PMA Quality Assurance Manual

Approved By: Nick Heminger

Title: Sr. Manager, Quality

Aviation Technical Services, Inc. (ATS) primary facility and administrative headquarters are located at: Hangar 1, 3121 109 Street SW, Everett, WA 98204
Manufacturing functions also take place at: Component Services Division (CSD), 2600 West Casino Road, Everett, WA 98204.

Our company focal to FAA and PMA Accountable Manager is Nick Heminger

This PMA Quality Assurance Manual (QAM) is submitted to the Federal Aviation Administration (FAA) for information and Regulatory Compliance requirements. This manual includes instructions for the design, development, and manufacture of Parts Manufacturer Approval (PMA) articles for various model aircraft under the authority of Title 14 Code of Federal Regulations (14 CFR).

This manual has been developed by the Quality Assurance Department with the intent and purpose of providing quality controls as required by Federal Aviation Regulations. This manual provides FAA verification of policies and procedures for the design, development and manufacture of FAA Parts Manufacturer Approval (PMA) articles. In support of this manual, ATS also utilizes the following to assure compliance:

- Supplier evaluations in accordance with forms and procedures maintained by ATS Quality Assurance.
- PMA Approved Supplier List (PASL), a document that is maintained and revision controlled by ATS Quality Assurance.
- Part certifications, i.e. 8130-3 Airworthiness Approval Tags, in accordance with procedures maintained by ATS Quality Assurance.

This manual establishes and maintains a quality assurance system to ensure compliance and conformance with FAA-PMA Articles manufactured by ATS for use on certified aircraft or as detail components of an aircraft assembly.

Changes that impact inspection, conformity and airworthiness shall not be implemented into this manual without prior FAA approval.

We shall notify the FAA, in writing (in advance), if manufacturing and/or the facility is relocated or expanded to other locations. Prior to shipping FAA-PMA parts from a new location, the new facility must be evaluated and approved by the FAA.
ATS PMA Quality Assurance Manual
Rev. 2
12 Feb 2016

Revision History

Any change to the Quality System will be approved by the FAA Manufacturing Inspection District Office (MIDO) prior to implementation.

ATS will immediately notify the FAA MIDO, in writing, of changes that affect inspection, conformity, or airworthiness of approved articles including criticality or added/new complexity of articles manufactured.

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Acronyms:
ACO  Aircraft Certification Office
ATS  Aviation Technical Services, Inc.
DSA  Direct Ship Authorization
ECO  Engineering Change Order
FAA  Federal Aviation Administration
M/AP Manufacturing/Assembly Plan
MIDO Manufacturing Inspection District Office
PAH  Production Approval Holder
PASL PMA Approved Supplier List
PO   Purchase Order
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Section A
Design Data Control

A1 A current copy of all drawings for FAA Approved articles will be controlled by the ATS Technical Data Control Center (TDCC) and made available to manufacturing and inspection personnel.

A2 Design data is filed by Drawing Number with the latest revision available to manufacturing and inspection personnel. ATS STCs, design, and manufacturing data are maintained digitally by ATS Technical Data Control Center (TDCC). FAA-PMA Supplements are retained by the Sr. Manager, Quality. Manufacturing and inspection records are maintained digitally by Components Program Management. Security of these files is maintained through electronic back up files.

A3 Design changes are classified as “major” or “minor” as defined by 14 CFR § 21.93.

A4 Design changes will be submitted to the FAA Aircraft Certification Office (ACO) to obtain FAA approval and will not be incorporated into production before FAA approval. Major changes require new part numbers and company travelers. Major design changes may require amendments or additions to:
STC: via the ACO.
Non Licensing/Test and Computations: via the ACO.
FAA-PMA: via ACO and MIDO for approval of a new PMA Article under non-licensing or Test and Computations.
FAA-PMA: via MIDO for approval of a new PMA Article under licensing agreement or FAA approved STC

A5 Material Review Board (MRB): ATS does not have MRB with respect to PMA.

Section B
Document Control

B1 All Quality system documents, data, and current approved changes will be managed from a central file maintained by the ATS Technical Data Control Center (TDCC).

B2 Shop personnel and Quality Control (QC) Inspectors will use only current, approved quality system documents and data, including forms which will be made available to employees who require them.

B3 For items received by approved suppliers, Receiving Inspectors ensure only properly configured supplied parts are received as approved and stocked into storage for later use. Quality Control inspectors will have the latest approved data and ensure parts used meet the design configuration.
Section C
Supplier Control

C1 ATS is required to have a QA system that ensures all products or articles provided by our suppliers including subtler suppliers. Supplier means a person at any tier in the supply chain who provides a product, article, or service that is used or consumed in the design or manufacture of, or installed on, an ATS PMA product.

Our PMA Approved Supplier List (PASL) is maintained by Quality Assurance. Each supplier on the PASL is audited, evaluated, and approved in accordance with forms and procedures established and maintained by Quality Assurance. ATS requires FAA access to all suppliers in our supply chain. These supplied items, which support manufacture and or assembly of PMA articles, will be inspected for visible external damage, proper packaging and marking, as appropriate to the shipment received. We do not delegate our manufacturing responsibility to any supplier. We ensure:

1. Each supplied article (or product) conforms to the FAA-Approved design data
2. We will evaluate all suppliers initially and on a periodic basis as determined on performance or category of articles (or products) supplied.
3. Our Risk Assessment of all suppliers determines our review cycle (see PASL)
4. First Article Inspection (FAI) is performed on all new type critical articles (or product).
   a) We may allow for FAI by the supplier
   b) We may perform FAI at the supplier
   c) We may perform FAI at our approved facility.
5. ATS will notify MIDO prior to granting of supplier direct ship authorization (DSA).
6. Suppliers located outside the US:
   a) ATS Quality Assurance will notify MIDO prior to addition to the PASL to verify it does not create an undue burden on the FAA.
   b) ATS Purchasing will notify all foreign suppliers of the requirement to grant access to FAA/CAA for review when requested to do so.

C2 Each supplier will be required by the ATS Purchase Order to report any product, article, or services that have been released from or provided by the supplier and subsequently found not to conform to ATS’s requirements.

C3 For all supplied articles (or products):
   a) Reports of unsatisfactory conditions will be documented and nonconforming parts segregated from our PMA manufacturing system. All Suppliers are informed of possible FAA audit.
b) Review of documented unsatisfactory conditions will increase our company’s’ supplier surveillance to a more frequent basis. An on-site visit may be determined necessary which will verify:
1. Certificates of Conformance received with each shipment
2. On-Site Supplier evaluation with/ without rejection history
3. Suppliers which may be added / removed from company PASL
4. Shelf-life requirements, if any
5. Special storage or handling requirements, if any and noted on the PO.

C4 After acceptance of incoming shipments, ATS receiving inspectors will provide evidence of acceptance via stamp or signature.

C5 When discrepancies are encountered during inspections, we will “tag” the material or shipment as “Unsat” or “Rejected” and identify the discrepancy

C8 Reject the articles and put them in a segregated storage area until corrective action is taken by the supplier or subcontractor. If the discrepancy cannot be resolved satisfactorily, the part will be disposed of as scrap or returned to the supplier.

C9 Direct Ship Authorization (DSA)
ATS may authorize individual suppliers on the PASL to provide direct shipment of parts manufactured under the ATS PMA, including sub-assemblies and assemblies. ATS Quality Assurance will notify MIDO prior to granting of DSA to any supplier.

All DSA granted by ATS shall be authorized in writing via letter format. ATS Quality Assurance will issue and maintain records of DSA, and make them available to the FAA MIDO office upon request.

Records and any DSA related documentation shall be maintained by the Supplier and be available for review by ATS and/or FAA for a period of (10) ten years, unless extended by the ATS Purchase Order (PO) or Supplier’s system requirements.

The granting of DSA does not in any way alleviate the supplier from verifying that each unit shipped is in accordance with approved design and in a condition for safe operation.

The granting of DSA will only be authorized when ATS establishes the Supplier has a documented quality system that assures each completed product or part(s) thereof conforms to the approved design data and is in a condition for safe operation.

DSA’s granted by ATS may be unit bound (specify number of units) or time bound (specify start date & ending date).
The supplier shall adhere to all approved ATS flow down requirements, including:

- The responsibility for each Supplier to request or petition DSA approval from ATS prior to any shipment being made.
- Direct ship the article.
- Provide a direct ship declaration with the shipment.
- Provide a signed/stamped (C of C) statement of conformance certifying that the article conforms to approved data and type design.
- Provide traceability to the end item user purchase order, or purchase request.
- Maintain evidence that the supplier has direct ship authorization from ATS through the supplier’s retention of a copy of DSA letter.
- Provide a statement (direct ship declaration) that delegation of inspection authority has been granted by ATS and that the inspection was performed on behalf of ATS as a PMA holder.

**Section D**

**Manufacturing Process Control**

D1 Material received will be accompanied by certification papers and identified by lot number, and reference the Purchase Order/Receipt number.

D2 There is a Manufacturing/Assembly Plan (M/AP) to record the Receipt number and manufacturer lot number for each part or material utilized. A M/AP is initiated for all PMA parts produced by ATS.

D3 All design data for each part is maintained by Technical Data Control Center (TDCC). Design data at a revision specified by the M/AP shall be made available to production personnel for use.

D4 Parts are inspected to ensure they conform to approved design.

D5 Parts are permanently marked or tagged in accordance with Section O of this manual. Small parts are marked in accordance with FAR 45.15(b) with a tag attached to the part or the packaging for the part.

**Section E**

**Inspection & Testing**

E1 ATS QC inspectors will determine that each completed part conforms to the design data and is safe for installation on type certificated products. Inspectors shall:
- Inspect all parts to drawing and specification requirements
- Witness any test at our facility
- Witness tests at our supplier facility when necessary to determine compliance.
E2  Inspectors shall have access to FAA approved data and specifications when inspecting FAA-PMA articles. When witnessing acceptance tests, the Inspectors shall have access to FAA approved data used to verify and validate any test.

E3  All inspection records described above and the record of disposition shall be maintained for at least five (5) years and made available to the FAA upon request.

Section F
Precision Measuring & Test Equipment Control

F1  Precision measuring & test equipment are maintained in a manner to ensure constant accuracy is assured via (verification before each use, measuring) or calibrating services.

F2  Precision measuring & test equipment which become inaccurate shall be tagged “rejected.” The reason for the tool rejected state shall be identified on the tag.

F3  Special tools, shop aids, master gauges or molds manufactured by ATS, contracted with or purchased from a vendor are verified against drawing requirements. When a physical defect is identified on a completed article, visually inspect and record on the work order.

F4  Discrepant precision measuring & test equipment identified during use shall be immediately quarantined by our shop and submitted to the Tooling department. Should the measuring or test equipment be verified as out of tolerance, the Manager, Quality will be notified and the impact on previously accepted product will be determined. Actions taken to correct any deficiencies include:

   a)  We will notify MIDO of any quality escape

   b)  We will initiate quality escape procedures per Section N of this manual.

F5  Precision measuring & test equipment used for inspection to design data will be certified for accuracy when purchased. They will then be subject to calibration until deemed unserviceable and scrapped or disposed of.

Section G
Inspection and Test Status

G1  The inspector shall affix a signature or stamp on the Manufacturing/Assembly Plan (M/AP) indicating acceptance of the process steps, and the finished article. In the case of a rejection, the cause shall be noted and the article secured in a separate location.
G2  Rejected components shall be marked with a rejection tag and dispositioned as scrap. Final disposition of rejected articles will be noted on the M/AP.

Section H  
Nonconforming Product and Article Control

H1  Nonconforming and rejected material will be segregated and scrapped after mutilation to prevent re-use.

H2  Nonconforming parts may be reworked to bring into conformity, provided rework only brings part to required dimensions as specified by design data. Repair of a defective part is not allowed. The Manufacturing/Assembly Plan (M/AP) will describe the rework for nonconforming parts.

H3  Major Change incorporation to FAA-PMA articles are first approved by FAA ACO and MIDO approval of any corresponding change to the PMA supplement.

Section I  
Corrective and Preventative Action

I1  Corrective actions; We will:
1) Review non-conformities of manufactured articles in order to:
   a) Determine the root cause of non conformance
   b) Evaluate the needs for corrective action(s)
   c) Evaluate corrective action to ensure non conformance does not reoccur
   d) Specify alternative actions when corrections are not achieved
   e) Record the results of actions and make records available to the FAA.

I2  2) We will take action to:
   a) Track the part number and job number of all nonconforming articles
   b) Determine a root cause analysis
   c) Establish action taken to correct the condition
   d) Establish any reason for the nonconformance.
   e) We will review non conformances monthly in order to ensure the comprehensive manufacturing processes continually produce articles that conform to its type design and are safe for operation. This monthly review and analysis will be recorded and provided to MIDO upon request.

I3  Preventive Actions; We will:
1) Institute Preventative action will determine establish and define requirements:
   a) Determine potential nonconformities and their cause
   b) Evaluate corrective action(s) needed to prevent occurrence
   c) Determine impending actions needed in order to comply
   d) Record the results of all actions
e) Review the effectiveness of any preventative actions
f) Specify alternative actions when corrections are not achieved
g) Record the results of actions and make records available to the FAA.

Section J
Handling & Storage

J1 All Material used during manufacture will be recorded on the Manufacturing/Assembly Plan (M/AP) by receipt and lot number.

J2 Acceptable finished products will be stored by unique Job number.

J3 Parts are stored in a dry environment and withing storage containers provided for each part, or on storage racks

J4 Parts are inspected prior to shipping.

Section K
Control of Quality Records

K1 Design data is filed by Drawing Number with the latest revision available to manufacturing and inspection personnel. ATS STCs, design, and manufacturing data are maintained digitally by ATS Technical Data Control Center (TDCC). FAA-PMA Supplements are retained by the Sr. Manager, Quality.

K2 Manufacturing and inspection records are maintained digitally by Components Program Management. Security of these files is maintained through electronic back up files. Manufacturing and inspection records (Manufacturing/Assembly Plans, Receiving Inspection records, etc) are retained for at least 5 years. Design data will be kept indefinitely.

Section L
Internal Audits

L1 ATS Quality Assurance will conduct Internal Audits per our schedule established yearly. Processes described by the PMA QAM will be evaluated on a yearly basis with final audit reports provided to MIDO upon request.

L2 Record of the audit shall be maintained by Quality Assurance and will include: Area /Date /Findings / Cause / Action Taken / Comments
Section M
In-Service Feedback

Service Difficulty Reports (SDRs)

M1  If in-service difficulties are discovered, they will be reported by ATS to the FAA ACO and MIDO.

Note: ATS will report 14 CFR 21.3 conditions to the FAA ACO within 24 hours, with the exceptions of weekends and recognized holidays, after it has been determined that the failure, malfunction, or defect is required to be reported. ATS will also provide this information to the FAA MIDO.

Self Disclosure Reporting

M2  If in-service difficulties are determined to be an issue with an ATS PMA product, they will be reported to the FAA’s geographic MIDO.

Airworthiness Directives (ADs)

M3  In the event that an Airworthiness Directive is issued by the FAA, ATS will immediately implement applicable changes, if any, to articles affected by the AD.

- When appropriate, changes related to an AD will be incorporated into the drawings and parts in stock will be re-inspected to ensure they meet the AD requirement.

Section N
Quality Escapes

Quality Escapes are defined as ATS PMA product that have been released from the quality system that do not conform to the applicable design data or quality system requirements

N1  ATS will notify the FAA of any apparent quality escape, by contacting the FAA MIDO office. Initial notice of a voluntary disclosure may be submitted orally, by electronic means or by written hardcopy.

N2  Notification will be made in a timely manner, normally within 24 hours of the discovery of the apparent quality escape, with the exception of weekends and recognized holidays.

N3  Quality escape notifications will include the following information;
- A brief description of the apparent violation, including an estimate of the duration of time that it remained undetected, as well as how and when it was discovered.

- Verification that the noncompliance ceased after it was identified.

- A brief description of the immediate action taken after the apparent violation was identified, the immediate action taken to terminate the conduct that resulted in the apparent violation, and the person responsible for taking the immediate action.

- Verification that an evaluation is underway to determine if there are any systemic problems and the corrective steps necessary to prevent the apparent violation from re-occurring.

- Identification of the person responsible for preparing the comprehensive corrective action.

- Acknowledgment that a written report will be provided within 20 working-days from the initial report.

Section O
Issuing Authorized Release Documents

ATS shall utilize FAA 8130-3 Airworthiness Approval Tag as a means to provide authorized release certification for an ATS PMA part.

O1 Selection, appointment, training, management, and removal of individuals authorized by ATS to issue authorized release documents:

- Prior to authorizing a Quality Control Inspector for PMA release authority, a Quality Manager shall assess the inspector’s training and qualifications by completing TF-834, PMA Release Authorization form.
- Based on the assessment, the QC Manager may limit the release authorization as appropriate. The QC Manager will inform the inspector of the scope of the limitations as listed on the TF-834. The inspector is responsible to conduct release certifications within the scope of those limitations.
- Upon satisfactory completion of the assessment, the QC Manager will sign the Form TF-834 and forward it to the Training Department for retention in the inspector’s training record.
- A roster of PMA release authorized personnel shall be maintained and distributed by the Training Department.
- To rescind release authorization of an inspector, the QC Manager will reflect the rescission on the TF-834 form and provide an updated copy to the Training Department. The Training Department shall revise the roster accordingly.
O2 When FAA 8130-3 form is issued as a Domestic or Export articles manufactured by ATS, our authorized individuals will complete the form in a manner described by the current revision of FAA Order 8130.21 less Block 13. On FAA Form 8130-3 Block 13, ATS will use PQ5315NM

O3 Prior to approval of any FAA Form 8130-3, ATS will:
- Ensure the PMA article conforms to its approved design.
  - Meets the importing country special conditions. (The applicable bilateral agreement shall be reviewed for the specific provisions associated with PMA articles.)
- Forwarding to the importing country, all documents specified by that country;
- Preserve and package the part as necessary to protect it against corrosion and damage.
Section P
PMA Article Part Marking

P1 ATS will mark ATS PMA products permanently and legibly with the following information: Part number, ATS Cage Code, and the letters “FAA–PMA”.

P2 Example of marking used by ATS on all PMA articles:
   Part Number
   53ZS6
   FAA/PMA

P3 If the FAA finds a part or article is too small or otherwise impractical to mark with the above information, ATS must attach that information to the part or its container. Only those articles will be identified using a tag or container labeling method. Articles where it is practical to mark will be marked.

Section Q
Shipping / Export of Completed Articles

Q1 All required documents will be sent with any shipment of completed products.

Q2 Before exporting products to other International Countries, FAA AC21-2 and Bilateral Agreements will be reviewed for applicable requirements.

Q3 All shipping documents are to be followed and completed according to shipping regulations. (i.e.: Customs Declaration and Dispatch Note, Certificate of Origin, Shippers Export Declaration, etc.)
Appendix 1
Aviation Technical Services, Inc.
Organization

Sr. Manager, Quality: Nick Heminger
Director, Operations (production): David Keimig
Sr. Manager, Engineering: Larry Coburn
Sr. Manager, Quality Control: Claire Myers

Appendix 2
Facility Layout

The locations of PMA functions include the following:

- **Component Services Division (CSD)** located at 2600 West Casino Rd., Everett, WA 98204: Primary location for manufacturing of ATS PMA articles, tooling and material issuance, and NDT.

- **Hangar 1** located at 3121 109th St SW, Everett, Washington 98204: Management, engineering services, and quality system operations mandated by 14 CFR §21.137 such as design data control and document control. Manufacturing in designated areas may also take place at Hangar 1 as a secondary location to CSD.

- **Warehouse** at 10319 Airport Road, Everett, Washington 98204: Shipping and receiving of parts and material.

- **C3 Building** at 10108 32nd Ave. W, Everett, Washington 98204: Tooling administration and calibration tracking.

- **Building** at 10315 Airport Road, Everett, Washington 98204: Manufacturing of ATS PMA articles.
Appendix 3
PMA Approved Supplier List (PASL)

The PASL shall be maintained by the QA department on the ATS intranet portal. A copy of the PASL shall be provided to the FAA MIDO upon any request.

The Quality Manager shall notify the FAA MIDO prior to adding suppliers to the PASL which:

- Are located in other countries and of the receipt of first articles produced by those suppliers.
- Are authorized to direct ship products produced under ATS’s PMA.