

8801 QS

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AVTECH QUALITY ASSURANCE SPECIFICATION

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1.0 PURPOSE

This document establishes basic Avtech Corporation Quality Assurance Requirements for the Supplier necessary to ensure that supplies/services purchased from the Supplier meet required quality levels. In addition, Avtech requires that equivalent provisions be flowed down to sub-tier suppliers.

2.0 DEFINITIONS

- 2.1 “**BUYER**” means Avtech Corporation, issuing the purchase order (physically or electronically) which invokes this document.
- 2.2 “**SUPPLIER**” means the vendor/supplier/distributor performing work and/or supplying materials, parts, assemblies, subassemblies, or services pursuant to the purchase order (physically or electronically).

3.0 GENERAL REQUIREMENTS

- 3.1 **APPLICABILITY** – These general requirements shall apply to Suppliers whenever Quality Assurance Requirements are invoked by Purchase Order. Applicable revision status of this document shall be the revision in effect on the date of Purchase Order, unless otherwise specified in the Purchase Order or related documents. Revision status of procured/deliverable items shall always be as specified in the Purchase Order.

3.2 SUPPLIER’S QUALITY CONTROL SYSTEM

- 3.2.1 Quality System and Related Procedures - The Supplier’s Quality Assurance system shall be implemented by written procedures, which adequately provide for compliance with the requirements herein. Manufacturers will either have a third party certified quality management system (AS9100, ISO9001:2008) or have processes in place that comply with these industry specifications. Distributors are certified to or have processes in place which are compliant with the requirements of ISO9002.
- 3.2.2 Organization – Quality Assurance responsibility shall be clearly designated within the Supplier’s organizations. Personnel having this responsibility shall have sufficient authority to assure that quality is not compromised.
- 3.2.3 Changes in Quality System – The Supplier shall immediately notify the Buyer in writing of any change to its Quality Assurance system that may affect 1) the

inspection, conformity, or safety of the product, 2) quality leadership, or 3) quality system status (e.g., Supplier converts to a ISO9000-based system or Supplier no longer is registered to AS9100).

- 3.3 NOTIFICATION OF DESIGN CHANGES** – Suppliers with design authority shall notify the Buyer of any changes of fit, form, function, or safety of product and obtain approval prior to manufacture and delivery. Suppliers shall submit proposed changes to the Buyer in writing. See Notice of Change (NOC) form on Buyer website. When design (or part of design) is the Buyer’s responsibility, changes affecting design specifications shall not be made without written authorization from the Buyer.
- 3.4 CHANGE IN MANUFACTURING FACILITY LOCATION**- The Supplier shall immediately notify the Buyer in writing of any planned change to the manufacturing facility location of the contracted part or assembly.
- 3.5 DRAWING AND CHANGE CONTROL** – The Supplier’s Quality Assurance system shall assure that the latest applicable drawings, specifications, technical requirements, Purchase Order information and changes thereto will be available at the time and place of the Supplier’s acceptance of material and/or services. All changes shall be processed in a manner which will assure incorporation on the affected material and/or services at specified effectivity points. On Buyer-designed parts, the Buyer may require that the Supplier’s change control system be compatible with that of the Buyer.
- 3.6 PROCUREMENT BY THE SUPPLIER** – The Supplier shall maintain a system to assure that Supplier-procured materials and/or services conform to Purchase Order drawings and specification requirements. The Supplier’s Quality Assurance system shall contain controls for assuring requirements are met by sub-tier suppliers, including flowdown of the most current component revision level requirement to the approved sources. The implementation of such controls shall be subject to surveillance by the Buyer.
- 3.7 SUPPLIER SUBCONTRACTING APPROVAL** – For all parts supplied per Buyer specifications, the Supplier shall notify the Buyer and receive written approval prior to subcontracting a process, part, assembly or end item prior to invoking the change.
- 3.8 RESTRICTION OF PROCESS SOURCES** – Restriction of process sources by customer or NADCAP approved sources may be invoked. When these restrictions are put in place, they must be flowed down to affected sub-tier suppliers. These processes may include, but are not limited to heat-treating, plating, and anodizing.
- 3.9 PRESERVATION AND PACKAGING** – In addition to specific packaging and preservation instructions that may be invoked on Buyer part specifications, the following apply:
- 3.9.1 All material intended for the Buyer shall be protected against the usual hazards of electrostatic discharge (ESD), corrosion, contamination, deterioration, or other spoilage at the Supplier’s facility and in transit.
 - 3.9.2 All material for the Buyer shall be packed with suitable protection so as to prevent damage through handling, during storage at the Supplier, in transit, and during storage at the Buyer’s facility before use.

3.9.3 Components which are identified by the manufacturer as moisture sensitive must be handled as identified in IPC-SM-786A. If the manufacturer's standards for humidity level or exposure time limit have been exceeded, the parts should be baked per IPC-SM-786A.

3.10 MANUFACTURING TRAINING REQUIREMENTS FOR CONTRACT

MANUFACTURERS – Personnel directly involved in building the Buyer's product shall be trained and certified to the current revision of IPC-A-610 Class 2 requirements. The Supplier shall maintain training and certification records for periodic audits. The Supplier shall take additional action to assure skill proficiency of personnel new to building Buyer products.

3.11 SUBSTITUTION– Regarding commercial off the shelf material, the Supplier shall not substitute "equivalent" items in place of those items specified on the Purchase Order. If an equivalent item to a specified material is to be supplied, it is offered with supporting documentation prior to the shipment. All changes relating to part number, drawing specification, delivery or price must be agreed to by Buyer and confirmed by a change to the Purchase Order.

3.12 OBSOLESCENCE – The Supplier shall notify Buyer of impending part obsolescence for all parts that are on open orders or which have been shipped by the supplier over the past 12 months. The notification shall occur at the earliest point possible and at least 6 months prior to the "end of life" order date.

3.13 SHELF LIFE CONTROL – The Supplier shall maintain a documented system for shelf life control items where acceptability is limited by maximum age. The system shall include a method of identifying and controlling such items. When environment is a factor in determining useful life, the identification shall include the storage conditions required to achieve the stated life (i.e., temperature, humidity, etc.). A minimum of 75% of the applicable material/article shelf life remains upon receipt of the material by Buyer, or the material is subject to rejection and returned to the Supplier, unless the material is part of a catalyst family, then the minimum shelf life remaining must be at least 50% upon receipt at Buyer. As applicable, the cure date and/or temperature limitation must appear on each container. Any other exceptions to this standard will be communicated through individual purchase orders.

3.14 LEAD FINISH FOR COMPONENTS – The lead finish allow for components on this order shall be (63/37) or (60/40) tin/lead, dipped or plated and fused. The manufacturer shall guarantee solderability for a period of 15 months following receipt of the components by Buyer. Waivers to this requirement shall be obtained from Buyer Supply Management prior to shipment.

3.15 MATERIAL SAFETY DATA SHEET (MSDS) – As applicable, the Supplier shall provide the Buyer with a current Material Safety Data Sheet (MSDS) in compliance with the Occupational Safety and Health Administration's (OSHA) hazard Communication Standard (29 CFR 1910.1200) and Washington Administrative Code (WAC) 296-62-054. Submittal of the MSDS shall be made at the time of initial shipment or receipt. Thereafter, the Supplier shall provide the Buyer with the MSDS for the material only if the formulation of the material is modified from that previously supplied. The submitted MSDS shall be dated and include the name of the preparer. In the event that the Supplier's point of contact is different than the preparer, then that individual shall also be named in the MSDS.

3.16 TOOL AND TEST EQUIPMENT CONTROL (BUYER FURNISHED) – All tooling and test equipment fabricated by the Supplier at the Buyer's expense, or supplied by the Buyer for

Supplier use, shall be considered property of the Buyer. Such tooling and test equipment shall be inspected, calibrated, and controlled as outlined in the following paragraphs. The Supplier, with review and approval at the Buyer's option, shall establish tool and test equipment controls.

3.16.1 All tools and test equipment, unless size or use prohibits, shall be identified, as applicable, with the following information.

- Property of Avtech Corporation
- Part Number of Tool/Test Equipment
- Inspection Date
- Re-inspection Due Date
- Calibration Date
- Re-calibration Due Date

3.16.2 If not otherwise specified, all equipment that is used to determine acceptance of material will be subject to, as a minimum, an initial inspection and calibration, and periodic re-inspection and re-calibration thereafter.

3.16.3 The Supplier shall be responsible for maintaining adequate records of all tooling and test equipment indicating periodic inspections and calibrations. Such records shall be readily available to the Buyer's Quality Assurance Representative and/or Buyer's Customer and /or FAA representatives.

3.16.4 The Supplier shall have a system which includes written procedures for control of all tooling and test equipment. Procedures shall be in accordance with the controls specified herein.

3.16.5 Any tooling or test equipment furnished to the Supplier by the Buyer shall not be reworked or modified without prior written approval of the Buyer.

3.16.6 Tooling or test equipment shall be properly maintained and preserved.

3.17 MEASURING AND TEST EQUIPMENT CALIBRATION SYSTEM – The Supplier shall maintain a system, including written procedures, to assure inspection and evaluation of measuring and test equipment, whether Supplier-owned or supplied by the Buyer or another agency. This system shall assure that the inherent accuracy of the equipment is comparable with the requirements of the unit being tested, and that required measurements are adequately performed. The system shall include appropriate calibration schedules and records per paragraphs 3.7.2 and 3.7.3.

3.18 MEASUREMENT STANDARDS CONTROLS – The Supplier's working standards used for calibration of tooling, measuring, and test equipment shall be checked at established intervals against suitable higher level standards which, in turn, will be checked at established intervals by reference to National Institute of Standards Technology (NIST) or equivalent certified primary standards. The Supplier shall maintain records or other conclusive evidence that proper control is being maintained. The Buyer may conduct, in the Supplier's facility, an evaluation of the Supplier's standards, measuring/testing devices, and calibration/maintenance personnel and methods to establish correlation between the Buyer's and Supplier's measurements.

- 3.19 PRODUCT IDENTIFICATION AND TRACEABILITY** – The Supplier shall maintain documented procedures for identification of product from receipt and during processes of production and delivery. The procedures shall address unique identification of individual product or batches; this identification shall be recorded.
- 3.20 PROCESSING** – The Supplier shall establish a system to assure that all processes, even including those which cannot be readily verified by inspection, will conform to specification requirements. When critical or special processes are performed outside the Supplier’s facility, it shall be the Supplier’s responsibility to assure proper performance of all such processes. Those processes to which Government specifications apply are subject to the applicable requirements regarding certifications or approval by Government agencies.
- 3.21 INSPECTION AND TEST** – The Supplier shall provide and maintain suitable gauges, instruments and test equipment to measure and test all material for conformance to the Buyer’s requirements. The Supplier shall perform inspection and/or test on end items covered by the Purchase Order prior to submission to the Buyer or prior to delivery. Inspection/test of material, which cannot be readily examined in the end items, must be performed at the appropriate in-process stages of manufacturing. The Supplier must maintain records of inspection/tests.
- 3.22 INSPECTION AND TEST STATUS** – The Supplier shall maintain a system for identifying inspection and test status of material. Identification may be accomplished by means of stamps, tags, routing cards, labels, bar codes, electronic databases, or other control devices. Final acceptance stamps must provide the Supplier with identification unless identification is provided on the product by other acceptable means. The Supplier shall be responsible for maintaining procedures for governing the control of inspection authority and shall, upon request, forward a record of such authority to the Buyer.
- 3.23 FIRST ARTICLE INSPECTION** – For all parts supplied per Buyer specifications, first article inspection shall be performed per AS9102 and supplied with the first shipment of a new or delta production lot. Buyer disclaims responsibility for any parts shipped prior to approval of first articles and related documentation. The Supplier shall flow down this obligation to its sub-tier chain.
- 3.24 CHARACTERISTICS NOT VERIFIABLE UPON RECEIPT** – The Supplier shall provide adequate controls, within the quality system, to ensure that characteristics not verifiable upon receipt are adequately controlled.
- 3.25 SAMPLING BY THE SUPPLIER** – Any statistical sampling procedures used for inspection/test may be subject to approval by the Buyer. Acceptance sampling shall meet the requirements of ARP9013, Statistical Product Acceptance Requirements” with minimum protection levels meeting ARP9013 Figure B1. In all cases, inspection requirements identified by engineering drawings and specification take precedence.
- 3.26 MATERIAL REVIEW** – The Supplier shall not exercise Material Review authority to use-as-is or repair completed product without written approval by the Buyer’s Quality Assurance Organization. (This applies only to material that is Buyer-designed and/or designs controlled to the Buyer’s specifications.)

- 3.27 SUPPLIER PERFORMANCE REPORTS** – Supplier performance is reported periodically and derived from Supplier responsibilities to deliver within the agreed upon delivery window, deliver acceptable material and/or services, and provide acceptable documentation as required by the Purchase Order. Performance expectations and additional information regarding performance reports can be found on Buyer website.
- 3.28 CORRECTIVE ACTION** – The Supplier’s Quality Assurance system shall provide means for ready detection of discrepancies and for prompt and effective corrective action. Corrective action must prevent reoccurrence, including firm effectivity points by serial number, part number, date, or other agreed methods. Corrective action records and information, such as pertinent data on defects and failures, shall be available. The Supplier is responsible for initiation of prompt replies to the Buyer’s Corrective Action Requests, and implementation of required corrective action.
- 3.29 SURVEYS AND SURVEILLANCE** – The Buyer may conduct a survey and/or perform surveillance of the Supplier’s Quality Assurance system to evaluate the degree of ability to comply with these and other applicable requirements, or assist in the resolution of quality problems. As necessary, a representative of the Buyer’s Customer may accompany the Buyer’s Quality Assurance representative. The Supplier shall grant right of access and all reasonable assistance to the Buyer, the Buyer’s customer, and regulatory authorities, such as the Federal Aviation Administration, to all facilities involved in the order and all applicable records.
- 3.30 THE BUYER’S QUALITY ASSURANCE REPRESENTATIVE** – The Buyer and/or Buyer’s customers may, at their discretion, provide resident or itinerant Quality Assurance personnel whose function shall be to survey Supplier operations, assist the Supplier in the resolution of quality problems, and witness at any stage (subject to proprietary considerations) the manufacture, processing, test, and inspection of items being manufactured for the Buyer. Copies of applicable specifications and documents shall be made available to the Buyer’s Quality Assurance representative.
- 3.31 SUPPLIER ASSISTANCE** – In the event those requirements are not completely clear, or where special assistance is needed, the Buyer will provide qualified personnel to consult with the Supplier. Requests for assistance shall be made via the Buyer’s Supply Chain Management department. If inquiries pertain to quality aspects of supplies or services being procured, the Buyer’s Quality Assurance organization may be contacted.
- 3.32 SAMPLING BY THE BUYER** – The Buyer reserves the right to use sampling plans for the acceptance or rejection of material and/or services. If a lot is rejected by the sampling procedure, the entire lot may be returned to the Supplier or the Buyer may screen the rejected lot at the Supplier’s expense.
- 3.33 FINAL ACCEPTANCE** - Inspection/test acceptance at the Supplier’s facilities by the Buyer does not guarantee final acceptance. Final acceptance shall be at the Buyer’s facility unless otherwise specified on the Purchase Order.
- 3.34 CONFORMANCE RESPONSIBILITY** – Surveillance, inspection and/or test conducted by the Buyer or representatives of any customer or government agency at the Supplier’s or the Buyer’s facility shall not relieve the Supplier of their responsibility in meeting the quality requirements of the Purchase Order.

- 3.35 EVIDENCE OF EFFECTIVE CONTROL** – Verification of product by the Buyer’s Customer shall not be used by the Supplier as evidence of effective control of quality and shall not absolve the Supplier of the responsibility to provide acceptable product, nor shall it preclude subsequent rejection by the Buyer or the Buyer’s Customer.
- 3.36 RECORDS** – The Supplier shall maintain adequate records of inspections, tests, and other Quality Assurance activities. Records shall provide objective evidence of the Quality Assurance operations performed, the results obtained and corrective actions taken. Such records shall be available to the Buyer. Where such records are traceable by serial or lot designation to material supplied to the Buyer, they shall be retained for a period of at least ten (10) years from the date of shipment to the Buyer. At the expiration of this period, Buyer reserves the right to request delivery of such records. In the event that Buyer chooses to exercise this right, Supplier shall promptly deliver such records to Buyer at no additional cost on media agreed to by both parties.
- 3.37 ENGLISH LANGUAGE REQUIREMENT** – The Supplier shall submit all required quality data (e.g., supplier quality procedures, certificates, reports, or other similar data required by the Buyer), correspondence and corrective actions responses in the English language (U.S.).
- 3.38 CERTIFICATION REQUIREMENTS** – The Supplier is responsible for compliance with all certification requirements referenced on the Purchase Order and for the maintenance of quality control records evidencing compliance with such requirements, regardless of whether work was performed by the Supplier or their sub-tier suppliers.
- 3.38.1 Certification of Compliance – The Supplier provides, with each shipment, a Certificate of Compliance traceable to the responsible Supplier contact by signature or printed name, which shows Avtech’s Purchase Order, Avtech’s part number and as applicable, the Supplier reference number. This document certifies that material or parts furnished have been manufactured and verified in accordance with all applicable specifications as stated in Avtech’s Purchase Order. This document also certifies that objective evidence of inspection and testing verifications is on file and available for review.
- 3.38.2 Records and Traceability Documentation – When Certification of Compliance from the Supplier is based on Certifications of Tests and Inspections received from the manufacturer or another supplier, the Supplier ensures that these Certifications are received and retained, and that adequate traceability exists to the manufacturer of the products.
- 3.39 TO OBTAIN SPECIFICATIONS** – When required, the Supplier may obtain copies of pertinent specifications through the Buyer’s Supply Chain Management Department or the cognizant government agency, if a government specification. Any use of Avtech drawings or specifications other than for manufacture of the ordered items is expressly prohibited.
- 3.40 NOTIFICATION OF NONCONFORMING OR UNSAFE PRODUCT** – The Supplier shall notify the Buyer if there may be a form, fit, function, usability, or reliability problem with material that has already been delivered.
- 3.40.1 The Supplier shall not knowingly ship non-conforming material without written authorization from the Buyer.

3.40.2 The Supplier notifies Buyer in writing of any occurrences of nonconforming product, processes or other anomalies that have shipped. The Supplier immediately notifies Buyer of any material defect or condition (within their knowledge) that may have been shipped to Buyer, which could result in an unsafe condition in an aircraft application.

3.41 PROHIBITED PRACTICES – The following acts or practices are typical of those prohibited:

- 3.41.1 Unauthorized Repair – Repairs (by welding, soldering, or the use of adhesives) of parts damaged or found faulty in the fabrication process: repairing holes in castings, forging or other materials by plugging or bushing without authorization from the Buyer Quality Assurance organization.
- 3.41.2 Unauthorized Processing – Addition, revision, or deletion of processes in manufacturing when those processes are subject to specification control by the Buyer.
- 3.41.3 Disregard of Approvals – Change in any process of quality control procedure that is subject to specific approval by the Buyer without proper notification and re-approval.
- 3.41.4 Improper Material Submittal – Submission of material having known defects/problems to the Buyer without notification.
- 3.41.5 Improper Material Re-submittal – Resubmission of material to the Buyer without material being clearly identified as resubmitted material.
- 3.41.6 Unauthorized Material and Information Transfer – Buying, selling, or transferring Buyer related material, parts, devices, assemblies or end equipment for purposes other than the performance of the Buyer's business, without prior written approval, or disclosing Buyer part numbers, or information related to those part numbers, to entities other than the Buyer, without prior written approval.
- 3.41.7 Reclaimed Material – Supplier using reclaimed material without prior written approval from the Buyer.
- 3.41.8 Part Condition – Shipping product that is not new product. In no circumstance will parts which have been used, screened, repaired or otherwise refurbished be accepted.

3.42 COUNTERFEIT ELECTRONIC PARTS PREVENTION – Parts supplied by non-franchised distributors are subject to the requirements defined in **0701QS**, including parts purchased by contract manufacturers on a turnkey basis for use on Buyer products.

3.42 PLASTIC INJECTION MOLDED COMPONENT – Parts supplied as plastic injection molded components are subject to the requirements of **0702QS** .

3.43 REACH- (Registration, Evaluation and Authorization of Chemicals) compliance:
If raw materials, parts, or assemblies supplied contain substances of very high concern (SVHCs) as prescribed by EU No. 1907/2006, Registration, Evaluation and Authorization of Chemicals,

identification shall be included in the shipment. This identification should list the SVHC-designated chemicals present in the purchased article and the conditions under which handling precautions should be taken.

3.44 FOREIGN OBJECT DETECTION –The supplier shall develop and maintain a Foreign Object Debris/Damage (FOD) program for manufacturing areas to prevent introduction of foreign objects into any item delivered under purchase orders to Buyer.

The Supplier shall employ appropriate housekeeping practices to assure timely removal of residue/debris generated, if any, during manufacturing operations and /or normal daily tasks. The supplier shall determine if sensitive areas that may have a high probability for introduction of foreign objects should have special emphasis controls in place for the manufacturing environment. The supplier shall determine the need for and implement FOD prevention and awareness training programs.