



Parker Hannifin Corporation

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Additional Quality Assurance Requirements

For

Parker Aerospace Suppliers

Prepared By:

Mike Wicks

Product Integrity

Approved:

William S. Schmiede

Vice President Integrity - Aerospace Group



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REVISION RECORD

<u>Rev.</u>	<u>Date</u>	<u>Description</u>	<u>Approval</u>
N/C	06 Jan 2003	New. Replaces Parker Aerospace document D112, Rev. 'J'	G. Udris
A	23 June 2003	Added Section 3.1.4 Access to Supplier's Facilities Revised clauses Q245, Q300 and Q330 Revised Q450. Old Q450 is now Q451 and old Q451 is now Q452 Corrected spelling and other typographical errors	G. Udris
B	7 Mar 2005	Reformatted and revised as follows: In Clauses Q030, Q040, Q050, Q055 replaced Parker Aerospace document numbers with SAE Standards; Q145 to ANSI/NC SL Standard Added clauses Q057, Q185, Q270, Q365, Q585, Q645 and Q800; Revised Q450 to add example of certification statement; Revised Q540, Q550 to reference SAE AS9102 requirement; Revised Q710 to add examples of typical traceability documents;	G. Udris
C	1 Mar 2006	Section 2. Last sentence added representatives of Parker Aerospace Section 3.2.3 added sources for documents Section 3.2.4 - 2 nd paragraph, 2 nd sentence - deleted "when specified by Contract" (It now requires the supplier to return all Parker Aerospace furnished proprietary documents at the end of Contract performance) Section 3.6 revised to include types of records minimum request time Section 3.7.4 (new added) Supplier Notification of Nonconforming Products Delivered to Parker Aerospace. Q036 added "Only applicable to CSO Associate facilities" Q075, Q085 revised to include EASA Q091 Revised to require AS9100 current revision Q105 revised to define requirements per SAE ARP9013 Q185 Third Party Source Inspection ...quality performance rating over the most current three (3) month period. (was four month period) Q231 added EASA Q320 - Supplier Furnished Raw Material - revised 2 nd paragraph -Caution. Raw Material from Foreign Sources. (Removed Parker Aerospace approved sources in Canada and United Kingdom) Q342 Nadcap was NADCAP Q450 Revised to reflect current practice and reference specification Q465 New - added packaging requirements Q550, Q560 and Q565 revised to require current revision of SAE AS9102 Q565 Removed SAE document sources Q677 - Alcohol and Drug Prevention Program - new added Typos - corrected typos and sentence structure throughout. No change in requirements.	G. Udris
D	15 Oct 2008	Entire document revised to remove requirements already in PH-SQRM Parker is now Parker Aerospace	M. Wicks

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Q010 GENERAL REQUIREMENTS CLAUSE

1. PURPOSE

This document describes the general and special product assurance requirements that are in addition to the requirements in the Parker Hannifin Corporation - Supplier Quality Requirements Manual (PH-SQRM). The requirements specified herein will be used by the divisions of Parker Aerospace and will be included on the Purchase Order, Contract or other formal agreement (hereafter referred to as the Contract) between a Supplier and a division of Parker Aerospace. The purpose of this document is to clearly define for each purchase of products or services, all of the necessary and applicable technical and quality requirements with which the Supplier must comply to meet the requirements of Parker Aerospace, its customers and/or regulatory authorities. For the purpose of this document, the term "Parker Aerospace" means the Parker Aerospace division which has entered into a Contract with the Supplier.

2. APPLICATION

This document was developed and has been issued for use by the divisions of the Parker Aerospace Group, however, when deemed appropriate, other Parker Hannifin Corporation divisions and facilities may use it by referencing the P9112 document in the Contract to the Supplier.

Unless expressly excluded by the Contract, Clause **Q010**, which includes Sections 1, 2 & 3 herein applies to all Contracts. The "Q" clauses listed in Section 4. apply only when the specific clause number is included on the Contract. NOTE: When electronic documents are used by Parker Aerospace to transmit requirements to the Supplier, 'Q' clauses may be flowed-down to the Supplier electronically, in attachments that are part of the Contract, such as the Manufacturing Quality Instruction (MQI) or Manufacturing Work Instruction (MWI) or other designated method. Compliance by the Supplier to all Contract requirements is subject to on-site verification by Parker Aerospace, representatives of Parker Aerospace, its customers and/or regulatory authorities, or, Parker Aerospace may request the Supplier to provide objective evidence of compliance with all Contract requirements.

3. SUPPLIER RESPONSIBILITIES

3.1 Prohibited Practices

The following acts and practices are prohibited, unless approved by Parker Aerospace in writing. Any violation by the Supplier may result in disqualification of the Supplier for future business with Parker Aerospace. In addition, the Supplier shall invoke (flow-down) the requirements of sections 3.1.1 through 3.1.5 to all of the Supplier's sub-tier sources performing work for the Supplier that is scheduled for delivery to Parker Aerospace on the Contract.

3.1.1 Unauthorized Facility Changes

During performance on the Contract, the Supplier shall give Parker Aerospace written notice before relocating any production, inspection or processing facilities; or, transferring work between different facilities; or, when applicable, prior to 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 Aerospace; or, making any other changes which may affect product quality, reliability or integrity. Such changes are subject to approval/disapproval by Parker Aerospace. 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 Aerospace.

3.1.2 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 Aerospace in writing for each occurrence. Unless specifically authorized by Parker Aerospace, this prohibition also applies to reworking products by removing plating (stripping) and re-plating. In those cases, where Parker Aerospace 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 Aerospace approved repair, salvage or stripping, and the method used.

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3.1.3 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 Aerospace. Authorization may be contingent on Parker Aerospace 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.

3.1.4 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 Aerospace without prior written authorization by Parker Aerospace. This prohibition also applies to the use of such processes by the Supplier's sub-tier sources. Authorization by Parker Aerospace may be contingent on Parker Aerospace 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 Aerospace approved sources.

3.1.5 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 Aerospace, 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.

3.2 Contract Changes & Their Effectivity

3.2.1 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.

3.2.2 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 (as defined by MIL-STD-973) without specific approval by Parker Aerospace 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 (as defined by MIL-STD-973). The Supplier shall furnish a copy of the Class II change to Parker Aerospace prior to the initial delivery of the (changed) products, so that Parker Aerospace can verify that the change does not violate the above requirements.

3.3 Certifications

3.3.1 Delivery Certification

By delivering products or services to Parker Aerospace required by the Contract, the Supplier certifies that such products or services are in compliance with all applicable requirements of the Contract, and objective evidence of compliance is available and will be furnished to Parker Aerospace for review upon request.

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3.3.2 Certification Requirements

The Supplier shall furnish with the initial delivery of products and/or services on the Contract, all certifications, test reports and other documents (hereafter certifications), issued by the Supplier or by the Supplier's sub-tier sources that are required by the specific "Q" Clauses listed on the Contract. The Supplier is responsible to ensure that all certifications furnished by the Supplier, or by the Supplier's sub-tier sources, are complete, legible and reproducible, accurate and in compliance with all Contract requirements. Parker Aerospace reserves the right to return all products to the Supplier at Supplier's expense when the certifications that support the products and/or services are not properly executed. When the Contract includes provisions for incremental deliveries by the Supplier, after the initial delivery of products/services and required certifications, the Supplier may, on subsequent deliveries, either provide additional copies of the certifications, or note on the packing list/shipper and the Certificate of Conformance (CoC), the date when the original certifications applicable to the current delivery were initially furnished to Parker Aerospace.

3.3.3 Certification Language & Content

All certifications shall be in the English language and as a minimum include the following information and data:

- a. name of the issuing organization (Supplier and/or Supplier's sub-tier source)
- b. part number and revision. Unless specified by Contract, revision status is not required for off-the-shelf electronic components, catalog items and/or standard parts
- c. quantity processed and/or delivered
- d. lot or batch number (when applicable)
- e. Parker Aerospace Contract number, and if applicable the Line Item & Release Number (Parker Aerospace direct Suppliers only)
- f. title and signature that meets the requirements of 3.3.4 and 3.3.5, of the authorized official of the issuing organization.
- g. certifications issued by Supplier's sub-tier sources shall include information and data required by (a), (b), (c), (d), and (f) above
- h. Suppliers that are required to furnish certification(s) to Parker Aerospace that were issued by their Sub-tier source shall reference the certification(s) on their shipping documents, Certificates of Conformance (Q240) and/or Materials & Processes Summary Report (Q245).

3.3.4 Acceptable & Authorized Signatures

All certifications and test reports shall include the title and acceptable signature of the authorizing company official. The following methods are the only Parker Aerospace approved and acceptable methods for applying signatures to certifications: (a) actual signatures rendered in ink by the signing official; (b) facsimiles of actual signatures such as rubber stamps; or (c) machine or computer graphics generated facsimile signatures. The title of the authorizing company official may be in a printed or hand written format. When quality or inspection stamps are used in lieu of actual signatures, such stamps shall clearly identify the issuing organization and the authorized individual to whom the stamp is assigned. The issue, use and control of such stamps shall be governed by documented procedures in the Supplier's Quality Management System.

3.3.5 Electronic Signatures

When the Supplier elects to use electronic signatures on electronic documents, the following rules apply:

- a. application of electronic signature must be under the direct control of the person whose name appears on the document,
- b. electronic signature may only be applied at the location or facility where the individual is located and the individual must have direct access to the products or services, and supporting data to monitor the process, perform inspections and ensure that the products or services conform to all Contract requirements,
- c. the preparation of electronic documents and application of electronic signatures is governed by documented procedures in the Suppliers Quality Management System to ensure the validity and integrity of all electronic documents, and
- d. by application of an electronic signature, the Supplier certifies that the signature was applied by the authorized company official in compliance with (a), (b) & (c) above

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3.4 Nonconforming Products & Material Review

3.4.1 Identification, Segregation & Control

Any products found to be nonconforming to Parker Aerospace drawings, specifications, Contract, or other applicable requirements either by the Supplier or the Supplier's sub-tier sources, shall be identified, segregated and reworked or replaced with conforming products prior to delivery to Parker Aerospace. Parker Aerospace reserves the right to reject and return any nonconforming products to the Supplier at the Supplier's expense.

3.4.2 Supplier Material Review Authority

Unless the Supplier is granted Material Review authority by inclusion of Clause **Q155** or **Q160** on the Contract, all nonconforming material shall be submitted to Parker Aerospace for disposition in accordance with 3.4.3.

3.4.3 Submittal to Parker Aerospace MRB for Disposition

Unless otherwise specified in the Contract, in order for the Supplier to submit nonconforming products to Parker Aerospace Material Review Board (MRB) for disposition, the Supplier shall document all nonconforming conditions in accordance with the requirements of AS/EN/SJAC9131 and submit a request to the Parker Aerospace Buyer. Parker Aerospace MRB will not accept for review and disposition any products that can be reworked to meet drawing or specification requirements, or, are obviously scrap. After review and disposition by Parker Aerospace MRB, a copy of the form describing the MRB disposition will be returned to the Supplier. A 'use-as-is' or 'repair' (salvage) disposition by MRB does not relieve the Supplier of the legal responsibility and liability for such products.

3.4.4 Supplier Notification of Nonconforming Products Delivered to Parker Aerospace

When the Supplier has determined that nonconforming product(s) have been delivered to Parker Aerospace, the Supplier shall notify the Parker Aerospace Buyer within twenty-four (24) hours of the initial discovery. The Supplier shall use receipt acknowledged e-mail or other positive notification method. The notification shall include the following information:

- a. Supplier name
- b. Parker Aerospace Contract number
- c. part number and description
- d. affected quantity and serial numbers (if known)
- e. dates delivered (if known)
- f. brief description of the nonconforming condition

The initial notification shall be followed by a formal "Disclosure Letter" delivered to the Parker Aerospace Buyer within five (5) days of the initial notification. The Disclosure Letter shall include the following information:

1. complete description of the nonconforming condition(s)
2. the affected quantity of products (including serial numbers when applicable) and dates delivered to Parker Aerospace
3. potential effect of the nonconformance on the performance, reliability, safety and/or usability of the product(s) if known
4. recommendations for Parker Aerospace action including for products that Parker Aerospace may have already delivered to its customers
5. immediate action taken by Supplier to contain the nonconformance and nonconforming products
6. root cause analysis of the nonconforming condition
7. root cause corrective action plan and schedule
8. the plan and schedule for verifying the effectiveness of the corrective action

In those cases where (1) through (8) above are under investigation and incomplete, the Supplier may request, from the Parker Aerospace Buyer, authority to submit an interim disclosure letter. The interim letter shall include as much information as available and identify the due date for completion of the investigation and the date final disclosure letter that includes all (1) through (8) data will be submitted to Parker Aerospace. Parker Aerospace reserves the right to participate in the nonconforming product investigation at the facilities of the Supplier or its sub-tier sources.

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3.4.5 Re-Submittal of Products Previously Rejected by Parker Aerospace

Products returned to the Supplier by Parker Aerospace and re-worked or replaced by the Supplier and re-submitted to Parker Aerospace shall be clearly identified as re-submitted products. The Supplier's packing list/shipper shall include a statement that the products delivered are:

- a. replacement, or
- b. reworked to meet all applicable requirements, and
- c. include reference to the Parker Aerospace rejection document serial number.

3.5 Document Sources

Copies of Parker Aerospace proprietary documents, or Parker Aerospace customer proprietary documents, required by the Supplier to comply with Contract requirements will be furnished to the Supplier by Parker Aerospace with the Contract.

Copies of Industry, National, International or US Government documents and Standards are generally available on the internet or from commercial sources. The Supplier is responsible for obtaining such documents, including current revision of such documents. Any problems experienced by the Supplier in obtaining required documents should be brought to attention of the Parker Aerospace Buyer.

The following sources are responsible for the documents listed:

SAE: Copies **AS** and **ARP** standards may be ordered from: SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001 (724) 776-4970 or on the Internet at <http://www.sae.org>

ANSI/NCSL: Copies of **Z540-1** document may be obtained from: National Conference of Standards Laboratories (NCSL), 1800 30th Street, suite 305B, Boulder, Colorado 80301

RTCA/DO - 178/254 may be obtained from: **RTCA** (Radio Technical Commission for Aeronautics) 1828 'L' Street NW, Suite 805 Washington, DC 20036. Telephone 202-833-9339. E-Mail: info@rtca.org

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4. QUALITY ASSURNACE PURCHASE ORDER CLAUSES

("Q" Clauses from Section 4. apply only when included on the Contract)

4.1 Supplier Inspection & Quality System Requirements

Q020 Parker Hannifin Corporation - Supplier Quality Requirements Manual (PH-SQRM) - establishes the general requirements for Quality Management Systems applicable to all Parker Hannifin Corporation Suppliers. Q020 will be included by Parker Aerospace on all production Contracts with Suppliers.

Q030 Quality Management System – Stockist Distributors per SAE AS9120 – The Supplier shall establish and maintain a Quality Management System in compliance with the current requirements of SAE AS9120 - "Quality Management Systems - Aerospace - Requirements for Stockist Distributors." Supplier's Quality Management System is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).

Q035 Inspection System - FAA-PMA Holder - When the Contract is for products for which the Supplier has received Federal Aviation Administration (FAA) Parts Manufacturer Approval (PMA), the Supplier shall establish and maintain an Inspection System in compliance with the current requirements of 14 CFR 21 (Title 14, Code of Federal Regulations, Part 21), Subpart "K" - Approval of Materials, Parts, Processes and Appliances. The Supplier's Inspection System is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s). A copy of the current FAA PMA approval letter or "Certificate" shall be furnished to Parker Aerospace with the initial delivery of products on the Contract.

Q036 Parker Aerospace Document D113 - The division shall establish and maintain compliance to the current revision of Parker Aerospace Document D113 – "Product Assurance Requirements." FAA Parts Manufacturer Approval (PMA) Program is only applicable to CSO associate facilities.

Q037 Inspection System - Production Certificate FAA-PC Holder - When the Contract is for products for which the Supplier holds a Federal Aviation Administration (FAA) issued "Production Certificate" (PC), the Supplier shall establish and maintain an Inspection/Quality System in compliance with the requirements of 14 CFR 21 (Title 14, Code of Federal Regulations, Part 21), Subpart G & FAA Advisory Circular (AC) 21-1. The Supplier's Inspection/Quality System is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s). A copy of the current FAA approval letter or "Certificate" shall be furnished to Parker Aerospace with the initial delivery of products on the Contract.

Q038 Inspection System - FAA-TSOA Holder - When the Contract is for products for which the Supplier holds a Federal Aviation Administration (FAA) issued "Technical Standard Order Authorization" (TSOA), the Supplier shall establish and maintain an Inspection/Quality System in compliance with the current Requirements of 14 CFR 21 (Title 14, Code of Federal Regulations, Part 21) Subpart G & FAA Advisory Circular (AC) 21-1. The Supplier's Inspection/Quality System is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s). A copy of the current FAA approval letter or "Certificate" shall be furnished to Parker Aerospace concurrent with the initial delivery of products on the Contract.

Q040 Variation Management Program per SAE AS9103 – The Supplier shall establish and maintain a Variation Management Program in compliance with the current requirements of SAE AS9103 - "Variation Management of Key Characteristics." AS9103 requires the use of statistical methods to control manufacturing and processing operations. Supplier's variation management program is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).

Q050 Inspection & Test System per SAE AS9003 – The Supplier shall establish and maintain an Inspection & Test System in compliance with the current requirements of SAE AS9003 - "Inspection and Test System." Supplier's Inspection & Test System is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).

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Product Integrity

Approved:

William S. Schmiede

Vice President Integrity - Aerospace Group



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- Q055 SQA Program Requirements per ISO 9000 - 3 and RTCA/DO - 178** – The Supplier shall establish and maintain a Software Quality Assurance (SQA) Management and Development Program in compliance with the current requirements of documents ISO 9000-3 and RTCA/DO-178. The Supplier's SQA Management and Development Program is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).
- Q056 Design Assurance Requirements, Airborne Electronic Hardware (Firmware) RTCA/DO-254** - The Supplier shall establish and maintain a Design Assurance Management and Development Program for airborne electronic hardware (i.e. ASIC's, FPGA's, and PLD's) in compliance with the requirements of Radio Technical Commission for Aeronautics document RTCA/DO-254 – “Design Assurance Guidance for Airborne Electronic Hardware.” The Suppliers electronic hardware Design Assurance Management and Development Program is subject to audit, verification and approval/disapproval by Parker Aerospace designated representative(s).
- Q057 Deliverable Aerospace Software Supplement SAE AS9100 / AS9006** - This Contract is for deliverable software or products containing deliverable software. Supplier's Software Quality Assurance (SQA) program shall meet the requirements of the current revision of SAE AS9100 - “Quality Management Systems - Requirements for Aviation, Space and Defense Organizations”, and SAE AS9006 - “Deliverable Aerospace Software Supplement for AS9100.” Supplier's SQA program is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).
- Q060 Inspection System per NASA NHB 5300.4(1c)** - "Inspection System Provisions for Aeronautical & Space Materials, Parts and Services." The Supplier shall establish and maintain an inspection system that is in compliance with the current requirements of National Aeronautics and Space Administration (NASA) document NHB 5300.4(1c). The Supplier's Inspection System is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).
- Q075 Quality System per EASA Part 21** – The Supplier shall establish and maintain a Quality System that is in compliance with the requirements of the current revision of European Aviation Safety Agency (EASA) Regulation, Part 21 – “Certification Procedures for Aircraft and Related Products and Parts.” The Supplier's Quality System must be approved by EASA and/or by the National Civil Aviation Authority (NCAA) of the country in which the Supplier's facilities are located. A copy of the current EASA issued approval letter or “Certificate” shall be furnished to Parker Aerospace concurrent with the initial delivery of products on the Contract.
- Q080 Inspection System per US 14 CFR 145** - The Supplier shall establish and maintain an Inspection System that is in compliance with the requirements of the current revision of 14 CFR 145 (Title 14, United States Code of Federal Regulations, Part 145) - “Repair Stations; Inspection System Requirements.” The Supplier's Inspection System must be approved by the Federal Aviation Administration (FAA) with a rating applicable to the item called out on the Parker Aerospace Contract. A copy of the current FAA issued approval letter or “Certificate” shall be furnished to Parker Aerospace concurrent with the initial delivery of products on the Contract.
- Q085 Inspection System for Maintenance Organization per EASA Part 145** - The Supplier shall establish and maintain an Inspection System in the Suppliers Maintenance Organization that is in compliance with the current revision of European Aviation Safety Agency, (EASA) Regulation, Part 145 – “Approved Maintenance Organization; Inspection System Requirements.” The Supplier's Inspection System must be approved by EASA, and/or the National Civil Aviation Authority (NCAA) of the country in which the Supplier's facilities are located with a rating applicable to the item on the Parker Aerospace Contract. A copy of the current approval letter or “Certificate” shall be furnished to Parker Aerospace concurrent with the initial delivery of products on the Contract.
- Q091 Quality Management System per SAE AS9100** – The Supplier shall establish and maintain a Quality Management System that is in compliance with the current revision of the requirements of SAE AS9100 - “Quality Management Systems - Requirements for Aviation, Space and Defense Organizations”. Suppliers AS9100 Quality Management System shall be certified and accredited in accordance with SAE AS9104 and listed on the SAE OASIS data base. The Suppliers Quality Management System is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).

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Q105 Statistical Product Acceptance Requirements per SAE ARP9013 - When the Supplier elects to use a statistical methods for product acceptance, unless otherwise specified by the Contract, the Suppliers statistical acceptance method(s) shall be in compliance with the requirements established by ARP9013, ARP9013/1, ARP9013/2, ARP9013/3 or ARP9013/4. When this clause is included on the Contract, Supplier shall submit Supplier's proposed statistical product acceptance method to Parker Aerospace for review and concurrence.

Q145 Requirements for Calibration Laboratories per ANSI/NCSS Z540-1 - The Supplier shall establish, document and maintain a system that is in compliance with the current revision of ANSI/NCSS Z540-1. The Supplier's calibration system is subject to audit, verification and approval and/or disapproval by Parker Aerospace designated representative(s).

Q155 Limited Material Review Authority – The Supplier is authorized to conduct Material Review and disposition nonconforming products identified by the Supplier using the following disposition alternatives:

- a. rework to applicable requirements,
- b. scrap, or
- c. RTV – return to (the Supplier's) sub-tier source for rework or replacement.

Nonconforming products are defined as any products that fail to meet the requirements of the Parker Aerospace engineering drawing, specification, Contract or other approved product description, including products (such as products under the Supplier's proprietary design control) which fail to meet requirements established and controlled by the Supplier or the Supplier's sub-tier sources. The Supplier may propose and formally request a "use-as-is" or repair (salvage) disposition from Parker Aerospace by submitting the appropriate request to the Parker Aerospace Buyer in accordance with the requirements defined in section 3.4.3 herein. The Supplier's Material Review and nonconforming product disposition records, as well as the Material Review records at the Supplier's sub-tier sources are subject to on-site verification by Parker Aerospace to ensure that the Supplier is in compliance with the requirements of this clause.

Q160 Full Material Review Authority - The Supplier is authorized to conduct Material Review and disposition all 'Minor' nonconformance's found on products that are under the Supplier's proprietary engineering design authority and control. 'Minor' nonconformance's are defined as nonconformance's which do not adversely affect product health or safety, performance, interchangeability, reliability, maintainability, effective use or operation, or weight or appearance when a factor. 'Major' nonconformances are defined as nonconformances other than 'Minor' that cannot be completely eliminated by rework or reduced to a 'Minor' by repair. All Parker Aerospace specified requirements are defined as 'Major' and disposition of products with 'Major' nonconformances is the sole prerogative of the Parker Aerospace Material Review Board (MRB). The Supplier's authority to disposition products with 'Minor' nonconformance's is contingent on the Supplier having an established and documented Material Review system, which provides for a technically competent Material Review Board (MRB) chaired by a responsible member of the Supplier's Quality organization. The Supplier's MRB System shall include:

- a. feedback of product nonconformance information to the Supplier's product design function;
- b. analysis to determine 'root cause' of individual product nonconformance's;
- c. implementation of positive corrective action;
- d. verification of corrective action to ensure effectiveness in eliminating recurrence of nonconforming products;
- e. evaluation and reporting of nonconformance trends to management.

Q175 Supplemental Purchase Order Conditions per PD1000 - The Supplier shall comply with the requirements of the current revision of Parker Aerospace Gas Turbine Fuel Systems Division (GTFSD) document PD1000.

4.2 Source Inspection Requirements

Q180 In-Process Source Inspection - Products to be delivered on this Contract, require in-process source inspection, tests or both by a Parker Aerospace Quality Assurance representative. The points in the manufacturing sequence at which in-process inspection is required will be specified in the Contract. The Supplier shall notify Parker Aerospace at least forty-eight (48) hours in advance of the time the product will be ready for in-process source inspection. Upon request, the Supplier shall make available to the Parker Aerospace representative any measuring and test equipment, facilities, records and personnel to facilitate the in-process source inspection.

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Q185 Third Party Source Inspection at Supplier's Expense - The requirement for the supplier to contract with a Parker Aerospace approved third party supplier to perform source inspection (in-process or final) at the Supplier's facilities may be invoked by Parker Aerospace anytime during Contract performance. The following conditions may necessitate this action:

- a. Supplier's quality performance falls below established and agreed upon minimum threshold for the last three (3) month period;
- b. Suppliers delegated inspection authority has been revoked by Parker Aerospace due to a nonconformance(s) detected by Parker Aerospace (or its customer) after receipt of products/services from the Supplier;
- c. Supplier's failure to implement effective corrective action on previous nonconformance(s) resulting in recurrence of the nonconforming condition; or
- d. at the request of the Supplier.

The Supplier will be notified in writing when this requirement is invoked by Parker Aerospace.

Q190 Final Source Inspection - Products to be delivered on this Contract require final source inspection, tests or both by a Parker Aerospace Quality Assurance representative, prior to delivery to Parker Aerospace. The Supplier shall notify Parker Aerospace 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 Aerospace representative any measuring and test equipment, facilities, records and personnel to facilitate the final source inspection.

Q195 Delegated Source Inspection - Products or services to be delivered on this Contract require inspection, tests or both, by a representative(s) in your quality organization delegated and authorized by Parker Aerospace to perform inspection and/or tests on behalf of Parker Aerospace. Such inspection and/or tests shall be accomplished prior to delivery of products to Parker Aerospace, and may be accomplished at your facilities and/or the facilities of your sub-tier sources. The delegated representative(s) is responsible for assuring that products delivered to Parker Aerospace conform to all Contract requirements. Upon receipt of this Contract, notify the Parker Aerospace delegated representative(s) so that appropriate planning and scheduling can be accomplished to conduct the required inspection and/or testing to meet the Contract required delivery schedules. The Supplier shall make available to the delegated Parker Aerospace representative any measuring and test equipment, facilities, records and personnel to facilitate the delegated source inspection.

Q196 Supplier Self Release Authority - Under the Parker Aerospace Supplier Self-Release Program, the Supplier has been delegated authority to perform final inspection on behalf of Parker Aerospace and release product(s) for delivery to Parker Aerospace. Parker Aerospace Quality Assurance reserves the right to conduct product integrity audits, quality system assessments, verify Supplier's conformance to the Parker Aerospace self-release program requirements and to revoke delegation authorization. Inability to maintain an acceptable level of quality performance by the Supplier may result in cancellation of self-release authority by exclusion of specific part number(s) or the authority in its entirety. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or a separate attached document a written statement titled "Self-Release Certificate" which complies with the requirements of section 3.3 herein and is worded substantially as follows:

"This is to certify that all products, Part (Number), authorized for self-release and delivered on this Contract (number) and packing list/shipper (number) have been inspected in accordance with the Parker Aerospace Supplier Self-Release Program and comply with all requirements of the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request"

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q200 Government Source Inspection (GSI) - US Government Source Inspection (GSI) is required prior to delivery to Parker Aerospace. 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 the Parker Aerospace Buyer 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.

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Q220 Government Surveillance - During performance on this Contract, the Supplier's Inspection/Quality System, manufacturing operations and processes, including when applicable those at the Supplier's sub-tier sources, are subject to review, verification and analysis by authorized representatives of applicable US Government agencies and personnel. Government source inspection (GSI) is not required unless Clause Q200 is also included in the Contract.

4.3 Supplier Statements of Quality (Certifications & Test Reports)

Q230 Airworthiness Approval Tag (FAA Form 8130-3) - Authorization by Federal Aviation Administration (FAA), or by an authorized representative of the FAA, is required prior to delivery of products to Parker Aerospace. A completed FAA Form 8130-3, signed by the FAA, or a duly authorized representative of the FAA, and attached to the products, is required with each delivery and upon receipt at Parker Aerospace. A separate 8130-3 tag is required for each part number and/or serial number delivered. If the Supplier is unable to furnish an 8130-3 tag, the Supplier shall notify Parker Aerospace Buyer immediately.

Q231 Authorized Release Certificate (EASA FORM 1) - Authorization by European Aviation Safety Agency (EASA), or by an authorized representative of EASA, is required prior to delivery to Parker Aerospace. A completed "Authorized Release Certificate – (EASA FORM 1), signed by a duly authorized representative of EASA, or by the National Civil Aviation Authority (NCAA) of the Supplier's country, and attached to the products is required with each delivery and upon receipt at Parker Aerospace. If the Supplier is unable to furnish the EASA FORM 1, the Supplier shall notify Parker Aerospace Buyer immediately.

Q233 Maintenance Record and Release Certificate. – All work performed on parts or components by a Federal Aviation Administration (FAA) approved repair station, shall be documented on a Maintenance Record and Release Certificate for that component or part in compliance with United States Code of Federal Regulations 14 CFR Part 43.9, and include the following information:

- a. description of work performed,
- b. the date of completion of the work performed,
- c. the name of the person performing the work if other than the person specified in (d), and
- d. if the work performed on the appliance or component part has been performed satisfactorily, the signature, the certificate number, and the kind of certificate held by the person approving the work. The signature constitutes the approval for return to service only for the work performed.

Q235 Contract Line Item & Release Number - Parker Aerospace may issue Contracts that contain more than one Contract Line Item and may also contain one or more Release Numbers against each Contract Line Item. In such cases, the Supplier shall include on the Supplier's packing list/shipper the Parker Aerospace Contract Line Item & Release Number against which the delivery of products or services is made.

Q240 Certificate of Conformance (CoC) – With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document, a written statement titled "Certificate of Conformance" which complies with the requirements of section 3.3 herein and is worded substantially as follows:

"This is to certify that all products or services delivered on this Contract (number) and packing list/shipper (number) are in compliance with all requirements of the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

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- Q245 Material & Process Summary Report** – After 1st article approval, the Supplier may, in lieu of providing Parker Aerospace the original, or true copies of the original, certifications and test reports, issued by the Supplier or the Supplier's sub-tier sources, instead, furnish a completed Material & Process Summary Report with each delivery of products on the Contract. Unless otherwise specified, the Summary Report (example last page of this document) format is optional, however, as a minimum, it shall contain the following information:
- a. part number;
 - b. drawing revision;
 - c. Contract Number and if applicable the Line & Release Number;
 - d. packing list/shipper number;
 - e. material and/or process description;
 - f. material and/or process specification number and revision, including type, grade, class, etc.;
 - g. material and/or process quantity;
 - h. name and location of Parker Aerospace approved special processor (ref. Q340) and/or material supplier, including country of origin for all raw material used
 - i. material heat lot and/or traceability number to processes
 - j. statement of conformance attesting that the information on the Summary Report is accurate and true; and
 - k. the Supplier's company name and the name and signature or stamp (per 3.3.4) and title of the authorized company official who issued the Summary Report.

In addition, all materials and processes listed on the Summary Report shall comply with the applicable requirements of Clauses Q320 and Q340 and when applicable, be performed by Parker Aerospace approved sources. The Supplier shall maintain the original certifications and test reports in a manner so that upon Parker Aerospace's request, they can be retrieved and furnished to Parker Aerospace within twenty-four (24) hours. In addition, the Supplier shall notify Parker Aerospace in writing prior to disposal or destruction of the original certifications and test reports listed on the Summary Report and give Parker Aerospace an opportunity to obtain possession of the original certifications and test reports.

- Q250 Certificate of Traceability (CoT)** – With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "Certificate of Traceability" which complies with the requirements of section 3.3 herein, and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) comply with all requirements of the Contract and: (a) were purchased directly from the manufacturer or an authorized distributor; (b) the attached certifications/test reports are true and correct copies of the originals issued by the manufacturer and cover all products delivered on this Contract; and (c) the products have not been altered, re-worked, re-processed, or modified in any manner except as specified by the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

- Q255 Supplier Proprietary Design Products** – The Supplier shall certify that the product are of Supplier's proprietary design and are available as standard off-the-shelf or catalog products, and comply with all of the Supplier's engineering drawing or specification requirements. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement which complies with the requirements of section 3.3 herein, and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) comply with all requirements specified in the product catalog or specification data sheet. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request"

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

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Q260 Statement of Conformity (FAA Form 8130-9) – The Supplier shall provide documentation to support the Supplier's conformity inspection, including a completed FAA Form 8130-9 with each 1st Article product furnished on the Contract. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written "Statement of Conformity" which complies with the requirements of section 3.3 herein, is worded substantially as follows, and signed by an authorized FAA inspector, Designated Manufacturing Inspection Representative (DMIR) or other authorized FAA representative

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) have been inspected in accordance with applicable Federal Aviation Administration (FAA) Regulations, and are: (a) authorized for installation and use on FAA certified aircraft systems produced by Parker Aerospace; (b) are new and in unused condition; and (c) are in compliance with all requirements of the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q265 Production Certificate – The production of products on this Contract shall be accomplished in accordance with the detail requirements of the Contract, including engineering drawings, specifications, manufacturing, processing and/or assembly and testing instructions furnished by Parker Aerospace. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "Production Certificate" which complies with the requirements of section 3.3 herein and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) were (manufactured) (processed) (assembled) (tested) in compliance with all applicable drawings, specifications and instructions furnished by Parker Aerospace. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request".

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q270 Source Control Drawing (SCD) Certification - The Supplier shall certify that the products have been designed and manufactured and are in compliance with all of the requirements of the current revision of Parker Aerospace SCD, or, that the product is an existing Commercial-Off-The-Shelf (COTS) item, whose configuration is controlled by the Supplier and the item is in compliance with all of the construction, performance, installation and interchangeability characteristics specified by the Parker Aerospace SCD. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "Production Certificate" which complies with the requirements of section 3.3 herein and is worded substantially as follows:

"This is to certify that the products delivered on this Contract (number) and packing list/shipper (number) comply with all requirements specified by the Parker Aerospace SCD. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Parker Aerospace SCD No.: _____ Rev.: _____
 Supplier P/N: _____ Rev.: _____
 Title of Authorized Individual: _____
 Signature/Stamp _____ Date: _____

Q280 Fasteners – Manufacturer & Lot Identification – The Supplier shall provide on the packing list/shipper or on separate attached document information that identifies the fastener manufacturer and the manufacturer's production lot or batch number. In addition, the Supplier shall verify and certify that the manufacturer (or other source) of the fasteners is not currently listed as a "debarred, suspended, or ineligible Contractor" on the current issue of the "lists of parties" published by the US Government, General Services Administration (GSA). **For additional information and resolution of eligibility questions, contact the Parker Aerospace Buyer.**

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Q285 Fasteners – Certificate of Conformance - All fasteners delivered on this Contract shall be manufactured, tested and controlled in compliance with the requirements of PUBLIC LAW 15 CFR 280 – generally known as the “Fastener Quality Act”. With each delivery of fasteners on this Contract, the Supplier shall furnish copies of the original certifications and test reports, and include on the packing list/shipper or on a separate attached document, a written statement titled “Certificate of Conformance”, which complies with the requirements of section 3.3 herein and is worded substantially as follows:

“This is to certify that all fasteners delivered on this Contract (number) and packing list/shipper (number) have been: (a) manufactured, tested and controlled in compliance with the requirements of the “Fastener Quality Act”, (b) have not been commingled with fasteners from other manufacturers, or with fasteners from other lots or batches, and (c) the fasteners comply with all applicable requirements. The certificate issued by the fastener manufacturer states that the fasteners have been manufactured according to the applicable standards and specifications and have been inspected and tested by an approved laboratory and that all original laboratory test reports are on file and available for review. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request.”

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

4.4 Control of Raw Material

Q300 Raw Material Verification Program – The Supplier shall develop, document and implement a raw material (sheet, plate, bar, rod, etc.) verification program that will ensure that material received from the Supplier's sub-tier sources meets all applicable technical and quality requirements. The Supplier's verification program shall include provisions for monitoring and periodic testing of raw material upon receipt to ensure that such material meets all applicable requirements, and implement appropriate storage and controls to preclude commingling of different heat/lots or batches of material. Raw material testing shall be in accordance with specification requirements and may be performed by the Supplier or a recognized testing laboratory. Supplier's verification program shall document the frequency of such tests and the test results. Records showing the results of the Supplier's material verification program and its effectiveness shall be available to Parker Aerospace for review upon request.

Q310 Parker Aerospace Furnished Material – Parker Aerospace may furnish raw material (bar stock, castings, forgings, etc.) and/or components (fittings, connectors, etc.) to the Supplier for use in or on products to be delivered on this Contract. In such cases the Supplier shall establish and maintain strict accountability for all Parker Aerospace furnished material to ensure that it is properly used and accounted for. When raw material is furnished, the Supplier shall establish required controls to ensure traceability of the raw material to the finished product and furnish material traceability records with the delivery of products to Parker Aerospace. For components, unless individual component traceability is required by Contract, the Supplier shall ensure that such components are used only on products to be delivered to Parker Aerospace on the Contract. Unless otherwise specified by the Contract, the Supplier shall return any unused Parker Aerospace furnished material to Parker Aerospace with the last delivery of products on the Contract. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement which complies with requirements of section 3.3 and is worded substantially as follows:

“This is to certify that all products delivered on this Contract (number) and packing list/shipper (number), were manufactured using: (a) material furnished by Parker Aerospace; (b) the material identified on the material and/or the Parker Aerospace shipper, and (c) no material substitution was made. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request.”

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

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Q320 Supplier Furnished Raw Material - With each lot of raw material delivered or used to fabricate products on this Contract, the Supplier shall furnish a "Certification/Material Test Report." When more than one heat/lot of raw material is delivered at the same time, each heat/lot of material shall be identified and provide traceability to its Certification/Material Test Report. In the event that more than one heat/lot of raw material was used to fabricate products, the products produced from each heat/lot shall be identified and/or packaged separately to maintain integrity and to provide traceability to the applicable material Certification/Material Test Report.

Raw Material from Foreign Sources - Prior to delivery or use of any raw material produced outside the United States, the Supplier shall submit a request to the Parker Aerospace Buyer for approval to use the raw material for each Part Number being supplied. Parker Aerospace approval may be contingent on on-site evaluation of the source of the material as well as additional and independent material testing and analysis to determine that the material meets all applicable requirements. Parker Aerospace reserves the right to reject and return to the Supplier at Supplier's expense any raw material, or products made from raw material, when the source that produced the raw material is outside the United States. The supplier shall submit a copy of the Parker Aerospace "approved" request to use raw material from foreign sources with each delivery of products where the raw material from the foreign source was used.

MATERIAL TEST REPORT. Unless otherwise specified by the contract, each Certification/Material Test Report shall include name of the company that furnished the material and the following information and data:

- a. material description, including, as applicable, name or designation, size or weight, alloy, type, class, grade or condition,
- b. lot, batch or heat number, and
- c. the applicable specification and revision to which the material complies.

With each delivery of raw material/products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document, a written statement which complies with the requirements of section 3.3 herein, and is worded substantially as follows:

"This is to certify that all (material) (products) delivered on this Contract (number) and packing list/shipper (number), (complies with) (were fabricated from material represented by) the attached Certifications/Material Test Reports. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

In addition to the requirements above, when the material furnished or used to fabricate products, is one of the types listed below, the Certification/Material Test Report shall include the following information and data:

- A. **FERROUS MATERIALS.** The Certification/Material Test Report shall include data that shows the actual test results obtained from the lot or heat of material versus the values required by the applicable material specification for:
 - a. chemical composition, and
 - b. physical properties
- B. **NON-FERROUS MATERIALS.** Unless otherwise required by the material specification or Contract, the Certification/Material Test Report shall show:
 - a. the typical or range of values of the chemical composition of the material,
 - b. the range of physical properties of the material, and
 - c. include a statement that the material conforms to the applicable material specification.
- C. **NON-METALLIC MATERIALS.** The Certification/Test Report, issued by the manufacturer of the material, shall show:
 - a. the specification and revision to which the material conforms,
 - b. the lot/batch number (if applicable),
 - c. the date manufactured,
 - d. any other technical data (material test results, composition, chemical or physical properties, etc.) required by the applicable material specification or Contract.

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Q330 Traceability of Products to Raw Material - For each lot of products delivered to Parker Aerospace, the Supplier shall provide positive traceability of each individual product to the material certification/test report that represents the raw material from which each of the products was manufactured. Traceability may be provided by identifying the raw material heat, lot, batch or melt number from the certification/test report on tags attached to each product and/or on packaging (when used). Heat/lot identification required by applicable specifications, such as for castings and forgings is acceptable for traceability purposes provided it is clearly marked and not obliterated by subsequent operations.

Q335 Critical Parts – The Supplier shall establish and maintain strict controls during all manufacturing, processing and inspection operations when products or parts are identified as "Critical" (i.e. Fracture Critical, Mission Critical, Flight Critical, etc.) on the Contract, drawing, specification or other applicable documentation. The Supplier's manufacturing documentation, i.e. travelers, routes, work orders, process instructions, etc. shall be identified with the notation "Critical Part" and submitted to Parker Aerospace for review. When work on critical parts is to be performed by a sub-tier source, the Supplier's documentation shall include the sub-tier Supplier's documents as part of the submittal for Parker Aerospace review. No changes are permitted in the raw material, manufacturing, processing or inspection operations on critical parts unless prior review and written approval is obtained from Parker Aerospace. Any certifications and test reports issued by the Supplier or his sub-tier sources shall be identified with the notation "Critical Part". All critical parts shall be permanently identified, using a method specified on the drawing or specification, with a serial number traceable to the raw material and processing certifications/test reports.

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4.5 Control of Special Processes**Q340 Qualified Process Sources & Certifications**

CAUTION: All special processes must be performed by sources approved by Parker Aerospace. Use of processes and/or process sources that have not been approved by Parker Aerospace may result in return of all products to the Supplier at the Supplier's expense. Unless otherwise directed by the Contract or the procuring Parker Aerospace division, the Supplier shall select process sources from the list of Parker Aerospace approved process sources that can be found on the 'Internet' on Parker home page (www.parker.com) under the heading Parker Aerospace Group and sub-heading "Our Suppliers", or by contacting the Parker Aerospace Buyer. The following requirements apply:

- A. **SPECIAL PROCESS** – Is the application of chemical, metallurgical, nondestructive or any other special manufacturing, joining or inspection processes, controlled by Federal, Military, US Government, Industry (i.e. Parker Aerospace, Boeing, General Electric, etc.), National, International, or other specifications. All special processes shall be performed only by those sources currently approved for the specific process by Parker Aerospace. In addition, when required by a Parker Aerospace customer, the Supplier may be required to use customer approved special process sources. Upon request, Parker Aerospace will provide the Supplier with a list of the approved process sources.
- B. **PROPRIETARY PROCESS** – Prior to initial application of a process that is controlled by a proprietary specification developed by the Supplier or the Supplier's sub-tier source, the Supplier shall furnish a copy of the specification, or sufficient technical data to Parker Aerospace (subject to normal proprietary rights consideration and nondisclosure agreement) so that Parker Aerospace can determine whether adequate process controls exist to ensure that the proprietary process will yield products that meet all Parker Aerospace technical and quality requirements. In addition, the Supplier shall notify Parker Aerospace when any changes to the proprietary process are planned so that Parker Aerospace can evaluate the potential impact on product technical or quality requirements.
- C. **PROCESS CERTIFICATIONS** - For all special processes required by the Contract or reference documents, the Supplier shall furnish to Parker Aerospace, with the delivery of products, the certification/test report issued by company that actually performed the process. All certifications/test reports shall meet the requirements of section 3.3 herein, and as a minimum include a complete description of the special process performed, including:
- process name, applicable specification and revision, type, class, grade, etc.,
 - when applicable, a statement that the process was performed by certified operator(s), and
 - in the case of priority process (ref. Q341), that the process was performed in accordance with the Parker Aerospace approved process control document.
- D. **REWORK** - In those cases where products have been subjected to Parker Aerospace approved rework, repair and/or salvage processes (see section 3.1.2), the certifications shall include a description of the process used and the quantity of parts subjected to the process.

Q341 Priority Process - Parker Aerospace Engineering has identified a number of special processes whose application on aerospace products requires strict control of the process steps to ensure that the resultant product meets all technical, quality and reliability requirements. The products on this Contract include one or more priority processes that must be performed by Parker Aerospace approved priority process sources. The Parker Aerospace approved priority process sources are listed on the Parker Internet home page (www.parker.com) under the heading Parker Aerospace Group and sub-heading "Our Suppliers".

Q342 Nadcap Accreditation - Special processes shall only be performed by sources that are accredited and approved by the National Aerospace and Defense Contractors Accreditation Program (Nadcap). This requirement applies whether the process is performed by the Supplier or by the Supplier's sub-tier sources. Use of sources not accredited by Nadcap shall result in return of products to the Supplier at the Supplier's expense. For a list of Nadcap accredited sources contact the Parker Aerospace Buyer.

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Q350 Heat Treat Certifications - With each delivery of products on this Contract, the Supplier shall furnish a time/temperature certification that includes the following data: (a) part number and revision; (b) quantity heat treated; and (c) for each heat treatment cycle – the actual temperature range & duration (hrs) of each heat treat cycle.

Q360 Heat Treat Furnace Charts - With each delivery of products on this Contract, the Supplier shall furnish the original, or a legible copy, of the furnace temperature chart, which shows the part number, the date and the actual time the part was moved in/out of the furnace.

Q365 1st Article Destructive Metallurgical Test Report (DMTR) - With each delivery of 1st article products on the Contract, the Supplier shall furnish a DMTR. The DMTR shall include the test results for any process that requires control per Parker Aerospace document BPS 4127 - "Control of Priority Processes" specified on the engineering drawing and/or specification. The testing shall be accomplished on an actual part or a suitable test sample produced and processed simultaneously with the lot of production parts. The testing shall be accomplished and a DMTR issued by an organization approved and/or certified by one of the following: (a) American Association for Laboratory Accreditation (A2LA); (b) Nadcap in accordance with SAE AS7101 - "General Requirements for Materials Test Laboratory Accreditation Program"; (c) Third party registrar issued certificate indicating the testing organization is in compliance with ISO 17025 - "General Requirements for the Competence of Testing and Calibration Laboratories"; or (d) A laboratory approved by Parker Aerospace.

Q370 Test Samples - With each delivery of products on the Contract, the Supplier shall furnish for verification testing by Parker Aerospace one (1) additional product or suitable test sample produced from the same material lot and processed simultaneously with the lot of products delivered. When more than one lot of material was used, a sample is required for each lot of material. The sample shall be marked or tagged to identify the process that it represents (i.e. material, heat treat, nitriding, plating, etc.), and noted on the packing list/shipper.

Q375 Process Control Data – With each delivery of products on the Contract, the Supplier shall furnish for verification testing by Parker Aerospace one (1) additional product or suitable test sample produced from the same material heat lot and processed simultaneously with the lot of products delivered. When more than one heat lot of material was used, a sample is required from each lot. The sample(s) shall be marked or tagged to identify the heat lot and the process which the sample(s) represent (i.e. material, heat treat, nitriding, plating, etc.) and noted on the packing list/shipper.

Q380 Nondestructive Test (NDT) Reports – Unless otherwise specified by the contract, drawing or specification, NDT shall be performed on 100% of the lot of products. With each delivery of products on the Contract, the Supplier shall furnish a certified test report that shows that the required NDT (i.e. penetrant, magnetic particle, radiographic, ultrasonic, etc.) test was performed on all delivered products. The test report shall be issued by the organization that actually performed the NDT and include:

- a complete description of the test, test name, specification, revision, type, method, etc.
- the acceptance criteria document number and revision, that applies to the NDT operation
- the number and revision level of the NDT procedure used, and
- when applicable, identity of the qualified/certified personnel who performed the NDT.

All products subjected to NDT and found to be acceptable shall be identified as required by the applicable NDT specification. When products are serialized the serial numbers shall be referenced on the NDT reports and certifications. NDT test reports shall meet the requirements of Section 3.3 herein.

Q385 Radiographic (x-ray) Inspection - With each delivery of products on the Contract, the Supplier shall furnish a certified test report of radiographic (x-ray) inspection performed on the products. The document package supporting the radiographic inspection shall be issued by the organization that actually performed the radiographic inspection and include: (a) test report showing the accept/reject quantities, and (b) copy of the approved shooting sketch; the shooting sketch or test report shall include the number and revision of the approved radiographic technique. Unless Clause Q386 is included on the Contract, the Supplier is not required to furnish the exposed x-ray film with delivery of the products; however, Supplier shall maintain the film in accordance with the record retention requirements of the Supplier's Quality Management System.

Q386 Radiographic (x-ray) Film - In addition to the test reports and shooting sketches required by Q385, the Supplier shall furnish the exposed x-ray film with each delivery of products.

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Q390 Parker Aerospace Approval of NDT Techniques - Prior to conducting any nondestructive testing (NDT) required by drawing or specification on products scheduled for delivery on this Contract, the Supplier shall prepare and submit to Parker Aerospace for review and approval a detailed procedure describing the NDT to be performed. The Supplier's procedure shall include all necessary information including pictures or sketches, materials, tooling and/or equipment to be used, safety precautions and any other pertinent information required to successfully conduct the NDT operation. The procedure shall be: (a) identified with a control number; (b) reference the applicable NDT specification and revision with which it complies, and (c) include the name, signature and date of the qualified and certified technician who prepared and/or approved the NDT technique. Changes to Parker Aerospace approved NDT techniques shall be submitted to Parker Aerospace for approval prior to their use in production.

Q400 Parker Aerospace Braze or Weld Schedule Approval - Prior to performing any brazing or welding on products scheduled for delivery on this Contract, the Supplier shall prepare and submit to Parker Aerospace for review and approval a detailed written braze or weld schedule and a braze or weld sample or an actual part that was produced using the submitted braze or weld schedule. The braze or weld schedule shall identify: (a) Part Number and revision; (b) applicable braze or weld specification and revision, and (c) name & signature of the qualified/certified individual that approved the braze or weld schedule.

4.6 Control of Castings

Q410 Foundry Control - Prior to making the first production run on any new castings, or castings for which new tooling (patterns or molds) have been made; or, when a change is made in gates, risers, chills, or as cast shape; or, when a pattern or mold is transferred to a different facility, the Supplier shall establish a foundry control procedure and submit to Parker Aerospace, for review and approval the following:

- A. SAMPLE CASTINGS - Sample foundry control castings from the first production run representative of the controls, practices and processes to be used on the production castings. The quantity of foundry control castings shall be in compliance with the requirements of the applicable casting specification and/or as specified in the Contract. 1st Article castings shall be in addition to the production quantities required by the Contract.
- B. 1ST ARTICLE INSPECTION REPORT (FAIR) - Showing the results of the FAI of the sample foundry control 1st article castings.
- C. MECHANICAL PROPERTIES - The laboratory test report or certified statement of the test bar mechanical properties from the foundry control 1st Article castings. The test bars shall be from the same melt and heat treat lot as the foundry control 1st Article castings.
- D. CHEMICAL COMPOSITION - The laboratory test report or certified statement of the chemical analysis of the material (melt) used in the foundry control 1st Article castings. The test specimens shall show the actual percentage of each element contained in the specimen.
- E. RADIOGRAPHIC (x-ray) FILM - The shooting sketch, radiographic technique used and the exposed film of the foundry Control 1st Article castings.

Q420 Production Castings - The Supplier shall produce production castings using the same foundry control practices established and approved by Parker Aerospace as a result of foundry control defined in clause Q410. With each delivery of production castings on this Contract, the Supplier shall furnish for each separate heat/melt of castings in the lot, all certifications and test reports required by the following 'Q' Clauses:

- Q320 - The Supplier Furnished Raw Material
- Q340 - Qualified Process Sources & Certifications
- Q350 - Heat Treat Certifications
- Q380 - Nondestructive Test (NDT) Reports

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4.7 Control of Forgings, Extrusions & Pressings

Q430 Pre-Production Controls - Prior to making the first production run of forgings, extrusions or pressings, or on any forging or pressing where dies or a technique has been changed, the Supplier shall submit to Parker Aerospace for review and approval the following:

- A. 1st ARTICLE – Sample 1st Article forging, extrusion or pressing from the first production run and representative of all manufacturing and processing operations scheduled to be used during production. The quantity of 1st articles shall be in accordance with the requirements of the applicable specification or as specified in the Contract. 1st articles shall be in addition to the quantities required by the Contract.
- B. 1ST ARTICLE INSPECTION REPORT (FAIR) – Showing the results (actual values) of the FAI.
- C. MECHANICAL PROPERTIES - The laboratory test report or certified statement of the test bar mechanical properties taken from the 1st Article.
- D. CHEMICAL COMPOSITION - The laboratory test report or certified statement of chemical analysis of the material used in the 1st Article, or a specimen taken from the 1st article, showing the actual percentage of each element contained in the 1st article or specimen.
- E. ULTRASONIC TECHNIQUE - When required by the drawing or specification, the written technique used to perform the ultrasonic inspection on the 1st Article and to be used during production.
- F. NONDESTRUCTIVE TEST (NDT) REPORTS - The laboratory test report of NDT accomplished in accordance with the applicable specification and showing acceptance of the 1st Article.
- G. GRAIN FLOW SAMPLE - When required by the applicable drawing or specification, the cross section and pictures of grain flow pattern taken from the 1st Article.

Q440 Production Forgings, Extrusions & Pressings - Production forgings, extrusions or pressings shall be produced using the methods and controls established and approved by Parker Aerospace during pre-production controls defined in Clause Q430. With each delivery of production forgings, extrusions or pressings on the Contract, the Supplier shall furnish for each separate heat/lot, all of the certifications/test reports required by the following 'Q' Clauses:

- Q320 - The Supplier Furnished Raw Material
- Q340 - Qualified Sources & Process Certifications
- Q350 - Heat Treat Certifications
- Q380 - Nondestructive Test (NDT) Reports

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4.8 Control of Age Sensitive Items

Q450 Age Limits for Elastomers – Unless otherwise specified by the Contract, the age limit or maximum time between the date of manufacture of elastomers (i.e. rubber goods such as o-rings, seals, gaskets, etc.) to the date of delivery to Parker Aerospace is a maximum of forty (40) quarters or ten (10) years. The Supplier shall establish and maintain an effective system of age control of elastomers to ensure that the age limits are met. Individual or bulk elastomers delivered to Parker Aerospace shall be properly identified in accordance with the applicable specification and include the cure date (quarter & year, i.e. 2Q03) either on the individual packages or on the bulk containers. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document, a written statement which complies with the requirements of section 3.3 herein, and is worded substantially as follows:

“This is to certify that all elastomers delivered on this Contract (number) and packing list/shipper (number) have been manufactured and controlled in accordance with the age control requirements, have not been commingled with elastomers from other manufacturers, or other lots or batches and comply with all of the requirements of the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request.”

Cure Date(s): _____
 Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q451 Control of Aerospace Elastomeric Seals & Seal Assemblies - Unless otherwise specified by the Contract, the Supplier shall control elastomeric seals and seal assemblies in accordance with the requirements of document SAE ARP5316 – “Storage of Aerospace Elastomeric Seals and Seal Assemblies Which Include an Elastomer Element Prior to Hardware Assembly”. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document, a written statement which complies with the requirements of section 3.3 herein, and is worded substantially as follows:

“This is to certify that all elastomers delivered on this Contract (number) and packing list/shipper (number) have been manufactured and controlled in accordance with the requirements of SAE ARP5316 and have not been commingled with like elastomers from other manufacturers, or other lots or batches and comply with all of the requirements of the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request.”

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q452 Cure Date Marking - All products delivered on this Contract that include elastomeric seals and seal assemblies subject to age limitations shall be identified with a cure date (Quarter & Year, i.e. 3Q98) of the oldest elastomer contained in the product.

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- Q455 O-Ring Requirements for Manned Space Programs** – The O-rings on this Contract are for critical manned space flight applications. For each lot of O-Rings delivered on this Contract, the Supplier shall furnish certifications and test reports, which include the following data:
- a. specific gravity
 - b. durometer hardness reading
 - c. minimum tensile strength (PSI)
 - d. elongation (%), and
 - e. compression set under 0.100 inches.

With each delivery of O-Rings delivered on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document, a written statement which complies with the requirements of section 3.3 herein, and is worded substantially as follows:

“This is to certify that all o-rings delivered on this Contract (number) and packing list/shipper (number) have been manufactured, tested and controlled in accordance with all applicable requirements, have not been commingled with o-rings from other manufacturers, or other lots or batches and comply with all of the requirements of the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request”.

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

- Q460 Limited Shelf Life Materials** - With each delivery of materials on this Contract, that have a limited or specified shelf life, the Supplier shall furnish the following data: (a) cure or manufacture date; (b) expiration date or shelf life; (c) lot or batch number, and (d) when applicable, any special storage requirements/handling procedures to be followed. The above information shall be marked on each container or certification and shall be in addition to normal identification requirements such as material name, part or code number, drawing, specification number and revision, type, size and quantity and other markings as applicable. For each delivery of limited shelf life materials on the Contract the time lapse between the cure or manufacturing date of such materials, and the date of scheduled receipt by Parker Aerospace, shall not exceed one fourth (1/4) of the total shelf life of the material without prior written waiver from the Parker Aerospace Buyer.

- Q465 Packaging and Labeling** - All seals, o-rings, elastomers, seal kits/sets delivered on this Contract shall be individually packaged and labeled in opaque heat sealed bags that conform to MIL-PRF-121 (waterproof) and MUL-PRF-131 (water vapor proof). The package or container for each individual item shall be identified with part number, nomenclature, specification number governing the material, cure date and the Parker Aerospace Contract number.

- Q466 Batch Packaging** - Quantity per unit package shall be one (1) item per package or in multiples of five (5) pieces (e.g. 5, 10, 15, 20 etc.). Batch bagging or sub-group packaging is allowed for smaller sized, large lot quantity components such as nuts, bolts, screws, packing, o-rings, etc. Batch sizes shall be in quantities of 10, 25, 50 or 100 per batch or plastic bag, not to exceed 100 per bag. The plastic bag size shall be a minimum of 5 X 7 and a maximum of 10 X12 inches. The batch package or container shall be identified with the Part Number, nomenclature, drawing or specification number governing the material, cure date or manufacturing date and the Parker Aerospace Contract number. Parts requiring test data shall be individually packaged and include the test data in and/or attached to the package. The test data shall be packaged to avoid damage by preservation oils or other fluids. Small parts such as solenoids, check valves and relief valves may be sub-grouped into lots of five (5) including their test data. NOTE: For those items not covered by this requirement, the Supplier shall contact the Parker Aerospace Buyer for packaging instructions prior to shipment of parts to Parker Aerospace.

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4.9 Control of Electronic Devices & Components

- Q470 Electrostatic Discharge (ESD) Control Program** - Prior to processing production hardware, the Supplier shall establish, implement and submit to Parker Aerospace for review and approval, including on-site examination when appropriate, an Electrostatic Discharge (ESD) Control Program Plan in compliance with the requirements of MIL-STD-1686. The Supplier shall package all products susceptible to damage from ESD in compliance with MIL-STD-1686, in static shielding conductive containers meeting requirements of MIL-B-81705. Protection shall be provided to prevent physical damage and to maintain leads and terminals in the manufactured condition under normal handling and transportation environments. The outside of packages containing ESD sensitive products shall have a clearly displayed ESD warning label conforming to ANSI/EOS/ESD S-8.1. The same labels shall be used to seal shielded bags.
- Q480 Protection of Electrostatic (ESD) Sensitive Devices** - All voltage sensitive devices delivered on this Contract, including subassemblies and assemblies containing such devices shall be protected from static electricity and transient voltages in accordance with the requirements specified on the drawing or specification under which the devices are procured.
- Q485 Aerospace Electronic Products – General Requirements** - The materials, methods, and acceptance criteria for producing soldered electrical and electronic assemblies shall meet the requirements of IPC-A-610 - "Acceptability of Electronic Assemblies", and IPC/EIA J-STD-001 - "Requirements for Soldered Electrical and Electronic Assemblies" for **Class 3** High Performance (Aerospace) Electronic Products.
- Q486 Industrial Electronic Products – General Requirements** – The material, methods and acceptance criteria for producing soldered electrical and electronic assemblies shall meet the requirements of IPC-A-610 – "Acceptability of Electronic Assemblies" and IPC/EIA J-STD-001 – "Requirements for Soldered Electrical and Electronic Assemblies" for **Class 2** Dedicated Service (Industrial) Electronic Products.
- Q490 Certifications & Test Reports – Electronic Devices** - With each delivery of electronic devices and/or components on this Contract, the Supplier shall submit to Parker Aerospace certifications traceable to the manufacturing and/or screening process. Certifications and test reports shall meet the requirements of section 3.3 herein and include the following data:
- applicable drawing and/or specification and revision;
 - part number and revision;
 - manufacturers identity,
 - manufacturers lot and date code; and
 - the quantity delivered.
- Q500 Identification of Electronic Devices** - Each electronic device or component delivered on this Contract shall be identified in accordance with the applicable specification by lot or batch, traceable to the actual manufacturing process and manufacturer. The lot or batch number may be a date or the Supplier shop order code, and shall provide the capability to effectively and positively screen the lot or batch to remove defectives, in the event that it is determined that a defective product condition exists in the lot.
- Q510 Control of Printed Wiring** - With each delivery of printed wiring on this Contract, the Supplier shall furnish the following:
- one sample printed wiring board or coupon, as required by the Parker Aerospace Contract, from each 'plating lot', which represents the lot, delivered to Parker Aerospace; the sample board may be taken from the Supplier's electrical rejects;
 - rigid printed wiring that conforms to the quality assurance provisions of MIL-P-55110, or IPC-6012, including group 'A' and group 'B' inspections;
 - flexible and rigid-flex printed wiring that conforms to the quality assurance provisions of MIL-P-50884 or IPC-6013, including group 'A' and group 'B' inspections. Unless otherwise specified in the Contract, electrical test for group 'A' inspection per MIL-P-50884 or IPC-6013 shall be limited to Types 2,3,4 & 5;
 - an electrical continuity test certification for all multi-layer boards.

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Q515 Component Obsolescence Management - The supplier shall develop, document and implement an electronic component management process that addresses all aspects of the product life cycle from design through service, including component selection, application, and standardization and obsolescence management. Suppliers program shall address the following issues:

- a. In the event that a component becomes obsolete or otherwise unprocurable, the supplier's obsolescence management process shall include provisions for alternate parts, end-of-life buys, and/or upgraded parts.
b. When alternate parts are considered, parts shall be selected from alternate sources, which are form-fit-function replacements & meet the same quality, reliability & selection criteria as the original parts.
c. Note that form-fit-function alternate parts that require modification to the printed wiring board layout also require Parker Aerospace approval.
d. When end-of-life buys are being considered, the supplier shall formally notify Parker Aerospace of its intent and the life time buy requirement shall be negotiated and approved by Parker Aerospace.
e. When alternate parts cannot meet form-fit-function requirements or when upgraded parts are being considered, the supplier shall formally notify Parker Aerospace of its intent and shall provide a detailed engineering analysis of the re-screening or testing requirements which will provide form-fit-function equivalency to the original parts.
f. The supplier's analysis report to Parker Aerospace for upgraded parts shall substantially respond to the following questions:
1. Reason for change
2. Will the component be substituted into a Critical Function
3. List equipment in which new component will be used, and the quantities each
4. Existing component part number
5. Existing component rated temperature range
6. Operating temperature environment
7. Existing component quality assurance process, e.g. MIL-SPEC screening, etc.
8. New component Part No.
9. New component rated temperature range
10. New component quality assurance process, e.g. MIL-SPEC, screening, etc.
11. What is impact of the substitution on equipment reliability and safety? (report analysis results)
12. Briefly describe the analysis and results that show the new component will be reliable in this application e.g, in-service data, etc.
g. In the case of out-of-production equipment where obsolescence issues render the equipment to be unsupported, Parker Aerospace shall be notified of the circumstances that caused the unavailability of the product. Parker Aerospace and the supplier will work together to provide, timely, accurate, standardized communications to notify customers of an impending product obsolescence and/or discontinuance.

4.10 Control of Contamination & Foreign Object Damage (FOD)

Q520 FOD Control Program - 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 operations. When applicable, the Supplier's FOD control program shall include controls to preclude FOD or contamination at the Supplier's sub-tier sources. MIL-STD-980 may 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.

Q530 FOD Certification - With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "FOD Certification" which complies with the requirements of section 3.3 herein and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) have been produced, controlled and examined in accordance with the applicable requirements of the FOD Control Program. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
Address: _____
Title of Authorized Individual: _____
Signature/Stamp: _____ Date: _____

Table with 2 columns: Prepared By (Mike Wicks, Product Integrity) and Approved (William S. Schmiede, Vice President Integrity - Aerospace Group)



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4.11 Inspection & Test Reports & Documentation

Q540 1st Article Inspection at Source - Inspection and/or testing and acceptance of 1st Article product by Parker Aerospace is required prior to delivery of any products on this Contract. The 1st Article product shall be complete, documented per SAE AS9102 and ready for delivery to Parker Aerospace. The Supplier shall notify Parker Aerospace at least forty-eight (48) hours in advance so that the inspection and/or testing of the 1st Article product as well as review of supporting documentation can be scheduled and completed prior to the required product delivery date. Upon request, the Supplier shall make available to Parker Aerospace representatives any measuring and test equipment, facilities and/or personnel to facilitate the 1st Article inspection.

Q550 1st Article Inspection at Parker Aerospace – The Supplier shall submit a 1st Article product and supporting documentation, as required by current revision of SAE AS9102, for inspection and/or testing and acceptance by Parker Aerospace prior to delivery of products on this Contract. The 1st article shall be completely processed in accordance with Contract requirements. When authorized by the Contract, the 1st Article product may be included as part of the initial quantity delivered on the Contract and included as part of the total Contract order quantity. In such cases, failure of the 1st Article product to meet Contract specified requirements may result in rejection and return of the delivered production quantity to the Supplier at the Supplier's expense.

Q560 1ST Article Inspection Requirements (FAIR) – The Supplier shall perform a First Article Inspection (FAI) in accordance with the requirements of the current revision of SAE AS9102. The FAIR data package shall include a ballooned drawing and completed AS9102 forms as follows: (a) Form 1 - a list of the applicable detail drawings; (b) Form 2 - a list of the standard parts, material or processes; and (c) Form 3 - the actual results for each drawing dimension and notes. Excess products, remaining from a previous production lot, may not be used to fulfill the FAIR requirements. The Supplier shall furnish a copy of the completed FAIR results with the initial delivery of products on the Contract.

Q565 Controlled Planning – The products on this Contract are considered critical for aerospace applications and require strict control of manufacturing and processing operations. The Supplier shall furnish a complete First Article Inspection Report (FAIR) in accordance with the requirements of the current revision of SAE AS9102, accompanied by copies of Supplier's manufacturing and processing routing sheets to be used during production. Upon Parker Aerospace review and approval of the first article and planning documentation, the Supplier's manufacturing and process planning shall be considered as 'frozen'. Any changes proposed by the Supplier to the approved frozen planning shall be submitted to Parker Aerospace for review and approval prior to implementation. The Supplier shall furnish a revised FAIR, reflecting the changes in product as a result of changes in planning approved by Parker Aerospace, with the next delivery of products on the Contract. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement which complies with requirements of section 3.3 and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) have been produced in accordance with "controlled planning" approved by Parker Aerospace. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q570 100% Inspection Report – The Supplier shall perform 100% inspection of all characteristics on all products delivered on this Contract. The Supplier's 100% inspection data shall show the part number and drawing revision and the actual values obtained during inspection versus the requirements of the drawing (including block data and notes) or specification. When applicable, copies of material and/or process certifications shall be attached to the inspection report.

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Q575 Dimensional Inspection Certification (DIC) – When the Contract is for assemblies or sub-assemblies, where the detail component characteristics can not be verified by Parker Aerospace upon receipt, a DIC is required. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "Dimensional Inspection Certification" (DIC) which complies with the requirements of section 3.3 herein, and is worded substantially as follows:

"This is to certify that the products (part number and revision) delivered on this Contract (number) and packing list/shipper (number) have been assembled using components (part number and revision) have been inspected and conform to all applicable requirements. Copies of inspection records to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q580 Supplier Inspection Report (SIR) - When this clause is included in the Contract, Parker Aerospace will provide the Supplier with blank copies of SIR forms and define the specific product inspection to be accomplished by the Supplier on this Contract. The Supplier shall perform the required inspections and record the actual results on the SIR forms. The SIR shall include the name and signature of the Supplier's authorized representative responsible for quality and be included with each delivery of products on this Contract.

Q585 Supplier Inspection Report of Classified Characteristics - Classification of characteristics on the drawing is a means by which Parker Aerospace Engineering conveys the potential seriousness of non-conformance of certain product characteristics. Classification of characteristics is not intended to indicate that other drawing requirements are not important or need not be met. The purpose is to establish a common basis for placing emphasis on the more important characteristics during all phases of tooling, production, inspection, and testing. Any characteristic found to be nonconforming during inspection is cause for rejection regardless of classification.

On all products delivered on this Contract, the Supplier shall furnish an Inspection Report showing the actual results of inspection of all classified characteristics in accordance with the inspection requirements for each classified characteristic defined below. The Supplier's inspection report shall show the part number, drawing revision and the actual values obtained during inspection versus the requirements of the drawing (including block data and notes) or specification. When applicable, copies of material and/or process certifications shall be attached to the inspection report. Inspection requirements for each classified characteristics are as follows:

C Critical Characteristics: (1) Characteristics that judgment and experience indicates that if defective could result in hazardous or unsafe conditions for individuals using or maintaining the product or vehicle on which it installed. (2) Affect flight safety objectives, or (3) prevent performance of a military vehicle's operational function as a weapon (e.g., mission abort). Critical characteristics shall be inspected 100%.

A Critical Assembly Characteristics: Characteristics where omission of detail parts or subassemblies from the assembly or where improper installation of detail parts or subassemblies into the assembly would not be detected during acceptance testing. Assembly critical characteristics shall be inspected 100%.

I Customer Interface Characteristics: Characteristics, which are determined, through coordination with the customer, as having an effect on installation or interchangeability. Customer Interface characteristics shall be inspected 100%.

M Major Characteristics: Characteristics, other than critical, which if defective, could: (1) Result in product failure (other than critical), or (2) materially reduce the usability of the vehicle on which the defective product is installed. Unless otherwise specified in the Contract, major characteristics shall be inspected in accordance with a Parker Aerospace approved sampling plan.

F Fracture or Fatigue Critical Characteristics: A fracture of fatigue critical area or part is one where the stress level is sufficiently high, that if a defect occurs in the area or part, it could result in a fatigue failure, which could result in the loss of an aircraft. All fracture or fatigue critical characteristics shall be inspected 100%.

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- Q590 Final Inspection Report (FIR)** – Prior to delivery of products to Parker Aerospace, the Supplier shall perform final inspection on all products and document the results on a FIR. The format of the FIR is optional; however, it shall show the actual inspection results obtained, versus the drawing or specification requirements. The Supplier shall maintain the completed FIR as part of Suppliers quality records. Upon request, the FIR will be made available to Parker Aerospace, or Parker Aerospace customers or regulatory agencies for review.
- Q600 Product Serialization Requirements** - Serial numbers for all products on this Contract have been assigned by Parker Aerospace and are defined in the Contract or reference documents. The Supplier shall apply the specified serial numbers on all products and record the serial numbers on all applicable documentation. The assigned serial numbers may not be altered or replaced without written authorization from Parker Aerospace.
- Q605 Product Serialization by the Supplier** - Products ordered on this Contract shall be serialized by the Supplier using serialization scheme selected by the Supplier. The Supplier's serialization scheme shall include provisions to ensure that serial numbers are not duplicated on products with the same part number.
- Q607 ATA SPEC2000 Serial Number Formatting** – The serial numbers assigned by the Supplier shall comply with the serial number formatting requirements of the latest revision of Air Transport Association (ATA) SPEC 2000, Chapter 9.
- Q610 Acceptance Test Procedure (ATP) Approval** - Prior to initial delivery of products on this Contract the Supplier shall submit to Parker Aerospace, for review and approval, a copy of the ATP or other quality conformance procedure that describes the final tests to be performed by the Supplier on products scheduled for delivery to Parker Aerospace. The ATP shall include a list of equipment used and any test diagrams or sketches necessary for technical interpretation of the ATP. Any revisions to a Parker Aerospace approved ATP shall be submitted to Parker Aerospace for review and approval prior to incorporation into production.
- Q620 Functional Test Data Sheets** - With each delivery of products on this Contract, the Supplier shall furnish to Parker Aerospace a functional test data sheet, which shows the actual results (values) obtained during the functional tests performed on each unit of product versus the requirements specified in the Parker Aerospace approved Acceptance Test Procedure (ATP) or specification. The test data sheets shall identify the part number and drawing revision, individual products by serial number, meet the requirements of section 3.3 herein and be signed or stamped (inspection or functional test/acceptance stamp) by the Suppliers authorized representative.
- Q630 Functional Test Certificate (FTC)** – With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement titled “Functional Test Certificate” (FTC), which complies with the requirements of section 3.3 herein and is worded substantially as follows:

“This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) have been tested as required by the applicable drawing, specification, or approved acceptance/functional test procedure, and are in compliance with all requirements of the Contract. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request.”

Company Name: _____
Address: _____
Title of Authorized Individual: _____
Signature/Stamp: _____ Date: _____

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Q640 Registered Components - The products ordered on this Contract are designated as 'Registered Components'. Registered component designation is applied to all products whose failure in service or operation would most probably result in catastrophic failure and are critical to the safe operation of the system or vehicle in which installed. All registered components require strict controls and traceability throughout the manufacturing and inspection operations. Prior to start of production, the Supplier shall submit to Parker Aerospace, for review and approval, a written control plan describing the Supplier's procedure which will be used to effectively control these components during the Supplier's manufacturing, inspection and testing operations and processes. When applicable such controls shall include the controls exercised by the Supplier's sub-tier sources. The Supplier's control plan shall describe the following in detail:

- a. detail sequence of manufacturing operations and the product characteristics generated at each,
- b. method, type and points during the manufacturing sequence where special processing (heat treatment, plating, etc.) will be performed and the sources to be used;
- c. points during (a) and (b) above, where inspections and/or tests will be accomplished and documented,
- d. product characteristics that will be inspected and verified during (c) above,
- e. methods of identification, preservation and packaging to be used,
- f. handling and transportation precautions that will be implemented, and
- g. any other controls required by the Contract.

Subsequent to Parker Aerospace approval, any changes in the plan shall be submitted to Parker Aerospace for review prior to implementing them in production. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement which complies with requirements of section 3.3 and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) were manufactured and controlled in accordance with the Parker Aerospace approved control plan for Registered components. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q645 Controlled Components - The products ordered on this Contract are designated as 'Controlled Components'. A controlled component designation is applied to all products where judgment and experience indicates that if defective, the product could result in hazardous or unsafe conditions for individuals using or maintaining the product or vehicle on which it is installed; affect flight safety; prevent performance of a military vehicle's operational function as a weapon e.g.: mission abort; result in product failure (other than critical); materially reduce the usability of the vehicle on which the defective product is installed or, one which has been determined, or through coordination with the customer, as having an effect on installation interchangeability.

Prior to start of production, the Supplier shall submit to Parker Aerospace, for review and approval, a written Process Control Document (PCD) describing the Supplier's methods, processes, key process parameters, process parameter settings and control methods related to the product and its sub-components which will be used to effectively control the product during the Supplier's manufacturing, inspection and testing operations and processes. When applicable, the supplier shall also submit to Parker Aerospace, for review and approval, the PCD(s) applicable to operations performed by the Supplier's sub-tier sources. The Supplier's PCD shall describe the following in detail:

- a. Detail sequence of manufacturing operations and the product characteristics generated at each step of the manufacturing process.
- b. Method, type and points during the manufacturing sequence where special processing (heat treatment, plating, etc.) will be performed and the sources to be used.
- c. Points during (a) and (b) above, where inspections and/or tests will be accomplished and documented.
- d. Product characteristics that will be inspected and verified during (c) above.
- e. Methods of identification, preservation and packaging to be used.
- f. Handling and transportation precautions that will be implemented.
- g. Any other applicable controls as required by the Contract.

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The supplier's approved PCD shall be marked with the following legend that identifies the product is under a controlled component plan:

<p>CONTROLLED COMPONENT – FROZEN PROCESS</p> <p>This item is a controlled product and has been manufactured in accordance with process controls established and documented on the current Process Control Document (PCD) approved by Parker Aerospace.</p>

Subsequent to Parker Aerospace approval, any changes to the PCD shall be submitted to Parker Aerospace for review prior to implementing them in production. With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement which complies with requirements of section 3.3 and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) were manufactured and controlled in accordance with the current Parker Aerospace approved Process Control Document (PCD). No changes to the approved PCD were made during the manufacturing and processing of these products. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 PCD Number: _____ Revision: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

Q650 Qualified Parts Certificate (QPC) - With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "Qualified Parts Certificate", which complies with the requirements of section 3.3 herein and is worded substantially as follows:

"This is to certify that all products delivered on this Contract (number) and packing list/shipper (number) are listed on or have been approved for listing on the applicable 'Qualified Products List' (QPL) or 'Preferred Parts List' (PPL) of the applicable specification. Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

4.12 Miscellaneous Requirements

Q660 Manufacturers Catalogs, Drawings, etc. - With the initial delivery of products on this Contract, the Supplier shall furnish to Parker Aerospace one (1) copy of the current manufacturers catalog, drawing, blueprint, or specification which fully and clearly describes the products delivered, and can be used by Parker Aerospace to verify product conformance to requirements.

Q665 Repaired & Overhauled Products - With each delivery of products on this Contract, the Supplier shall include on the packing list/shipper or on a separate attached document a written statement which complies with the requirements of section 3.3 herein, describes the work accomplished, and is worded substantially as follows:

"This is to certify the all products delivered on this Contract (number) and packing list/shipper (number) have been (repaired)/ (overhauled)/ (replaced) in compliance with the requirements of drawing or specification) and (revision) and have been functionally tested (if applicable) in compliance with (test procedure number) and (revision). Objective evidence to support this certification will be made available to Parker Aerospace for review upon request."

Company Name: _____
 Address: _____
 Title of Authorized Individual: _____
 Signature/Stamp: _____ Date: _____

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- Q677 Alcohol and Drug Prevention Program** - All Employees performing maintenance or inspection of products scheduled for delivery to Parker Aerospace shall be included and part of a Federal Aviation Administration (FAA) approved Anti-drug and Alcohol Misuse Prevention Program. This requirement applies both to pre-employment and random testing of current employees in accordance with the requirements of US 14 CFR Part 121, Appendix "I" and Appendix "J". Evidence of compliance with this requirement shall be made available to Parker Aerospace for review upon request
- Q700 Manufacturing Quality Instruction (MQI)** - The Supplier shall comply with the special engineering, manufacturing and/or quality instructions and requirements that apply to the products ordered on this Contract. Such requirements may be described in document(s) such as engineering work Instruction (EWI), Manufacturing Quality Instruction (MQI), Quality Work Instruction (QWI), Manufacturing Work Instruction (MWI), ore other designation referenced on the Contract.
- Q710 Component Traceability Requirements** – The Supplier shall establish and maintain traceability of all detail components used in the manufacture or assembly of products delivered on this Contract. Data (such as parts inventory or bill of material lists, that include lot numbers, job numbers or work orders., etc.) which provides traceability of each detail component, including sub-assemblies, to the raw material from which it was made, including all processing, testing and inspection operations performed during manufacturing operations shall be furnished with the delivery of products to Parker Aerospace on this Contract.
- Q750 Product FMEA Requirements** – The Supplier shall implement Failure Mode & Effects Analysis or a similar tool to use for identifying variation in product characteristics, their effects and causes, and to develop solutions that will minimize/eliminate the effects of variation in products delivered on this Contract. The Supplier's product FMEA program shall be submitted to Parker Aerospace for review and approval prior to start of work on the Contract.
- Q755 Process FMEA Requirements** - The Supplier shall implement Failure Mode & Effects Analysis or a similar tool to use for identifying variation in production processes, their effects and causes, and to develop solutions that will minimize/eliminate the effects of variation in products delivered on this Contract. The Supplier's process FMEA program shall be submitted to Parker Aerospace for review and approval prior to start of work on the Contract.
- Q765 Alternate Materials and/or Process Specifications** - An alternate specification list applies to this order. The list defines the alternate material and/or process specifications that may be used when the material or process specification shown on the engineering drawing or other documents has been cancelled by DoD or industry initiatives and the material or process to the original specification is no longer available. The authorized alternate specification will be listed on the Contract or on reference documents such as the Manufacturing Quality Instruction (MQI) applicable to the order. A copy of the alternate specification list may be obtained by contacting the Parker Aerospace Buyer.
- Q770 Ship to Stock (STS)** – Products on this Contract have been approved and designated for STS processing. The Supplier shall identify all containers, packages and shipping documents with the words "STS" in bold format.
- Q780 Pre-Production Review** - Products on this Contract have been designated as complex and require close control of manufacturing and processing operations and/or sequence. The Supplier shall notify Parker Aerospace at least seven (7) days before start of production so that Parker Aerospace may schedule and conduct an on-site review and approve Suppliers equipment, methods, processes and controls to be used during production. Subsequent to approval, any changes proposed by Supplier shall be submitted to Parker Aerospace for review and approval prior to implementation into production.
- Q800 UID Marking** - Products on this Contract require Unique Identification (UID) marking in accordance with the requirements of current revision of MIL-STD-130. The Supplier is required to submit to Parker Aerospace for review and approval the Suppliers detail UID marking procedures and methods prior application of UID marking and delivery of products to Parker Aerospace.
- Q999 Internal Parker Aerospace Quality Instructions and/or Inspection Routing** - Q999 could be imposed for specific Manufacturing Quality Instruction (MQI) for Parker Aerospace internal use and/or directing the shipment to inspection without instruction for normal inspection and 1st Article Inspection (FAI) verification.

Prepared By:

Mike Wicks

Product Integrity

Approved:

William S. Schmiede

Vice President Integrity - Aerospace Group

