

	FORM Rexnord Industries, LLC Aerospace Division	FM Level 4
Supersedes: Rev. E Original Issue Date: 4/26/1999 Originator: Quality UNCONTROLLED WHEN PRINTED	Subject: Supplier Quality Assurance Requirements	Form Number: PG 012 Rev. Date: 9/6/2017 Revision: Rev. F Page: 1 of 5

This document establishes product assurance requirements for all supplies ordered under the Purchase Order, of which this form is part of, to assure that such supplies conform to required levels of quality and reliability. It is noted that supplies purchased on this order are intended for use in applications, such as Aerospace, that require a high level of quality and reliability.

The following supplementary provisions as noted on the purchase order shall be applicable to the furnishing of the goods and services covered by the attached purchase order. The Seller in accepting this order agrees to be bound by the paragraphs specified on the purchase order and comply with the required provisions in all respects. Rexnord Precision Gear reserves the right to schedule and perform an onsite audit.

Q1 – General Requirements

- 1.1. Prohibited Practices – The following acts or practices are typical of those prohibited:
 - a. Unauthorized Repairs – Repairs by welding, brazing, soldering, plugging, bushing or use of paints, adhesives, or plating, or any other method, on parts damaged or found to be faulty during the fabrication process, or on defects in castings/forgings, are prohibited unless specifically authorized by Buyer in writing.
 - b. Unauthorized Processing – Seller shall not change, add, or delete any process, material, or procedure without prior Buyer written approval if such process, material, or procedure was originally subject to approval by the Buyer.
 - c. Disregard of Approvals – Seller shall not change or delete any quality control procedure or process that is subject to specific approval by Buyer without prior approval of Buyer in writing.
- 1.2. Documentation
 - a. Buyer Acceptance – The Buyer may refuse to accept supplies delivered under the Purchase Order if the Seller fails to submit the certifications/documents, test data, or reports required by the Purchase Order.
 - b. Retention of Records – Unless otherwise specified by the Purchase Order, the Seller shall retain objective evidence, including records of the inspections and tests performed in the course of manufacturing, testing, processing, inspecting, preserving, packaging, and shipping of items on the Purchase order for a minimum of ten (10) years after completion of the order. Such records shall be made available to Buyer for review upon request.
- 1.3. Authorized Deviations – The Seller must report any departure from drawings, specifications or other Purchase Order requirements and must describe such departures, including a description of the cause and

corrective action taken to preclude recurrence. The report shall be submitted to the Buyer’s Purchasing Department, which will arrange for material review action. Seller shall not ship a discrepant item without concurrence and authorization to ship.

- 1.4. Corrective Action Requests – When a quality problem exists, the Buyer may request corrective action from the Seller. Such requests require timely responses and should include the following information: (a) Analysis of the cause of the problem, (b) statement of the action taken, and (c) the affectivity of the corrective action.
- 1.5. Special Product Assurance Requirements – The following special product assurance requirement clauses are applicable to the Purchase Order when specifically called out by the clause numbers on the Purchase Order.
 - a. Seller’s Quality Control System – The Seller shall maintain an inspection/quality control system in compliance with the clauses designated. Seller’s system shall be subject to audit by the Buyer and/or representatives of the Federal Aviation Administration (FAA) or other Government Agency.

Q2 – Basic Inspection System

- 2.1. The Seller’s inspection system shall conform to the following basic requirements established by Precision Gear:
 - a. Subcontractors – All suppliers from which Precision Gear purchases items, equipment or parts, on which all specified quality characteristics can be verified by Precision Gear upon receipt, shall have an established basic inspection system in accordance with the following requirements:
 - b. Receiving Inspection – Supplies purchased by the Supplier for use in Buyer’s orders shall be subjected to receiving inspection to assure conformance to Buyer’s Purchase Order requirements. Such supplies shall be adequately identified and controlled to prevent co-mingling with other supplies.

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- 2.2. In-process Controls – The Seller shall employ a system for controlling the hardware throughout the manufacturing process. This may be accomplished by a manufacturing outline or other suitable method which details the operation sequence and inspection points and includes provisions for controlling the drawing/specification revision status during the manufacturing process.
- 2.3. Calibration – The Seller shall implement and maintain a documented system for control and use of Inspection Equipment. All Inspection Equipment shall be calibrated against certified standards, which have known valid relationships to National Standards.
- 2.4. Non-Conforming Material Control – The Seller shall maintain a system for control of non-conforming material, a system for assuring prompt action to correct the cause of non-conforming material, and a system for withholding and separating non-conforming material from normal production pending disposition.
- 2.5. Final Inspection – The Seller shall in all instances perform a complete and thorough inspection of the item(s) to be delivered, prior to shipment to the Buyer.
- 2.6. Inspections shall be documented and as a minimum shall show lot size, characteristics inspected, quantity inspected, quantity rejected and description of defects found.
- Q3 – Quality System per ISO 9001, IATF 16949, ISO 13485, ISO 17025, AS9100 and/or NADCAP – The Seller shall meet any of these requirements.
- Q4 Certificate of Conformance – The Seller shall supply a certificate of conformance with each shipment referenced to: purchase order, part number and revision, quantity shipped, material designation or description, lot numbers when applicable, required specifications and revisions, and bearing the signature and title of a management or quality assurance representative.
 - a. Specialty metals must be melted in the United States or a qualifying country, or they can be melted anywhere but must be "incorporated in an article manufactured in a qualifying country". The clause allows a qualifying country to manufacture parts from metal that was melted anywhere, provided it meets specifications, but a United States company can only use metal that was melted in the United States or a qualifying country.
- Q5 – Raw Material Material Test Reports – For each lot or heat of material supplied on this order, the Seller shall furnish a certified material test report showing the material description, including as applicable, the material name, alloy, type, grade or condition, the producer’s (mill) name, the lot or heat number and the material specification and revision to which the material complies, and in addition, for:
 - a. Ferrous Materials – Show the actual values of chemical and physical properties obtained from the lot or heat versus values required by the applicable material specification.
 - b. Non-Ferrous Materials – Show the typical or range of values of the chemical and physical properties of the material and a statement that the material conforms to the requirements of the applicable material specification.
- Q6 – Precision Gear Furnished Material – Accountability of material furnished on this order must be maintained. No material substitution is allowed. In the event that more than one lot of material is furnished, the Seller shall maintain individual material lot integrity.
- Q7 – Seller Furnished Material – The Seller shall furnish with each delivery of parts, material certifications/test reports covering all material used to fill the order. The certifications/test reports shall be traceable to the material producer’s heat, lot, batch or melt number and as applicable, meet the requirements for material test reports specified in Code Q5. If more than one lot of material is used, each lot of parts shall be identified to maintain traceability to the applicable material test report(s). The Seller’s representative shall sign all material certifications/test reports furnished by the Seller.
- Q8 – Material Traceability, Identification & Control The Seller shall provide positive traceability of each part, and serial numbers, if applicable to the material certifications/test reports of the specific raw material from which it was manufactured.
- Q9 – Control of Special Processes – All special processes such as surface treatments, plating, heat treating, welding, and non-destructive testing required for completion of this order shall be performed only by processors approved for the process by Precision Gear. For a list of processes requiring approval and names of approved suppliers, contact the Precision Gear Buyer who placed the order.

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Q10 – Special Processes – For all special processes required by the Purchase Order and performed by the Seller or by his sub-tier supplier, the Seller shall furnish the certification/test report issued by the supplier actually performing the process. The certification/test report shall include a complete description of the process performed (name, applicable specification, revision level, type, grade, class, etc., the quantity, part number, and name if applicable).

The certification/test report shall contain a statement that indicates the Supplier has performed all testing, chemical analyses and/or inspection required by the applicable specification and that objective evidence to support the certification is on file and available to the Buyer for review upon request. The frequency and scope of these tests shall be defined in the specification.

Certifications/documents must be written in ink, typed or carbon copies signed by a responsible official of the issuing organization.

Q11 – Heat Treat Certifications – The Seller shall furnish with each shipment of parts, certifications for each lot of parts, as well as a statement of the quantity and results for the pieces tested.

Q12 – Test Samples – The Seller shall furnish for Buyer verification testing, one additional part or suitable test sample, of the same material lot and processed simultaneously with each lot of parts supplied on this order. Both the test sample and Seller shipping documents shall identify the sample, part number, process, and batch or lot number.

Q13 – Non-Destructive Test (NDT) Reports – The Seller shall furnish with each shipment one copy of the certified test report for all NDT tests (penetrant, magnetic particle, radiographic, ultrasonic) performed. The report shall be issued by the organization actually performing the tests, including a complete description of the test (test name, specification type, method, acceptance criteria, and shall be signed by a responsible official of the issuing organization).

Q14 – Seller Inspection – Seller shall perform inspection or test of all items covered by the Purchase Order. Records of Seller’s inspection results showing quantity tested and rejected shall accompany each delivery of articles.

Q15 – Seller Inspection Report – The Buyer shall define specific inspection or test requirements to the Seller. The Seller shall perform the required inspections, tests, and record actual results, dimensions, values on a report and submit a signed copy of the report with each shipment to the Buyer.

Q16 – Castings/Forgings – Production – Raw castings/Forgings shall have certificates of conformance or test reports with each shipment denoting:

- Material
- Alloy
- Heat Treatment
- Heat or Melt Number
- Chemical Analysis
- Physical Analysis

Q17 – Software Quality Assurance – The Seller shall document and implement a program to control software and data that is stored on disks, tapes, cards, etc., to manufacture, control, and inspect product that the Seller provides to Buyer. Commercially available “off the shelf” software is generally exempt from this requirement. Software programs should specify part number and revision levels where applicable.

Q18 – Government/Customer inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify and furnish a copy to the Government Representative normally servicing your plant so Government Inspection can be appropriately planned. If a Government Representative does not service your plant, contact the nearest Defense Contract Administration Services Office (DCASO). If you cannot locate the Government Office, our Purchasing Manager shall be notified immediately.

Q19 Source Inspection Required – Notify Rexnord Precision Gear Buyer when material is ready for source inspection.



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- Q20 Supplier's Calibration System must conform, at a minimum, to ISO 10012 (traceability to NIST is required).
 - Q21 Supplier's Calibration/Material Testing lab System must conform to ANSI Z540 / ISO 17025.
 - Q22 Design changes or material substitution must be approved by Precision Gear prior to implementation. In the event of a process change, a NEW 1st article (per Q23) must be submitted to Precision Gear for approval. Supplier is to notify Precision Gear of non-conformances and procedure changes affecting Quality. Supplier shall implement a recall process to include a form of notification, work instruction describing the recall process, deviation form and disclosure to be approved by Precision Gear prior to shipment. (Note: Failure to comply or receive permission to deviate will result in material being rejected and returned at Supplier's expense).
 - Q23 First Article inspection data must accompany parts. First Article inspections shall be in compliance with AS9102 requirements unless otherwise noted. Every characteristic of one production part shall be verified and recorded. The vendor's standard form is not acceptable unless it mirrors the AS9102 forms. Data shall include actual findings to stated specification.
- Examples:
- Physical Dimensions per drawing specifications
 - Raw Material
 - Composition
 - Functional Characteristics
 - Plating
 - Weight
 - Soldering
 - Heat Treating
 - Others as Necessary
- a. Special Process certification will be included as applicable.
 - b. When an inspection fixture is used to verify conformance (attribute data), the fixture number may be furnished instead of variable data.
- Q24 Material furnished under this order shall be free from contamination by the presence of mercury. Material furnished under this order shall also be free from contamination by the presence of other toxic substance without prior approval from Rexnord Precision Gear.
- a. In the event of any accident involving mercury or any other toxic substance contamination of the material being furnished on this Purchase Order or suspicion of such contamination, Rexnord Precision Gear shall be notified immediately.
- b. Your subcontractors must be notified of, and must comply with the requirements of this notice. Flow down is necessary.
- Q25 Statistical Process Control Data for each key characteristic to accompany material when shipped. Key Characteristics are identified on our prints; this data shall demonstrate process control to an initial capability level of 1.67 CPK for Critical and 1.33 CPK for follow on production.
- Q27 When the suppliers facility is performing lot inspection sampling, instead of 100% lot inspection, the C=0 sampling plan is to be invoked.
- Q28 Personnel with responsibility for performing work that affects product conformity must be qualified especially when responsibility includes any testing considered to be a special process.
- Q29 Any changes in the product or process, changes of suppliers, changes to manufacturing locations or equipment Rexnord Precision Gear must be notified prior to the change taking place. (ref. Q23)
- Q30 Supplier shall maintain a formal internal tool control system that allows for the proper segregation, maintenance, and accountability of Rexnord Precision Gear or Rexnord's customer owned tooling.
- Q31 The supplier shall maintain an appropriate counterfeit part prevention plan in accordance with AS6174. If any material or product delivered to Precision Gear is suspected as counterfeit material, the appropriate government agency will be notified and per our AS9100 policy, product or material will not be reintroduced into the supply chain. Precision Gear will not compensate any supplier for counterfeit parts or material delivered to Precision Gear.
- Q32 The supplier shall ensure that persons doing work under the organization's control are aware of the importance of ethical behavior.

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Q33 The supplier shall ensure that persons doing work under the organization's control are aware of their contribution to product safety (the state in which a product is able to perform to its designed or intended purpose without causing unacceptable risk of harm to persons or damage to property).

Revision Level	Revision Date	Description of Revision	Approved By:	Documented Training Required Yes/No
A	4/26/1999	Created	Leonard Senkfor	No
B	2/21/2007	Reissued	Dave Christopher	No
C	4/7/2008	Deleted MIL-I-45208A, Inserted ISO9001:2008 and/or NADCAP and either or both of these requirements, deleted PGSQR012Rev1, inserted PGSQR012Rev2	Steve Poynton	No
D	5/11/2016	Added title and revision blocks to comply with AS9100 requirements for document control. Revised title nomenclature from PGSQR012Rev2 to PG 012. Re-released as revision (4).	Jeremy Kearns	No
E	7/13/2017	Added flowdown requirements (Q18-Q32) to align with AS9100D requirements. Added DFAR requirement to Q4. Changed from ISO9001:2008 to ISO 9001, added IATF 16949, ISO 17025, AS9100, ISO 13485. Reformatted document. Changed revision level from numbering scheme to letter to align with current practices for document control.	Jeremy Kearns	No
F	9/6/2017	Added Q33 – The importance of product safety	Jeremy Kearns	No