



SUPPLIER QUALITY ASSURANCE

MANUAL

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APPROVED BY: Fran Kroll		Revision Date 10/24/11

PREFACE

QCC's success is built upon maintaining top quality machined components and assemblies. Our customers require line ready complete parts, resulting in our dependence on quality sub-contractors.

Supplier communication, understanding, and cooperation are essential to strengthen quality management systems that reduce risks, and increase productive opportunities for both parties. QCC's Supplier Certification Program is a means to obtain these goals.

QCC is continuously improving processes and operations to produce quality products for our customers. We need you as a certified supplier on our production team. With your interest and input through the Supplier Certification Program, we can insure satisfied customers with our production team.

QCC

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QCC'S SUPPLIER QUALITY PROGRAM

Quality Control will partner with suppliers to provide material, services and components that are consistently acceptable for quality and on time delivery. The supplier must also have a corporate culture of continuous improvement that drives toward zero defects per million and lower costs for the customer. The supplier is responsible for meeting all QCC's specifications and requirements.

SUPPLIER SELECTION:

After a potential supplier has been identified, QCC Quality Assurance sends out a supplier survey, to further help in determining the capabilities of the potential supplier. Suppliers may be auditing to determine suitability.

1.0 PURPOSE

The purpose of this manual is to outline the requirements and expectations for meeting the terms and conditions of our purchasing documents, engineering specifications, engineering drawings, and related requirements. This manual does not alter or replace them.

2.0 SCOPE

This manual applies to suppliers that provide components, raw materials and services to QCC. (QCC)

3.0 DEFINITIONS

DPM – Defects Per Million

4.0 SUPPLIER QUALITY ASSURANCE REQUIREMENTS:

4.0.1 All materials used in part manufacture shall satisfy current government and safety constraints on restricted, toxic, and hazardous materials; as well as environmental, electrical, and electromagnetic considerations applicable to the country of manufacture and sale.

4.0.2 100% of parts or subcontracted services must fully comply with:

- PO requirements
- Blueprint requirements
- Applicable written specifications
- International industry standards
- Additional QCC requirements

4.0.3 100% of deliveries to QCC shall be on time.

4.0.4 Suppliers to QCC shall have a corporate culture of continuous improvement. Evidence of continuous improvement can be DPM reduction, investment in new equipment or facilities, cost reduction, ongoing training of staff, etc.

4.1 PACKAGING REQUIREMENTS:

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4.1.1 Received material must not be damaged or environmentally compromised. Packaging must be chosen that exceeds the anticipated protection needed to prevent damage, corrosion or degradation. Packaging requirements shall be agreed upon during the quote process. **The supplier shall use QCC approved packaging where required on the PO or print and all suppliers shall work towards QCC formatted bar coded labels for the purpose of scanning incoming material.** Suppliers shall follow QCC Routing Guidelines procedure for shipping to QCC that are outlined on the PO.

4.1.2 Packaging weight/size:

- Individual boxes intended to be manually handled shall not weigh over 35 lbs. (Exceptions being parts shipped via totes or other packaging intended to be moved via a forklift or similar lifting device.)
- Shipments with multiple individual boxes shall have a consistent quantity of parts per box. Any final box with less material than the others shall be marked as "Partial".
- Pallets/skids shall be "solid" with both a top and bottom platform
- Pallets/skids shall be evenly loaded and not weigh over 2000 lbs
- Pallets/skids shall not exceed 3 ft in height
- Pallets/skids shall be banded where necessary to assure intact delivery and shrink wrapped
- Boxes shall not overhang skids by more than 2 in
- Bar stock shall be between 12 ft and 13 ft
- Bar stock bundles shall be properly banded at 3 places (both ends and middle)
- Bar stock bundles must not weigh over 2000 lbs each

4.1.3 Packaging markings

- All individual (internal) and bulk (external) boxes/bags/containers shall have markings clearly identifying Part #, Qty and Revision Level.
- Boxes must be marked as "Box x of x" showing box number of total boxes being shipped.
- The packing list shall be attached to the 1st box (box 1 of x)
- Expiration date or date of manufacture shall be marked on each internal and external package for parts with a shelf life. (ie. O-rings, seals, adhesive, etc.)
- Only one part number shall be shipped within the same box
- No more than 5 part numbers shall be shipped per skid
- All boxes of a single part number should be kept on one skid where possible.

4.1.4 Preservation requirements

- All parts and raw materials shall be packaged to prevent damage
- Parts at risk for corrosion shall have an approved rust inhibiting agent applied to the parts or in the container that offers 6 months worth of protection (ie. oil, desiccant, etc.) Corrosion products are not acceptable on parts.
- Parts with a critical finished surface shall be packaged with special attention to preventing damage to this surface (ie egg crate, foam, etc.)

4.1.5 Cleanliness requirements

- Supplier will perform initial inspection of parts to be sure that an optimum level of cleanliness exists before processing. Use a visual aid of 10X magnification to verify naked-eye observations.
- Supplier will establish and control part cleanliness at an optimum level, which consistently meets requirements.
- Components shall be free of manufacturing residues such as scale, water, oils, grease, grinding debris etc. There shall be no contamination by foreign bodies such as sand, wire, fibers, dust, paper, etc.
- Lot parts shall be free of any machining particles such as chips, loose burrs or slivers. Maximum allowable residual magnetic flux density is 0.0001 Tesla (1 Gauss).
- Product shall be free of any cleaning debris such as glass beads, oxides, metal shot, and/or plastic media. Maximum allowable residual magnetic flux density is 0.0001 Tesla (1 Gauss).
- Product shall be free of heat treat residue or scale that can be flushed from parts in a normal cleaning process.
- Product must be free of rust or rust residuals in all areas of parts.

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- Product must be protected from rust with an approved rust inhibitor.

4.1.6 Documentation

Packing List:

- Name and address of the Supplier
- Name and address of the receiving location
- Packing List
- QCC Part Number
- QCC Part Description
- QCC PO number, PO item number and PO release number
- Shipping date
- Quantity Shipped (clearly differentiated from any quantity backordered)

Bill of Lading (BOL)

The following must be added to the outbound bill of lading:

Third Party Billing

QCC c/o Leading Edge Logistics

34877 Mound Rd.

Sterling Heights, MI 48310

- The packaging description as required by the National Motor Freight Classification
- Weight
- Number of boxes/Number of pallets
- Shipper name and address
- Receiving location name and address
- Packing List
- Name and address of Supplier
- Name and address of receiving location
- QCC part number
- QCC part description
- QCC PO number and blanket PO release/line number
- Shipping date
- Quantity shipped (clearly differentiated from any quantity backordered)
- Country of Origin

Certificate of Compliance/Material Certificates (Only if called out on purchase order)

- Part number
- Part revision
- Manufacturer's name
- Quantity
- Lot number/batch number/heat number
- Applicable specification processed to
- Chemistry
- Shelf life
- MSDS

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4.2 QUOTATION:

Suppliers must have a formal contract review process that takes all aspects of the job into account. This may include, but is not limited to the following:

- Achieving yearly DPPM goal
- Packaging that prevents damage/corrosion and provides consistency of counts
- Tooling costs
- Sample costs
- PPAP costs

Documentation showing evidence of capacity planning shall also be submitted.

4.3 APQP, INITIAL TRIAL & PPAP:

A formal PPAP is required for parts when requested by QCC or QCC's customer. APQP elements will be submitted by the supplier to QCC based on this document, prints, procedures, QCC specified PPAP checklists, RFQ, PO or emails.

APQP requirements shall be taken into consideration when the project is in the "Request for Quote" stage of development.

A formal PPAP is required for parts when requested by QCC or QCC's customer. The request may be written, verbal or on the PO.

The supplier must submit initial samples in appropriate trial quantities from production tooling. Some complex situations may require that samples in smaller quantities be submitted multiple times before the formal PPAP is submitted. Special consideration shall be given to assure samples come from all cavities or stations in the tooling (where applicable). Formal acceptance of the PPAP shall be secured before running any large scale production. QCC is not responsible for and is not obligated to accept any material produced before formal approval is granted.

The following PPAP elements are required for the formal submission [Default Level 3 PPAP where specific checklist not available]:

- Part Submission Warrant
- 3 sample parts from each process flow (Including each cavity or each fixture position). All must be clearly identified.
- Bubbled print (including all applicable notes)
- Inspection report – full layout to bubbled print performed on sample parts
- Test data
- Flow Chart
- Control Plan
- FMEA
- Material and/or process certs
- Cpk on critical characteristics – 30 pieces per cavity, > 1.67 Cpk short term & > 2.0 Cpk long term required
- Gage R&R
- Appearance Approval report (where applicable)
- Any additional requirements as determined by QCC

The supplier must notify the QCC Supplier Quality Engineer of any changes to the design, process or site. Upon notification and approval of the proposed change by the Supplier Quality Engineer, a new PPAP or specified elements of the PPAP shall be required. Contact the QCC Supplier Quality Engineer immediately upon knowledge of the change for clarification of documentation required and to begin approval process.

The following situations require PPAP review and QCC approval:

- Print revision change
- Supplier or subcontractor change at any level in the supply chain
- Raw material change
- Process change – including order of operation
- Machinery change or movement of machinery

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- Tooling change including changes in tool type, grade, manufacturer, etc
- Plant or facility change
- Test/Inspection change
- Obvious change in product appearance
- Changes as a result of a corrective action – Corrective Actions should be reflected on the FMEA, Control Plan and any other applicable document
- Production tooling that has been inactive for more than 12 months

4.4 DELIVERY:

All suppliers to QCC will work towards 100% on time delivery. Premium freight charges or line down charges incurred by QCC that are triggered by supplier caused disruptions can be charged back to the supplier.

The supplier must review all QCC PO's to verify that the parts/services described on the PO can be provided by the promise date. If the promise date stipulated by QCC cannot be met, the supplier must inform QCC purchasing and work with them to agree on a feasible promise date.

Suppliers must inform the QCC Purchasing representatives as soon as possible whenever a shipment is going to be late. The supplier shall also give an expected delivery date.

Suppliers with less than 95% on time delivery in a given quarter will be required to submit a formal corrective action plan to improve delivery. Formal action may be requested by QCC management at any time serious customer disruptions are being caused by supplier performance. Failure to submit the plan or improve delivery will result in loss of new business opportunities that may lead to resourcing.

4.5 QUALITY:

The supplier must verify that they have all of the documentation and raw material required on the PO and print to produce/process the part. If supplier does not have all requirements, they must inform QCC Purchasing regarding their needs.

All suppliers to QCC are required to work towards supplying 100% defect free products. In the event that nonconforming material is found, a return authorization is required within 48 hours or QCC will automatically send back the non-conforming material.

4.5.1 Corrective Action

Corrective Action shall be issued in the following format:

- Non-Conformity Description
- Responsible Team Members
- Containment Activity Disposition must be communicated within 48 hours (including parts in transit or previously shipped)
- Root Cause Analysis by completing 5 Why DCAR (QA-090)
- System Review and Verification (Verify corrective action was effective, update procedure/work instruction/test documentation & FMEA/Control Plan review)

All future shipments following an official defect must be certified and properly labeled as per official DCAR directives. The supplier will be responsible for all containment costs at QCC or by QCC approved 3rd party containment companies.

Root cause shall be communicated to QCC within date indicated on official DCAR. If the Corrective Action time frame cannot be met, the supplier must contact the QCC Supplier QA Engineer to arrange a due date extension.

Final close out of the corrective action will occur when counter measures are proven effective and approved by QCC Quality department.

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4.5.2 Process Control & Inspection

Suppliers shall take appropriate measures to assure acceptable product is shipped to QCC by controlling the processes. Inspection activities shall take place as required to assure acceptable material. Inspection should not be used to take the place of process control.

4.5.3 Incoming

QCC suppliers are responsible for the quality of their suppliers and subcontractors. They shall track the performance of their suppliers. Distributors are responsible for the manufacturers they represent. Where control of suppliers is supplemented by incoming inspection, all required documentation and test results will be forwarded to QCC. Appropriate certs are required.

4.5.4 In-Process

QCC suppliers are responsible for tracking quality through the manufacturing process and performing inspection as required and on critical characteristics. Document routings shall exist for production of QCC parts. SPC and Cpk analysis are required on KEY characteristics. > 1.33 Cpk short term & > 2.0 Cpk long term required. Charts and data shall be available upon request and revision control for all QCC parts is required.

4.5.5 Final Inspection

QCC supplier shall inspect/test completed parts or assemblies to insure they conform to specification.

C=0 sampling plans are required.

All material must be properly identified.

Required documentation including part number, revision, lot/heat, chemistry, etc must be sent with the parts to QCC (see 4.5.1).

4.5.6 Equipment

All suppliers are required to properly calibrate and maintain test and manufacturing equipment. Evidence of equipment control must be submitted upon request to QCC. Subcontracted services such as heat treating and plating must maintain oven charts, tritration logs, etc. All production equipment must be capable of producing material where +/- 3 sigma of the process are with specification limits. All test equipment must be capable of making the measurements required to assure acceptability. This generally requires proper range for the measurement and no more that 20% total gage error

4.6 DEVIATION REQUEST:

Suppliers must request approval to ship any nonconforming material. The deviation request shall be directed to the QCC Supplier Quality Engineer with adequate time to avoid late shipments. The supplier will then be required to fill out a QCC Supplier Deviation Request form that will include the following information:

- Supplier Name
- Supplier Representative
- Part Number
- Part Name
- Quantity Affected
- Explanation of Deviation Request (with applicable visual aids such as marked up prints, etc.)
- Cause of non-conformance
- Action to prevent future non-conformance
- Expiration date
- Approvals from Quality, engineering and production management.

FMEA & Control Plan review by QCC and the supplier are required when a deviation is requested. If approved, the SQE or a quality representative will return a signed copy of the deviation form to the supplier.

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4.7 SUPPLIER RATING

QCC suppliers will be rated monthly and report cards will be issued quarterly. Interim actions may be required of the supplier to improve a low supplier rating. Supplier may lose business due to a poor rating. Poorly performing suppliers may and can be resourced.

Suppliers are given an overall rating based on Quality, PPM, Delivery, Responsiveness and cost. Each category is assigned a point value that adds up to a possibility of earning a total of 100 points per month. The supplier must earn a minimum of 80 points each month to stay in good standing. If for any reason the supplier fails to maintain the minimum amount of points, they may be required to submit a supplier improvement plan within 7 days of receiving official supplier improvement plan request.

Quality=30 points

Official defect -5

PPM =10 points

750-1000+ -10
250-750 -5
Below 250 -0

On Time Delivery= 30 points

100%-98% -0
97%-95% -5
94%-90% -10
89%-85% -15
84%-80% -20
79%-75% -25
Below 75% -30

Responsiveness/Cost =30 POINTS

Unresponsive -30
Below Average responsiveness -25
Average responsiveness/Cost -10
Above Average -5
Exceptional responsiveness/Cost -0

Responsiveness/Cost is a ranking determined by supplier interaction with Quality Assurance and Purchasing departments, corrective action response timeliness, cost reduction, supplier audit results or other pertinent activities.

4.8 SUPPLIER CERTIFICATION:

All suppliers to QCC shall work towards ISO 2008 based compliance. Compliance can be assessed by formal 3rd party audits or 2nd part QCC audits. Formal certification by approved 3rd party registrar is preferred. All QCC suppliers must allow customer visits.

4.9 LAB ANALYSIS:

Lab analysis or conformance verification on parts supplied to QCC shall be performed by facilities with proper accreditation for the test being performed from a recognized certification body such as ISO, A2LA, etc.

4.10 ASSOCIATED DOCUMENTS:

Supplier Survey 4.1.013.502
Supplier Management Procedure
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