

**Approved Model List For  
ETX900-TSO Battery Installation  
EarthX**

**STC No. SA01005DE**

**Revision: I  
Dated: July 24, 2024**

**FAA APPROVED MODEL LIST**  
**ETX900-TSO Battery Installation Airworthiness Approval**

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**1. Revision Log**

<b>Revision</b>	<b>Pages</b>	<b>Description</b>	<b>FAA Approval</b>	<b>Date</b>
IR	ALL	Initial Release	See previous revision for signature.	Original Issue April 8, 2021
A	ALL	Cessna Adds models 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182Q.  Piper Adds models: PA-28-140, PA-28-150, PA- 28-151, PA-28-160, PA-28- 161, PA-28-180, PA-28-181, PA-28-201T, PA-28-235, PA-28-236, PA-28R-180, PA-28R-200, PA-28R-201, PA-28R-201T, PA-28RT- 201, PA-28RT-201T, PA- 28S-160, PA-28S-180.	See previous revision for signature.	May 4, 2022
B	4	Corrections to AML approved models listed in Section 4. Added Cessna 182N and revised Model 182Q to include serial numbers up to 18265965 only.	See previous revision for signature.	August 1, 2022
	ALL	Corrected page numbering.		
C	4	Added Mooney M20 Series Models to Approved Model List in Section 4.	See previous revision for signature.	September 29, 2022
	6	Minor grammatical corrections to Appendix A Issue Paper.		
D	Page 4 Sect 4	Adds Aviat A-1 series models	See previous revision for signature.	March 17, 2023

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E	Page 5	Added Textron (Cessna) models 177, 177A, 177B, 177RG, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K, 182, 182A, 182B, 182C, 182D, 185, 185A, 185B, 185C, 185D, 185E, A185E, A185F to Section 4, Approved Model List.	See previous revision for signature.	June 9, 2023
F	Page 6	Added Textron (Cessna) models 120, 140, 150, 150A, 150B, 150C, 175, 175A, 175B, & 175C to Section 4, Approved Model List.	See previous revision for signature.	July 10, 2023
G	Page 6  Page 6  Page 6	Added Piper PA-12 Series, PA-18 Series, PA-20 Series, PA-22 Series, PA-24 Series, PA-32 Series to Section 4, Approved Model List.  Added Cessna 180 from TCDS 5A6 to Item 6.  Added Cessna P172D from TCDS 3A17 to Item 7.	See previous revision for signature.	July 14, 2023
H	All  Page 2  Page 7	Reformatted footer with addition page number  Added model specific limitation for Cub Crafters model CC19-180 in Section 2.2.  Added Cub Crafters CC19-180, CC19-215, and Top Cub CC18-180, CC18-180A to Section 4, Approved Model List.	See previous revision for signature.	February 08, 2024

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I	All	Reformatted footer with addition page number		July 24, 2024
	Page 6	Added model specific limitation for Utility and Acrobatic airplane to Section 2.2.		
	Page 8	Corrected Regulation 23.867 Amendment from 23-49 to 23-62.		
	Page 8	Corrected Piper Model identified as PA-23-301FT to model PA-32-301FT.		
	Page 9	Added Normal Category Hawker Beechcraft Corporation Models from TCDS A1CE, and Normal Category Luscombe Models from TCDS A-694, and Normal Category Commander Aircraft Corporation Models from TCDS A12SO, and Normal Category Sierra Hotel Aero, Inc. Models from TCDS A-694 to Section 4, Approved Model List.	<p align="center"><i>for</i> Gregory S. DiLibero            Manager, West Certification Branch            Compliance &amp; Airworthiness Division            Aircraft Certification Service</p> <p>Date: _____</p>	

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**2. Introduction**

This document is the Federal Aviation Administration (FAA) Approved Model List (AML) for Supplemental Type Certificate (STC) Number SA01005DE, for installing the EarthX Inc. ETX900-TSO Battery into eligible aircraft.

Revisions to the AML must be coordinated between the STC holder and the responsible ACO Branch and require FAA approval. This AML is only applicable to the aircraft listed in paragraph 4.

**2.1 Prerequisites**

For a serial number of an approved model (see paragraph 4) to be eligible for this STC installation, certain equipment must be installed (See paragraph 2.2, limitation 1)

**2.2 Limitations**

**Limitations - ALL models:**

<b>Limitation Number</b>	<b>Limitations for ALL models</b>
1	To prevent battery overcharging, Over Voltage Protection (OVP) means/ equipment in the battery charging system is required.
2	The installer must determine if this design change is compatible with previously approved modifications.
3	The modified airplane must be maintained in accordance with the Instructions for Continued Airworthiness (ICA) document.
4	A copy of this certificate must be maintained as part of the permanent records for the modified aircraft.
5	If the holder agrees to permit another person to use this certificate, the holder shall give the other person written evidence of that permission.
6	Installation limited to 14 DC volts electrical systems.

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**Limitations - Model Specific:**

The following airplanes models certified in Categories other than Normal are not eligible for installation of the EarthX ETX900-TSO battery.

- I. Cub Crafters
  - a. Model CC19-180 (Utility Category),
- II. Hawker Beechcraft Corporation
  - a. Model 19A, 2 PCLM (Utility and Acrobatic Category),
  - b. Model M19A, 2 PCLM (Utility and Acrobatic Category),
  - c. Model B19, 2 PCLM (Utility and Acrobatic Category),
  - d. Model 23, Musketeer, 2 PCLM (Utility Category),
  - e. Model A23, Musketeer II, 2 PCLM (Utility Category),
  - f. Model A23A, 2 PCLM (Utility Category),
  - g. Model A23-19, 2 PCLM (Utility Category),
  - h. Model A23-24, 2 PCLM (Utility Category),
  - i. Model B23, 2 PCLM (Utility and Acrobatic Category),
  - j. Model C23, 2 PCLM (Utility and Acrobatic Category),
  - k. Model A24, 2 PCLM (Utility Category),
  - l. Model A24R, Sierra 200, 2 PCLM (Utility Category),
- III. Commander Aircraft Corporation,
  - a. Model 112, 4 PCLM (Utility Category),
  - b. Model 114, 4 PCLM (Utility Category),
  - c. Model 112B, 4 PCLM (Utility Category),
  - d. Model 112TCA, 4 PCLM (Utility Category),
- IV. Sierra Hotel Aero, Inc.
  - a. Model Navion (Army L-17A); 2 PCLM (Utility Category),
  - b. Model Navion A (Army L-17B and L-17C); 2 PCLM (Utility Category),
  - c. Model Navion B; 1 PCLM (Utility Category),

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**3. Certification Basis**

The certification basis for each qualified model listed in paragraph 4 is as specified in its Type Certificate Datasheet (TCDS) and as modified by this STC’s type design at the amendment levels noted in the appendix A.

**4. Approved Model List**

Item	Aircraft Make	Aircraft Model	TC Data Sheet	Certification Basis	Master Document List/Date	Instructions for Continued Airworthiness	Model Limitations	Notes	Initial Approval / Amendment Date
1	Cessna	182P	3A13	CAR part 3 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. B, dated April 8, 2021, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. B, dated July 31, 2020, or later FAA approved revision.	See paragraph 2 for Limitations for all models and any Model Specific Limitations.	None	Initial Approval April 8, 2021
2	Cessna	182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182Q to Serial Number 18265965.	3A13	CAR part 3 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. C, dated February 15, 2022, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all models and any Model Specific Limitations.	(1)	May 5, 2022/ August 1, 2022
3	Piper	PA-28-140, PA-28-150, PA-28-151, PA-28-160, PA-28-161, PA-28-180, PA-28-181, PA-28-201T, PA-28-235, PA-28-236, PA-28R-180, PA-28R-200, PA-28R-201, PA-28R-201T, PA-28RT-201, PA-28RT-201T, PA-28S-160, PA-28S-180	2A13	CAR part 3 with amendments as noted in Appendix C, Table 1.	EarthX Doc. No. D18120 Rev. D, dated March 17, 2022, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all Models and any Model Specific Limitations.	(1)	May 5, 2022
4	Mooney	M20 Series Models: M20E (SN 24-470 and on), M20F (SN: All), M20J (SN 0001-02999), M20K (SN: 0001-0999)	2A3	CAR part 3 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. E2, dated September 9, 2022, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all Models and any Model Specific Limitations.	(1)	September 29, 2022
5	Aviat	A-1 Series Models: A-1, A-1A, A-1B, A-1C-180, A-1C-200	A22NM	CAR part 3 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. F, dated September 18, 2022, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all Models and any Model Specific Limitations.	(1)	March 17, 2023

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Item	Aircraft Make	Aircraft Model	TC Data Sheet	Certification Basis	Master Document List/Date	Instructions for Continued Airworthiness	Model Limitations	Notes	Initial Approval / Amendment Date
6	Textron (Cessna)	177, 177A, 177B	A13CE	CAR part 3 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. G1, dated April 20, 2023, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all models and any Model Specific Limitations.	(1)	June 9, 2023
		177RG	A20CE						
		180, 180A, 180B, 180C, 180D, 180E, 180F, 180G, 180H, 180J, 180K	5A6						
		182, 182A, 182B, 182C, 182D	3A13						
		185, 185A, 185B, 185C, 185D, 185E, A185E, 185F	3A24						
7	Textron (Cessna)	120, 140	A-768	CAR part 3 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. H1, dated June 30, 2023, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all models and any Model Specific Limitations.	(1)	July 10, 2023
		150, 150A, 150B., 150C	3A19						
		175, 175A, 175B., 175C, P172D	3A17						
8	Piper	Models: PA-12, PA-12S	A780	CAR part 3 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. II, dated June 30, 2023, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all Models and any Model Specific Limitations.	(1)	July 13, 2023
		Models: PA-18, PA-18A, PA-18S, PA-18AS	1A2						
		Models: PA-20, PA-20S	1A4						
		Models: PA-22, PA-22-108, PA-22-135, PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	1A6						
		Models: PA-24, PA-24-250, PA-24-260, PA-24-400	1A15						
		Models: PA-32-260, PA-32-300, PA-32S-300, PA-32R-300, PA-32RT-300, PA-32RT-300T, PA-32-301FT, PA-32-301XTC, PA-32R-301, PA-32R-301T, PA-32-301, PA-32-301T	A3SO						



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9	Cub Crafters, Inc.	CC19-180, CC19-215	A00053SE	14 CFR part 23 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. J2, dated 01/15/2024, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all Models and any Model Specific Limitations.	(1)	February 08, 2024
	Topcub Aircraft, Inc.	CC18-180, CC18-180A	A00006SE						
10	Hawker Beechcraft Corporation Aero, Inc.	19A (2 or 4PCLM Normal Cat.), B19 (2 or 4PCLM Normal Cat.), 23 (4PCLM Normal Cat.), A23 (4PCLM Normal Cat.), A23A (4PCLM Normal Cat.), A23-19 (2 or 4PCLM Normal Cat.), A23-24 (4 or 6PCLM Normal Cat.), B23 (4PCLM Normal Cat.), C23 (4PCLM Normal Cat.), A24 (4 or 6PCLM Normal Cat.), A24R (4 or 6PCLM Normal Cat.), B24R (4 or 6PCLM Normal Cat.), C24R (4 or 6PCLM Normal Cat.)	A1CE	14 CFR part 23 with amendments as noted in Appendix A, Table 1.	EarthX Doc. No. D18120 Rev. K3, dated 07/22/2024, or later FAA approved revision.	EarthX Doc. No. 180426 Rev. C, dated September 11, 2021, or later FAA approved revision.	See paragraph 2 for Limitations for all Models and any Model Specific Limitations.	(1)	July 24, 2024
	Luscombe Aircraft Corporation	LUSCOMBE 8, 8A, 8B, 8C, 8D, 8E, 8F	A-694						
	Commander Aircraft Corporation	COMMANDER 112TC (4PCLM Normal Cat.), 112B (4PCLM Normal Cat.), 112TCA (4PCLM Normal Cat.), 114 (4PCLM Normal Cat.), 114A (4PCLM Normal Cat.)	A12SO						
	Sierra Hotel Aero, Inc.	NAVION (4PCLM Normal Cat.), Navion A (4PCLM Normal Cat.), Navion B (4PCLM Normal Cat.), Navion D, Navion E, Navion F, Navion G, Navion H	A-782						

**NOTE(S): All models added have been substantiated per a specific Model Evaluation Summary (MES) report that substantiates model additions. This is per the STC's Model Qualification Process (MQP) document D18114.**

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**Appendix A: STC Certification Basis**

**All models shown in paragraph 4 fall within the STC’s certification basis shown below:**

Based on §§ 21.115 and 21.101, and the FAA policy for significant changes in FAA Order 8110.48, the certification basis is as follows:

- a. As determined by the Type Certificate Data Sheet (TCDS) for the aircraft for parts **not changed or not affected** by this STC.
- b. Regulations at the amendment levels listed in Table 1 below for parts **changed or affected** by the STC since the reference date of application, March 31, 2021.
- c. Means of Compliance Issue Paper, SE-1, dated January 9, 2020, approved, and closed on January 28, 2020, Installation of Rechargeable Lithium Batteries and Battery Systems on Aircraft is applicable to this modification.

**Table 1: Certification Basis Including Amendments and Special Conditions**

<b>Regulations</b>	<b>Amdt.</b>
CAR 3	
3.381(a)	3-0
3.382	3-0
14 CFR part 23	
§ 23.301(a)(b)(c)	23-48
§ 23.303	23-0
§ 23.305(a)(b)	23-45
§ 23.307(a)	23-0
§ 23.561(e)	23-62
§ 23.601	23-0
§ 23.603(a)(b)	23-23
§ 23.605(a)	23-23
§ 23.607(b)	23-48
§ 23.609(a)(b)	23-0
§ 23.611	23-48
§ 23.613(a)(b)(c)(d)	23-45
§ 23.619	23-7
§ 23.625(a)(b)(c)	23-7
§ 23.853(a)	23-62
§ 23.863	23-34
§ 23.867(b)(1)	23-62
§ 23.1301	23-62
§ 23.1309(a)(c)(d)	23-62
§ 23.1322(b)(e)	23-43
§ 23.1351(a)(1)(2)(i)(b)(1)(i)(ii)(2)(3)	23-49
§ 23.1357	23-43
§ 23.1359(c)	23-49
§ 23.1365(a)(c)(d)(e)	23-49
§ 23.1367	23-0
§ 23.1431(b)	23-62

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<b>Regulations</b>	<b>Amdt.</b>
§ 23.1529	23-26
§ 23.1541(a)(2)(b)	23-21
§ 23.2010	23-64
§ 23.2525	23-64
Special Conditions per IP Below	-

**Issue Paper (IP) SE-1, date 1/9/2020 approved and closed on January 28-20:**

NOTE: For details on the IP Special Conditions below and MOC to the special conditions, review the Issue Paper outlined above

**Special Conditions:**

- (1) Maintain Safe Cell Temperature.
- (2) Prevent explosion or fire.
- (3) Prevent the occurrence of self-sustaining, uncontrolled increases in temperature or pressure.
- (4) Not emit explosive or toxic gases in hazardous quantities within the airplane either in normal operation or as a result of any failure.
- (5) Comply with the requirements of §23.863.
- (6) Escaped corrosive fluids or gases shall not damage surrounding structure or any adjacent systems, equipment, electrical wiring, or the airplane in such a way as to cause a major or more severe condition.
- (7) The maximum amount of heat resulting from a short circuit of the battery or internal cell, or any other failure, shall not have a hazardous effect on the aircraft structure or essential systems.
- (8) Rechargeable lithium battery installations must have a system to automatically control the charging rate of the battery to prevent battery overheating and overcharging and either:
  - i. A battery temperature sensing and over temperature warning system with a means for automatically disconnecting the battery from its charging source in the event of an over temperature condition,  
OR
  - ii. A battery failure sensing and warning system with a means for automatically disconnecting the battery from its charging source in the event of a battery failure.
- (9) Any rechargeable lithium battery installation, the function of which is required for safe operation of the aircraft, must incorporate a monitoring and warning feature that will provide an indication to the appropriate flight crew members whenever the safe of charge of the batteries has fallen below levels considered acceptable for dispatch of the aircraft.
- (10) The instructions for Continued Airworthiness (ICA) required by §23.1529 must contain maintenance requirements to assure that the battery has been sufficiently charged at appropriate intervals specified by the battery manufacturer and the equipment manufacturer that contain the rechargeable lithium battery or rechargeable lithium battery system. The lithium rechargeable batteries and lithium rechargeable battery system must not degrade below a specified ampere-hour levels sufficient to power aircraft systems. The ICA must also contain procedures for the maintenance of replacement batteries to prevent the installation of batteries that have degraded charge retention ability or other damage due to prolonged storage at a low state of charge. Replacement batteries must be of the same manufacturer and part number as approved by the FAA.
- (11) To show compliance to the proposed special conditions herein, paragraphs (1) through (10):
  - i. RTCA documents, “Minimum Operation Performance Standards for Rechargeable Lithium Battery Systems”, DO-311A, may be used for non-commuter category airplane installations.
  - ii. RTCA document, Certification Test Guidance for Small and Medium Rechargeable Lithium Batteries and Battery Systems, DO-347, may be used for commuter category airplane installations.