TRIUMPH™

SUPPLIER QUALITY ASSURANCE MANUAL

SQAM001
Revision F



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REVISION RATIONALE

This requirements document has been revised to incorporate the clause structure and content of AS9100. In addition, Triumph specific requirements, definitions and notes have been revised in response to stakeholder needs.

FOREWORD

To assure customer satisfaction, Triumph Group, hereinafter, Triumph must provide, and continually improve safe and reliable products and services that meet or exceed its customer and applicable statutory and regulatory requirements. This commitment requires Triumph's external providers to develop, execute, and sustain key business, operational and process management practices that demonstrate capability of effectively meeting or exceed contractual obligations.

The relationship between Triumph and its Suppliers is key to delivering greater levels of innovation and competitive advantages. The effective management of our relationships are supported by information, compliance, risk, and performance management requirements.

The Triumph Supplier Quality Assurance Manual (SQAM) has been established to standardize quality management system requirements of Triumph Group Companies, hereinafter, Triumph Companies to the greatest extent possible for use at all levels of the supply chain.

The latest version and relevant supporting material, including forms and templates can be obtained from the Triumph Supplier Portal, hereinafter, Supplier Portal, at www.triumphsupplysource.com

APPLICATION

This document applies to all Suppliers that:

- Design, develop or provide aviation, space, and defense products and services; and post-delivery activities, including the provision of maintenance, spare parts, or materials.
- Provide deliverable software or product that contains deliverable software for aviation, space and defense products and services.
- Provide maintenance or continuing airworthiness management services for civil or military aviation articles and products, and original equipment manufacturers with maintenance, repair, and overhaul operations.
- Procure parts, materials, and assemblies and resells those products to a customer in the aviation, space, and defense industries.

INTRODUCTION

.1 General

Triumph Group, Inc., headquartered in Radnor, Pennsylvania, designs, engineers, manufactures, repairs, and overhauls a broad portfolio of aviation and industrial components, accessories, subassemblies, systems, and aircraft structures. Triumph serves a broad, worldwide spectrum of the aviation, space, and defense industry, including Original Equipment Manufacturers (OEMs) of commercial, regional, business, and military aircraft and aircraft components, as well as commercial and regional airlines and air cargo carriers.

The adoption of the Supplier Quality Assurance Manual is a strategic decision to improve overall performance and provide a sound basis for sustainable development activities across Triumph Companies and its supply chain. The potential benefits of the SQAM include:

a. the ability for suppliers to consistently provide products and services that meet requirements;

b. facilitating opportunities for suppliers to enhance customer satisfaction;

c. addressing risk and opportunities associated with supplier's context and objectives;

d. the ability to demonstrate conformity to specified quality management system requirements.

.2 Triumph Culture

Our Vision: As One Team, we enable the safety and prosperity of the world.

Our Mission: We partner with our customers to triumph over their hardest aerospace, defense, and industrial challenges to deliver value to our stakeholders.

Our Values: Integrity • Continuous Improvement • Teamwork • Innovation • Act with Velocity

.3 Triumph Company Locations

https://www.triumphgroup.com/

QUALITY MANAGEMENT SYSTEMS – SUPPLIER REQUIREMENTS

1.0 SCOPE

To standardize the use and application of common Quality Management System requirements, Triumph employs SAE Aerospace Standard (AS) 9100 requirements as a foundation, in addition to determined supplemental requirements.

All members of the Triumph supply chain must comply with the following Quality Assurance requirements:

- 'Supplier Quality Assurance Manual', hereinafter, SQAM
- Triumph Company specific Supplier Quality Assurance Addendums

In addition to the requirements contained in this document, the supplier shall comply with:

- Triumph 'Business Code of Conduct'
- 'Triumph Group General Purchase Orders Terms and Conditions' referenced on Triumph Company Purchase Orders, unless otherwise negotiated or as set out in a long-term contract.

Purchase order(s) acceptance constitutes accountability for the conformity of all quality and delivery requirements within.

Where the supplier does not conform to the requirements set forth within this document and company specific addendums, Triumph reserves the right to charge the Supplier with associated administrative and nonconformance remedy charges/fees/costs.

Concessions to this document and supplemental requirements are not authorized without the written approval of the applicable Triumph Company.

2.0 APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications applies. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In event of conflict between this document and references cited herein, the SQAM takes precedence.

Document	Title
AS5553	Counterfeit Electrical, Electronic, and Electromechanical (EEE) Parts: Avoidance, Detection, Mitigation, and Disposition
AS6174	Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel
AS9100*	Quality Management Systems – Requirements for Aviation, Space and Defense Organizations
AS9102*	Aerospace First Article Inspection Requirement
AS9103	Validation Management of Key Characteristics
AS9115*	Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations - Deliverable Software (Supplement to 9100)
AS9117*	Delegated Product Release Verification
AS9120*	Quality Management Systems Requirements for Aviation, Space, and Defense Distributors
AS9138	Quality Management System Statistical Product Acceptance Requirements
AS9145*	Requirements for Advanced Product Quality Planning and Production Part Approval Process
AS9146*	Foreign Object Damage (FOD) Prevention Program - Requirements for Aviation, Space, and Defense Organizations
AS9162*	Aerospace Operator Self-Verification Programs
AS13000	Problem Solving Requirements for Suppliers
AS13001	Delegated Product Release Verification Training Requirements
AS13002	Requirements for Developing and Qualifying Alternate Inspection Frequency Plans
AS13003	Measurement Systems Analysis Requirements for the Aero Engine Supply Chain
AS13004	Process Failure Mode and Effects Analysis (Process FMEA) and Control Plans

AS13100	AESQ Quality Management System Requirements for Aero Engine Design and Production Organizations
ISO9001	Quality Management Systems – Requirements
ISO17025	General Requirements for the Competence of Testing and Calibration Laboratories
ISO9712	Non-destructive testing – Qualification and certification of NDT personnel
ISO19828	Welding for aerospace applications – Visual inspection of welds
ISO11745	Brazing for aerospace applications – Qualification test for brazers and brazing operators – Brazing of metallic components
ISO24394	Welding for aerospace applications – Qualification test for welders and welding operators – Fusion welding of metallic components
AC7004	Nadcap: Quality Management System
AWS D17.1	Specification for Fusion Welding of Aerospace Applications
EN4179	Aerospace series, Qualification and approval of personnel for non-destructive testing
NAS410	Certification and Qualification of Nondestructive Test Personnel
SNT-TC-1A	Recommended Practice – Personnel Qualification and Certification in Nondestructive Testing
SCMP	Supply Chain Management Procedures
NOTE:	**Internationally harmonized standards developed under the authority of the IAQG and listed herein, as SAE International "AS publications. Equivalent versions may be published by other standards bodies (e.g., European Committee for Standardization (CEN), Japanese Standards Association/Society of Japanese Aerospace companies (JSA/SJAC).*

3.0 TERMS AND DEFINITIONS

In this document, the following verbal forms are used:

- "Shall" indicates a requirement.
- "Should" indicates a recommendation.
- "May" indicates a permission.
- "Can" indicates a possibility, or a capability.

Information marked as "NOTE": is for clarifying the associated requirement.

For the purposes of this document, terms and definitions stated in AS9100:2015 and AS13100 apply.

CHAPTER A SUPPLIER QUALITY MANAGEMENT SYSTEM REQUIREMENTS

4.0 CONTEXT OF THE ORGANIZATION

AS9100 Supplemental Requirements

4.2 Understanding the Needs and Expectations of Interested Parties

Right of Entry

Supplier shall ensure:

(1) On-site right of entry to Triumph, respective governmental and regulatory agencies, third parties mandated by Triumph and contracting parties accompanying Triumph representatives.

(2) Access to the applicable areas of the facilities, related supplier, and business partner facilities, including, documented information, the ability to conduct audits, quality investigations, and verify product and processes.

(3) Where access is restricted due to export control, technical requirements or intellectual property concerns, facilitation is made to allow Triumph or regulatory agency to fulfill their mandate.

(4) Language translation services are provided, where required.

4.3 Determining the Scope of the Quality Management System

Supplier shall ensure:

(1) Applicable requirements of the SQAM are included within the Quality Management System.

(2) Deliverable software or products containing deliverable software, compliance with AS9115 when planning and evaluating the software design, development, or management activities of the organization.

(3) Certification for the associated scope(s) of work in accordance with Table 1 – QMS Certification Requirements.

(4) Certification requirements are cascaded to sub-tier suppliers in accordance with Table 1 – QMS Certification Requirements

(5) Access for Triumph to relevant data within Online Aerospace Supplier Information System (OASIS) and Nadcap databases (e.g., registration documentation, certification, audit reports and findings, corrective actions).

(6) A Compliance self-assessment is considered to verify the management system includes SQAM requirements; see Appendix A– SQAM Compliance Self-Assessment for recommendations on how to complete a compliance self-assessment.

5.0 LEADERSHIP

AS9100 Supplemental Requirements

5.3. Organizational Roles, Responsibilities and Authorities

Supplier shall ensure:

(1) Personnel responsible for conformity of product requirements are identified and have the authority to take appropriate action for quality issues to prevent delivery.

6.0 PLANNING

AS9100 Supplemental Requirements

6.1 Actions to Address Risks and Opportunities

Supplier shall ensure:

Notification to Triumph, within 3 working days, via the Supplier Portal when aware of an issue regarding:

(1) Major incidents impacting the ability to meet commitments to Triumph.

(2) Risks that could impact continuity of business or operations, particularly single points of failure.

(3) Relevant changes to certifications including lapse, withdrawal, or major audit findings.

(4) Change of the most senior Quality Leader.

(5) Significant change to the Quality Management System and its Scope.

(6) Change in ownership, name, or discontinuation of business activities.

(7) Breaches of Information Technology (IT) security systems (Cyber Security).

(8) Risks with the supply of substances used in the production or physical make-up of products, due to laws and regulations concerning the control or use of such substances.

(9) Any changes to Facility Address and Facilities (e.g., layout, infrastructure).

7.0 SUPPORT

AS9100 Supplemental Requirements

7.5 Documented Information

7.5.2 Creating and Updating

Supplier shall ensure:

(1) When creating and updating documented information, the date is recorded and traceable to the responsible person making the change (e.g., name, stamp, electronic signature), with a permanent marking method and the original information being legible and retrievable after the change.

(2) Documented information is not altered without proper traceability to the authority permitting the alteration.

(3) Documented information requiring submission or approval by Triumph is written in English, unless otherwise specified by Triumph.

(4) Where documented information is also maintained in native language, as well as English, and there is a conflict, the English language takes precedence.

(5) Documented units of measure are recorded in the same unit of measure as the Product Definition.

7.5.3 Control of Documented Information

Retrieval Timescales

Supplier shall ensure:

(1) Documented information required for review is available to Triumph, Triumph's Customer, and/or Regulatory Agency within 3 working days of notification.

(2) Documented information is available within 24 hours for onsite visits, unless the data is located off site, then every effort to retrieve the data as soon as possible, but no later than 3 working days.

(3) Delivery of documented information to Triumph, Triumph's Customer, and/or Regulatory Agency, does not release the Supplier from any requirements herein, with respect to that documented information, except as agreed to in writing the Triumph.

Maintenance

Supplier shall ensure:

Notification in writing, within 24 hours, when damage to documented information under their responsibility occurs.

Retention Periods

Supplier shall ensure:

(1) Documented information is retained from the date of manufacture for the time periods defined in Table 2 – Retention Periods

(2) While the contract is open, all documented information is retained. When the contract is closed, the documented information (data) becomes a candidate for disposition in accordance with retention period requirements.

(3) Clarification of disposition requirements for documented information are submitted to Triumph.

(4) Where calculated data required to be retained for statutory or regulatory reason, the input data and methods of a Triumph or Triumph Customer computer program are retained to enable recalculation.

8.0 OPERATION

AS9100 Supplemental Requirements

8.1 Operational Planning and Control

Supplier shall ensure:

(1) Compliance with the requirements of AS9146 - FOD Prevention Programs.

(2) Special Requirements, Critical Items and Key Characteristics are planned, implemented, and controlled, in accordance with, AS9103 – Variation Management of Key Characteristics, when included in the product definition.

Manufacturing Control Plans

Supplier shall ensure:

(1) Manufacturing control plans are submitted to Triumph for approval of Critical and/or Non-Critical Parts, when required by Triumph PO, at least 30 days prior to start of production, or as required by applicable specification.

(2) Manufacturing control plans include fabrication, processing, processor name, inspection steps in the sequential order required by the applicable process specification(s) and/or engineering drawing(s) and all sub-tier associated manufacturing and/or process plans.

(3) Following approval, the manufacturing plans are considered "frozen", and no deviations are permitted, including any arising from supplier's sub-tier suppliers and/or processors, without Triumph's written authorization.

(4) Product is not delivered without appropriate approvals.

8.1.2 Configuration Management

Supplier shall ensure:

An Electronic Supplier Information Request (E-SIR) is submitted to request utilization of a varying revision of a technical data, process specification, drawing revision, etc.

8.1.3 Product Safety

Supplier shall ensure:

Reporting, within 24 hours of verification, anything that can affect the product's safe and reliable operation identified at any stage in the product's life.

NOTE: The OEM or Engine Type Certificate Holder shall have final judgement on whether there is actual risk to safe and reliable operation.

8.1.4 Prevention of Counterfeit Parts

Supplier shall ensure:

(1) The counterfeit part prevention process is planned, implemented, and controlled in accordance with AS6174 or AS5553, as applicable.

(2) The counterfeit part prevention process includes a mechanism for reporting counterfeit parts to Triumph within 24 hours of counterfeit part confirmation.

8.2 Requirements for Products and Services

8.2.1 Customer Communication

Supplier shall ensure:

(1) Privileges, agreements, and instructions are only accepted in writing via Interface Documents, e.g., purchase order, purchase order supplements and/or amendments.

(2) Verbal agreements and instructions are not construed as approval or authorization.

(3) Use of Triumph methods of formal communication and traceability requirements, as applicable shall be in accordance with Table 3 – Supplier Communication Methods, General

(4) Notification of any risk as defined in Actions to Address Risks and Opportunities – see Section 6.1 Actions to Address Risks and Opportunities.

(5) Information Request and/or clarifications are submitted utilizing the Electronic Supplier Information Request (E-SIR) application located on the Supplier Portal.

8.2.2 Determining the Requirements for Products and Services

Supplier shall ensure:

(1) Subordinate documents, specifications, and data referenced within the Purchasing Document are obtained or requested.

(2) Only the latest revision of Triumph specific documents (e.g., procedures, forms, templates), where specified by and agreed in writing by Triumph, are used.

(3) A documented process is implemented and effective describing the review, distribution, and implementation of all engineering standards and/or specification and related revisions based on Triumph schedules, as required.

(4) Compliance with requirements for designation, approval documentation, and control of Key Characteristics.

(5) Triumph Customer specification revisions are verified prior to use.

8.3 Design and Development of Products and Services

8.3.1 General

Supplier shall ensure:

(1) A documented process is established that describes the Design and Development Process.

(2) Where contractually required, the Design and Development Process complies with applicable elements of Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) as defined by AS9145.

(3) Technical requirements are updated and maintained, transferred to technical specification of their product, and the data validation and verification is managed.

8.3.2 Design and Development Planning

Supplier shall ensure:

(1) Relevant stakeholders within the organization and, as appropriate, its supply chain is included in the design and development planning.

(2) Associated dependencies needed for successful progress of the design and development activity is identified and formally communicated to Triumph.

(3) Design Reviews are configured and planned, as appropriate to the project and considers the magnitude, complexity, novelty, risk, etc. and include milestone dates in the design and development plan.

8.3.3 Design and Development Inputs

Supplier shall ensure:

The following requirements inputs are identified and reviewed, as applicable:

(1) Safety requirements, e.g., safety assessment output, part classifications.

(2) Triumph requirements, e.g., project timescales, aftermarket strategy including component lives, service intervals.

(3) Operational requirements, e.g., fluid dynamics, loads, speeds, operating environments, maneuvering characteristics, and gyroscopic loads.

(4) Boundary and interface requirements.

(5) Requirements for identification, traceability, and packaging.

(6) Consideration of design alternatives.

(7) Embedded software requirements.

(8) Lesson learned, design standards, and best practice.

Design Risk Analysis

Supplier shall ensure:

(1) Design FMEA is conducted on the product design, when APQP is required.

(2) Evidence of the Design FMEA results are retained, as documented information.

(3) Design FMEA alternative approaches are only used with Triumph approval.

NOTE: AS13004 should be used in the development of Process Failure Mode and Effects Analysis (Process FMEA) and Control Plans

Foreign Object Damage

Supplier shall ensure:

Design and Development process complies with AS9146 and designs for the prevention, detection and safe removal of foreign objects and contamination trapped during manufacture, maintenance, or repair in such features as, but not limited to, apertures, orifices, sharp bends, and corners.

8.3.4. Design and Development Controls

Progressive Product Definition Release

Supplier shall ensure:

(1) An appropriate, traceable, progressive product definition release process is employed to enable formal advance information to be provided to stakeholder functions.

(2) Product definitions are associated with the correct approval status of the design data (either approved or nonapproved) by Aviation Authority or under their delegation.

Design Reviews

Supplier shall ensure:

(1) Design reviews are conducted or supported in accordance with arrangements planned and agreed with Triumph, formally documents output from design reviews including action owners and timescales for closure.

(2) The applicability of each appropriate design review is agreed with Triumph, in relation to the scope of the design.

8.3.4.1 Design Verification and Product Validation

Supplier shall ensure:

(1) The creation of a verification strategy documenting activities necessary to verify the design outputs meet the design inputs using established methods and techniques.

(2) Material property data to be used in the design and its source prior to launching any design verification activity that requires the input of material property data, e.g., analysis, modeling is approved.

(3) Activities necessary to validate product operates as intended, in accordance with the requirements, are identified and documented.

(4) Where validation involves incorporation of the designed product into Triumph, e.g., testing, the following applies:

a) Determination of level of support required, as agreed.

b) Any specific regulatory requirement associated with verification and validation activities are actioned, as agreed.

c) The output from verification and validation activities shall be captured and formally documented, as agreed.

d) All verification and validation test failures are reported.

Design for ‘X’ (DfX)

Supplier shall ensure:

A multidisciplinary approach is used to optimize the design relative to criteria e.g., manufacturing capability, ease of assembly/strip, cost, weight, aftermarket, utilizing DfX as a tool.

Failure Reporting

Supplier shall ensure:

Quality procedures include failure reporting, analysis and corrective action unless otherwise agreed with Triumph.

Design Rational

Supplier shall ensure:

The creation and retention of comprehensive technical documented information of all aspects that influenced the design throughout its development, e.g., alternative designs, key decisions, problems encountered and how they were resolved, considerations, trade-offs, design standards used.

Critical Items (CI) and Key Characteristics (KC)

Suppler shall ensure:

(1) CIs and KCs are documented.

(2) Agreed by Triumph, if required.

(3) Comply with Triumph requirements for symbols and notations.

(4) KCs are identified on relevant documentation as agreed by Triumph.

8.3.5 Design and Development Outputs

Supplier shall ensure:

(1) Product design outputs [commonly known as the Design Technical Data Package (DTDP)] shall be agreed with the Triumph.

(2) The contents of the DTDP are independently reviewed by suitable qualified individuals other than the authors.

Product End of Life

Supplier shall ensure:

(1) If applicable, define and document appropriate procedures and instructions for the disposal of “End of Life” products, that they have designed and provide this information for inclusion in the applicable maintenance manual. Including, considering prevention of unauthorized reuse, minimization of environmental impact, compliance with national or international Health, Safety and Environmental regulations, compliance with any national security regulations and safeguarding of Triumph intellectual property.

(2) Agreement with the disposal procedures with Triumph.

8.3.6 Design and Development Changes

Supplier shall ensure:

(1) The Design Change process complies with AS9116 and any Triumph specific requirements.

(2) All design changes are approved unless formal delegation has been given.

(3) Scope and level of authorization has been defined within agreed delegation document.

(4) Notice of Change data is issued on Triumph proforma or alternative, as agreed.

(5) When required, a process is in place to ensure:

   a) All Class I and Class II Design Changes are submitted for change approval, unless granted in written authorization to proceed differently.

   b) Rejected design changes are not incorporated into the supplier’s drawing or into hardware.

   c) All requested design change documentation is retained on file.

8.4 Control of Externally Provided Processes, Products and Services

8.4.2 Type and Extent of Control

Supplier shall ensure:

(1) Sub-Tier complies with SQAM requirements.

(2) Sub-Tier establishes and maintains an effective FOD Prevention Program in accordance with AS9146.

(3) Sub-Tier shall plan, implement, and control counterfeit prevention process in accordance with AS6174 or AS5553, as applicable.

(4) Sub-Tier counterfeit prevention process includes a mechanism for reporting counterfeit parts within 3 working days of it being confirmed.

(5) Sub-Tier shall notify the Supplier of any significant change in QMS or business operations.

(6) Sub-Tier complies with the Supplier's requirements for control of work transfer.

(7) Risk analysis and mitigation plan is implemented with the Sub-Tier to deal with any restrictions to right of access to the sub-tier facility.

(8) Sub-Tiers may be disapproved for use on Triumph product or service due to performance or concerns.

Sub-tier Material and Special Processes

Supplier shall ensure:

Sub-tier raw material and Special Process Test results reflect all product definition requirements and conform to limits. Documented evidence of this conformity, including listing of each material element or test result in the applicable test report.

8.4.3 Information for External Providers

Supplier shall ensure:

(1) Sub-tier understands contracts requirements and cascades applicable specifications and requirements.

8.5 Production and Service Provision

8.5.1 Control of Production and Service Provision

Material Verification

Supplier shall ensure:

(1) Receiving inspection of metals is accomplished by verifying the Material CoC test results and applicable specifications. Metals include metallic raw materials (e.g., bar, sheet, plate, tube, wire, forging, casting, billet, ingot).

(2) Operator verification of metals is accomplished, prior to the first fabrication operation.

(3) No material substitutions are authorized unless approved in writing by Triumph.

Control of Equipment, Tools, and Software Programs

Supplier shall ensure:

(1) A Software Quality Assurance program for all nondeliverable software is implemented, documented, and maintained.

(2) A Software Quality Assurance program includes a change control process that documents all software changes are appropriately reviewed.

Validation and Control of Special Processes

Supplier shall ensure:

(1) Sampling of NDT is not permitted when performed to fulfill drawing or specification requirement, unless approved by Triumph. This does not apply to in-process NDT used to increase yield.

(2) NDT general procedures, part-specific techniques, and any subsequent changes are submitted for Responsible Level 3 approval, when required by Triumph.

Production Process Verification

Supplier shall ensure:

(1) Production Part Approval Process (PPAP) is implemented per the requirements of AS9145 when invoked by drawing related documents and/or purchase order(s).

First Part Qualification/First Article Inspection Report

Supplier shall ensure:

(1) Charges/Fees/Costs for the performance of production process verification, i.e., First Articles Inspection, generation of First Article Inspection Reports or associated activities, are not applicable.

(2) First part qualification (FPQ), when required, includes submission of objective evidence as defined by Triumph, to allow for determination of interchangeability, critical characteristics, performance, and reliability of components to meet application requirements.

(3) First Article Inspection is performed in compliance with AS9102. Equivalent forms may be used, provided all content prescribed within AS9102 is included.

(4) In addition to the requirements in the AS9102, FAI is applied to:

   a) Unique single run production orders not intended for ongoing production (e.g., out-of-production spares). Use of a modified or an alternative approach to this requirement may be used if agreed with Triumph. This does not apply to nonproduction applications (e.g., development, prototypes), unless otherwise requested.

   b) Kits with defined ‘Bill of Parts’, to provide evidence all parts in the kit have an approved FAIR.

(5) Sample parts used in the First Article process are provided to Triumph, if required.

(6) Parts are tagged or packaged in a manner that conspicuously identifies the First Article part as such.

(7) Product released is as ‘Not Complete’ FAIR, is submitted with a concession request.

Fixed Production Methods

Supplier shall ensure:

(1) Fixed Production Methods applies when product definition specifies “Fixed Process Control” or similar e.g., Production Process, Frozen Process, Controlled Process, Engineering Source Approval/Substantiation.

(2) Fixed Production Controls are implemented as necessary.

Vision Standards

Supplier shall ensure:

(1) NDT Personnel:

   a) are examined in accordance with applicable NDT personnel qualification and certification standard, e.g., EN4179, NAS410, SNT-TC-1A, ISO9712.

b) where personnel fail vision and/or color perception exams, their capability to distinguish and differentiate colors used in performance or applicable product verification/inspection activities is to be determined and documented.

c) Weld inspectors and personnel performing visual inspection to detect material discontinuities are included in this category and are to be trained and examined in accordance with ISO 19828.

(2) Welding Personnel (Welder/Welder Operator):

a) are examined in two-year intervals in line with AWS D17.1 and ISO24394,

b) eyesight acuity to a minimum of Curpax N5, Jaeger #2, or equivalent for near vision and Snellen 20/30, or equivalent for far vision.

(3) Brazing Personnel (Manual Brazer, Vacuum Brazer)

a) Are examined in two-year intervals in accordance with ISO11745

(4) Non-NDT Personnel performing product verification and inspection activities:

a) are examined annually,

b) eyesight acuity to a minimum of Curpax N5, Jaeger #2 or equivalent in at least one-eye or when using both together,

c) pass a one-time color vision perception test,

d) vision correcting eyewear, e.g., glasses, contact lenses used by personnel to pass vision exams are worn when performing product verification/inspection activities.

(5) Vision tests are performed by suitably trained and qualified personnel. For NDT personnel, this duty being performed by individuals designated by the Responsible Level 3 or a qualified medical practitioner.

(6) Personnel requiring any changes to vision correcting eyewear are reexamined.

(7) Use of darkened lenses or those that darken on exposure to light are prohibited.

Appointment and Qualification of Competent Persons

Supplier shall ensure:

(1) Employees directly inspecting product are formally authorized.

(2) Product is released by authorized personnel.

(3) A documented Operator Self-Verification Program conforming to AS9162.

(4) Personnel responsible for the review of material and special process test reports are trained to read, interpret, and evaluate test results to assure all drawing and/or specification requirements of the final product are met.

8.5.2 Identification and Traceability

Supplier shall ensure:

(1) The process for assigning serial or lot numbers provides traceability to the following:

a) Triumph part or assembly identification numbers.

b) Date of assignment.

c) Explanation for deviations from expected sequence or practice.

d) Recording of serial or lot numbers assigned to rejected items

(2) If serialized or lot numbered parts are manufactured from serialized or lot numbered material, then traceability shall be maintained to those details and their product acceptance records.

8.5.3 Property Belonging to Triumph or Triumph Customers

Supplier shall ensure:

(1) All Triumph furnished property is inventoried, maintained, and a recall process implemented.

(2) Suitability for use is verified prior to acceptance or use for all property furnished by Triumph or Triumph customers, as contractually required.

(3) When Triumph furnished property is found to be nonconforming, the items shall be quarantined, and Triumph notified within 24 hours.

8.5.4 Preservation

Supplier shall ensure:

(1) Utilization of special carts, boxes, containers, and transportation vehicles during fabrication and processing to prevent damage due to handling.

(2) Staples are not used during individual packaging of parts. This requirement excludes multi-part box packaging.

(3) Parts are inspected for damage at receipt (when applicable) and prior to shipment.

8.6 Release of Products and Services

Risk Release

Supplier shall ensure:

(1) The controls to manage risks associated with releasing products and services at risk are documented and key accountabilities are defined.

(2) The risk release of products and services only takes place once required Triumph Source Inspection or concession approvals have been received.

(3) Product shall be clearly identified as Source Inspected or having Concession Approval with traceability to the source document.

(4) An understanding that Source Inspection charges/fees/costs may be imposed.

Delegate Product Release Verification (DRPV)

Supplier shall ensure:

When Delegation is approved, an internal documented process conforms to SCMP4.1 – DPRV Program.

NOTE 1: Triumph follows AS9117 – Delegated Product Release Verification
NOTE 2: AS13001 Delegated Product Release Verification Training Requirements may be contractually required.

Certificate of Conformance (CoC) or Authorized Release Document

Supplier shall ensure:

(1) Certificate of Conformances, Authorized Release Documents or similar include:

- Supplier name,
- Supplier address,
- PO number,
- PO item number,
- Drawing number and revision,
- Quantity delivered,
- Serial or lot number(s), as required,
- When applicable, authorized concessions identification.

- Signature and/or stamp, and date of authorized Quality Representative.
- When applicable, specific requirements shall be documented on the Authorized Release Document, FAA (e.g., 8130).

Product or Service Release Documents:

Supplier shall ensure:

(1) Raw Material Manufacturer: Mill certification containing applicable material, material description, alloy and condition, physical properties, chemical analysis, and heat lot number.

(2) Age-Sensitive Material Manufacturer: Original manufacturing or cure date; lot number(s); expiration date or shelf-life length.

(3) Castings and Forgings Manufacturer: Certificate of Analysis and/or Certificate of Test and Inspection authorized by a cognizant test laboratory person.

(4) Distributors:

a) Raw Material: Distributor's CoC and raw material manufacturer requirements.

b) Standard Hardware: Copy of manufacturer certification or test report.

8.7 Control of Nonconforming Outputs

Disposition(s) of Nonconforming Product

Supplier shall ensure:

(1) Scrap:

a) Is prohibited, for articles provided by Triumph or Triumph Customer, without prior written authorization.

(2) Rework and/or Replacement:

a) Unless otherwise stated, rework and/or replacement of products or services are authorized by Triumph.

b) Altering the chemical or mechanical properties of the final engineering configuration, is submitted to Triumph prior to acceptance.

(3) Repair and/or Use-As-Is by:

a) Make to Print Suppliers, are not authorized, without Triumph written approval.

b) Design and Manufacture Suppliers are authorized when the nonconformity does not result in a departure from the requirements of Triumph or Triumph Customer product definition.

Concessions:

(1) Are understood to be a risk to Triumph, are only accepted under exceptional circumstances, and may be subject to administrative and nonconformance remedy costs.

(2) Are submitted through via the Supplier Portal, and approved prior to product shipment.

(3) Have appropriate corrective action taken and records retained as documented information.

(4) Approval identification (e.g., concession numbers) is traceable to product and shipping documents (e.g., packing slip, certificate of conformance) and marked in accordance with the applicable product definition marking requirements.

9.0 PERFORMANCE EVALUATION

AS9100 Supplemental Requirements

9.1 Monitoring, Measurement, Analysis, and Evaluation

9.1.1 General

Supplier shall ensure:

(1) Design characteristics are 100% inspected unless specific sampling plans are flowed down by Triumph, or an alternative sampling plan is approved.

(2) Alternate Inspection Frequency Plans are not permitted unless otherwise approved by Triumph.

(3) A documented process is maintained to control inspection when Alternate Inspection Frequency Plans are approved.

(4) Approved alternate inspection frequency plans are only applied to the approved product.

NOTE 1: ARP9013 or AS9138 may be used in the development of sampling plans.
NOTE 2: AS13002 should be used in the development and Alternate Inspection Frequency Plans

9.1.2 Customer Satisfaction

Supplier shall ensure:

(1) The Supplier Portal data is accurate, and an authorized representative maintains access; see Resource Documents for additional information (e.g., training materials).

(2) A review of Quality and Delivery performance data is conducted, at least monthly.

(3) Company goals and objectives for Triumph products and services are targeted to achieve and maintain 100% quality and delivery performance.

(4) The Supplier Quality, Delivery and Risk Scorecards are used as a focus for customer satisfaction monitoring.

a) **Quality Scorecards** provide key Quality Performance measures, see Table 4 – Quality Scorecard

b) **Delivery Scorecards** provide a measure of Delivery Performance, see Table 5 – Delivery Scorecard

c) **Risk Scorecard** provides an overview of key measures used by Triumph to ensure Supply Chain stability, see Table 6 – Supplier Risk Scorecard

(5) Contested Quality and Delivery Performance data is submitted within 10 days of data issuance through the Supplier Portal.

(6) Development or participation in an improvement plan to address performance gaps.

9.2 Internal Audit

Supplier shall ensure:

(1) The audit plan incorporates all elements within the scope of the management system including Quality System Audits, Production Process Audits, Product Audits and Special Process Audits.

(2) Quality System Audits include the review of compliance to the appropriate industry QMS certification standard (i.e., ISO 9001, AS9100) and this document.

(3) An annual audit report is prepared and submitted to Triumph upon request.

10.0 IMPROVEMENT

AS9100 Supplemental Requirements

10.2 Nonconformity and Corrective Action

Supplier shall ensure:

(1) Corrective action responses are submitted via the Electronic-Supplier Corrective Action Request (E-SCAR) system on the Supplier Portal.

(2) Root cause and corrective action plans responses do not exceed 14 days unless extension approved.

Notice of Escape (NOE):

Supplier shall ensure:

(1) Nonconformities affecting delivered products to Triumph and relevant interested parties are reported within 3 working days. See Product Safety requirements, as applicable. The supplier notification shall consist of 2 methods of communication:

   a) By telephone to the appropriate Triumph Procurement Representative,

   b) A second formal notification shall be submitted through the Supplier Portal.

(2) The 8D Problem Solving process is employed in accordance with AS13000.

(3) Immediate containment (Step D0 in 8D) is completed within 2 days of problem identification, unless otherwise agreed.

(4) Communication of the status of containment activities are performed at regular intervals.

NOTE: Measurement Systems Analysis should be performed in accordance with AS13003, when requested, on features associated with an escape.

Table 1 – QMS Certification Requirements

Supplier Description	Quality System Requirement
Make to Print and Design and Manufacture (1): Manufacture, inspect, test, and/or certify the conformance of semi-finished and/or finished products to proprietary engineering drawings.	AS9100
Distributor	AS9120
Special Process Provider (2)	Nadcap or Triumph requirements
Raw Material: Proprietary engineering specifications, manufacture, inspect, test and certification of,	ISO9001
Industry Standard Part or Industry Manufacturer	
External Calibration or Calibration Laboratory Service Provider	ISO17025 or National Equivalent, e.g., UKAS, COFRAC,
Production Shop Assist: Offload of planned manufacturing operations.	Per Triumph requirements based on scope of work, unless otherwise specified
Design only Contracted Design Responsible Organization/Partner/Supplier Task Organizations	
Repair Stations	FAA FAR Part 145/21 or AS9110

Requirements:
(1) Design responsible supplier shall have a special process management program in place for special processes.
(2) Special Processes requiring Nadcap Certification: Chemical Processing, Materials Testing Lab, Coatings, Heat Treat, Nonconventional Machining and Surface Enhancement, Nondestructive Testing, and Welding.

Table 2 – Retention Periods

Retention Time period	Part Type
40 years	Critical Safety Item
10 years	All other parts (serialized/non serialized)
End of Life +10 years	Design Records

Table 3 – Supplier Communication Methods, General

Communication	Supplier Portal
Supplier Request for Information	Electronic – Supplier Information Request (E-SIR)
Risk and Opportunity Notifications	
Notification of Escape	Electronic – Notification of Escape (E-NoE) and Phone Call
DPRV Documentation	Delegated Product Release Verification (DPRV) Program
Concessions	Nonconformances

Table 4 – Quality Scorecard

I. Quality Performance Measures and Ratings

Supplier Performance % Results	Supplier Quality Rating
100% - 99.5%	Acceptable
99.49% - 98.0%	Marginal
97.99% or less	Unsatisfactory

II. Quality Scorecard Components

Component	General Description	Example
Quality Yield	Percentage yield of supplied products or services meeting requirements within a 12-Month Period. *Expression: 100 - (Pieces nonconforming ÷ total pieces received)*	100- (800 *pieces nonconforming* ÷ 15000 *total pieces received*) = 99.95% Quality Yield
III. Quality Dashboard		
Cost of Poor Quality[1]	Percentage cost of supplied materials/services NOT meeting requirements within a 12-Month Period. *Expression:* (*Dollars nonconforming ÷ total dollars received) * 100*	($500 *dollars nonconforming* ÷ $15,000 *total dollars received*) * 100 = 3.33% COPQ
Corrective Action First-Time Yield	Percentage of corrective action responses found acceptable upon initial review, within a 12-Month Period *Expression:* (*Acceptable Corrective Action responses ÷ total corrective actions initiated) * 100*	3 *acceptable corrective action responses* ÷ 10 *total corrective actions initiated* = 30% Corrective Action FPY
Corrective Action On-Time Response	Percentage of corrective action responses submitted on or prior to due date	2 *corrective actions submitted on time*/3 *corrective actions due*=67%
NOE Total	Cumulative NOE occurrences within a 12-Month Period	Sum
NOE Current	Latest month quantity of NOE occurrences	

IV. Scorecard Notes:

NOTE: Distinct nonconformances reported by the Supplier are not counted against cumulative yield rating but may impact the Cost of Poor-Quality percentage.

Table 5 – Delivery Scorecard

I. Delivery Performance Measures and Ratings

OTD & OTIF Performance % Results	Supplier Delivery Rating
100%	Exceptional
96%- 99.9%	Acceptable
90% - 95.9%	Marginal
89.9% or less	Unsatisfactory

II. OTD and OTIF Components

Component	General Description	Example
On-Time Delivery (OTD)	Rolling average percentage of total pieces received on-time versus the total number of pieces received, within a 12 - Month period.	(300 + 600 + 400 [pieces delivered on time]) ÷ (350 + 600 + 410 [pieces required]) = 95.58%
On-Time in Full (OTIF)	Rolling average percentage of delivery lines received on-time versus the total number of delivery lines received, within a 6-month period.	(5+10+10 [lines delivered on time]) ÷ (10+15+15 [lines required]) = 62.5%

III. Delivery Scorecard Notes:

NOTE 1: Product Units of measure (UOM) are calculated as: One UOM = One PIECE.
NOTE 2: The on-time delivery window will be +7 days early/-3 days late.
NOTE 3: Month to month performance will be posted as a YTD cumulative measure.

Table 6 – Supplier Risk Scorecard

I. Risk Performance Measures and Rating

Supplier Risk Performance Results	Supplier Risk Rating
0 - 1.67	Low Risk
1.68 – 3.35	Medium Risk
3.36 – 5	High Risk

II. Risk Score Calculation

Formula	Example
Sum of KPI Risk Weights (Nonconformity Business Impact + NOE Count + ESCAR Count + Quality Yield + OTIF/OTD %)/Total KPI Quantity (5)	(0+7+6+0+3)/5= 3.2

III. Risk Score Components

Risk Rating	Key Performance Indicators [KPI] – 6 Month Period				
	Business Impact	NOE Count	ESCAR Count	Quality Yield	OTIF/OTD %
Low	$0	0	1-2	100% - 99.5%	100% - 96.0%
Med	$1 to $499k	1	3-5	99.49% - 98.0%	95.9% - 90.0%
High	$500k +	2 or more	6 or more	97.99% or less	89.00% or less

IV. KPI Risk Weights

KPI	Assigned KPI Weight		
Business Impact	0	8	10
NOE Count	0	7	9
Quality Yield	0	6	8
OTIF	0	6	8
Total ESCARs	1	2	3