European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

Liberty XL-2

Type Certificate Holder:

Liberty Aerospace Incorporated
100 Aerospace Drive
Melbourne, FL 32901
USA

Manufacturer:

Liberty Aerospace Incorporated
100 Aerospace Drive
Melbourne, FL 32901
USA

For variants: Not Applicable

Issue 4: 26 August 2009

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SECTION 1: GENERAL, Basic Model XL-2 Design

A. General

1.	a) Type: b) Variant:	XL-2 Not Applicable
2.	Airworthiness Category:	Normal Category
3.	Type Certificate Holder:	Liberty Aerospace Incorporated 100 Aerospace Drive Melbourne, FL 32901 USA
4.	Manufacturer:	Liberty Aerospace Incorporated 100 Aerospace Drive Melbourne, FL 32901 USA
5.	(reserved)	
6.	FAA Type Certification Date:	19-February-2004
7.	EASA Type Certification Date:	1-June-2007

B. Certification Basis

1.	Reference Application Date for determining the applicable requirements :	15-May-2006
2.	(Reserved)	
3.	(Reserved)	
4.	Certification Basis:	As defined in CRI A-1, latest issue
5.	Airworthiness Requirements:	CS 23 initial issue
6.	Requirements elected to comply:	None
7.	EASA Special Conditions:	CRI F-1, Protection from the effects of HIRF CRI F-2, Protection from the direct effects of lightning strike CRI F-3, Protection from the indirect effects of lightning strike
8.	EASA Exemptions:	None
9.	EASA Equivalent Safety Findings:	CRI C-2, Emergency Landing Dynamic Conditions is applicable to s/n 0007 and 0009 through 0125 that have not been modified per Liberty gross weight increase kit RKI-SIL-08-001. This ESF is not applicable to s/n 0007 and 0009 through 0125 with kit RKI-SIL-08-001 installed, nor for s/n 0126 and up, because this newer airplane configuration has been tested and meet the requirements of the Emergency Landing Dynamic Conditions and is in full compliance with §23.562.

10. EASA Environmental Standards : CS 36 (ICAO Annex 16, volume I, as applicable) (refer to paragraph E Note 3)

C. Technical Characteristics and Operational Limitations

1. (Reserved)
2. Description: Single piston engine, two-seated cantilever low wing airplane, Carbon fibre composite fuselage and metal chassis construction, Aluminium wing, fixed tricycle landing gear.

3. Equipment: Equipment list, AFM, Section 2. (Refer to paragraph E Note 1)
The secondary altimeter is FAA approved in accordance with Liberty Drawing 135A-05-221, Revision R1 or all further FAA approved revision must be installed for night-VFR and IFR operations.

4. Dimensions:

Span	28 ft 9 in (8.80 m)
Length	20 ft 3.8 in (6.19 m)
Height	7 ft 5 in (2.28 m)
Wing Area	112.0 sq ft (10.41 m^2)

5. Engine: Teledyne Continental IOF-240-B
Engine controlled by Full Authority Digital Electronic Control (FADEC) (refer to paragraph E Note 2)

The engine has been EASA type certified 10 May 2007 under TC EASA.IM.E.169.

5.1 Engine Limits: For all operations :
Maximum engine speed 2800rpm (125 HP)
Minimum engine speed 825 rpm

6. Propellers and propeller limits: MT Propeller MT175R127-2Ca

The propeller has been EASA type certified 21 November 1986 under TC EASA.P.006.

Maximum diameter : Not over 175 centimeters
Number of blades: 2
No additional tolerance permitted

7. Fluids:

7.1 Fuel: 100LL or 100 grade aviation fuel
7.2 Oil: Refer to Airplane Flight Manual
7.3 Coolant: Not Applicable

8. Fluid capacities:

8.1 Fuel: One tank in the fuselage
Total : 29.5 US Gallons
Usable : 28.0 US Gallons (refer to paragraph E note 4)

8.2 Oil: Maximum: 6.0 US quarts
Usable – 10° nose up: 3.0 US quarts
Usable – 10° nose down: 3.0 US quarts

9. Air Speeds:

For serial numbers s/n 0007 and 0009 through 0125 without Liberty gross weight increase kit RKI-SIL-08-001 installed :

VNE (Never Exceed speed)	162 KIAS
VNO (Max. structural cruising speed)	125 KIAS
VA, VO (Manoeuvring speed) at 1653 lbs (749 kg)	100 KIAS
VFE (Maximum flaps extended speed) Flaps 30°	80 KIAS

For serial numbers s/n 0007 and 0009 through 0125 with Liberty gross weight increase kit RKI-SIL-08-001 installed, and for s/n 0126 and up :

VNE (Never Exceed speed)	157 KIAS
VNO (Max. structural cruising speed)	122 KIAS
VA, VO (Manoeuvring speed) at 1653 lbs (749 kg)	100 KIAS
VFE (Maximum flaps extended speed) Flaps 30°	86 KIAS

10. Maximum Operating Altitude: 12,500 ft

11. Operational Capability: Day-Night VFR and IFR when appropriate equipment is installed and operating correctly.
Flight into expected or actual icing conditions is prohibited.

12. Maximum Masses:

For serial numbers s/n 0007 and 0009 through 0125 without Liberty gross weight increase kit RKI-SIL-08-001 installed :

Maximum Takeoff and Landing: 1653 lb (749 kg)

For serial numbers s/n 0007 and 0009 through 0125 with Liberty gross weight increase kit RKI-SIL-08-001 installed, and for s/n 0126 and up :

Maximum Takeoff and Landing: 1750 lb (794 kg)

13. Centre of Gravity Range:

For serial numbers s/n 0007 and 0009 through 0125 without Liberty gross weight increase kit RKI-SIL-08-001 installed :

Fwd limit : 82.20 inches aft of datum up to 1554 lbs with a straight line taper to 83.48 inches at 1653 lbs.

Aft Limit : 86.75 inches aft of datum up to 1653 lbs.

For serial numbers s/n 0007 and 0009 through 0125 with Liberty gross weight increase kit RKI-SIL-08-001 installed, and for s/n 0126 and up :

Fwd limit : 81.00 inches aft of datum up to 1598 lbs with a straight line taper to 83.00 inches at 1750 lbs. (if only operating up to 1653 lbs equates to a point on this forward limit line of 81.75 inches)

Aft Limit : 86.75 inches aft of datum up to 1750 lbs.

14. Datum: Station 0 (STN 0) is located 70.75 inches forward of vertical rollover hoop (forward face of opening). Water line 0 (WL 0) located 50.0 inches below airplane centreline through nose cone.

15. Design Limit Load Factors:

Flaps up	+3.8
	-1.9
Flaps down	+2
	-0

16. Levelling Means: Door sill as defined in AFM.

17. Minimum Flight Crew: 1 (Pilot)

18. Maximum Passenger Seating Capacity: 1

19. Baggage / Cargo compartment: Maximum 100 lb. at 118 inches aft of datum

20. Wheels and Tires: Refer to Airplane Flight Manual

21. Control Surface movements:

Stabilator :	Leading edge Up 5° ± 0.5°
	Leading edge Down 13° ± 0.5°
Rudder:	Right 30° + 0.5°/-1.5°
	Left 30° + 0.5°/-1.5°
Ailerons:	Up 24° ± 1.0°
	Down 19° ± 1.0°
Flaps:	Up 0 °
	Down 29° ± 1.0°

22. Serial Numbers Eligible: 0007, 0009 and subsequent

D. Operating and Service Instructions

For s/n 0007 and 0009 through 0125, FAA approved EASA Flight Manual, 135A-970-500 Revision C dated 18 August or all further FAA approved revision.
For s/n 0126 and up, FAA approved EASA Flight Manual, 135A-970-600 no revision dated 18 August or all further FAA approved revision.

Instructions for Continued Airworthiness, maintenance information, and replacement times are contained in Liberty Aerospace, Inc Maintenance Manual Document Number 135A-970-100 which supersedes previous manual number 135A-970-006. See Chapter 4 of the Maintenance Manual for mandatory Airworthiness Limitations which take precedence over any limitations shown in this TCDS.

E. Notes

1. In addition to the equipment required in AFM Section 2, the following equipment are also required :
   - Airplane Flight Manual, Liberty Aerospace, Inc. (refer to paragraph D)
   - Stall Warning indicator
   - Cylinder head temperature gage

2. FADEC Limitations: Flight is prohibited if any FADEC Health Status Annunciator (HSA) channel lamps (cylinder icons) or annunciators are illuminated.

3. Exhaust Dawley P/N DEL 200201-003 must be installed on EU registered aircraft to comply with EASA Environmental Standards.

4. Current weight and balance report, including a list of equipment included in certificated empty weight, must be provided for each aircraft at the time of the original certification. The certified empty weight and corresponding center of gravity location must include unusable fuel of 1.5 US gallons (9.3 lb) at 101.80 inches aft of the datum.

5. All placards specified in the FAA Approved EASA Flight Manual (AFM) must be displayed in the airplane in the appropriate locations. (refer to paragraph D)

6. Exterior colors are to be limited to those specified in Instructions for Continued Airworthiness Chapter 04 (Liberty Aerospace Inc Maintenance Manual Document Number 134A-970-006). Registration marks shall be located above the structural bond line and shall be 10 inches in height.

7. Installation of additional flight-critical electronic equipment, such as an Electronic Flight Instrument System (EFIS), will require review by the FAA Aircraft Certification Service to determine whether aircraft-level lightning and/or High Intensity Radiated Field (HIRF) testing is required.

8. The second battery is to be utilized as a power source for FADEC and attitude and directional gyros only.

9. Any change to the canopy transparency will require review by the FAA Aircraft Certification Office to determine compliance with 23.807(c) requirement.

SECTION 2: NOTES

Reserved

SECTION 3: CHANGE RECORD

Issue 1: June 1, 2007. Original Issue

Issue 2: January 30, 2008. This issue clarifies the fuel quantities are "US" gallons on Note 4, corrects propeller diameter and rigging settings, and removes serial number 0008 from the TC according to the FAA memorandum dated December 10, 2007.

Issue 3: April 30, 2009. This issue corrects exhaust Dawley P/N from DEV to DEL.

Issue 4: August 26, 2009. this issue adds the gross weight increase for serial numbers s/n 0007 and 0009 through 0125 with Liberty gross weight increase kit RKI-SIL-08-001 installed, and for s/n 0126 and up. This newer airplane configuration has been tested and meet the requirements of the Emergency Landing Dynamic Conditions and is in full compliance with §23.562. New AFM and AMM have been approved.