Parker Hannifin Corporation

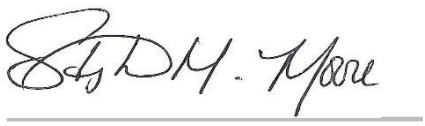
Supplier Quality Requirements Manual

November 2023

REVISION HISTORY

Revision	Date	Description of Changes
0	Dec-07	Initial Release.
1	Jan-08	Section 11.1 Performance Measures: RPPM denominator was: "Number of Parts Shipped," is: "Number of Parts Received." Delivery denominator was: "Number of Parts Ordered," is: "Number of Parts Received."
2	Mar-08	Added Parker Aerospace requirements in ***bold italics***. Other additions, after renumbering, include sections 3.5 - 3.7, 5.7 - 5.12, and 6.2(i).
3	Mar-16	Removed Kathy Miller and replaced with Stephen M. Moore on Page 1. Removed CIC Group and Revised Seal Group to Engineered Materials Group on Page 4. Added Conflict Minerals to Supplier Code of Conduct and revised the Ethics Section to state, "Global Code of Business Conduct." on Page 6. Various updates throughout that cover updates to quality systems and to bring to current business practices.
4	July 2018	Replaced John Dedinsky with Tom Gentile and other Multiple Updates.
5	March 2020	Update Supplier Code of Conduct
6	August 2020	Update Section 8.4.1 – change "order date" to "need date", update Section 11.1- change "contract date" to "need date", removed formula in Section 11.2
7	August 2022	Added Section 4.3 Material Reporting Requirements
8	November 2023	Added Section 8.6 Shipment Condition – Safe Loading & Unloading

Approved by:



Thomas C. Gentile
Vice President, Global Supply Chain

Stephen M. Moore
Vice-President, Lean Enterprise & Quality

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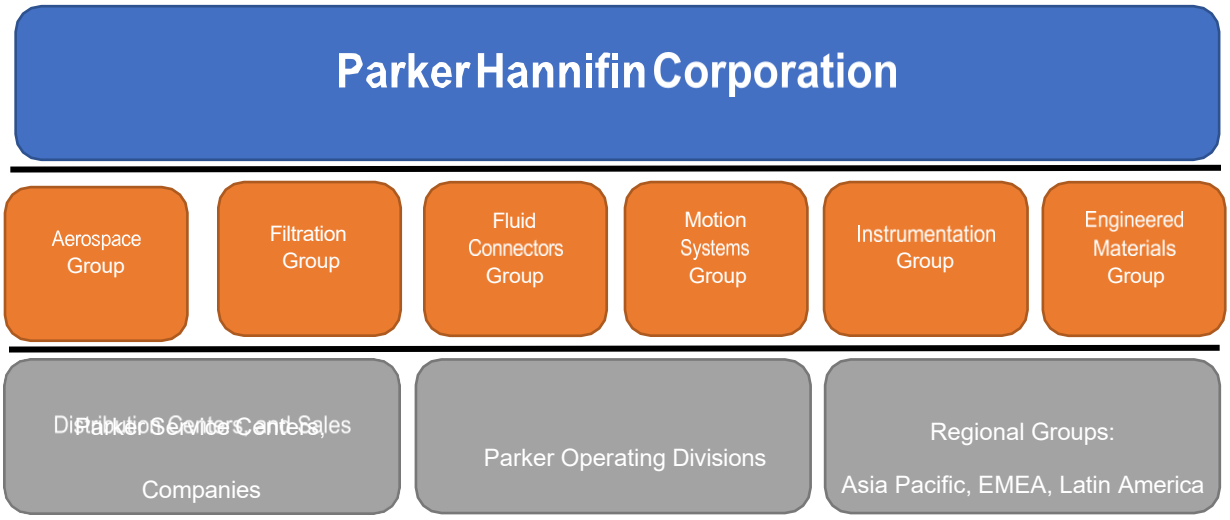
PARKER HANNIFIN CORPORATION

Corporate Overview Parker Hannifin Corporation is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of commercial, mobile, industrial, life science, and aerospace markets.

Corporate Mission The Parker Hannifin Corporation is committed to providing our customers with premier customer experience. This means meeting customer requirements for product quality, service, and on time delivery. It also means anticipating our customer's future needs and expectations for new products and services with innovative designs and systems. Parker aims to accomplish these objectives with strong leadership, a highly capable and empowered workforce, and partnering with best-in-class Suppliers.

Organization Structure



Web Page – Additional information about Parker can be found at www.parker.com .

INTRODUCTION

Our Suppliers Parker Hannifin Corporation recognizes the very important role our Suppliers have in the value we offer our customers. As an extension of our own operations, we rely on our Suppliers to provide material, products, and services which meet all the requirements of Parker contracts, applicable specifications, and the quality management requirements outlined herein.

Purpose Parker serves diverse market sectors, such as industrial, automotive, aerospace, and biomedical. The purpose of this manual is to inform Parker Suppliers of the core expectations we have regarding the Suppliers' quality management systems, design requirements, and manufacturing process controls required for the purpose of doing business with Parker. This manual describes what Parker expects its Suppliers to do to ensure that all Parker requirements and expectations are met.

Scope This manual applies to all Suppliers providing Parker Hannifin Corporation or any of its affiliates throughout the world with materials, products, processing, and related services, including intra-company Suppliers, and when applicable, to Supplier sub-tier sources. The general requirements outlined herein do not supersede conflicting requirements in the Parker contract, or drawing, including applicable engineering specifications and process specifications, or applicable long term agreement(s).

This manual specifies additional requirements for Parker Aerospace Suppliers as shown in bold italics.

Requirements In this manual, the terms "shall" and "must" mean that the described action is mandatory; "should" means that the described action is necessary and expected with some flexibility allowed in the method of compliance; and “may” means that the described action is permissible or discretionary.

Questions Questions concerning this manual should be directed to your respective Parker Buyer.

Supplier Code of Conduct:

The Supplier Code of Conduct is updated from time to time. The supplier is responsible for complying to the latest version which can be found at parker.com / working with Parker/ Parker Supplier Code of Conduct

1.0 QUALITY SYSTEM REQUIREMENTS

Suppliers shall maintain a Quality Management System (QMS) suitable to the products and services provided to Parker that is certified by an accredited third-party certification body to the latest version of one or more of the following, as defined by the purchasing Parker Divisions.

- ISO 9001 - Quality Management System Requirements[1]
- AS/EN/JISQ9100 - Quality Management System Requirements (Aerospace)[2]
- ISO/TS/IATF 16949 - Quality System Requirements (Automotive, Truck & Heavy Equipment)[3]
- ISO13485 - Quality Management System Requirements (Medical)[1]

See the following sources for a listing of accredited certification

bodies:

[1]The U.S. accreditation body for management systems can be found at ANSI-ASQ National Accreditation Board, http://www.anab.org. For a list of Accreditation Boards from other countries, refer to the International Accreditation Forum at http://www.iaf.nu.

[2]For AS9100, see SAE OASIS database at http://www.sae.org/iaqg/

[3]For ISO/TS/IATF 16949, see International Automotive Oversight Bureau at http://www.iaob.org or International Automotive Task Force at http://www.iatfglobaloversight.org

In the absence of third-party certification, depending on the product, its application, value, and criticality, the Parker Buyer and Quality representative may authorize the acceptance of other evidence of compliance. This may include second party (Parker) audit or first-party (self) assessment to the applicable criteria above, or to a set of alternative basic quality requirements (such as those described in a 'Parker Supplier Quality Assessment' checklist).

Parker Aerospace and AS9100 Plant Suppliers shall comply with the following requirements. Parker Aerospace suppliers are required to be certified to AS9100, AS9110, or AS9120 as applicable:

- ***Distributors/Stockists - shall establish and maintain a QMS that is certified to AS9120/EN9120, AS/EN/JISQ9100 or ISO9001***
- ***Calibration Suppliers - shall establish and maintain a measurement management system that is in compliance with either:***
  - ***ANSI/NCSL Z540.3 - Calibration Laboratories and Measuring & Test Equipment Requirements,***
  - ***ISO 10012 – Requirements for Measurement Processes and Measuring Equipment, or***
  - ***ISO/IEC 17025 – General requirements for the competence of testing and calibration laboratories***
- ***Special Process Suppliers - shall establish and maintain a QMS that is in certified to AS/EN/JISQ9100, ISO 9001, or PRI/Nadcap AC7004.***

- ***Software Suppliers (Deliverable Software Only) - shall establish and maintain a QMS that is in compliance with RTCA/DO-178, AS9115 and the Software Engineering Institute (SEI) Capability Maturity Model (CMM) guidelines of Level 3, prior to Parker approval.***
- ***Commercial-Off-The-Shelf Suppliers (COTS) - Suppliers that provide commercial products shall establish a QMS certified to ISO 9001, or equivalent.***
- ***Aerospace Maintenance organizations – shall establish and maintain a QMS that is certified to AS9110.***
- ***All Other Suppliers - shall establish and maintain QMS that is certified to AS/EN/JISQ9100, and a measurement management system which meets the requirements of either ANSI/NCSL Z540.3, ISO 10012, or ISO/IEC 17025.***

Suppliers registered in accordance with AS9104 shall be listed in the SAE OASIS database.

1.1 Quality Manual

Upon request, the Supplier shall furnish Parker with a copy of the Supplier's Quality Management System Manual, which is to be current and approved by the Supplier's management, including or making reference to related documents. The quality management system documentation shall include Supplier's statements of a quality policy and quality objectives. Top management shall define quality objectives and measurements which should address customer expectations and be achievable within a defined period of time. The Supplier shall notify the Parker Buyer of any substantive changes to the Supplier's quality management system or personnel within 30 days.

1.1 Parker Aerospace and AS 9100 Plants require all Suppliers to provide:

- Access to the suppliers OASIS Tier 2 data (e.g., information and results of audits, assessments, nonconformance's, corrective action, scoring, and suspensions) upon request, unless justification can be provided (e.g., competition, confidentiality, conflict of interest).
- Immediate notification in the event certification has been lost.
- Notification of significant changes within the supplier's organization (e.g., changes related to address, ownership, key management, number of employees, scope of operations).

2.0 SUPPLIER APPROVAL PROCESS

Parker requires all Suppliers to be approved prior to the issuance of contracts. All Suppliers must be approved by Parker, regardless of approvals by customers or other entities.

2.1 Supplier Assessment

The Supplier Approval Process may include the following:

- Supplier Initial Assessment
  Parker may request the Supplier to provide a copy of its quality management system certificate and/or complete a self-assessment of its business and quality management system and capabilities (i.e., quality, delivery, technology, cost, and continual improvement objectives).

  Any special processes will require assessment as part of the Supplier Approval Process.
  Special processes and assessments are defined as outlined in the following:

  Non-Aerospace suppliers: AIAG PPAP Manual.

- Aerospace suppliers: Nadcap

- Documentation Audit
  In those cases where a Supplier's quality management system has not been certified by an accredited certification body, Parker may request a copy of the Supplier's Quality Manual and supporting procedures (and perhaps internal audit reports) to determine if the Supplier's quality management system meets Parker requirements.

- On-Site Assessment
  Regardless of a supplier's QMS certification status, Parker, and/or its customers, may elect to conduct on-site assessments of a supplier. As a result, findings may be issued. It is the supplier's responsibility to correct all findings in an agreed upon timeframe.

  These on-site assessments could include evaluations of:

  - Product or Process Capability – to determine the Supplier's ability to meet Parker's requirements for complex and/or critical products/processes.
  - Quality Management System (QMS) – to determine whether the Supplier's quality management system meets one or more of the applicable standards and is functioning effectively; may occur in conjunction with other on-site assessments. On-site QMS assessments by Parker should occur prior to approval of Suppliers with non-certified quality management systems (QMS).
  - Business and Manufacturing Operations – to determine whether the Supplier has the financial resources, production capacity, and other business resources needed to fulfill Parker volume production needs and continuity of supply.

- Continual Improvement Initiative – to determine if the Supplier's culture, methods and skills are present to actively pursue continual improvement.
- Technology Assessment - to determine whether the Supplier has the needed technical resources, including production and inspection equipment, facilities, engineering resources, Parker-specified computer-aided design language/format, electronic commerce capability, etc.
- Sub-Tier Supplier Control – to evaluate the effectiveness of the Suppliers sub-tier management processes and ensure that products or services procured from sub-tier sources and delivered to Parker conform to all applicable Parker requirements.

All new Parker Aerospace Calibration Suppliers require an on-site assessment by Parker or its representatives for compliance to ANSI/NCSL Z540-3 prior to approval.

All new Parker Aerospace special process Suppliers require on-site assessment by Parker, including personnel approved by Materials & Processes, prior to a QMS audit by Parker prior to addition of the Supplier to the Approved Process Suppliers List (APSL).

Parker Aerospace requires all Suppliers to be approved and listed on Parker Approved Suppliers List (ASL) or the APSL, prior to the issuance of contracts to the Supplier.

Parker Aerospace requires all Special Process Suppliers to be PRI/Nadcap certified for the applicable process prior to being listed on the APSL. All special processing performed by suppliers of 'build to print' components shall be performed by a Nadcap approved supplier.

Site assessments may occur at any time per Parkers discretion.

3.0 GENERAL REQUIREMENTS

The following set of general quality requirements applies to all Suppliers.

3.1 Compliance to Contractual Requirements

Upon accepting a Parker contract, the Supplier is responsible for compliance to all contract (e.g., engineering drawing, specification, purchase order) requirements. All documents, drawings and specifications, regardless of origin, are applicable to the Supplier when specified in the contract or documents referenced in the contract, and are required to be used at all levels of the supply chain. Unless otherwise specified in the contract, the document revision in effect on the date of issue of the contract applies to the contract. Neither audit, surveillance, inspection or tests made by Parker, representatives of Parker or its customer(s), at Supplier's facilities, at any sub-tier facilities, or upon receipt at Parker, relieves the Supplier of the responsibility to furnish acceptable products or services that conform to all contract requirements; nor does it preclude subsequent rejection by Parker or its customers.

3.2 Parker Designated Sources

Where specified by contract, the Supplier shall purchase products, materials or services from Parker-designated sources. However, the Supplier is responsible to ensure that items procured from such sources meet all applicable technical and quality requirements.

3.3 Control of Sub-Tier Suppliers

The Supplier, as the recipient of the contract, is responsible for meeting all requirements, including work performed by the Supplier's sub-tier Suppliers (also known as Sub-Suppliers or subcontract Suppliers). When the Supplier uses sub-tier sources to perform work on products and/or services scheduled for delivery to Parker, the Supplier shall include (flow-down) on contracts, to its sub-tier sources, all of the applicable technical and quality requirements contained in the Parker contract, including quality system requirements, regulatory requirements, the use of Parker designated sources, and the requirement to document and control 'key characteristics' and/or 'key processes,' and to furnish certifications and test reports as required. Parker and its customers reserve the right-of-entry to suppliers and all sub-tier supplier facilities, subject to proprietary considerations.

- Special Process Suppliers

  For Parker Aerospace, unless otherwise specified by contract, the Supplier shall only use special process sources that are approved by Parker Aerospace and listed on the APSL. This requirement applies to Suppliers who perform special processing such as heat treating, plating, etc., as part of their internal operations. The Supplier shall flow-down this requirement to its sub-tier sources. NOTE: Source Control Design items are excluded as they fall under the design authority Quality Management System.

- Risk Management

All suppliers are expected to have identified all internal and external interested parties a long with any significant risks that may impact the supplier's ability to meet the expectations of the interested parties (see ISO 9001:2015)

For Parker Aerospace, the Supplier shall establish a risk management program in accordance with the guidelines established by SAE ARP9134 (or equivalent) to effectively assess those elements from all aspects of the business that could affect the quality of the products and/or services scheduled for delivery to Parker Aerospace. A copy of the Supplier's risk management program shall be furnished to the Parker Buyer upon request.

3.4 Control and Release of Parker Furnished Documents

Documents furnished by Parker to the Supplier are furnished solely for the purpose of doing business with Parker. Proprietary documents may be furnished to the Supplier in hard copy, electronic or other media. The Supplier is responsible for controlling and maintaining such documents to preclude improper use, loss, damage, alteration and/or deterioration.

Unless authorized by the Parker Buyer in writing, the Supplier may not transmit or furnish any Parker furnished documents, or copies of such documents, to anyone outside the Supplier's business organization except to a sub-tier source used by the Supplier for performance of work on the Parker contract. The Supplier shall return to Parker, or purge electronic copies of, all proprietary documents with the last delivery of products or services on the contract. Parker may request the Supplier to furnish objective evidence or certification that proprietary documents have been purged. The Supplier shall flow down this requirement to all sub-tier sources, when such sources will be in receipt of Parker proprietary documents during performance of work for the Supplier.

3.5 E-Business Requirements

Many Parker divisions currently use and are continually expanding the use of electronic business tools to facilitate day-to-day activities using electronic linkages between Parker internal operations as well as with Parker Suppliers and customers. Contracts, delivery schedules, notification of product rejections, requests for corrective action, etc. may be transmitted to Suppliers electronically, and Parker expects that Suppliers will adopt these tools to reduce errors and improve efficiency. For a list of e-business requirements and opportunities contact the Parker Buyer.

3.6 Electronic Documents

The accuracy and authenticity of electronic documents and forms submitted to Parker is of highest importance. The following rules apply and may be subject to review by Parker at Suppliers facilities:

- The issue of electronic documents and application of electronic signatures must be under the direct control of the individual whose name appears on the electronic document
- The electronic signatures may only be applied at the place where the individual is located and the individual must have direct access and responsibility for the products or services described in the electronic document.

- The application of the electronic signature certifies that the signature (individual) represents an authorized company official.

For Parker Aerospace, the use of electronic forms and signatures must be described in and governed by Supplier's documented procedures.

3.7 Federal Aviation Administration (FAA) Regulations

For Parker Aerospace, the following requirements apply when the contract is for products/services under the authority of regulatory agencies (reference www.faa.gov):

- ***FAA Certification***
  When specified on the contract, the Supplier shall submit a completed FAA Form 8130-3, executed in accordance with the requirements of FAA Order 8130.21, for all work performed.

- ***Parts Manufacturer Approval (PMA) Certification***
  When the contract requires the Supplier to furnish replacement or modification parts, such parts shall be manufactured and certified in accordance with Title 14 CFR Part 21, Subpart K, §21.303. The parts shall be marked in accordance with Title 14 CFR 45, Subpart B, § 45.15 and submitted to Parker with FAA Form 8130-3 executed in accordance with FAA Order 8130.21

- ***Anti-Drug and Alcohol Misuse Prevention Program***
  All Supplier employees (including any Supplier's sub-tier employees) performing maintenance or inspection of products scheduled for delivery to Parker shall be included and part of a FAA approved Anti-Drug and Alcohol Misuse Prevention Program. The requirement applies both to pre-employment and random testing of current employees in accordance with the requirements of 14 CFR Part 121, Appendix "I" and Appendix "J". Evidence of compliance to this requirement shall be made available to Parker upon request.

Exceptions. This anti-drug and alcohol requirement does not apply to employees performing safety sensitive functions outside the United States territory and persons contracted to perform safety sensitive functions for an employer who is located outside the United States territory.

3.8 Business Continuity

The Supplier should have a business continuity plan which would allow for the safeguarding, storage and recovery of engineering drawings, electronic media, and production tooling in the event of damage or loss. This plan should also contain contingency plans to satisfy Parker requirements in the event of significant utility interruptions, labor shortages, equipment failure and field returns.

3.9 Facility Changes

During performance on the Contract, the Supplier shall give Parker written notice prior to:

- relocating any production, inspection or processing facilities;
- transferring work between different facilities
- initiating any changes in the source of major components procured by the Supplier and designated for use in or for installation on products scheduled for delivery to Parker
- making any other changes which may affect product quality, reliability or integrity.

Such changes are subject to approval/disapproval by Parker prior to shipment of affected products. A change in ownership or a change in the individual designated as the management representative with respect to the Suppliers Quality/Inspection System shall be construed as a facility change and requires the Supplier to notify Parker within 30 days.

For Parker Aerospace suppliers, Supplier shall establish an internal procedure for formal notification to Parker that includes; risk assessment/mitigation, transfer plan, demonstration of capacity and demonstrate the existence of buffer stock to mitigate risks to on-time delivery and quality.

3.10 Unauthorized Product Repairs & Salvage

The Supplier may not perform any repairs such as welding, brazing, soldering, plugging, peening, bushing, or, use of paints, adhesives or plating, or use any standard or other repair practice or method, on products damaged or found to be discrepant during fabrication or processing, or, on defects in castings or forgings, unless such repairs are specifically permitted by the applicable drawing or specification, or are specifically authorized by Parker in writing for each occurrence. Unless specifically authorized by Parker, this prohibition also applies to reworking products by removing plating (stripping) and re-plating. In those cases, where Parker authorized product repair, salvage or stripping has been accomplished, the Supplier shall include on the packing list/shipper or on a separate attached document a list of the products that have been subjected to such Parker approved repair, salvage or stripping, the method(s) used for the salvage or repair, and the nonconformance document number authorizing the salvage or repair.

3.11 Unauthorized Product Changes or Substitutions

The Supplier may not make any changes or substitutions to any products or services required by the Contract, drawing, specification, standard, or other applicable document without prior written authorization by Parker. Authorization may be contingent on Parker conducting an on-site review of the proposed product or service changes at the Supplier's facilities, or the facilities of the Supplier's sub-tier sources.

3.12 Use of Non-Conventional Manufacturing Methods

Unless required by the drawing, specification, or Contract, the Supplier may not use Electrical Discharge Machining (EDM), Electro Chemical Machining (ECM), laser or abrasive water jet cutting or drilling, flame spray coatings, or any other non-conventional manufacturing method or process on products scheduled for delivery to Parker without prior written authorization by Parker. This prohibition also applies to the use of such processes by the Supplier's sub-tier sources. Authorization by Parker may be contingent on Parker conducting a review and approving the method, facilities, equipment and qualified personnel at the Supplier's facilities or the facilities of the Supplier's sub-tier sources that will perform the operation

or process. In addition, when authorized, such operations and processes may only be performed by Parker approved sources.

3.13 Altering Data on Documents

The use of any method that causes the original data on documents to be obliterated and unreadable (i.e. the use of correction fluids, correction tape, write-over, or other methods) to correct, modify or otherwise alter the data and/or entries on any certifications, test reports or other documents required by the Contract, is strictly prohibited. Corrections may be made on inspection reports such as 1st Article Inspection Reports (FAIR), providing it is clearly obvious that a correction was made and it is signed (initialed) or stamped by an authorized individual. Upon receipt at Parker, products or services represented by documents that show evidence that they have been corrected or altered in an unauthorized manner are subject to return to the Supplier at Supplier's expense.

3.14 Contract Changes & Their Effectivity

- **Parker Aerospace Initiated Changes**

  The Supplier shall incorporate, at the specified and agreed upon effectivity points, all changes initiated by Parker Aerospace and communicated to the Supplier through a formal Contract change and/or amendment. Such changes may be in the form of revised drawings, specifications, tests, inspection or fabrication methods, etc., and may apply to products as well as to the Supplier's management and administrative systems. The Supplier's business management system shall include appropriate controls and records, including controls at the Supplier's sub-tier sources, which provide objective evidence that changes were incorporated as required by the Contract. Objective evidence may be in the form of date, lot, serial number, revision letter, or other positive identification. Such records are subject to on-site verification by Parker Aerospace at the Supplier's facilities or the facilities of the Supplier's sub-tier sources.

- **Supplier Initiated Changes**

  The Supplier may not make any changes in product design, drawings, performance specifications, materials or processes that will result in a Class I change (defined as changes that affect Fit, Form, Function, Reliability, Maintainability, or Safety without specific approval by Parker in writing prior to making such changes in products or data. When applicable, the Supplier shall flow-down this requirement to the Supplier's sub-tier sources. The Supplier may make changes on products under Supplier’s proprietary engineering design control that result in a Class II change (any change other than Class I as defined above). The Supplier shall furnish a copy of the Class II change to Parker prior to the initial delivery of the (changed) products, so that Parker can verify that the change does not violate the above requirements.

4.0 PRODUCT QUALIFICATION

This section defines the generic requirements for production part qualification and approval. The purpose is to determine if all Parker design and specification requirements are properly understood by the Supplier and that the manufacturing processes have the capability to consistently meet these requirements.

In all instances where a product is manufactured to a new design, for a new system, or for a new application, it is important that Supplier and Parker allocate responsibility for assuring that all performance, endurance, maintenance, safety and warning requirements are met. It is preferred that this allocation of responsibility be in writing.

The supplier should be able to present objective evidence of their manufacturing capability on similar processes or products, to demonstrate technical competency, when a new process is being used in the production of product for Parker. Objective evidence can include capability data, FPY, quality issues with other customers, and any existing supplier quality metrics.

4.1 First Article Inspection

For Non-Aerospace Suppliers:

First Article Inspection (FAI) is required to initially qualify a part/process for Supplier approval, unless the PPAP process (below) is used instead. Furthermore, a new FAI may be requested if there is an extended gap of time since last production. The FAI requires that all features and characteristics on the design specification and control plan be inspected and verified prior to production. Actual measured values shall be recorded as opposed to general statements of conformance or other notations simply indicating acceptance.

For First Article Inspection guidance, see AIAG PPAP Manual (Appendix C, D, & E) – Production Part Approval Process (available from www.aiag.org). When submitting a First Article Inspection report, the Supplier should use the form provided by the Parker Buyer or designate. Otherwise, generic Form# PH-FAI, or other convenient and equivalent may be used.

In addition to an FAI, and when required by the contract or Parker buyer, Suppliers shall, as a minimum, develop a Control Plan by identifying special product and process characteristics that are key to achieving quality. The Supplier shall also include those special characteristics designated by Parker in the drawing, specification, or contract. Parker Control Plan (Form #PH-CPLAN) or other convenient and equivalent version may be used.

For Parker Aerospace:

All FAI's shall be documented in accordance with AS/EN/SJAC9102 unless otherwise specified in the contract. The Supplier shall furnish a copy of the completed FAIR results with the initial delivery of products on the Contract, and immediately following updates made in accordance with the following requirements. The supplier shall perform a full FAI or a Partial FAI for affected characteristics when any of the following occurs:

- ***A change in design.***

- *A change in any manufacturing source(s), processing source, sub-tier processor(s), process(es), inspection method(s) (including functional test requirements), location of manufacture, tooling, or materials.*
- *A change in numerical control program or translation to another media.*
- *A natural man-made event, which may adversely affect the manufacturing process.*
- *An implementation of corrective action required to complete a previous FAI.*
- *A lapse in production for two years shall require an update for any characteristics that may be impacted by the inactivity. This lapse is from the completion of last production operation to the actual restart of production.*
- *A Parker drawing which references a standard hardware item (e.g., "NAS","MS") and that item is modified from the original purchased configuration and/or has additional characteristics. In this case, the FAIR shall include data for only those characteristics that were changed and/or added.*
- *Altered Item Drawings with specific dimension requirements.*
- *Parker made to customer print items*
- *When requested by either internal/external customer.*
- *When the revision of the drawing is changed, even if it has not affected the specific configuration.*

Note: The potential impact to form, fit, and function exceptions as cited in AS9102 do not apply to Parker products.

Note: If a supplier is planning to use statistical methods for product acceptance for production (less than 100% inspection) the requirements of SQRM paragraph 5.10 Sampling Inspection apply.

When it is not physically possible to perform the FAI on a single product, data from multiple products can be used, providing all parts have been manufactured using the same engineering definition, bill of material, supply chain, and method of manufacture (including measurement method). The FAI report shall be annotated to signify the use of multiple products and provide traceability of those products used to obtain the inspection results.

Programmers for Coordinate Measuring Machine (CMM) during FAI activity shall be independent to those programming product measurement equipment supporting the production process.

Note: Coordinate Measuring Machines used for FAI do NOT have to be independent to those used for product measurement during production activities.

When a CAD model is used for programming, the model shall not be used to create both the manufacturing and CMM/Inspection programs.

The supplier shall furnish a copy of the completed FAIR results with the initial delivery of products on the contract.

4.2 Production Part Approval Process

When required by the Parker contract, the Supplier shall submit to Parker a more comprehensive Production Part Approval Process (PPAP) qualification package.

For Parker Aerospace, PPAP shall be in accordance with AS 9145. Unless otherwise specified, Level 3 shall apply. PPAP submittals may be managed by the Parker Aerospace Enovia PPAP Management System.

The following, including sections A-H below, applies to Non-Aerospace Suppliers only:

The Supplier is responsible for obtaining the latest revision of the applicable AIAG core tool reference manuals and forms (see Applicable Documents section for where these references may be obtained).

The AIAG Core Tools Manuals are:

- Advanced Product Quality Planning (APQP) and Control Plan
- Production Part Approval Process (PPAP)
- Potential Failure Mode and Effects Analysis (FMEA)
- Measurement Systems Analysis (MSA)
- Statistical Process Control (SPC)

When PPAP is specified on the Parker contract, the Supplier shall submit a "Level 3" PPAP package to the Parker Buyer unless otherwise directed on the purchase order. See AIAG PPAP Manual, Table 4.2, for complete list of submission requirements for each level of PPAP. Also, see AIAG APQP Manual for related guidance on associated product and process design and development methodology and techniques.

The supplier shall review and update, as necessary, all applicable items in the PPAP file to reflect the production process, regardless of whether or not the Parker specified PPAP Level requires the item to be submitted. Parker can request to review the documentation at any time.

A. Design Record, Change Documents, and Customer Approval

The Supplier shall have the design record for the saleable product/part and components; any authorized engineering change documents for those changes not yet recorded in the design record but incorporated in the product, part or tooling; and evidence of Parker engineering approval. See AIAG PPAP Manual.

B. Process Flow Diagram

The Supplier shall have a visual diagram of the proposed or current process. This diagram shall clearly describe the production process steps and sequence, and meet the specified Parker needs, requirements and expectations. See AIAG PPAP Manual.

C. Failure Mode and Effects Analysis

Suppliers with product design responsibility shall develop a Design FMEA in accordance with, and compliant to, Parker-specified requirements. A single Design FMEA may be applied to a family of similar parts or materials upon approval by the purchasing Parker division.

Suppliers shall develop a Process FMEA in accordance with, and compliant to, Parker-specified requirements. A single Process FMEA may be applied to a process manufacturing a family of similar parts or materials if reviewed for commonality by the Supplier and if approved by the purchasing Parker division. See AIAG FMEA Manual.

D. Measurement Systems Analysis

The Supplier must develop or obtain gages and standards to control their processes and to determine product conformance to specifications. Variable gages and measurements are preferred. Alternative methods, gages or standards may be used at Parker to verify the Supplier's inspection results. Parker may request the Supplier to participate in a correlation study to compare Supplier measurement results against results obtained by Parker gages and methods.

The Supplier shall perform Measurement Systems Analysis (MSA) studies, e.g., gage repeatability & reproducibility, bias, linearity, stability, for all new or modified gages, measurement, and test equipment. See AIAG MSA Manual. Documentation and results should be maintained and available to Parker on request.

E. Control Plan

The Supplier shall have a Control Plan that takes into account the output from the FMEA and defines all methods used for process monitoring and control of special product/process characteristics. The control plan covers three distinct phases: prototype, pre-launch, and production. A single control plan may apply to a group or family of products that are produced by the same process at the same source. See AIAG APQP Manual. Product family Control Plans are acceptable upon approval from the purchasing Parker division.

F. Process Capability Study

Process Capability Index (Cpk) is a comparison of the inherent variability of a process output to specification limits under statistically stable conditions. Most methods for estimating capability require that the characteristic being evaluated is approximately normally distributed, and in statistical control. The distribution should be determined prior to estimating capability. If the process is not in statistical control, all assignable causes must first be identified and removed. Special techniques are available for calculating capability when inherent assignable causes, such as tool wear, are present.

Definitions and calculations for Cpk and Ppk indices are found in AIAG PPAP and SPC Manuals. Unless otherwise required by Parker, the Supplier shall use the following as acceptance criteria for evaluating initial process study results of special characteristics for processes that appear stable. Documentation and results should be maintained and available to Parker on request:

Results	Interpretation
Index > 1.67	The process currently meets acceptance criteria.
1.33 ≤ Index ≤ 1.67	The process is marginally acceptable.
Index < 1.33	The process is not acceptable.

G. Certification and Test Reports

The Supplier shall provide evidence that the following verifications required by the design record and control plan have been completed and that results indicate compliance with specified requirements:

- Dimensional Results – for each unique manufacturing process, e.g., cells, lines, molds, patterns, a record of actual results of all characteristics.
- Material and Performance Test Results – for all parts and product materials with chemical, physical, metallurgical, and functional performance requirements.
- Qualified Laboratory Documentation – documentation showing laboratory results of the qualifications for the type of measurements or tests conducted and the standards used.
- Sample Product – actual samples as required by the applicable specification or Parker contract.
- Master Sample – retain a master sample, when required by the Buyer, and make available upon request.
- Checking Aids – if requested by the Buyer, submit part-specific assembly or component checking aids.
- Records of Compliance – copies of records showing compliance to all applicable Parker-specific requirements.

See AIAG PPAP Manual for applicable forms and instructions.

H. Part Submission Warrant

Upon completion of all PPAP requirements, the Supplier shall complete the Part Submission Warrant (PSW). A separate PSW shall be completed for each Parker part number unless otherwise specified by the Parker contract. Upon receipt, Parker will review and either approve, reject, or provide interim approval. See AIAG PPAP Manual for forms and instructions.

Section 4.3: Material Reporting Requirements

It is Parker's requirement that Suppliers enter product material data into a material reporting database when a government and/or customer requires such information from Parker.

Unless otherwise specified, the required data will be managed by the Supplier in Compliance Data Exchange ("CDX") and communicated on a Material Data Sheet Request.
https://public.cdxsystem.com/en/web/cdx/material-reporting

5.0 PROCESS CONTROL

This section defines the basic necessities for Suppliers to control their manufacturing processes.

5.1 Special Characteristics

The Supplier shall demonstrate conformity to those special characteristics designated by Parker through

means of documentation and appropriate control methods. In addition to any special characteristics identified by Parker, the Supplier shall also review, identify, document, and control other product and process characteristics that are key to achieving quality.

For Parker Aerospace, the Suppliers variation management program shall be in compliance with requirements of AS/EN/SJAC9103.

Variation management of Key Characteristics using statistical methods to control manufacturing processes is required for key characteristics identified by Parker on the drawing or by separate documentation, (MQI, CPI or other). The supplier will be required to measure those features and demonstrate capability by performing data analysis and calculating Cpk (or an equivalent attribute measure of Capability) for each characteristic.

The supplier is required to provide copies of the capability study, with each delivery, until a minimum of three manufacturing lots, having a Cpk of 1.67 or greater, are shipped. Key Characteristic demonstrating capability may be monitored with statistical process control per SQRM Section 5.10. Key characteristics that have not achieved a Cpk of 1.67 will require data submittals, showing 100% inspection, with each delivery.

Sample Lot size shall be a minimum of thirty (30) pieces from a continuous manufacturing lot (Same material, Tooling and set up). Sample lot/batch number shall be documented on copies of capability studies.

The supplier's variation management program is subject to audit, verification and approval by Parker Aerospace designated representative(s), or its customers.

The requirements for process capability and control does not supersede drawing requirements and shall not be used as accept or reject criteria for the noted feature.

When the supplier has achieved a Cpk of 1.67 on all key characteristics, a statement shall be included on supplier's certificate of conformity for the life of the program stating "The supplier certifies all key characteristics identified by Parker meet or exceed a 1.67 Cpk".

5.2 Error-Proofing

The Supplier should use error-proofing devices and techniques as a form of process control; especially for repetitive functions, difficult tasks prone to mistakes, or where high RPN processes have been identified and error proofing is not possible, 100% inspection is required for all special characteristics.

5.3 Work Instructions

The Supplier shall prepare documented work instructions, for all employees having responsibilities for the operation of processes that impact product quality. These instructions shall be maintained current and accessible for use at the workstation.

A curriculum of training requirements will be defined for every operator. Appropriate training is required in order for employees to demonstrate competency prior to working and potentially impacting quality. Training records must be maintained as well as updated on a regular basis for all operators.

5.4 Control of Monitoring and Measuring Devices

The Supplier shall determine the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements. As a minimum, where necessary to ensure valid results, measuring equipment shall:

- Be calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification shall be recorded; and
- Be identified to enable the calibration status to be determined.

For Parker Aerospace, unless otherwise specified by contract, the Supplier shall establish procedures to control Measuring and Test Equipment (M&TE) that are in compliance with the requirements of ANSI/NCSL Z540-3, ISO 10012, or ISO/IEC 17025.

5.5 Statistical Process Control

Where specified in the Control Plan, the Supplier is required to apply effective statistical process controls. Suppliers should consult the Statistical Process Control (SPC) manual published by AIAG for guidance, methods, examples, and related reference information.

Suppliers should maintain records of all data related to Statistical Process Control of special characteristics and be made available to Parker upon request. Supplier shall provide evidence of proper controls for special characteristics when not meeting Cpk requirements.

Suppliers must demonstrate a continuous improvement process that utilizes internal, as well as external data, to provide ongoing improvement in the quality of products delivered to Parker.

5.6 Preventive Maintenance

The Supplier should identify key process equipment and provide resources for machine/equipment maintenance activities and develop an effective planned total preventive maintenance system.

5.7 Source Inspection

Supplier's products or services may be subject to source inspection by Parker, representatives of Parker or applicable government or regulatory agencies. Source inspection requirement will be included on the contract and may apply to any and all operations performed by the Supplier or the Supplier's sub-tier sources, including prior to delivery of products to Parker. The Supplier shall provide the necessary access, equipment and resources required to effectively accomplish the source inspection.

5.8 Traceability

Suppliers shall establish a lot traceability system that tracks components throughout the value stream, from raw material through shipment to Parker. This includes all process steps including inspection and test procedures, rework and sub-tier supplier operations.

Where a 'shelf life' restriction applies, suppliers shall ensure that materials are tracked and controlled to prevent expired materials from being used in production.

5.9 Shelf-Life Control

A. Materials - With each delivery of materials or products that have a limited or specified shelf life, the Supplier shall furnish data that shows (a) the cure or manufacture date, (b) expiration date or shelf life, (c) lot or batch number, and when applicable any special handling or storage requirements. Unless otherwise specified by contract, for all shelf-life limited materials or products delivered to Parker, the remaining shelf life shall be a minimum of 75% of the total shelf life for the material.
B. Elastomers and Seals - For Parker Aerospace, Suppliers scheduled to provide elastomeric seals or assemblies must meet the requirements for data recording procedures, packaging, and storage of elastomeric seals and seal assemblies which includes an elastomeric element per SAE AS5316.

5.10 SAMPLING INSPECTION

For Parker Aerospace Suppliers, when statistical methods for product acceptance are planned, the supplier shall submit their proposed alternate inspection frequency plan to Parker Aerospace for review and concurrence prior to use. Statistical Product Acceptance Requirements shall conform to AS 13002 unless an alternate method is specified by contract.

Exceptions to AS13002:

In determining capability of the production measurement system, and when capability is demonstrated through the use of Gage R&R, the maximum acceptable R&R percentage is 10% (Ref. AS13002, section 5.1.5).

Note: An R&R percentage between 10 and 30 percent may be acceptable for some applications with Parker approval.

Sample inspection shall be suspended immediately following any non-conformance and until corrective action has been implemented and the process has once again demonstrated acceptable capability through statistical data and/or appropriate technical justification as approved by Parker (Ref. AS13002, section5.6.3).

Any characteristic affected by process change and subject to a full or partial FAI, as defined in Parker First Article Inspection Requirements, shall be reviewed with Parker to determine what actions and/or re-approval may be required to continue with the alternate inspection frequency plan. As a minimum, all characteristics affected by the process change shall demonstrate acceptable capability through

statistical data and/or appropriate technical justification, as approved by Parker, prior to continuing the alternate inspection frequency plan for those characteristics (Ref. AS13002, section 5.7.3).

A relevant capability analysis assessed against minimum acceptable criteria Ppk 1.65 for Key characteristics, 1.33 for Major characteristics or 1.0 for Minor characteristics is required as part of the Data Pack Contents (Ref. AS13002, section 7.1.1 Data Pack Contents Column).

In addition to AS13002 Sampling Tables (Ref. Table 2 - Major characteristics sampling table and Sample Table 3 – Minor characteristic sampling table) the following sampling table shall be used for all characteristics designated by Parker as "Key" characteristics:

Key	Batch Size							
Ppk	**Up to 10**	**11 to 20**	**21 to 30**	**31 to 45**	**46 to 60**	**61 to 90**	**91 to 120**	**121 to 150**
2 and above	2	2	2	3	4	5	6	6
1.66 to 1.99	3	4	5	5	6	9	12	15
1.33 to 1.65	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
Less than 1.33	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

Key	Batch Size						
Ppk	**151 to 200**	**210 to 250**	**251 to 300**	**310 to 500**	**501 to 750**	**751 to 1000**	**1001 to 2000**
2 and above	8	10	12	20	30	40	50
1.66 to 1.99	20	20	20	25	38	40	50
1.33 to 1.65	ALL	ALL	ALL	ALL	ALL	ALL	ALL
Less than 1.33	ALL	ALL	ALL	ALL	ALL	ALL	ALL

NOTE: Batch sizes above 2000, sample size to be agreed upon with Parker.

5.11 Operator Self-Verification

Parker Aerospace Suppliers may delegate inspection authority and product/process inspection and acceptance to production operators. In such cases, the Supplier's operator self-verification program shall comply with the requirements of SAE ARP9162. Prior to implementation of the program on products/processes scheduled for delivery to Parker, the Supplier shall request and obtain approval from Parker in writing.

5.12 Raw Material Lot Control

For Parker Aerospace, the Supplier shall develop, document and implement a raw material (sheet, plate, bar, rod, etc.) verification program that will ensure that all material received from the Supplier's sub-tier sources meet all applicable technical and quality requirements. The Supplier's verification program shall include provisions for monitoring and testing all raw materials (every bar, billet, etc.).

Upon receipt of any raw material, Supplier shall compare the chemical, physical and mechanical properties data stated on the mill certification against the material specification requirements and document such comparison. The supplier shall implement appropriate storage and controls to preclude commingling of different heat/lots or batches of material. Additionally, the Supplier shall perform an over-check of the chemical composition to verify specification compliance by conducting a quantitative chemical analysis such as (X-ray Fluorescence (XRF), Optical Emission Spectroscopy (OES), Energy Dispersive X-ray Spectroscopy (EDS), etc.), or by having such a measurement performed by a laboratory meeting one of the following conditions: those listed on the Parker Aerospace Approved Process Supplier List (APSL); a laboratory accredited by PRI-Nadcap, A2LA or other accreditation body recognized by the International Laboratory Accreditation Cooperation (ILAC) and listed in the Signatories to the ILAC Mutual Recognition Arrangements (MRAs). Records showing the results of the Supplier's material verification program and its effectiveness shall be available to Parker Aerospace for review upon request. Traceability shall be provided by identifying the raw material heat, lot, batch or melt number from the certification/test report on the product and/or on packaging (when used), or the products segregated and identified.

5.13 Electro-Static Discharge (ESD) Control

Suppliers scheduled to provide ESD sensitive devices to Parker shall, prior to processing product, establish, document and implement an Electrostatic Discharge (ESD) Control Program plan in compliance with the requirements of MIL-STD-1686 or equivalent.

5.14 Counterfeit Parts

For Parker Aerospace, supplier shall have policy or procedure to cover and apply requirements, practices and methods to mitigate risk of receiving and installing counterfeit electronic parts (reference SAE AS-5553 - Counterfeit Electronic Parts; Avoidance, Detection, Mitigation and Disposition). To prevent the inadvertent use of counterfeit parts and materials all fasteners and/or electrical, electronic and electro-mechanical parts delivered and/or used in the manufacture of deliverable products shall be from the Original Component Manufacturer (OCM)/ Original Equipment Manufacturer (OEM) or their franchised dealer or an authorized distributor chain. Parts shall not be used or reclaimed and misrepresented as new. Parts shall not be acquired from independent distributors or brokers unless specifically authorized in writing by the buyer. The supplier shall flow down this requirement to sub-tier suppliers.

5.15 Foreign Object Damage/Foreign Object Debris (FOD) Prevention

The supplier shall establish, document and maintain a program to control and eliminate Foreign Object Damage (FOD) and/or contamination during the supplier's manufacturing, assembly, test and inspection, and packaging/shipping (e.g. use of FOD causing materials like Styrofoam packing beads) operations. When applicable, the supplier's FOD control program shall include controls to preclude FOD or contamination at the supplier's sub-tier sources. AS9146 shall be used as a guide to establish and implement the supplier's FOD program. The supplier's FOD program is subject to on-site review and approval by Parker Aerospace.

6.0 CHANGE CONTROL

The Supplier is responsible for controlling changes and notifying the Parker Buyer of all changes to the approved part design, manufacturing process, or site.

6.1 Change Control Process

The Supplier shall have a process to ensure that relevant versions of applicable documents furnished by Parker (as well as those specified of external origin) are available at points of use.

The Supplier is responsible for the timely review, distribution and implementation of all Parker engineering standards/specifications and changes in accordance with the schedule required by Parker. Timely review should be as soon as possible, and shall not exceed two working weeks. The Supplier shall maintain a record of the date on which each change is implemented in production. Implementation shall include updated documents.

6.2 Supplier Change Requests

Suppliers shall not make changes to their processes, location, facilities, equipment, material, product design (or any change which may affect product design or function) without written approval from the Parker Buyer for:

- Correction of a discrepancy on a previously submitted part;
- Product modified by an engineering change to design records, specifications, or materials; or
- Any planned changes by the Supplier to the design, process, or manufacturing location, such as:
    - Use of other material than was used in previously approved part or product
    - Production from new, additional, replacement or modified tools, dies, molds, patterns, etc.
    - Production following upgrade or rearrangement of existing tooling or equipment
    - Production from tooling and equipment transferred to a different plant site or from an additional plant
    - Change of sub-tier Supplier for parts, nonequivalent materials, or services (e.g. heat treating, plating, etc.)
    - Product produced after tooling has been inactive for production for 12 months or more
    - Change to test/inspection method – new technique (no effect on acceptance criteria)
    - For bulk materials: new source of raw material from new or existing Supplier, or change in product appearance attributes, etc.
    - Use of any non-conventional manufacturing methods such as electro-discharge machining (EDM), electro-chemical machining (ECM), laser or abrasive water jet metal cutting, flame spray coatings, etc.

Before submitting to Parker a request for a permanent change to a Supplier-controlled design, the Supplier shall review the FMEA and Control Plan, as applicable, to ensure that all process-related issues have been addressed and resolved. Parker may require the Supplier to submit an updated FMEA and Control Plan prior to approval of such permanent changes. Parker may also require other portions, or all, of the related qualification process to be repeated. In some cases, Parker may elect to review Supplier proposed permanent changes at the Supplier's facility.

To request a permanent engineering change, the Supplier shall use the Part/Process Change Notification form (#PH-PPCN), or other equivalent form of notification acceptable to the Parker Buyer.

To request a one-time or temporary deviation, Suppliers shall use Parker's Supplier Deviation Request (Form # PH-SDR), or other equivalent form acceptable to the Parker Buyer.

For Parker Aerospace, Suppliers shall flow down the above stated requirements to the suppliers' sub-tier sources. The supplier shall submit production/process change notifications consistent with AS 9116 describing all design and process changes for Parker approval, prior to making the change.

7.0 CONTROL OF NONCONFORMANCEMATERIAL

For nonconforming products supplied to Parker, including those that reach a Parker customer, the Supplier must cover all costs to correct the nonconformance including; assessment costs, administrative costs to process the nonconformance, and any rework or repair costs incurred by Parker as a direct result from receiving nonconforming hardware from the supplier.

7.1 Supplier Request for Nonconformance Deviation

A Supplier shall not knowingly ship product that deviates from the drawing, specification limits, or design intent without prior written authorization from the Parker Buyer. If such a condition exists, the Supplier may petition the Parker Buyer, in writing, to allow shipment of the product under a written nonconformance deviation. The Supplier shall use Parker's Supplier Deviation Request (Form # PH-SDR), or equivalent, unless otherwise directed.

If requested by the Parker Buyer, the Supplier must send samples of such nonconforming items to Parker for evaluation. The cost of shipping, inspection, and testing to determine the potential acceptability of such product will be charged to the Supplier.

Parker approval of a deviation is specific to the products for which it has been submitted and approved and shall not to be construed as a permanent engineering change. The Supplier must begin work immediately on corrective action. In all cases, the Supplier shall fully contain all product suspected of being nonconforming. In addition, nonconforming product may be returned to the Supplier at Supplier expense, or the Supplier may be required to sort any suspect product already shipped to Parker sites or be charged back for the cost of sorting by Parker. Any parts shipped to Parker that have been approved for deviation shall be clearly identified as such externally on the box, container, or other packaging and on shipping documentation. Inside of each box shall contain a copy of the Parker-approved deviation document.

For Parker Aerospace Suppliers, unless the Supplier is specifically granted material review and disposition authority by the contract, the Supplier shall document all nonconforming conditions in accordance with the requirements of AS/EN/SJAC9131 and submit them to the Parker Buyer (MRB) for review. Parker Aerospace Material Review Board will not accept for review and disposition any product that can be reworked to meet drawing or specification requirements or are obviously scrap.

7.2 Control of Reworked Product

Rework is defined as additional operations that are not part of the basic production process flow, which will bring product in full compliance with applicable drawings and specifications. Instructions for rework, including re-inspection requirements, shall be accessible to and utilized by the Suppliers appropriate personnel. All rework shall be documented and accepted by the responsible Quality organization. On the other hand, repair is defined as using alternative manufacturing techniques, methods, materials, or processes which may not bring product into full compliance with applicable drawings and specifications. Repairs are not allowed without written approval from Parker.

7.3 Supplier Containment

For product quality problems reported by Parker to the Supplier, until formal corrective action has been taken and approved, the Supplier shall provide documented evidence with subsequent shipments that such product has been inspected for the identified nonconformances and meets all applicable requirements.

7.4 Recovery of Costs for Non-Confirming Material

A. When material is rejected, a debit shall be issued.
   - For any rejected material (regardless of quantity), a minimum disposition fee of $500 will be debited (general admin, etc.) along with the cost of the product multiplied by the number of pieces returned to the supplier (purchase order amount) with a 15% added processing charge. If further analysis is required (measurement, testing, etc.), a minimum $100 per hour will be debited in 1 hour increments. Labor rates may vary by international regions.
   - If purchase order amount does not exceed $100, a flat $100 processing fee debit will be issued.
   - Supplier shall be debited for any cost of poor quality charge fee incurred by Parker (originating from the end customer) which could be inclusive of line down charges or any other such penalties.
   - When Parker or Parker's Customer conducts the sorting, inspection, or etc. on the shipment, the following charges shall apply.
   - Charges to the supplier are calculated for a minimum of one hour using the following rates (charged time in addition to the one hour minimum is rounded up to the next whole hour).
   - Indirect Labor - $100 per hour (inspection, handling, sorting, scrap, general administration, etc.). Labor Rates may vary by international regions.
   - Direct Labor - $100 per hour (rework, repair, including testing & processing). Labor Rates may vary by international regions.

B. Freight to rectify non-confirming condition.
   - If rejected material is returned to the supplier, supplier shall arrange with their chosen carrier, provide account charge information, or Parker will debit the amount incurred. This includes all intermediate shipments between the end customer and the supplier.
   - Replacement material shipment shall be shipped to Parker at the supplier's expense.

8.0 PACKAGING, LABELING, DELIVERY & RECORD RETENTION

Preservation, packaging, labeling, and shipping methods must comply with common industry practices and Parker requirements specified on the contract.

8.1 Preservation

In order to detect deterioration, the condition of product in stock should be assessed at appropriate planned intervals. The Supplier should use an inventory management system to optimize inventory turns over time and should assure stock rotation, such as “first-in-first-out” (FIFO).

For Parker Aerospace suppliers, BPS4108 is the document that describes the requirements for achieving cleanliness, inspecting for cleanliness, maintaining cleanliness, providing corrosion protection and controlling cleaning solutions for Parker parts without damaging the parts or coatings. The Supplier shall use the methods and materials specified in BPS 4108 to assure adequate cleaning and preservation for all products to be delivered to Parker.

8.2 Packaging

The Supplier must adequately plan for packaging designed to prevent product contamination, deterioration or loss and to eliminate shipping damage. Suppliers should provide expendable packaging or returnable containers, where appropriate, that provide for sufficient density and protection from any likely damage that may occur. Expendable materials and packaging must meet local and national standards for safe disposal and/or recycling.

8.3 Labeling

Labeling and bar code requirements may vary among Parker divisions. The Parker Buyer will provide the Supplier with the necessary specifications.

8.4 Delivery

The Supplier should systematically inform Parker of any delay in delivering product and provide a new dispatch date. The Supplier is responsible for additional transport costs due to delays.

For Parker Aerospace, Certificates of Conformance (CoC)

Assigned CoC by the Suppliers head of quality or company officer (or their authorized delegate) attesting that all products and/or services delivered are in compliance with all contract requirements shall be furnished with each shipment to Parker Aerospace, All CoC’s must be in the English language and may be in electronic format with electronic signatures. All signatures or signature blocks must clearly show title of the signatory. The CoC shall include:

- ***Supplier Name***
- ***Part number***
- ***Drawing/specification revision***
- ***Parker contract number***
- ***Line/release number (when applicable)***
- ***Quantity delivered***

- ***Packing list/shipper number (when applicable)***

When additional certifications/test reports are required for special processing, raw material, etc. the requirements will be specified on the contract.

8.4.1 Quality of Delivery Cost Recovery

- The Supplier shall immediately notify Parker of any circumstances that may cause a delay in delivery. At time of notification, the Supplier will provide information stating the estimated period of delay and the reasons thereof.
- Unless expressly deemed unnecessary by Parker in writing, the Supplier shall provide a written recovery plan on the day of delay disclosure, identifying all processes and durations required to achieve delivery. The Supplier shall use additional effort at its sole cost and expense, including without limitation premiums and expedited shipping methods to avoid or minimize delay to the maximum extent possible.
- All additional costs resulting from such efforts shall be borne by the Supplier. Nothing herein shall prejudice any of the rights or remedies provided to Parker in the applicable Order or by remedy available at law.
- In the case of an unexcused late delivery of any product by Supplier, liquidated damages shall be enforced against Supplier (and not as a penalty) at a 2% price reduction per day of late delivery to the NEED date. The liquidated damages for late deliveries shall not exceed 25% of the delayed line item(s) value. In the event such liquidated damage cap is met and Supplier continues to fail to deliver on-time in accordance with this Section and any other existing Agreement, then, in addition to collecting liquidated damages assessed herein, Parker shall have other remedies available at law or in equity. Supplier shall be debited for any cost for late delivery incurred by Parker originating from customer.

For Parker Aerospace suppliers, section 8.4.1 applies to turnaround time (TAT) on repair items as well as OEM deliveries. The standard TAT time allowed is 15 days. The 15 day TAT begins upon the Supplier's receipt of the return.

8.5 Record Retention

The Supplier shall retain quality records for a time period specified by the Parker contract or related reference documents. Upon request, the Supplier shall be capable of retrieving and delivering required records to Parker within forty-eight hours from time of request by Parker.

Unless otherwise specified by Parker Aerospace, the Supplier shall maintain all records that provide objective evidence of compliance to Parker contract requirements for a minimum of fifteen (15) years after the last delivery of products and/or services on the contract. Prior to discarding, transferring to another organization, or destruction of such records, the Supplier shall notify the Parker Buyer in writing and give Parker the opportunity to gain possession of the records. These requirements are also applicable to records generated by Supplier's sub-tier sources.

8.6 Shipment Condition – Safe Loading & Unloading

Shipped materials must be suitably prepared to allow safe unloading activities to occur:

- When feasible, shipments shall be made on pallets, skids or other foundational structures which facilitate the use of material handling equipment to easily lift and move the shipment.
- Pallets or skids shall be in good condition.
- Shipments must be stable and secured to the pallet. If multiple containers (or products) are packaged to be handled together, the resultant shipment must be suitable secured such that individual containers or materials may not fall or changing the center-of-gravity.
- Shipments stacked (placed on top of another shipment), must be stable and capable of being safely moved. The 'bottom' shipment (shipment base) must be capable of sustaining the weight of the 'top' shipment.
- If a shipment has a center-of-gravity which is either significant off-center or higher than the mid-point of the shipment, this shall be clearly identified on the shipping documents as well as the shipment itself.
- Containers must be appropriate for the type of material being shipped. The container's integrity must be sufficient for the weight of the material being shipped as well as the anticipated environmental conditions.
- Shipments which present a specific hazard (flammable, corrosive, etc.) shall be appropriately labeled in accordance with local and federal requirements.

9.0 CONTINUAL IMPROVEMENT

Suppliers should define a process for continual improvement, (examples: lean and six sigma) Recommend ISO 9004, including Annex B. A copy of the Supplier's continual improvement program shall be furnished to Parker upon request

9.1 Problem Solving Process

Suppliers should use a closed-loop corrective action process whenever a problem is encountered internally or upon notification from Parker. For example:

	Discipline	Description
1	Describe the Problem	State what the problem "Is," and "Is Not" with respect to what, where, when, who, how, and how many. Use quantitative terms.
2	Use a Team Approach	Consult and coordinate with relevant stakeholders.
3	Apply Containment	Immediately contain any suspect product to protect Parker and its customers.
4	Root Cause Analysis	Identify potential causes, analyze causes for failure mode, validate root cause(s), and identify solutions.
5	Implement Permanent Corrective Action	Implement solution. Update applicable FMEA, control plan and work instructions.
6	Verify Effectiveness of Corrective Action	Use check sheets, auditing, sampling, and/or control plans to monitor process performance for effectiveness and sustained improvement.
7	Implement Preventive Action	Implement changes to prevent the same type of error from occurring in similar products/processes. Update applicable documents.
8	Management Support	Review, approve, and support. Provide resources and team recognition.

For additional guidance on problem solving methods, tools, training, and related references, refer to AIAG document CQI-10.

9.2 Corrective Action Report

Parker may issue a request for a Corrective Action Report (CAR) to the Supplier when non-conforming material, components, or assemblies are found. When a formal reply is requested (whether hard copy or electronic media), the Supplier should use Corrective Action Report (Form PH-CAR) shown in the FORMS AND EXHIBITS section of this manual, or other convenient media of equivalent content. When documenting the root cause, the Supplier shall include the underlying reasons:

- why the specific nonconforming condition or incident occurred,
- why it was not detected by the Suppliers quality controls, and
- why the related process, from a systemic viewpoint, allowed the nonconformance (and potentially others like it) to occur.

The Supplier should apply the following criteria to determine whether the underlying root cause has been identified:

- It initiates and causes the event you are seeking to explain.
- It is directly controllable.
- The elimination of that root cause will result in the elimination or reduction of the problem.

Statements from the Supplier indicating that the corrective action is to alert or retrain the operator, and/or increase inspection, alone, are NOT acceptable corrective actions. These kinds of actions would be considered insufficient and not address the real underlying root cause(s) of why the Supplier's policy, instructions, process, procedure, and/or system allowed the problem to develop and occur and not be detected by quality controls.

Unless otherwise requested by Parker when notified, the Supplier shall respond to a request for corrective action as follows:

Required Action	**Timeline (from initial notification by Parker)**
The Supplier shall promptly acknowledge receipt of notification and communicate to Parker the immediate containment actions to be taken.	Within 24 hours
The Supplier shall provide an update of the containment plan to protect Parker during the interim period. This update must include: • Confirmation that the Supplier has identified all suspect product in process, in stock, in transit, and potentially at any Parker site by lot number, Parker contract number, and quantity. • Additional specific containment actions needed to be taken by the Supplier and/or Parker.	Within 72 hours
The Supplier must submit the completed Corrective Action Report (Form # PH-CAR, or equivalent) indicating the permanent actions taken, or to be taken, to prevent recurrence of the same problem, to prevent the occurrence of similar problems, and the applicable effectivity dates. Failure to respond with adequate containment and/or corrective action in agreed upon timeframe may result in the Supplier being removed from Parkers approved supplier list.	Within 10 business days

10.0 PURCHASED PRODUCT VERIFICATION

Parker expects to receive products from Suppliers with zero defects allowing products to move directly from dock to stock, or to the point of use, without incurring additional costs associated with receiving inspection. Parker may charge Suppliers for costs to inspect, sort, evaluate, and/or return products that do not meet requirements. Parker's respective divisions will administer their Purchased Product Verification program on the basis of individual part numbers, product families, or overall Supplier performance.

Purchased Product Verification may include Supplier Self Verification; Source Inspection at the supplier's premises or inspection upon receipt of product at Parker.

10.1 Supplier Self Verification Requirements

Where implemented, Supplier Self Verification may include Dock to Stock and Delegated Product Release Verification (DPRV) programs. Supplier Self Verification applies to material and components released for production that ship to a particular Parker location. However, Parker reserves the right to inspect any product upon receipt or at any other time, due to criticality or any other factor, or cancel the program at any time.

Supplier Self Verification typically does not include pre-released parts, samples, prototypes, pilot fabrication runs, first articles for new tooling or processes, and other low-volume applications.

To be considered for Supplier Self Verification, the product must meet the following requirements:

- Must be from an approved Parker Supplier
- The Supplier must meet requirements for a certain number of consecutive lots of the same part number being accepted by the same Parker location
- The Supplier must not be rated as having unacceptable product quality performance
- No open and delinquent corrective action requests for the part number (or products from the same family)

10.2 Supplier Self Verification Suspension

The Supplier's Supplier Self Verification privilege can be suspended when any of the following conditions occur:

- A part number is detected as non-conforming
- The Parker Buyer is made aware that the Supplier has a major non-conformance related to a second or third-party quality management system audit
- When results or audit evidence show the Supplier is not following their approved Control Plan or related work instructions

Generally, the suspension process is as follows:

A. Parker Buyer will notify the Supplier that their Supplier Self Verification privilege has been suspended.
B. Parker will issue a request for corrective action to the Supplier.

C. The suspension should end when the Supplier satisfies the conditions outlined in the section above.

If the Supplier is put on suspension repeatedly, the Parker Buyer may place the Supplier on new business hold and/or divert the business to an alternate Supplier.

10.3 Dock-to-Stock

Dock to Stock Suppliers have the authority to directly release product(s) for delivery to Parker without the need for any additional inspections beyond the Supplier's normal inspection processes by Parker, Parker representatives or Delegated Product Release Verification (DPRV).

10.4 Delegated Product Release Verification (DPRV)

Delegated Product Release Verification (DPRV) is a process whereby a supplier is delegated the authority to act on behalf of Parker to verify and release products/services.

The DPRV inspections shall be performed on each release of product. DPRV shall be performed after final inspection, as close to shipment as practical; conducted as an independent process by someone other than the person who performed the final inspection, unless waived by Parker.

The DPRV shall consist of, but not limited to:

- Contract / purchase order review.
- Supplier documentation review.
    - Verification that all required product realization operations and inspections are complete.
    - When applicable, verification that product nonconformance has been properly documented and processed, in accordance with Parkers contractual requirements.
    - Verification that Parker's requirements for First Article Inspection (FAI) and/or Production Part Approval Process (PPAP) have been satisfied.
- Physical product verification, including verification of product marking/identification and visual examination. DPRV shall validate special requirements, critical items, and key characteristics when contractually required by Parker.
    - Sampling plans (as outlined in Section 5.10 – Sampling Inspection of this document) for product verification may be used with approval from the Parker Division.
- Shipping / release documentation.

DPRV personnel shall validate and record the completion of the verification activity. When required, Parker may provide a Delegated Product Release Verification Checklist to document completion of the DPVR validations, otherwise the supplier can utilize their own checklist to satisfy Parker's DPRV process criteria.

Specific stamps, identification numbers, etc. shall be used for product release when required by the delegating Parker Division.

Product and/or documentation nonconformances detected during the DPRV process shall be processed in accordance with Parker nonconformance and corrective action procedures and the contractual requirements.

For Parker Aerospace suppliers, the requirements of AS 9117 - Delegated Product Release Verification; AS13001 – Delegated Product Release Verification Training Requirements and AS7106/5 – National Aerospace and Defense Contractors Accreditation Program Self Release Agreements – Requirements apply.

10.5 Source Inspection

Source Inspection when imposed, requires purchased product verification by a Parker Quality Representative at the Supplier's facility prior to delivery to Parker. The Parker Quality Representative may be a Parker employee, or a Parker authorized third party inspection contractor.

The Supplier shall notify Parker, or the Parker approved inspection contractor, at least forty-eight (48) hours in advance of the time the products will be ready for final inspection. Upon request, the Supplier shall make available to the Parker Quality Representative any measuring and test equipment, facilities, records and personnel to facilitate the source inspection.

10.6 Government Source Inspection (GSI)

For Parker Supplier's, Government Source Inspection (GSI) may be imposed at the discretion the US Government on any Parker US Government contract.

Upon receipt of this Contract, the Supplier shall promptly notify the US Government representative who normally services the Supplier's plant, in order that the US Government representative can accomplish appropriate planning for conducting source inspection at the Supplier's facilities. If the Supplier cannot locate the US Government representative to arrange for the required source inspection, the Supplier shall notify Parker immediately. Upon request, the Supplier shall make available to the US Government representative any measuring and test equipment, facilities, records, and personnel to facilitate the Government source inspection.

11.0 SUPPLIER PERFORMANCE

11.1 Performance Measures

- **QUALITY**
  This metric defines the Rejected Parts Per Million (RPPM) shipped using the following formula. The definition of "rejected parts" is the total number of parts received from the Supplier that do not conform to the drawing, applicable specification, contract requirements or any other valid quality reason (including those caused by shipping and administrative errors). Quantities are to be reported in the units that they are purchased:

$$\text{RPPM} = \frac{\text{Number of Parts Rejected}}{\text{Number of Parts Received}} 1{,}000{,}000$$

  RPPM is a measure of how Parker perceives the quality of products delivered by the supplier.

  Examples that count as rejected product are:
  - Parts that are dimensionally inaccurate and reworked by Parker.
  - Parts that are reported out of specification even though Parker uses them without modification.
  - Parts that conform to the drawing but do not fit the intended use and where the supplier is responsible for the design for the intended application.
  - The nonconforming parts found and returned after the whole consignment has been sorted either by Parker or the supplier at Parker's or Parker Customer facility.
  - The whole consignment being returned by Parker, even though the supplier may subsequently perform sorting at the supplier's facility and find a portion acceptable.
  - Parts that were manufactured to specification but are received by Parker damaged, mislabeled, or misdirected, with mixed stock, missing documents or inaccurate document data for which the supplier is responsible.
  - Parts that conform but are returned due to wrong quantity delivered, duplicate shipment, or wrong parts sent for which the supplier is responsible.
  - Parts returned for being delivered without the required Parker/Customer approval (i.e., PPAP sub-missions, product design changes) and for which the supplier is responsible. This includes parts that may have been subsequently approved, but where the submission was incomplete, or the late approval disrupted Parker/Customer's production.

  Examples that do not count as rejected product are:
  - Parts that conform to the drawing but do not fit the intended use and where Parker is responsible for the design and/or selection.
  - Parts that were manufactured to specification but are received by Parker damaged or misdirected due to the supplier's carrier or their transportation company.
  - Parts that are returned due to wrong quantity ordered, wrong parts ordered, or duplicate orders placed for which Parker is responsible.

- Parts delivered without the required Parker/Customer approval (I.e., PPAP submissions, product design changes), but where the parts are not returned, and approval is granted without disruption to Parker/Customer.

Based on Parker's current expectations, the following table describes the resulting actions for varying RPPM performance levels (See PH Connect for thresholds):

Premier	Meets requirement set by Parker
Preferred	Satisfactory; no action required
Marginal	Systemic corrective action may be required
Unacceptable	Systemic corrective action is required and may require Supplier to meet with Parker management representatives.

- **Delivery**

  This metric defines the delivery performance rating using the following formula:

  "On time" is based on the NEED date, or Kanban signal (unless other delivery requirements are explicitly applied to an individual order).

  Based on Parker's current expectations, the following table describes the resulting actions for varying delivery performance levels (See PH Connect for thresholds):

Premier	Meets requirement set by Parker
Preferred	Satisfactory; no action required
Marginal	Systemic corrective action may be required
Unacceptable	Systemic corrective action is required and may require Supplier to meet with Parker management representatives.

- **Continual Improvement**

  This metric is the percent of savings to annual spend. Spend is defined as the dollar amount Parker purchased from the Supplier. The following formula defines the calculation:

$$\frac{\text{Dollar Value of Ideas Submitted}}{}$$

% Savings = **Total Dollar Spend x Continuous Improvement Commitment Percentage**

Investigative requests will be used to initiate ideas generated by Parker representatives. The requests are used to cultivate ideas within the Supplier's organization and to assist the Supplier in meeting the Process Continuous Improvement (PCI) targets. PCI objectives are the responsibility of the Supplier to meet and are not dependent on the number of investigative requests submitted by Parker. Investigative requests will be executed using PH Connect (Parker's Web-based Supplier Portal).

PH Connect is the primary medium by which continuous improvement ideas are submitted. The Parker Procurement (Supply Chain) Department is responsible for the installation and training of the system within the Supplier's operation. PH Connect On-Line Help is the instructional reference for use of the system.

11.2 Supplier Development Program

Parker's Supplier Development Program is designed to improve the Supplier operations in multiple aspects of their business, which includes new product development, engineering, quality, communication, performance, delivery, and cost through the implementation of a Lean Enterprise and/or Six Sigma Program in conjunction with appropriate quality tools. For further information, you may contact your Parker Buyer.

APPICABLE DOCUMENTS

The following documents are referenced within this manual and may be applicable to the extent specified by Parker in the contract and applicable reference documents. Copies may be obtained from the sources shown. It is the Suppliers responsibility to obtain applicable documents and to ensure that current revisions are maintained and available to its operations, as required.

Document	Document Title	Available From
ANSI/NCSL Z540.3	Requirements for the Calibration of Measuring and Test Equipment	www.ncsli.org
ISO 9001	Quality Management System Requirements (General)	www.ansi.org www.iso.ch
ISO 10012	Measurement Management Systems – Requirements for Measurement Processes and Measuring Equipment	www.iso.org
ISO/IEC 17025	General Requirements for the Competence of Testing and Calibration Laboratories	www.iso.org
AC7004	Nadcap Audit Criteria for Quality Management System	www.eauditnet.com
ARP9134	Supply Chain Risk Management Guideline	www.sae.org
AS5316	Storage of Elastomer Seals and Seal Assemblies Which Include an Elastomer Element Prior to Hardware Assembly	www.sae.org
AS5553	Counterfeit Electrical, Electronic, and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition	www.sae.org
AS/EN/JISQ9100	Quality Management System Requirements (Aerospace)	www.sae.org www.asd-stan.org
AS9003	Inspection and Test Quality System (Aerospace)	www.sae.org
AS9102	Aerospace First Article Inspection Requirement	www.sae.org
AS9103	Quality Management Systems – Variation Management of Key Characteristics	www.sae.org
AS9104	Requirements for Aviation, Space, and Defense Quality Management System Certification Programs	www.sae.org
AS9110	Quality Management Systems – Requirements for Aviation Maintenance Organizations	www.sae.org
AS9115	Quality Management Systems – Requirements for Aviation, Space and Defense Organizations – Deliverable Software	www.sae.org
AS9116	Notice of Change (NOC) Requirements	www.sae.org
AS9117	Delegated Product Release Verification	www.sae.org
AS9120	Quality Management Systems – Requirements for Aviation, Space, and Defense Distributors	www.sae.org

AS9131	Quality Management Systems – Nonconformance Documentation	www.sae.org
AS9145	Requirements for Advanced Product Quality Planning and Production Part Approval Process	www.sae.org
AS9146	Foreign Object Damage (FOD) Prevention Program Requirements for Aviation, Space and Defense Organizations	www.sae.org
AS9162	Aerospace Operator Self-Verification Programs	www.sae.org
AS7106/5	National Aerospace and Defense Contractors Accreditation Program Self-Release Agreements – Requirements	www.sae.org
AS13001	Delegated Product Release Verification Training Requirements	www.sae.org
AS13002	Requirements for Developing and Qualifying Alternate Inspection Frequency Plans	www.sae.org
BPS4108	Cleaning Methods Including Corrosion Protection	Parker Buyer
ISO/TS/IATF 16949	Quality Management System Requirements (Automotive)	www.ansi.org www.aiag.org
ISO 13485	Quality Management System Requirements (Medical)	www.ansi.org www.iso.ch
RTCA DO-178	Software Consideration in Airborne Systems and Equipment Certification	www.rtca.org
MIL-STD-1686	Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)	assist.dla.mil
APQP	Advanced Product Quality Planning & Control Plan Manual (for non-aerospace suppliers)	www.ansi.org www.aiag.org
PPAP	Production Part Approval Process Manual (for non-aerospace suppliers)	www.ansi.org www.aiag.org
SPC	Statistical Process Control Manual	www.ansi.org www.aiag.org
MSA	Measurement System Analysis Manual	www.ansi.org www.aiag.org
FMEA	Potential Failure Mode & Effects Analysis Manual	www.ansi.org www.aiag.org
CQI-10	Effective Problem Solving Guideline	www.ansi.org www.aiag.org
ISO 9004	Quality Management Systems - Guidelines for Performance Improvements	www.ansi.org www.iso.ch

FORMS AND EXHIBITS

Many of the required forms are available in the respective AIAG core tools manuals and other reference documents. Certain unique Parker forms are exhibited herein*. Electronic versions of these and other Parker forms (including those considered equivalent to the AIAG forms) may be obtained from your Parker Buyer.

Form Number	Form Title	Available From
CFG-1001	Part Submission Warrant	See PPAP Manual
THE-1001	Part Submission Warrant	See PPAP Manual
CFG-1003	PPAP-Dimensional Results	See PPAP Manual
CFG-1004	PPAP-Material Test Results	See PPAP Manual
CFG-1005	PPAP-Performance Test Results	See PPAP Manual
PH-CAR	Corrective Action Report *	Parker Buyer
PH-CPLAN	Control Plan *	Parker Buyer
PH-FAI	First Article Inspection Report *	Parker Buyer
PH-FMEA	Failure Mode and Effects Analysis	Parker Buyer
PH-PPCN	Product/Process Change Notification *	Parker Buyer
PH-SDR	Supplier Deviation Request *	Parker Buyer
PH-SQA	Supplier Quality Assessment	Parker Buyer
PH-ISO 9001	ISO 9001 Quality Management System Audit	Parker Buyer