Bailey Moyes Dragonfly By Pitman Air

Quality Assurance Manual (QAM)
&
Continued Operational Safety Monitoring

Revision 4 August-28-2012

Pitman Air

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This Manual only applies to SLSA Aircraft and ELSA Kits manufactured by Pitman Air in the United States of America.

Record of Manual Revisions

Note* A current version of this manual is always available
on the internet at: http://www.pitmanair.com/dragonfly

# Revision Number & Date	Headings	Paragraph	Page numbers
1 25/11/2010	Complete revision & format to ASTM standard F2279-10	All	All
2 25/03/2011	Clarification Editing	All	All
3 15/07/2012	Added Reporting Form	All	All
4 28/08/2012	Re Organized to match F2279-06 & F2295-06	All	All

Serial Number Information

PA or PAK -____ _____ _____ - _____ _____ _____

Pitman Air or Pitman Air Kit – Engine – Production Number

Example: PA-582-111

This Manual only applies to SLSA Aircraft and ELSA Kits
manufactured by Pitman Air in the United States of America.

Contents

2. Referenced Documents

2.1 *ASTM Standards:*[2]
F2245-10c & 11Standard for Design and Performance of a Light Sport Airplane
F2279 06 & 10 Standard Practice for Quality Assurance in the Manufacture of Fixed Wing Sport Aircraft
F2295 06 Standard Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft

3. Terminology

3.1 *Definitions:*

3.1.1 *design and performance specification*—used herein to refer to Standards F2245-10 and F2279-10.

3.1.2 *LSA* -- Light Sport Aircraft meaning both ELSA (Experimental Light Sport Aircraft Kits) and SLSA (Special Light Sport Aircraft) unless otherwise noted as ELSA or SLSA

3.1.3 *Company Divisions:*

(a). *Administration*—That portion of the company which oversees, documentation, record keeping and internally audits Production and Quality Assurance.

(b) *Production*-- That portion of the company involved in the Assembly and production of aircraft parts, sections and sub-sections, and the final assembly of total aircraft.

(c) *Inspection*—That portion of the company which inspects for proper assembly of sections, sub-sections and final assembly of entire aircraft.

(d) *Testing*-- Those people within the company who are doing the testing of aircraft and/or components and systems.

3.1.4 *LSA kit (light sport aircraft kit)*—aircraft designed in accordance with Standards F2245 & F2279 that is manufactured and delivered as a kit.

3.1.5 *manufacturer*—Pitman Air

3.1.6 *permanent record*—where specified herein, applicable quality assurance records shall be kept for each LSA produced for as long as the relative airworthiness certificate remains in effect.

3.1.7 *process*—is any assembly or sub-assembly referred to as Work Orders in the production process.

3.1.8 *reserved holding area*—for rejected parts, materials, and assemblies; a containment area for rejected non-airworthy items awaiting proper disposition, where such rejected items shall not be distributed for use on an aircraft.

3.1.9 *satellite manufacturing, assembly, and distribution facilities*—refers to facilities being operated by commercial or private entities that, though authorized by the original manufacturer, are not directly associated with or controlled by the original manufacturer.

3.1.10 *secure storage area*—for accepted parts, materials, and assemblies; a storage area where the preservation of the contents to required design specifications is reasonably assured until distributed for use on an aircraft.

3.2 *Acronyms:*

3.2.1 *AOI*—Aircraft Operating Instructions or (POH) Pilot Operating Handbook
3.2.2 *LSA*—Light Sport Aircraft meaning both ELSA (Experimental Light Sport Aircraft Kits) and SLSA (Special Light Sport Aircraft) unless otherwise noted as ELSA or SLSA
3.2.3 *QAM*—Quality Assurance Manual; the guidance and structure for the implementation of the Quality Assurance Program.
3.2.4 *QAP*—Quality Assurance Program; the Implementation of the Production and Inspections used by Lite Flite North America in the manufacture of a LSA to verify and ensure the proper production thereof.
3.2.5 *QAR*—Quality Assurance Record; the records of quality assurance associated with each aircraft produced which include, shipping and receiving records, assembly and inspection records, component documents, as well as final inspection, test flight and delivery records.
3.2.6 BRS—Ballistic Rescue System (Parachute).
3.2.7 EIS—Engine Information System

4. Significance and Use

4.1 The purpose of this Manual is to provide the minimum requirements necessary for the establishment of a quality assurance and production acceptance program for a manufacturer and production of Light Sport Aircraft and Kits.

5. Quality Assurance Program (QAP)

5.1 Manufacturers of LSA shall develop a Quality Assurance Program (QAP) in accordance with the criteria established within this practice.

5.2 *Quality Assurance Manual (QAM)*—Each manufacturer shall document their QAP in the form of a Quality Assurance Manual (QAM).

5.3 *Quality Assurance Administration*—The manufacturer's administration that is charged with the implementation of the QAP may consist of one or more: company employees, company officials, or manufacturer's agents or assigns. The individual(s) that make up the quality assurance administration shall be identified within the QAM.

5.3.1 Quality Assurance Program (QAP) is the implementation of procedures and processes outlined in this manual.

Note: Each process is accomplished by following a written sequential program, which could be in the form of a Checklist, Work Order or Assembly Manual. Each process has at least 2 DIFFERENT people involved and signed for on that checklist or form, by the "Production Personnel" doing the process, and, the "Inspection Personnel" inspecting that work or procedure. And all processes and documentation are further overseen by "Administration" to insure Quality procedures are followed.

1) Production-- The person or persons doing the Manufacturing, Assembly of Parts, Sections or Sub-Sections
2) Inspection-- The inspection of the Part, Section or Sub-Section by someone other than the person or persons who did the Manufacturing and/or Assembly
3) Administration-- The person or persons who insure the Production and Inspection Records and Procedures were performed and documented properly and those records are kept with the Quality Assurance Record for that Individual Aircraft according to its Serial Number. And that all accessories installed are documented by Model & Ser.#

5.3.1.1 *Production Personnel*-- The following is a list of qualified Production Personnel:

1) Bob Bailey
2) Rhett Radford
3) Jim Prahl
4) Art Steinbach
5) _____

5.3.1.2 *Inspection Personnel*—The following is a list of Qualified Inspection Personnel:

1) Bob Bailey
2) Rhett Radford
3) Jim Prahl
4) Ed Pitman
5) Art Steinbach
6) Russell Brown

5.3.1.3 *Administration*—The following is a list of Qualified Administration Personnel:

1) Ed Pitman
2) Jim Prahl
3) Art Steinbach
4) _____

5.3.1.4 *Testing*—The following personnel are Qualified for Component Testing and/or Test Flight of Production Aircraft & Kits.

1) Bob Bailey
2) Rhett Radford
3) Jim Prahl
4) April Mackin
5) Ed Pitman
6) Art Steinbach (except test flights)
7) Russell Brown

5.4 **Quality Assurance Record (QAR)** All of the records pertaining a specific Aircraft.

NOTE 1—The intent of this record is to provide a means for the manufacturer to identify and reduce the number of LSA within a fleet that may be affected by a materials anomaly that would require corrective action, thereby reducing the economic impact of such corrective action. This paragraph should not be construed as a requirement for specific parts traceability.

5.4.1 Manufacturer shall maintain a Quality Assurance Record (QAR) for each LSA produced. Each QAR shall consist of the following:

5.4.1.1 Applicable final inspection records, check, and test documentation from the production acceptance procedures (see Section 8), and

5.4.1.2 A copy of the Manufacturers Statement of Compliance, and

5.4.1.3 The configuration of each aircraft at its point of delivery (for continued operational safety monitoring purposes), including associated parts lists and installed equipment lists.

NOTE 2—Each item listed in 5.4.1 shall include the LSA Serial Number and Date of Manufacture (DOM).

5.5 *Quality Assurance Revisions*—All personnel will be required to read and sign the latest revision to this manual, and the manuals within the company will have only the latest revision to ensure that only the latest revisions to the QAM are in use.

5.6 *Quality Assurance Audits*—Manufacturer shall conduct an annual audit of their QAP. Manufacturer shall maintain a record of all such audits. Any determination of non-compliance shall be resolved and a revision to the QAM shall be made if necessary to address any anomalies found. And: Periodical Audits will be performed by a 3rd Party like LAMA Light Aircraft Manufacturers Association.

6. Engineering and Manufacture

6.1 *Record of Compliance*—The manufacturer shall keep a permanent record of the design documentation used to show compliance of a particular configuration to the version of the design and performance specification in effect at the time of manufacture.

6.2 *Configuration Control*—All LSA configurations in production shall have Records of Compliance to the latest released revision of the design and performance specification.

6.3 *Production Documentation*—The manufacturer shall maintain a record of all production documentation, including revisions. Production documentation may include, but is not limited to, the following:

6.3.1 Parts lists, (Maintenance and Assembly Manual latest revision)
6.3.2 Process routings, (Maintenance and Assembly Manual latest revision)
6.3.3 Component and assembly drawings, (Maintenance and Assembly Manual latest revision)
6.3.4 Manufacturing instructions and specifications, (Maintenance and Assembly Manual latest revision)
6.3.5 Tooling and gauge drawings, (Maintenance and Assembly Manual latest revision)
6.3.6 The AOI or POH
6.3.7 The maintenance manual, and
6.3.8 The QAM.

6.4 *Special Processes*—A system shall be implemented to control all special processes and services related to the production of airframe components considered by the manufacturer to be critical to the structural integrity of the LSA, such as welding, brazing, heat treatment, plating, structural composites, adhesive bonding, and so forth, that ensures that each process and service is performed in accordance with approved specifications containing definitive standards of quality, and that periodic inspection of gauges, solutions, or any critical equipment is controlled and documented.

6.4.1 Only fresh products will be used when they have a shelf life. Any products which have expired will be immediately be thrown in the trash or disposed of in accordance with governing regulations.

6.4.2 Consumables such as Adhesives and Paints will be purchased and used for each aircraft built. Any excess materials will be discarded unless they are still suitable for use when the next unit begins production.

6.4.3 Processes such as welding, brazing, heat treatment, plating, structural composites, shall have production data that remains with the production documentation, such as what, who, where, when and the testing information for that process.

6.4.4 Annual or Periodic Inspection of gauges, solutions, or any critical equipment is performed and documented. Any products like paints or adhesives that may be suspect as to their quality will be labeled "DO NOT USE" and placed in the disposal area or dumpster.

7. Quality Assurance Inspections

7.1 Manufacturers shall implement and document a system of inspections to verify conformity of product to all applicable engineering requirements and production specifications.

7.1.1 Conforming, non-conforming, and items awaiting inspection must be separated or clearly distinguishable. Items found to be nonconforming shall either be evaluated by a Materials Review Board (MRB) in accordance with 7.4 or rejected in accordance with 7.5.

7.2 *Receiving Inspection*—Manufacturer shall implement a purchasing procedure that shall ensure all items ordered are clearly specified. Incoming items provided by outside vendors shall be inspected for conformity to applicable specifications.

7.3 *Acceptance of Conforming Items*—Conforming items shall be distributed as required or placed in a secure storage area for future use.

7.4 *Evaluation of Non-Conforming Items by a Materials Review Board*—A Materials Review Board (MRB) may be established to determine the disposition of non-conforming items, and shall consist of one or more manufacturer designated technical representatives. MRB representatives shall be identified within the QAM. If analysis, additional inspection, functional checks, repair, rework, and so forth assures that an item meets all of the relevant design requirements, the MRB may authorize its use in the production of a LSA. Otherwise, the item must be rejected in accordance with 7.5. The manufacturer shall keep a permanent record showing the disposition of non-conforming items that have been evaluated and accepted by the MRB.

7.5 *Rejection of Non-Conforming Items*—A process for disposing of items found to be unusable due to damage, shelf life limits, or other variations must be defined and implemented. A rejected item must be mutilated, disposed of, or sufficiently marked as rejected to ensure that it is not used in the production of a LSA. A rejected component may be placed in a reserved holding area for future disposition or disposal.

7.6 **Materials Review Board (MRB)** The following is a list qualified personnel for Materials Inspection, any 2 combined, constitutes a Board.

1) Bob Bailey
2) Rhett Radford
3) Ed Pitman
4) Jim Prahl
5) Art Steinbach

8. Production Acceptance

also found in Appendix B & C as both Outline and Checklist

NOTE 3—The following criteria should not be construed as requirements for specific features to be included on a LSA. When a requirement specifies a feature that does not exist on a LSA, the requirement does not apply.

8.1 ***Final Inspections***—Manufacturer shall verify and record that the Purchase Order and all Work Orders for each LSA produced has been completed prior to conducting the following Production Acceptance procedures.

8.1.1 ***ELSA Kit***—Manufacturer shall verify and document the proper completion of the production process prior to the further distribution of any ELSA kit or subsystem kit. Manufacturer shall provide the builder of an ELSA kit with appropriate Production Acceptance Ground Check and Flight Test Procedures, as described below.

8.1.2 ***SLSA Airplane***—Manufacturer shall verify the proper completion of the production process prior to the further distribution of any ready-to-fly SLSA. The following ground check and flight test procedures shall be conducted and documented for each ready to fly SLSA.

8.1.2.1 ***Ground Check***—Prior to flight testing, the manufacturer shall conduct a thorough ground inspection of each SLSA produced to verify at least the following:

(1) Weight and Balance—Empty weight and proper center of gravity location has been calculated and verified to be within limits, and that a weight and balance report has been completed for the airplane;

(2) Systems Check—The proper function of all switches and circuits, instrumentation, brakes, and any other appropriate systems shall be verified.
(3) Flight Controls Check—All flight controls shall be checked for smooth and proper function and proper maximum deflections. Control system connections and safeties shall be checked and verified intact.
(4) Seats and Safety Belts—Seats and pilot restraint system shall be checked for security and visual defects.
(5) Engine Check—Engine checks and procedures shall be performed to verify:
(a) Proper engine installation,
(b) Proper servicing of all engine fluids,
(c) No apparent fuel, oil, or coolant leaks, as appropriate,
(d) Propeller installation and pitch adjustment, as applicable,
(e) Performance of an engine "run-in" with adjustments, as required,
(f) Tachometer indicates engine idle RPM and maximum static RPM is within manufacturer's published limits,
(g) Proper function of engine instrumentation,
(h) Proper function of ignition system(s),
(i) Proper function of induction heating system,

(6) Placards Check—The aircraft shall be checked to verify that all required placards, switch, and instrument markings are in place.
(7) Preflight Inspection—The following shall be verified:
(a) All required documentation is on board,
(b) All visible surfaces are free of deformation, distortion or other evidence of failure or damage,
(c) Inspection of all visible fittings and connections for defective or insecure attachment, and
(d) Complete walk-around inspection in accordance with the AOI or POH.

8.1.2.2 ***Taxi Test***—After completion of the Ground Check, a Taxi Test shall be conducted to verify:
(1) Brake function,
(2) Landing gear tracking and steering, and
(3) Proper compass readings, to be verified by a reference, and corrected with compass card if needed.

8.1.2.3 ***Flight Test*** *for LSA Airplanes*—After completion of the Taxi Test, a flight test shall be conducted.
(1) Safe flight operation of each completed LSA airplane shall be verified to include acceptable handling and control characteristics, stall characteristics, engine operation, airspeed indications, and overall suitability for normal flight in accordance with the AOI (POH). The flight test procedure, at a minimum, shall include recorded verification of the following:
(a) Takeoff runway wind, outside air temperature, and pressure altitude,
(b) Verification that takeoff distance meets manufacturer's published specification,
(c) Verification that the climb rate meets or exceeds the manufacturer's published specification,
(d) Appropriate response to flight controls in all configurations,
(e) Wings-level idle-power stall speed in all configurations, including verification of appropriate stall warning and stall recovery characteristics,
(f) Verification of no unusual performance or handling characteristics, and
(g) Proper engine operating temperatures.

8.1.2.4 Design Confirmation Flight Test—For each completed LSA, or by random sampling at a frequency determined appropriate by the manufacturer, and for the first production unit off the production line, an in-depth test flight shall be conducted to verify production uniformity to the flight criteria of the design and performance specification.

8.2 *Instrument Calibration*—Any aircraft instrument requiring periodic calibrations shall have a current calibration.

8.3 *Resolution of Discrepancies*—Any anomalies found during ground checks or flight testing will be corrected and retested prior to delivery or Production Acceptance.

8.3.1 *Non-Compliance*—Any aircraft which fails any production acceptance test required by this standard shall be physically tagged as non-compliant. Anomalies shall be reworked per manufactures instructions, and each reworked anomaly must be re-evaluated.

8.3.1.1 *Non-Compliance Tag*—A non-compliance notice must be attached to the aircraft in such a manner that it is in clear view of a potential operator of the LSA.

8.4 *Production Acceptance Documentation*—A written checklist will be used as an acceptable method of documenting Production Acceptance inspections, checks, and tests.

9. Assignment of QA Duties and Responsibilities

9.1 LSA Manufacturer may assign QA duties and responsibilities to outside parties for the purpose of establishing satellite manufacturing, assembly, or distribution facilities, or a combination thereof.

9.2 Listing of QA Assignment Information:

1) LiteFlite PTY LTD Australia for Airframe Parts Production
Acceptance of LiteFlite Quality System Manual dated 22 April 2008
The LiteFlite Quality System Manual was reviewed and shown to meet the Standards acceptable to Pitman Air and ASTM requirements on November 15 2010.

2) LiteFlite PTY LTD Facilities, Processes and Documentation are to be inspected randomly at least every 2 years or 25 aircraft, whichever occurs first.
3) March 2012, Ed Pitman inspected and photographed Lite Flite facility in Botany, Australia near Sydney Airport.
Records reviewed and digitally recorded, showed conformity to “cradle to grave” tracking. Suppliers, Machining, Workmanship and other processes are well documented allowing the capability to track and isolate any anomaly whether it is material, labor or production related.
4) Copies of all records from Australia are kept in Pitman Air Facility both digitally and hard copy.

Appendix A QAM & COSM (rev. 4) Acceptance
Acceptance of Practices and Processes for Quality Assurance & Continued Operational Safety Monitoring

I have read, understand and accept the Quality Assurance Program as outlined in this Manual, and will adhere to these practices and policies while performing my duties for Pitman Air in the Production of Dragonfly Aircraft & Kits.

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

X__________________________ __________________________ #_________________ ____________
Signed Name printed Pilot License # Todays Dated

Fill Out, Sign & Return to:
Ed Pitman
Pitman Air
6905 Frey Rd.
Shingletown, CA 96088

Appendix B
Production Acceptance Outlined

Ground Check—*Prior to flight testing, conduct a thorough ground inspection of each SLSA produced to verify at least the following:*
(1) Weight and Balance—*Empty weight and proper center of gravity location has been calculated and verified to be within limits, and that a weight and balance report has been completed for the airplane;* ***And entered into the POH for this Aircraft. POH for this Aircraft in section*** *6.3.4 AIRCRAFT SPECIFIC WEIGHT AND CG POSITION on Page 21*

(2) Systems Check—*The proper function of all switches and circuits, instrumentation, brakes, and any other appropriate systems shall be verified.*
(3) Flight Controls Check—*All flight controls shall be checked for smooth and proper function and proper maximum deflections. Control system connections and safeties shall be checked and verified intact.*
(4) Seats and Safety Belts—*Seats and pilot restraint system shall be checked for security and visual defects.*
(5) Engine Check—*Engine checks and procedures shall be performed to verify:*
(a) Proper engine installation,
(b) Proper servicing of all engine fluids,
(c) No apparent fuel, oil, or coolant leaks, as appropriate,
(d) Propeller installation and pitch adjustment, as applicable,
(e) Performance of an engine "run-in" with adjustments, as required,
(f) Tachometer indicates engine idle RPM and maximum static RPM is within manufacturer's published limits,
(g) Proper function of engine instrumentation,
(h) Proper function of ignition system(s),
(i) Proper function of induction heating system, and
(j) EIS limits are set to the configuration as per Rotax Specifications
(6) Placards Check—*The aircraft shall be checked to verify that all required placards, switch, and instrument markings are in place.*
(7) Preflight Inspection—*The following shall be verified:*
(a) All required documentation is on board, A.R.O.W.
(b) All visible surfaces are free of deformation, distortion or other evidence of failure or damage,
(c) Inspection of all visible fittings and connections for defective or insecure attachment, and
(d) Complete walk-around inspection in accordance with the AOI or POH.

8.1.2.2 Taxi Test—*After completion of the Ground Check, a Taxi Test shall be conducted to verify:*
(1) Brake function,
(2) Landing gear tracking and steering, and
(3) Proper compass readings, to be verified by a reference, and corrected with compass card if needed.

8.1.2.3 Flight Test—*After completion of the Taxi Test, a flight test shall be conducted.*
(1) Safe flight operation of each completed LSA airplane shall be verified to include acceptable handling and control characteristics, stall characteristics, engine operation, airspeed indications, and overall suitability for normal flight in accordance with the AOI. The flight test procedure, at a minimum, shall include recorded verification of the following:
(a) Takeoff runway wind, outside air temperature, and pressure altitude,
(b) Verification that takeoff distance meets manufacturer's published specification,
(c) Verification that the climb rate meets or exceeds the manufacturer's published specification,
(d) Appropriate response to flight controls in all configurations,
(e) Wings-level idle-power stall speed in all configurations, including verification of appropriate stall warning and stall recovery characteristics,
(f) Verification of no unusual performance or handling characteristics, and
(g) Proper engine operating temperatures.

Appendix C — Production Acceptance Checklist

	Task	Approved
Ground Check	*Prior to flight testing, conduct a thorough ground inspection of each SLSA produced to verify at least the following:*	
(1) Weight and Balance	*Empty weight and proper center of gravity location has been calculated and verified to be within limits, and that a weight and balance report has been completed for the airplane; E**ntered & signed in the POH for this Aircraft in section 6.3.4** AIRCRAFT SPECIFIC WEIGHT AND CG POSITION **on Page 22 of POH***	
(2) Systems Check	*The proper function of all switches and circuits, instrumentation, brakes, and any other appropriate systems shall be verified. BRS & EIS Manuals are in POH*	
(3) Flight Controls Check	*All flight controls shall be checked for smooth and proper function and proper maximum deflections. Control system connections and safeties shall be checked and verified intact.*	
(4) Seats and Safety Belts	*Seats and pilot restraint system shall be checked for security and visual defects.*	
	Engine checks and procedures shall be performed to verify:	
	(a) Proper engine installation,	
	(b) Proper servicing of all engine fluids,	
	(c) No apparent fuel, oil, or coolant leaks, as appropriate,	
	(d) Propeller installation and pitch adjustment, as applicable,	
	(e) Performance of an engine "run-in" with adjustments, as required,	
	(f) Tachometer indicates engine idle RPM and maximum static RPM is within manufacturer's published limits,	
	(g) Proper function of engine instrumentation,	
	(h) Proper function of ignition system(s),	
	(i) Proper function of induction heating system,	N/A
	(j) EIS limits are set to the configuration as per Rotax Specifications	
(6) Placards Check	*The aircraft shall be checked to verify that all required placards, switch, and instrument markings are in place.*	
(7) Preflight Inspection	*The following shall be verified:*	
	(a) All required documentation is on board,(A.R.O.W) Airworthines Certificates, Registration, Operating Limits, Weight &Balance	
	(b) All visible surfaces are free of deformation, distortion or other evidence of failure or damage,	
	(c) Inspection of all visible fittings and connections for defective or insecure attachment,	
	(d) Complete walk-around inspection in accordance with the AOI or POH.	
(8) Taxi Test	*After completion of the Ground Check, a Taxi Test shall be conducted to verify:*	
	(1) Brake function,	
	(2) Landing gear tracking and steering, and	
	(3) Proper compass readings, to be verified by a reference, and corrected with compass card if needed.	
(9) Flight Test	*After completion of the Taxi Test, a flight test shall be conducted. **SPECIAL FLIGHT PERMIT ONBOARD. A thorough run of Production Test Flight Checklist should take 3 to 7 Flight Hours.***	
	(1) Safe flight operation of each completed LSA airplane shall be verified to include acceptable handling and control characteristics, stall characteristics, engine operation, airspeed indications, and overall suitability for normal flight in accordance with the POH. The flight test procedure, at a minimum, shall include recorded verification of the following:	
	(a) Takeoff runway wind, outside air temperature, and pressure altitude, ***Wind Speed_____Kts. Temperature_____F Density Alt._____***	
	(b) Verification that takeoff distance meets manufacturer's published specification,	
	(c) Verification that the climb rate meets or exceeds the published specification,	
	(d) Appropriate response to flight controls in all configurations,	
	(e) Wings-level idle-power stall speed in all configurations, including verification of appropriate stall warning and stall recovery characteristics,	
	(f) Verification of no unusual performance or handling characteristics, and	
	(g) Proper engine operating temperatures.	

N-Number _____

Serial # _____

I Certify That this Aircraft has been Inspected and Tested as shown above, and was found to be in compilance with the Standards for Production Acceptance found in ASTM 2279-10.

Signed:_____

Printed Name:_____

Dated _____

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Appendix D Safety of Flight & Service Difficulty Report Form

Mail to: Pitman Air, 1840 Airport Blvd., Red Bluff, CA 96080 OR Online at: www.pitmanair.com/dragonfly/

Check One	Item of Concern	Safety of Flight	Service Difficulty

Reporting Party Contact Information

Name	
Address	
City	
ST	
Zip Code	
Day Phone #	
FAX #	
email address	

Check Appropriate

Owner	Operator	LSRI	LSRM	A&P
Other Explain:				

Aircraft Specific Information

Aircraft Information		Engine Information	
Make		Make	
Model		Model	
Serial Number		Serial Number	
N-Number		Gearbox Ratio	
Date of Mfg.		Propeller Mfg	
		Propeller Serial #	

Date of Problem Discovery _____ dd/mm/yyyy

Description:

Comments	

Signature_____-Date_____dd/mm/yyyy

Appendix E Continued Operational Safety Monitoring (COSM)
of a Light Sport Aircraft

1. Scope

1.1 This practice establishes the standard practice for the continued operational safety monitoring of a light sport aircraft.

2. Referenced Documents

2.1 *ASTM Standards:*[2]
F2245 Specification for Design and Performance of a Light Sport Airplane
F2564 Specification for Design and Performance of a Light Sport Glider

3. Terminology

3.1 *Definitions:*

3.1.1 *LSA (light sport aircraft)*—used herein to refer to both LSA airplanes and LSA gliders.

3.1.2 *LSA airplane (light sport aircraft airplane)*—powered aircraft designed in accordance with Specification F2245 that is manufactured and delivered ready to fly.

3.1.3 *LSA glider (light sport aircraft glider)*—aircraft designed in accordance with Specification F2564 that is manufactured and delivered ready to fly.

3.1.4 *manufacturer*—Ed Pitman dba Pitman Air

4. Significance and Use

4.1 The purpose of this practice is to establish a method by which safety of flight issues are discovered, evaluated, and corrected for the purpose of maintaining operational safety of a LSA.

5. Continued Airworthiness Support

5.1 The manufacturer of a LSA shall maintain an Operational Safety Monitoring System as a normal business conduct.

5.2 Assignment Of Duties—Manufacturers may assign operational safety monitoring and continued airworthiness support duties to other entities.

5.2.1 Assignment of Data Collection, Safety Directives Issuance and Processing:
Ed Pitman
Art Steinbach

5.2.2 Investigation and Testing:
Ed Pitman
Bobby Bailey
Rhett Radford
Jim Prahl

5.2.3 Interface with FAA, NTSB and other concerned Agencies:
Ed Pitman
Bobby Bailey
Rhett Radford
Jim Prahl
Art Steinbach

5.2.4 Interface with material suppliers:
Ed Pitman
Art Steinbach
Bobby Bailey

5.2.5 Determination of Corrective Action:
Ed Pitman
Art Steinbach
Bobby Bailey
Rhett Radford

5.3 Manufacturer's Responsibilities—LSA manufacturers shall develop and implement a system of receiving, evaluating, and correcting safety of flight and service difficulty issues.

5.3.1 Manufacturer shall evaluate all Safety of Flight and Service Difficulty reports and shall initiate corrective action as needed to correct any Safety of Flight related issues.

5.3.2 Manufacturer shall not use notices of corrective action to promote or make mandatory non-safety of flight related equipment upgrades or additions.

5.3.3 The manufacturer shall provide with the delivery of each LSA documented Continued Airworthiness Instructions in the English language. These instructions shall include at least the following:
The Pilot Operating Handbook (POH)

5.3.3.1 A method for the owner/operator to report maintenance, service, and safety difficulties to the manufacturer, in accordance with 5.4.
The Pilot Operating Handbook (POH) Reporting Forms in Manuals
www.pitmanair.com/dragonfly

5.3.3.2 A method for the owner/operator to obtain and verify that they have the latest Safety of Flight information developed by the manufacturer, in accordance with 5.4.
www.pitmanair.com/dragonfly

5.3.3.3 Instructions pertaining to annual and 100-hr. Inspection items as needed.
www.pitmanair.com/dragonfly/ Maintenance Manual

5.4 Owner/Operator Responsibilities:

NOTE: The following items are listed in the POH Pilot Operating Handbook.

5.4.1 Each owner/operator of a LSA shall read and comply with the maintenance and continued airworthiness information and instructions provided by the manufacturer.

5.4.2 Each owner/operator of a LSA shall be responsible for providing the manufacturer with current contact information where the manufacturer may send the owner/operator supplemental notification bulletins.

5.4.3 The owner/operator of a LSA shall be responsible for notifying the manufacturer of any safety of flight issue or significant service difficulty upon discovery.

5.4.4 The owner/operator of a LSA shall be responsible for complying with all manufacturer issued notices of corrective action and for complying with all applicable aviation authority regulations in regard to maintaining the airworthiness of the LSA.

5.4.5 An owner of a LSA shall ensure that any needed corrective action be completed as specified in a notice, or by the next scheduled annual inspection.

5.4.6 Should an owner/operator not comply with any mandatory service requirement, the LSA shall be considered not in compliance with applicable ASTM standards and may be subject to regulatory action by the presiding aviation authority.

6. Determination of Corrective Action

6.1 The manufacturer of a LSA shall evaluate and determine appropriate corrective action for a Safety of Flight issue in accordance with Annex A1.

6.2 Manufacturer shall maintain a record of all Safety of Flight related risk assessments and the resolution thereof.

7. Notice of Corrective Action

7.1 When corrective action is determined to be warranted (based upon the manufactures Operational Safety Risk Assessment Procedure as described in Section 6), the manufacturer shall issue a notice to the known owner/operators of the effected LSA's.

7.2 *Notices*:

7.2.1 Notices shall have a page header that contains the following information, when available:

7.2.1.1 The name, postal address, Web address, and telephone number of the issuing entity,

7.2.1.2 The date the notice is released,

7.2.1.3 The date the notice takes effect,

7.2.1.4 Limitations for completion of any required corrective action,

7.2.1.5 The make and model of the affected LSA,

7.2.1.6 The serial number of the affected LSA,

7.2.1.7 A number that uniquely identifies the notice,

7.2.1.8 The number of the superseded notice, if applicable, and

7.2.1.9 The page number and number of total pages.

7.2.2 The first page shall contain, in large bold uppercase letters, one of the following titles:

7.2.2.1 "SAFETY ALERT" for notifications that require immediate action.

7.2.2.2 "SERVICE BULLETIN" for notifications that do not require immediate action but do recommend future action.

7.2.2.3 "NOTIFICATION" for notifications that do not necessarily recommend future action but are primarily for promulgation of continued airworthiness information.

8. Discontinued Airworthiness Support

8.1 Should a manufacturer no longer be able to support the LSA produced, manufacturer should make a timely and diligent effort to contractually transfer any design data needed for continued airworthiness support to a viable entity, such as another manufacturer, type club, user group, or other interested party.

NOTE 1—This section shall not be construed as a requirement for a manufacturer to forfeit for any reason, any patents, copyrights, design ownership, commercial rights, proprietary information, intellectual property, monetary rights, or financial interests in the sale or transfer, or both, of any design data. Should a significant airworthiness issue arise that cannot be satisfactorily resolved, affected LSA's may be subject to regulatory action by the presiding aviation authority.

ANNEX

(Mandatory Information)

A1. OPERATIONAL SAFETY RISK ASSESSMENT PROCEDURE

A1.1 Introduction

A1.1.1 This process of performing a risk assessment is for LSA manufacturers to use in order to determine appropriate corrective action on aircraft Safety of Flight & Service Difficulty Reporting Form.
Note that all operational situations are unique and that manufacturer experience or judgment may result in a different action taken than that prescribed by this procedure.

A1.1.2 Safety Alert notifications are required to address unsafe conditions, but the determination of which types of service problems should be considered as unsafe conditions is generally dependent upon the type and use of aircraft, and the effect a particular condition may have on the continued safe operation of the aircraft.

A1.2 Definitions

A1.2.1 *Safety Effect*—The actual service report or potential consequences of the service issue. The more adverse the consequences, the higher the risk weighting will be assigned. The weighting for each safety effect is shown below:

A1.2.2 *Catastrophic Effect (4)*—High potential for loss of aircraft and fatalities.

A1.2.3 *Hazardous Effect (3)*—Large reduction in functional capabilities or safety margins, that may cause serious or fatal injuries.

A1.2.4 *Major Effect (2)*—Significant reduction in functional capabilities or safety margins, that may cause physical discomfort or a significant increase in workload, possible injuries, or fatalities.

A1.2.5 *Minor Effect (1)*—Slight reduction in functional capabilities or safety margins, that may cause an increase in workload or require use of emergency procedures.

A1.2.6 *Operational Use*—Operational use may play a role in determining appropriate corrective action by impacting the priority in which the corrective action is accomplished.

A1.2.7 *Trainers*—Rigorous operational use demanded. Large number of takeoffs, landings, and power changes per flight hour tends to accelerate wear; accumulates hours quickly and is usually maintained under a structured maintenance program.

A1.2.8 *Personal Use*—Usually owned by individuals or small groups and generally operated for recreational purposes. Typically accrue low fleet average hours per month and are subject to annual condition inspection intervals. Low use often contributes to different airworthiness concerns than higher use aircraft.

A1.2.9 *Special Use*—Rentals, aerial advertising, aerial photography, and so forth may generate special concerns from this segment of operations.

A1.2.10 *Number of Occurrences of the Event*—An event is defined as a single service difficulty that requires an investigation to determine if a corrective action is necessary. The event may result in an aircraft accident, incident, a safety recommendation from the presiding civil aviation authority, a service report, and so forth. The number of occurrences is the total number of events of the same service difficulty across the fleet of specific make and model of aircraft.

A1.2.11 *Events versus Population*—The number of occurrences divided by the total number of aircraft of that make and model and configuration. Alternately, where a component is used in the same capacity on multiple makes or models, the number of occurrences divided by the total number of aircraft that incorporate the component.

A1.2.12 *Time Between Events*—Using all of the occurrences as defined above, determine the average time between events. For single events, use the average fleet age (in airframe hours) as the time between events.

A1.3 Risk Assessment Methodology

A1.3.1 Determine the safety effect and the Safety Risk Factor and plot the results of the assessment on the Risk Assessment Evaluation Chart using the methodology that follows. From the chart, determine the most appropriate method of alerting the public to the safety of flight issue or service difficulty (that is, Safety Alert notification, Service Bulletin, and so forth). The chart provides an objective method to assist the evaluator in determining the most appropriate corrective action.

A1.4 Risk Assessment Evaluation Chart

A1.4.1 The chart depicted in Fig. A1.1 is intended to serve as a basis for determining corrective actions. In certain cases, however, experience and judgment may drive the user to a different conclusion.

A1.4.2 The vertical axis denotes the safety effect and its effect on continued airworthiness. The four categories are minor, major, hazardous, and catastrophic. The categories are: intended to weigh the relative effects of an airworthiness problem and its effect on continued flight to landing. The user can interpolate and assess a safety effect score between the values stated below.

A1.4.3 The higher the Safety Effect, the more negative the airworthiness effect. The airworthiness impact determination is very important and must be carefully analyzed to ensure public safety while minimizing the economic burden of any necessary corrective action on the owners of an LSA.

A1.4.4 The horizontal axis denotes the Safety Risk Factor. The Safety Risk Factor increases from left to right and is calculated using the following:

A1.4.5 Safety Risk Factor = Safety Effect (a) 3 Operational Use (b) 3 Percentage Use by Population (c) + Number of Occurrences (d) + Events versus Population (e) + Time between events (f):

Safety Risk Factor = (a) x (b) x (c) + (d) + (e) + (f)

(a) = Safety Effect: (d) = Number of Occurrences:
Catastrophic = (4) 5+ = (3)
Hazardous = (3) 3 to 5 = (2)
Major = (2) 1 to 3 = (1)
Minor = (1) (e) = Events versus Population:

(b) = Operational Use: 10 %+ = (2)
For hire = (2) 1 %+ = (1)
Personal = (1) 0.1 % = (0)

(c) = Percentage Use by Population: Less than 0.1 % = (-1)
>75 % For hire = (4) (f) = Time between Events:
>50 % For hire = (3) Over 3 years = (-1)
>25 % For Hire = (2) Over 2 years = (0)
<25 % For Hire = (1) 1 to 2 years = (1)
Less than 1 year = (2)

A1.5 Safety Effect Determination

A1.5.1 The safety effect determination has a significant impact on the response to an airworthiness concern or service problem.

A1.5.2 The following list of safety of flight examples is broken down by the potential airworthiness impact. This is a guide, not a hard and fast rule or an exhaustive list. Manufacturers are encouraged to relocate, delete, or add, or a combination thereof, to the service issues listed within the examples below as necessary to address what constitutes a given level of safety effect appropriate to a specific aircraft configuration.

Examples of conditions with potentially CATASTROPHIC effect (4):

Failure of primary aircraft structure
Loss of primary control
Failure of propeller blade
Failure of propeller hub
Engine fire that causes an accident
Cabin fire
Significant electrical system fire
Structural, engine, or propeller repairs, or a combination thereof, performed incorrectly that result in a failure

Examples of conditions with potentially HAZARDOUS effect (3):

Crack in primary structure (repairs required)
Engine fire
Carbon monoxide in cabin
Total power loss
Partial propeller blade failure
Failure of pilot's seat

Examples of conditions with potentially MAJOR effect (2):

Crack in primary structure (inspections required)
Failure of primary engine fuel pump that results in aircraft damage
Loss of ground steering
Failure of engine coolant system
Loss of trim control

Examples of conditions with potentially MINOR effect (1):

Cracks in secondary aircraft structures
Loss of primary engine fuel pump that does not cause engine failure, may cause performance degradation
Failure of engine instruments including EGT/CHT, RPM, oil pressure, oil temperature, engine coolant indicator
Total loss of braking
Loss of trim position indicator
Failure of stall warning

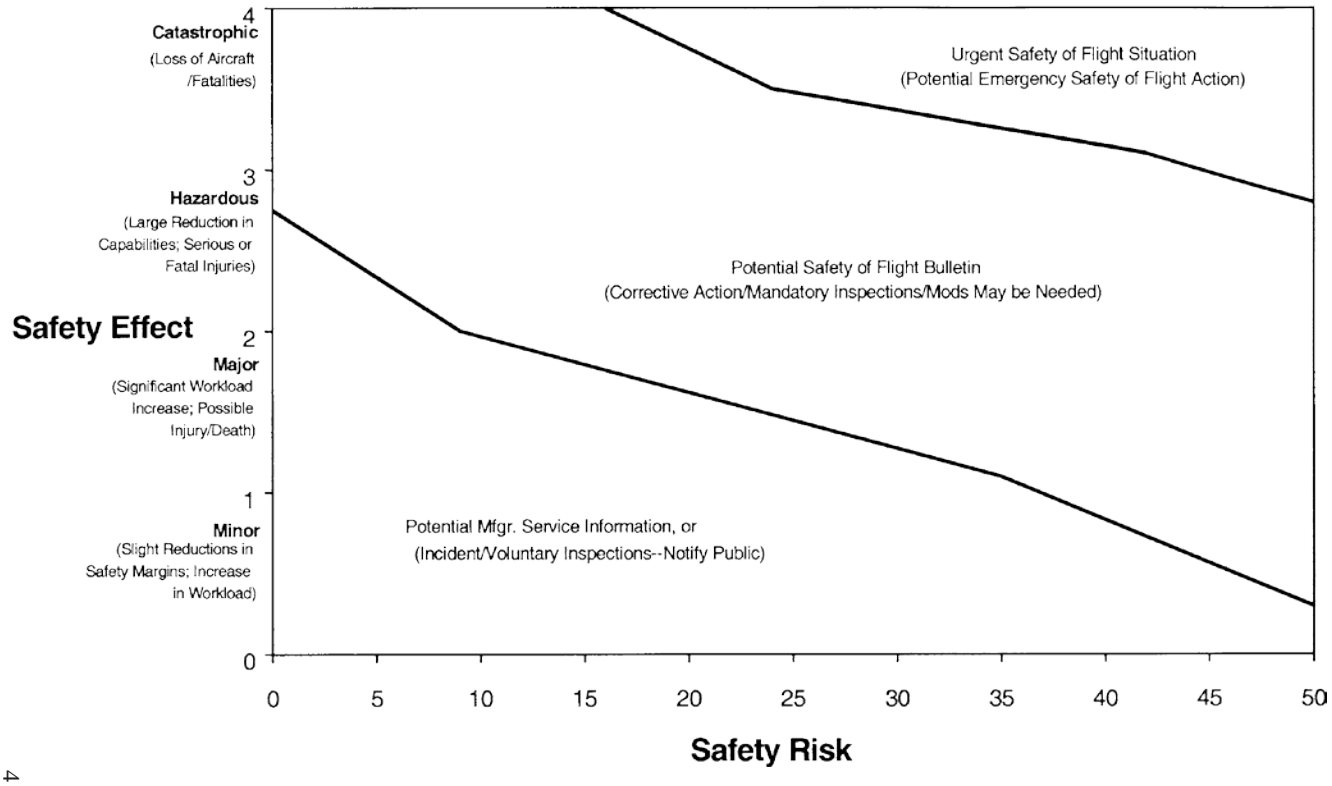

FIG. A1.1 Light Sport Aircraft Risk Assessment Evaluation Chart

Pitman Air
Ultralight & Light Sport Aircraft
Sales, Service & Flight Instruction
Ed Pitman 1840 Airport Blvd. Red Bluff. CA 96080
shipping & billing: 6905 Frey Rd.,Shingletown, CA 96088
ed_pitman@hotmail.com 530-945-1860

Safety Directive (template)

Notice Number: **Supersedes:**

"SAFETY ALERT – SAFETY DIRECTIVE" for notifications that require **IMMEDIATE ACTION**. Or,
"SERVICE BULLETIN" for notifications that do not require immediate action but do recommend future action. Or,
"NOTIFICATION" for notifications that do not necessarily recommend future action but are primarily for promulgation of Continued Airworthiness Information.

Date of Notice: **dd/mm/yyyy**

Date Notice takes effect: **dd/mm/yyy**

Limitations for Completion: of any required corrective action.

Make and Model of the affected LSA:

Serial Numbers of the affected LSA:

When Corrective Action must take place:

Description of Correction Action:

Who is Qualified to perform Corrective Action:

NOTE: Always use proper Personal Protective Equipment and Safe Guards required by OSHA and/or your State or local Safety Authority.

Tools Required:

Parts Needed:

Where to obtain parts:

Instructions for Completion: (in Detail)

NOTE: Logbook Entries: Must be made that show the successful completion of corrective action, who, what, when. and parts used (including Batch and Date information), and from where they came, invoices etc.

End of QAM