



# **Supplier Quality Requirements Manual**

**Revision –N/C**

**Date: 8/9/2014**

**DOCUMENT PGSQM-002**

**Page 1**

This document contains information that is confidential and proprietary to Pacific Gear Systems. This document is furnished on the understanding that the document and the information it contains will not be copied or disclosed to others except with the written consent of Pacific Gear Systems and will not be used for any purpose other than conducting business with Pacific Gear Systems, and will be returned and all further use discontinued upon request by Pacific Gear Systems. All rights reserved.

# **SUPPLIER QUALITY REQUIREMENTS MANUAL**

**APPROVALS:**

---

**President**  
Edward L. Heade

## TABLE OF CONTENTS

Manual Identification	1
Document Approvals	2
Table of Contents	3
Record of Revisions	4
List of Effective Pages	5

---

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1	Purpose	6
2	Terms and Definitions	6-7
3	Notifications	7
4	Supplier Selection and Surveillance	7
5	Suppliers Performance Monitoring	7-8
6	Commitment to Quality	8
7	Document Control	8
8	Quality Records	8
9	Quotation and Contract Review	9
10	Purchasing Control	9
11	Material Control	9-10
12	Production Process Planning and Control	10
13	Inspection and Testing Planning and Performance	10-12
14	Product Identification and Traceability	12
15	Material Status Identification	12
16	Non-Conforming Material	13
17	Corrective and Preventative Action	13
18	Continuous Improvement	13
19	Inspection, Measuring and Test Equipment	14
20	Preservation, Packaging and Shipment Control	14





## 1. Purpose

This Supplier Quality Manual establishes general product quality requirements and is intended to define the requirements for the supplier to assure that all goods and services delivered to Pacific Gear Systems is per the drawings, specifications and purchase order requirements. This allows Pacific Gear Systems to conform to specified requirements for quality. This manual constitutes an extension of a contract between the Supplier and Pacific Gear Systems covering the goods or services as described in a Purchase Order. The Supplier's acceptance of a Purchase Order shall constitute an agreement to the requirements of this document; the terms and condition of the Purchase Order shall take precedence.

## 2. Terms and Definitions

- 2.1 Approved Supplier- Supplier who is approved to supply material, parts, and processes or testing to Pacific Gear Systems. Approved Suppliers are listed in the Pacific Gear Systems Approved Suppliers List.
- 2.2 Certified Supplier- Supplier who has consistently achieved a high Quality Performance Rating and are therefore exempt from Pacific Gear approval of First Article Inspection and will have reduced incoming product inspected at Pacific Gear.
- 2.3 Corrective Action - Action taken to eliminate the cause of actual nonconformance's in order to prevent recurrence.
- 2.4 Customer Complaints- Incidents of complaints made by Pacific Gear customer on suppliers provided product.
- 2.5 Defect- A nonconformance of a quality characteristic to its specification.
- 2.6 First Article Inspection- A complete, documented inspection to verify that prescribed production methods have produced an acceptable product as specified by product drawings, purchase order, specification and/or other applicable design documents.
- 2.7 Key Characteristic- The features of a material, process or part whose variation has a significant influence on product fit, performance, service life, or manufacturability.
- 2.8 Nonconforming Material – Any material, part or product with one or more characteristics which deviate from the requirements in the contract, specification, drawings and /or other product description.
- 2.9 Nonconforming Material Corrective Action Report (NMCAR)– A form used to document nonconforming materials, parts, or processing. Root Cause, Corrective Action and associated review and disposition of material are recorded on this document.
- 2.10 Occurrence – Each incident where a nonconformance is detected. For supplier rating purposes, nonconformance of the same time will count as a single occurrence
- 2.11 Opportunity-An individual dimension or characteristic on a particular part.
- 2.12 Preventative Action- Action taken to eliminate the cause of potential nonconformance's in order to prevent their occurrence.
- 2.13 Source Inspection – Inspection at supplier's facility by Pacific Gear.
- 2.14 Special Process–Process where the supplier is unable to provide the service contacted for and requires the supplier to send or route the required process to a specialized service provider which the sub-tiered supplier is certified to produce.
- 2.15 Supplier- Subcontractor who supplies product, processing, or services to Pacific Gear Systems.

- 2.16 Supplier Quality Performance Rating System –The System whereby supplier’s quality performance is monitored to define qualification level and ascertain the need for corrective action.
- 2.17 Suppliers Survey – Survey used to evaluate the Quality Assurance capabilities of an existing or potential Supplier. This survey may be completed by the supplier, or used as an audit checklist for audits performed by Pacific Gear. (See form PGQF-010).
- 2.18 MRB Board- The Material Review Board consists of the Quality Manager and a cognizant engineer, which shall review material dispositions and determine the proper course of action.

### **3. Notification**

- 3.1 The Supplier shall immediately notify Pacific Gear of any significant changes in ownership, location, processing, Quality System registration status, etc. that could affect product quality or delivery.
- 3.2 The Supplier shall immediately notify Pacific Gear of any suspected or known issues with received material, process or design which may affect quality or performance of the product, safety or customer satisfaction known as “Quality Escapes”.
- 3.3 The Supplier shall immediately notify Pacific Gear of any, which contains (or contained) suspected or known nonconforming product.

### **4. Supplier Selection and Surveillance**

- 4.1 Pacific Gear shall select, survey, and monitor the performance of suppliers to assure conformance to requirements
- 4.2 Initial supplier surveys form PGQF-010, shall be conducted prior to issuance of a Purchase Order. This initial survey is to ascertain the capabilities of the potential Supplier and the existence of a documented quality system. The Suppliers Quality Management System shall meet the requirements of MIL-I-45208, ISO-9001/2000, AS9100, NADCAP or an equivalent approved by Pacific Gear.
- 4.3 Following initial survey, an on-site survey/audit may be conducted to further determine the capabilities of the Supplier. This includes facility and special process and testing sources where on-site reviews and periodic re-visits may be required to assure conformance with contractual requirements.
- 4.4 By accepting a Purchase Order from Pacific Gear, the Supplier agrees that Pacific Gear and /or other regulatory agencies as required may audit or review the Suppliers facility and procedures.

### **5. Suppliers Performance Monitoring**

- 5.1 Pacific Gear will monitor Supplier quality performance.
- 5.2 Following submission and acceptance of the initial Quality Assurance Suppliers Survey, all new Suppliers will be provisionally approved, permitting orders to be placed with the Supplier. As product is delivered, this rating will be adjusted based on actual performance.
- 5.3 Ratings are based on quality performance of parts received, using a rolling 12-month evaluation period. Scoring is based on occurrences of nonconformance and Pacific Gear customer complaints.
- 5.3.1 The goal is for all suppliers to meet at least the acceptable category.

5.3.2 Formal Root Cause Corrective Action, focusing on system breakdown, is required if the Quality Rating falls below an Acceptable level.

5.4 If the Supplier fails to correct nonconforming conditions, or lower Quality Ratings are repetitive, the Supplier may be required to meet with Pacific Gear Quality Assurance to develop an active plan and/or may be disqualified and placed on the "Unapproved Suppliers List".

5.5 Pacific Gear Quality Assurance reserves the right to adjust the Suppliers Quality Performance Rating based on response to corrective action and/or business reasons.

5.6 Disapproved suppliers may only be used if approved by the Pacific Gear Quality Manager.

## **6. Commitment to Quality**

6.1 The Supplier shall establish and maintain a quality management system and shall monitor and continually improve their system.

6.1.1 The extent and complexity of the documented quality management system may be based on the size of the organization and type of activities, the complexity of its processes and their interactions, and the competency of personnel.

6.2 The Suppliers shall ensure that all quality objectives, including all product requirements, are met, with the aim of enhancing customer satisfaction.

## **7. Document Control**

7.1 Documents required by the Quality Management System must be controlled. This control shall ensure that:

- Documents are approved for completeness and adequacy prior to use
- Relevant versions of applicable documents are available at all points of use
- Obsolete documents are prevented from unintended use

7.2 The supplier shall ensure that all documents, drawings, process sheets, instructions, specifications and data supplied by Pacific Gear are identified and controlled so that only revisions specified on the Purchase Order are used.

7.3 The supplier shall not use or disclose to any third parties any Pacific Gear design documents or data without prior written approval of Pacific Gear. All data may only be used in support for services supplied to Pacific Gear.

## **8. Quality Records**

8.1 Quality records shall be legible and identifiable to the product involved and shall be stored and maintained in such a way

8.2 Quality Records shall be made available, upon request by Pacific Gear or the FAA

8.3 All records pertaining to Pacific Gear product verification and acceptance shall be maintained for min. 5 years



## 9. Quotations and Contract Review

- 9.1 Prior to quoting or accepting a Purchase Order, the supplier shall assure a complete understanding of all applicable requirements. The Suppliers shall ensure they have the equipment capability and capacity to perform the work required.
- 9.2 The Supplier shall comply with all specification stated or referenced on the Purchase Order, including applicable engineering drawings, process specifications and industry specifications. The supplier shall ensure compliance to the latest revisions in effect at the time of the placement of the Purchase Order unless otherwise specified.
- 9.3 All discrepancies shall be resolved prior to submission of a quotation or acceptance of an order
- 9.4 Verbal changes or deviations from the requirements of the Purchase Order are NOT Acceptable. The Supplier shall meet all requirements of the Purchase Order as written and accepted by the supplier or obtain a written deviation approved by Pacific Gear. Any request for deviation shall be submitted at the earliest possible time. Pacific Gear's Quality Assurance and/or Engineering must approve deviation to product specification requirements.
- 9.5 The supplier shall follow all approval requirements and may not deviate from the approved methods, unless a documented deviation is received.

## 10. Purchasing Control

- 10.1 The Supplier shall evaluate and select suppliers based on their ability to supply product or services, which meet specified requirements.
- 10.2 The Supplier shall maintain a listing of approved suppliers (ASL), which includes the scope of the approval, and shall periodically review supplier's performance.
- 10.3 The Supplier shall ensure that purchased product conforms to specified Purchase Order requirements.
- 10.4 The Supplier **SHALL NOT** subcontract any Pacific Gear work to another subcontractor without approval from Pacific Gear.
  - 10.4.1 The Supplier shall establish and maintain a system to fully describe the product or service to be purchased including the "flow down" of requirements specified by Pacific Gear. When requested by Pacific Gear, the Supplier shall submit a copy of the Purchase Order to the sub-tier supplier for review of the flow down requirements.
  - 10.4.2 The Supplier who subcontracts NDT (Non-Destructive Testing) requirements shall assure that the NDT source is approved by Pacific Gear or NADCAP approved and shall supply all applicable documents to the NDT source and shall assure that the NDT process is performed at the proper sequences on the items.

## 11. Material Control

- 11.1 The Supplier shall store and identify raw material to prevent unauthorized use of material.
- 11.2 Unapproved material shall be segregated from approved material in a holding area. Raw stock stored for commercial use must be isolated from any material used in an aerospace application.
- 11.3 All Pacific Gear furnished material must be kept segregated and clearly identified as property of Pacific Gear while in the Supplier's possession.

11.4 The Supplier shall maintained the calibration (where applicable) and condition of the tooling, fixtures, and gages(I.E tools) supplied by Pacific Gear. If any discrepancies are found concerning tooling the supplier shall contact the Pacific Gear Purchasing Dept.

## **12. Production Process Planning and Control**

12.1 The Supplier shall plan and control all manufacturing and process operations.

12.2 The plan shall include:

- Sequence of operations
- Establishment of controls and the development of control plans where key characteristics have been selected by the Supplier or specified by Pacific Gear
- Identification of in-process inspection verification points
- Selection, identification and use of required equipment, tools, fixturing and measuring and test equipment
- Provision of all required information that describes the characteristics of the product
- Provision of documented work instructions, as necessary
- Provision for elimination of tool marks and handling damage
- Provision for the prevention, detection, and removal of foreign objects

12.3 Where manufacturing processes require traceability, the process plan shall assure that traceability is maintained and documented, including the traceability of all consumable items.

12.4 Only when specified on the Purchase Order, the manufacturing plan must be submitted to Pacific Gear for approval. Subsequent to Pacific Gear approval, the Supplier shall not make any changes to the plan without first obtaining written approval of Pacific Gear's engineering manager.

## **13. Inspection and Testing Planning and Performance**

13.1 The Supplier shall ensure that monitoring and measurements are carried out in a manner that is consistent with the required accuracy of the checks being made.

13.2 Inspection check sheets or Inspection Method Sheets (IMS) shall be prepared and used for each Pacific Gear part number. The inspection check sheets must demonstrate that all characteristics of a part have been inspected and verified by the Supplier.

13.3 The inspection check sheet(s) shall include, but not limited to, the following entries:

- Part numbers, operation sheet and serial numbers are required
- Purchase Order number
- Quality of parts
- All drawing characteristics with methods of inspection, visual, tools gages, etc.
- Entries to verify these inspections (actual readings, where possible)
- Confirmation that each applicable inspection/test has been performed and the results are within requirements
- Acceptance of inspections by Supplier's quality personnel by stamp, signature and date of inspection
- Rejection numbers for any non-conformances

### **13.4 First Article Inspections**

13.4.1 The Supplier shall perform a first article inspection upon initial set-up and after any subsequent set-up, machine change, etc.

13.4.2 First Article Inspections data sheets shall be recorded directly on a copy of the applicable operation sheet or drawing. The alternative is to “bubble” the operation sheet or product drawing so that each characteristics is clearly identified to an attached data sheet

13.4.3 First Article Inspection Data shall be submitted to Pacific Gear for approval prior to running the remainder of the lot.

13.4.3.1 The “first piece” must be 100% inspected by the Supplier and accepted before being presented to Pacific Gear Inspection for concurrence. The actual dimensions must be recorded and presented.

13.4.3.2 Production shall not continue until a Pacific Gear’s engineering accepts the “first piece”. Any unacceptable or “borderline condition” must be remedied before the remainder of the production run continues. Pacific Gear Purchasing or Quality Assurance will communicate “first piece” acceptance”.

13.4.3.3 Suppliers who consistently meet high levels of Quality performance Rating may be exempted from or submissions of first article. First Article verification must still be performed at the Supplier, with associated records maintained, but submission for approval at Pacific Gear is not required. Suppliers who are exempted from First Article submission will be notified of this exemption. Exemption may be for all products from that supplier, or only for specific parts.

### **13.5 In-Process Inspection**

13.5.1 The Supplier will check subsequent pieces at defined intervals to ensure that the product continues to meet all specified requirements. Pacific Gear may require the recordings of designated actual in-process measurements. Such requirements shall be specified on the purchase order, or designated in a communication document sent from Pacific Gear.

### **13.6 Final Inspection**

13.6.1. The Supplier must deliver the product, which conforms to all requirements and specifications. In order to assure this, all characteristics must be 100% final inspected unless a specific instruction or specification provided by, or approved by, Pacific Gear Quality Assurance directs otherwise.

13.6.2. The use of Statistical Process Control (SPC) techniques may be permissible in lieu of 100% inspection if process capability can be demonstrated and Pacific Gear Quality Assurance has granted written approval for the process control scheme.

### **13.7 Source Inspection**

13.7.1 The Purchase Order may indicate the requirement for Source Inspection.

13.7.2 Where Source Inspection is required; the facility must have an adequate area to perform source inspections.

13.7.3 Requests for Source Inspection must be submitted to Pacific Gear’s Purchasing. This shall include in writing the Supplier, location, type of inspection required (detailed or final) part number and name, quantity and the date available for the source.

13.7.4 Items presented for Source Inspection must be 100% inspected (unless the supplier has been specifically approved for sample inspection) and must meet all applicable requirements and specifications.

13.7.5 The following documents, as applicable, shall be presented with the items to be sourced inspected

- Purchase Order
- Completed work order as specified on the Purchase Order
- Specifications
- Special process, test and material certifications
- Suppliers inspection Data
- Any nonconformance and corrective action reports

### **13.8 Certifications**

13.8.1 Pacific Gear requires Material Certifications and Certificate of Conformance as specified on the Purchase Order.

13.8.2 All certifications of work completed must be signed and dated. In addition the name and title of the person signing must be typed adjacent to the signature. Original certifications must be supplied.

## **14. Product Identification and Traceability**

14.1 The Supplier shall maintain a system to identify product in accordance with specified requirements and to maintain product traceability to materials and process.

14.2 Traceability shall be maintained per the approved manufacturing process plan, including marking of parts and associated documents.

## **15. Material Status Identification**

15.1 The Supplier shall maintain a product in process identification system, which consist of appropriate marking of parts and associated documents. Inspection stamps, if used, must be traced to the individual operator and inspector.

15.2 The material status shall be clearly identified. All marking and numbering of parts shall be applied per operation sheet requirements. If no method is called out on the drawing or P.O contacts Pacific Gear Purchasing for written instructions before shipment.

15.2.1 All parts must be identified with the information called out on the P.O and a tagged along with the identification called out on the container.

15.3 The following in-process operation, where applicable, require part stamping:

- Heat Treat
- Nondestructive Testing
- Stress Relief
- Proof Testing
- Nonconforming material
- Hardness Testing

## **16. Non-Conforming Material**

16.1 The Supplier shall establish and maintain a system for the identifications and segregation of nonconforming product. Pacific Gear does not permit Suppliers to perform material review functions; therefore Pacific Gear Engineering must disposition and approves any nonconforming product. SUPPLIER DOES NOT HAVE MRB AUTHORITY FOR ANY Pacific Gear Systems, Inc. PROPERTY

16.2 Product or material found to be nonconforming shall be marked, tagged and controlled to prevent unattended use or from becoming intermingled with conforming product or material.

16.3 All reports of nonconforming product or process shall include a documented root cause and corrective action plan. This may be documented on a Pacific Gear Supplier Nonconformance Report or the Suppliers own nonconformance corrective action document, provided this includes true root cause evaluation and corrective action. Non-conformances from sub-tier suppliers shall be documented.

16.4 Nonconformities will be documented at Pacific Gear through the Nonconforming Material Corrective Action Report (NMCAR) system. All non-conformances will be documented with a Root Cause and Corrective Action.

16.4.1 If the Supplier has not submitted a Root Cause and Corrective Acton plan with the non-conforming product, Pacific Gear's Quality Assurance or Purchasing shall send the NMCAR to the supplier requesting the required information. All non-conforming material is subject to Pacific Gear's MRB system for evaluation. The Supplier will be given 2 weeks for the Root Cause and Corrective Action to respond.

16.4.2 All Root Cause and Corrective Action plans are subject to review and approval by Pacific Gear.

16.5 Pacific Gear personnel shall examine nonconforming material to determine if the nonconformance can be reworked to conform to the drawing or specification.

16.6 Suppliers may request and review any non-conformances reported against them, if the Supplier feels Pacific Gear has incorrectly assigned the responsibility.

16.7 Serialized parts shall have the serial numbers noted on all correspondence.

16.8 All data obtained from the NMCAR system will be used in the Supplier Quality Performance.

16.9 All Pacific Gear Systems, Inc. suppliers are required to report all quality escapes within 10 working days.

## **17. Corrective and Preventative Action**

17.1 The Supplier shall maintain a system to address corrective and preventative actions.

17.2 The Corrective and Preventative Action system shall require:

- Review of actual nonconformance's
- Determination of the cause of the nonconformance's
- Evaluations of the need for action to ensure that nonconformance's do not reoccur.
- Review of potential nonconformance's and their causes
- Evaluation of actions taken to prevent occurrence of non-conformances.

## **18. Continuous Improvement**

18.1 The Suppliers shall continuously improve the effectiveness of the Quality Management System through the use of a quality policy, quality objectives, audit results, corrective and preventative action and management review.

## **19. Inspection, Measuring and Test Equipment Control**

- 19.1 The Supplier shall ensure that all measuring and test equipment (M&TE) is appropriate to assure conformance of products and service to specifications. This shall include assurance of the accuracy and precision required.
- 19.2 The Supplier shall establish and maintain a system for the maintenance and calibration control of measuring and test equipment (M&TE), and standards to sufficient accuracy to assure conformance of products and services to design requirements and specifications.
- 19.2.2 All equipment or devices that are used to measure, gage, test, or otherwise examine the product to determine compliance to requirements, whether owned by the Supplier, the suppliers employee, or any outside agency must be included.
- 19.3 Written records shall be maintained in accordance with the control procedures which indicate the status of the individual test and measuring equipment, calibration date, and due date for calibration and by whom. The equipment shall be labeled with the same information. All measuring equipment shall be serialized with the serial number on the associated calibration document.
- 19.4 All outdated calibrated tools shall be segregated and labeled or tagged as such to prevent use.

## **20. Preservation, Packaging and Shipment Control**

- 20.1 The Suppliers process planning shall provide the necessary instructions for the handling and protection of product throughout all aspects of the product realization to prevent corrosion and nicks, dings and damage.
- 20.2 The Supplier shall maintain a system that will provide effective preservation, packaging, shipping. The Supplier is responsible for assuring that all items shipped to Pacific Gear are preserved and packaged that no shipping can occur. All packaging shall be marked with the applicable Purchase Order requirements. Parts are required to be individually packaged to prevent damage and each box must contain the following, Part Number, Serial Number, Date of Manufacture and Purchase Order Number.
- 20.3 The Supplier shall ensure that all necessary documents are enclosed with the shipments.