage	Flange Joint
9	Fin Closeout-Vertical Closeout and Upper and Lower Fuselage	Flange Joint
11	Baggage Bay Floor and Laminate Structures	Flange Joint
12	Baggage Bay Floor Supports (Port and STBD) and Laminate Structures	Flange Joint
18	Fin Horn Closeout	Flange Joint

Table 04-5 Bond Line Callouts for Figure 04-5

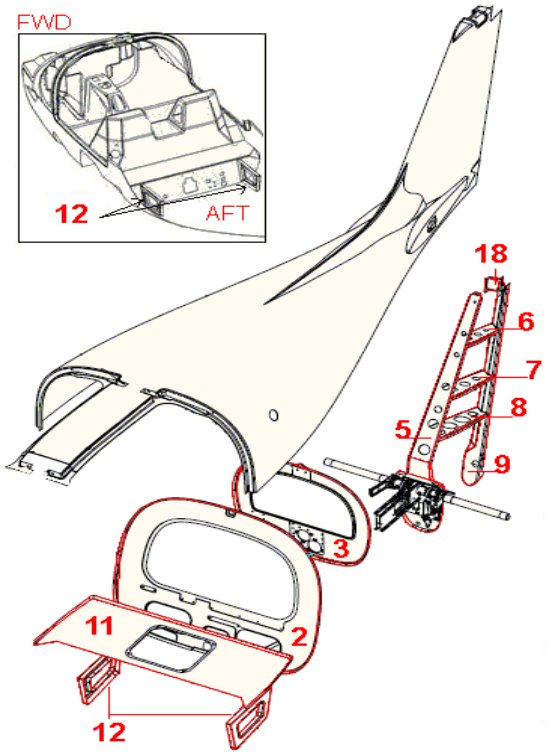


Figure 04-5 Upper Fuselage Bond Lines Detailing the Location of the Baggage Bay Supports

Figure Callout	Description	Bond Joint
4	Battery Braces (Main and Backup) and Lower Fuselage	Face-to-Face Joint
13	Bond Line between Hoop Reinforcement and Upper & Lower Fuselage	Face-to-Face Joint
14	Ducts NACA Cabin Air (Port and STBD) and Lower Fuselage	Flange Joint
15	Closeout Seatbacks (Port and STBD)	Flange Joint
16	Horizontal Center Line Reinforcement Strap between Upper & Lower Fuselage (10 quantity)	Face-to-Face Joint
17	Reinforcement Strap for Rollover Hoop and Lower & Upper Fuselage	Face-to-Face Joint

Table 04-6 Bond Line Callouts for Figure 04-6

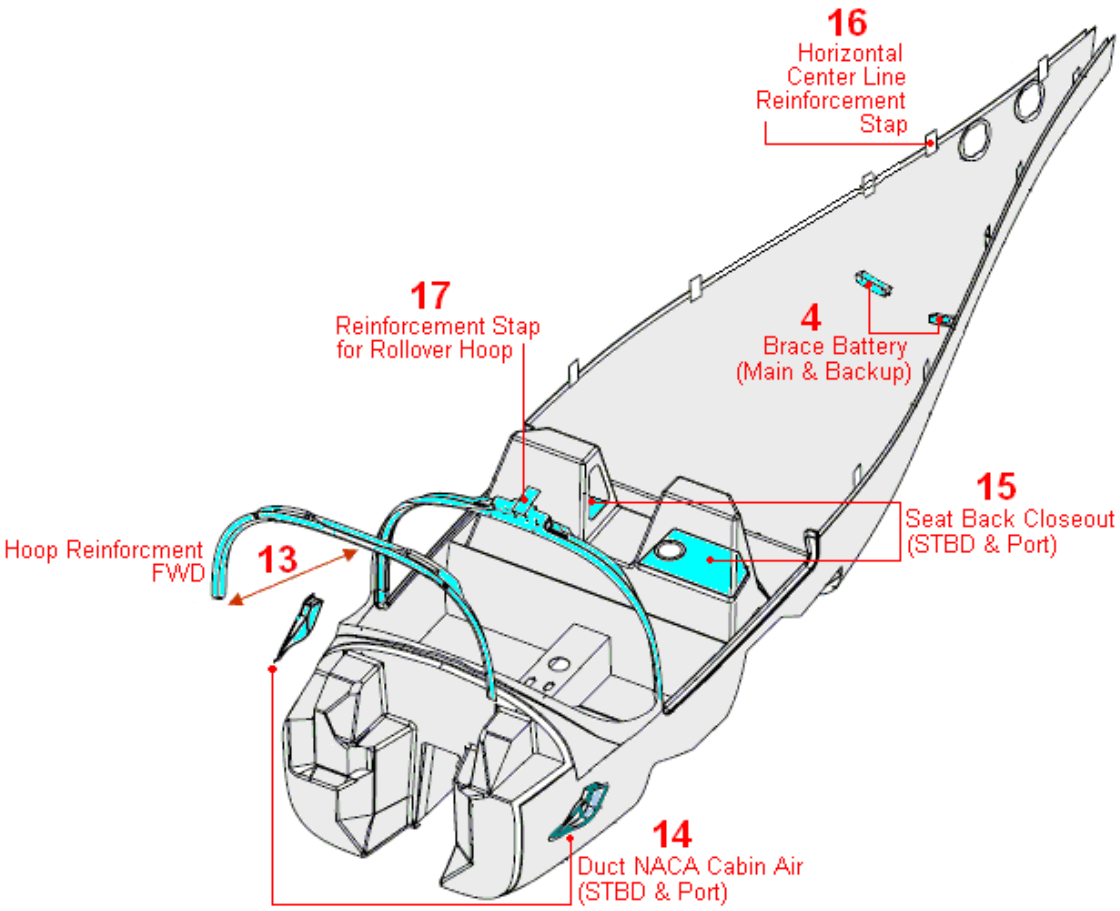


Figure 04-6 Lower Fuselage Bond Lines

Section 02-04 Liberty XL-2 Compliance at a Gross Weight of 1750 Lbs.

Table 04-7 and Figure 04-7 through Figure 04-9 details the location of the various stiffeners and bond lines for compliance for the gross weight of 1750 lbs. upgrade.

LIBERTY XL-2 COMPLIANCE AT A GROSS WEIGHT OF 1750LBS • For SN0007 and SN0009 thru SN0115 if modified in accordance with RKI-SIL-08-001 for a maximum gross weight of 1750 lbs. • For SN0116 and subsequent, these modifications are installed at the factory for a gross weight of 1750 lbs.		
Figure	**Description**	**Bond**
Figure 04-7	Bond Line between Seat Base Stiffener and Lower Fuselage (port and starboard)	Face-to-Face Joint
Figure 04-8	Bond Line between FWD Bulkhead Reinforcement and Lower Fuselage	Face-to-Face Joint
Figure 04-9	Bond Line between Seat Back Stiffener and Lower Fuselage (starboard)	Face-to-Face and Lap Joint

Table 04-7 Compliance at a Gross Weight of 1750 lbs.

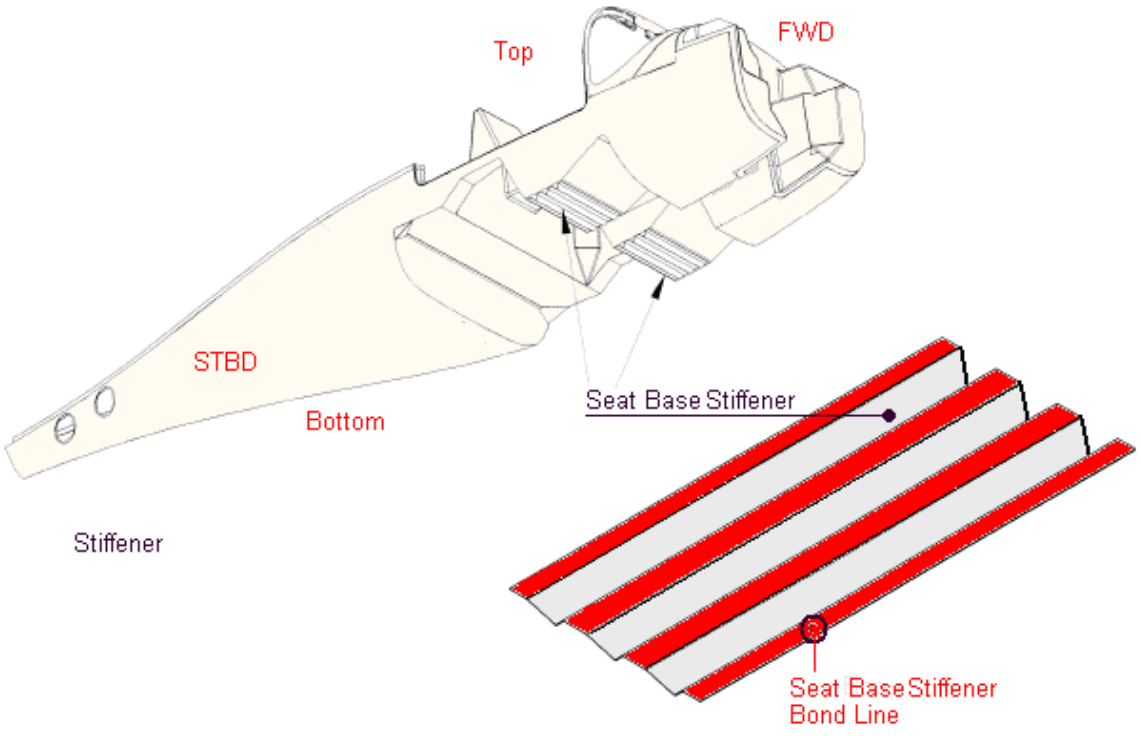


Figure 04-7 Seat Base Stiffener and Lower Fuselage Bond Lines

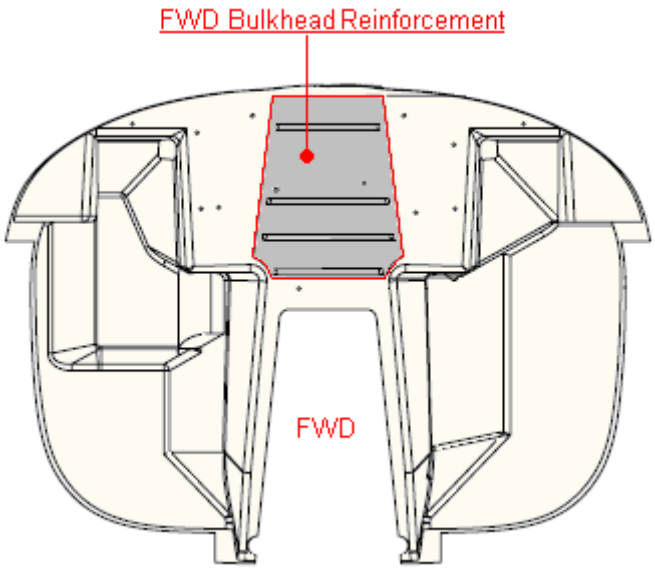


Figure 04-8 FWD Bulkhead and Lower Fuselage Bond Lines

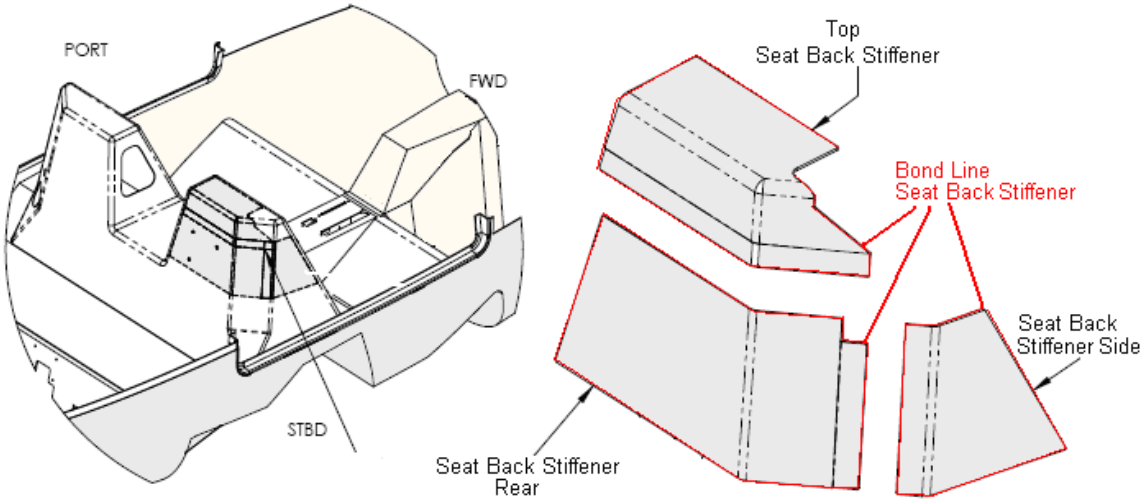


Figure 04-9 Seat Back Stiffener and Lower Fuselage Bond Lines

Section 02-05 Battery Inspection and Replacement Requirements

Inspect, and replace as required, the batteries listed in this table with new batteries at the intervals shown or at the recommended interval by the battery's vendor or at the interval prescribed by applicable local regulations, which ever occurs first.

Component	OEM	P/N	Inspection Interval	Mandatory Replacement Time
Primary Battery	Concord Battery	RG-25XC or RG-25	Annual for all aircraft	• 1800 hours or 3 years, whichever occurs first
Secondary Battery	Teledyne Continental Motors	6560701.	Annual for all aircraft	• 12 calendar months after date of installation. • If the secondary battery has been used for more than one (1) hour (emergency operations). • If the secondary battery is severely depleted • If the EBAT FAIL light stays illuminated for more than 5 minutes on the HSA panel

Table 04-8 Battery Inspection and Replacement Requirements

1. The TCM part number provides a Power-Sonic Corporation model PS-12120 12vdc 12 A.H. battery..

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Section 04-03 External Surface Paint Requirements

To ensure the temperature of the load-bearing composite structure is kept below the structural temperature limit, the outer surface of the composite components must be painted white except for areas of registration marks, placards, and minor trim, Figure 04-10 defines the zones.

NOTE

In Figure 04-10, zone I are areas of composite painted surfaces and zone II are areas of metallic painted surfaces.

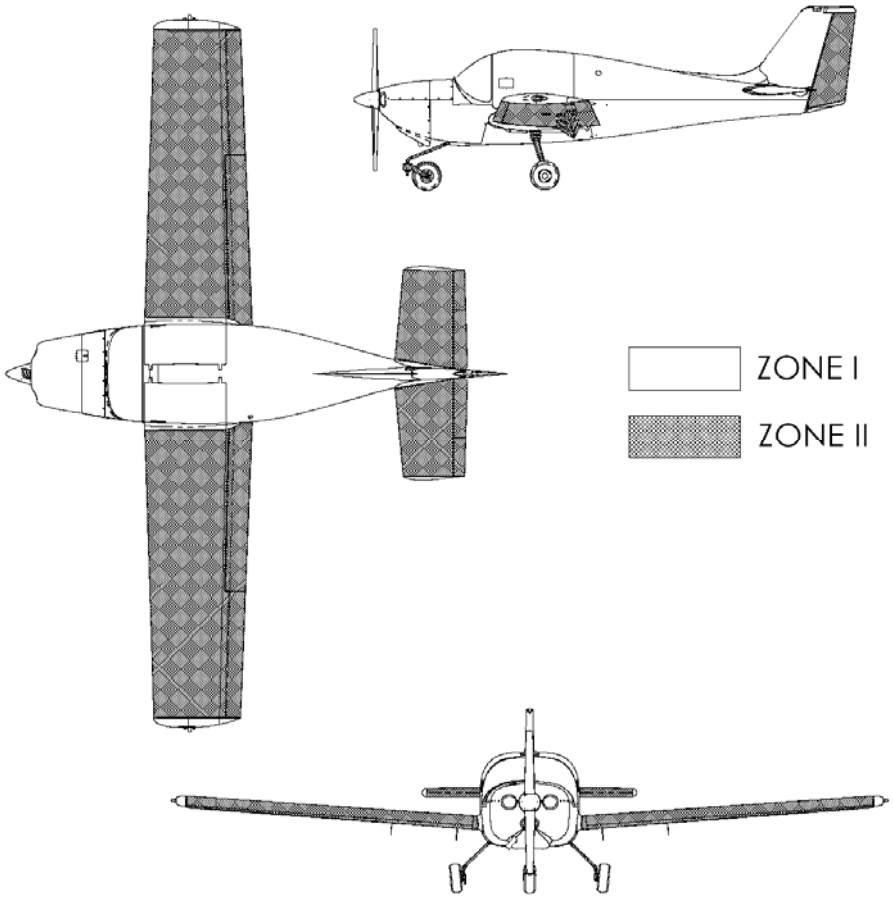

Figure 04-10 Paint Zones

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