KOLLMORGEN

SUPPLIER QUALITY MANUAL

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Approved By:	Steve Van Aken Director of Quality	1/13/2016	**Supplier Quality Manual** **Document Number: DS-P-53** **Revised: January 13, 2016** **Issue E**
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NOTE: All revisions to the Kollmorgen Supplier Quality Manual must be reviewed and processed by Quality at Kollmorgen, 501 West Main Street; Radford, Virginia – Zip: 24141 – Country: USA.

1.0 Purpose

The purpose of this document is to define supplier goals and requirements for managing quality, delivery, cost, communications, part qualification, and production sustainability. All Kollmorgen entities that procure production material are responsible for ensuring that suppliers comply with all requirements contained within this Supplier Quality Manual.

2.0 Scope

This Supplier Quality Manual applies to all suppliers that provide production material or services to Kollmorgen. This includes supplier designed products that are incorporated into a Kollmorgen assembly/product and finished goods branded by Kollmorgen. Individual Kollmorgen facilities may have additional facility specific requirements, and will establish specific processes for carrying out these requirements. If a conflict exists between the requirements presented in this manual and individual facility requirements, the more stringent requirements will apply.

3.0 Supplier Goals

Suppliers for Kollmorgen should strive to accomplish the following:

- Zero Defects (quality)
- 100 % on time delivery (delivery)
- Conformance to requirements to eliminate sorting, scrap, and rework (cost)
- Continuous improvement initiatives to improve quality, delivery, and cost

4.0 Achieving Quality – Delivery – Cost (QDC)

Kollmorgen expects the following from our suppliers:

1. Products and services shall comply with all Kollmorgen specifications and requirements.
2. Suppliers shall review, understand, and communicate any questions concerning specification and process requirements to the appropriate Kollmorgen point of contact (see Communications).
3. Suppliers shall comply with all Kollmorgen design, process control, and process capability requirements.
4. Suppliers shall comply with all Supplier Corrective Action Requests and assist Kollmorgen with efficient and effective problem resolution.
5. Suppliers shall control their sub suppliers to ensure compliance with all Kollmorgen specifications and process requirements.
6. Suppliers shall have a quality system in place and be able to demonstrate compliance with Kollmorgen specification and process requirements.
7. Suppliers shall have the ability to manage changes to Kollmorgen specifications and process requirements.
8. Suppliers are required to communicate the proper use of their product or service to Kollmorgen.
9. Suppliers shall not implement changes that may impact form, fit, function, interchangeability, reliability, or durability of their products or processes without written notification to and approval by Kollmorgen. **This requirement also applies to changes relative to manufacturability or cost savings initiatives.**
10. Suppliers shall notify Kollmorgen of any situation with a known or perceived negative impact to product quality, reliability and, or safety.

5.0 Communications

Buyer: Primary point of contact for all purchasing and related issues. The buyer must be informed of any issue that impacts quality, delivery, and or cost.

Supplier Quality Engineer: Primary point of contact for all quality related issues and correspondence. Supplier Corrective Action Requests, Supplier Deviation Requests, and any quality related requirements must be managed in coordination with the Supplier Quality Engineer and the Buyer.

Corporate Commodity Team: The corporate commodity team manages commercial issues for key commodities and helps support supplier selection, quoting, qualification, and management of key suppliers.

6.0 Supplier Selection

Suppliers are selected based on Kollmorgen's assessment of their ability to manufacture a product or provide a service in accordance with demanded requirements. Supplier selection will follow the process depicted in Figure 1.

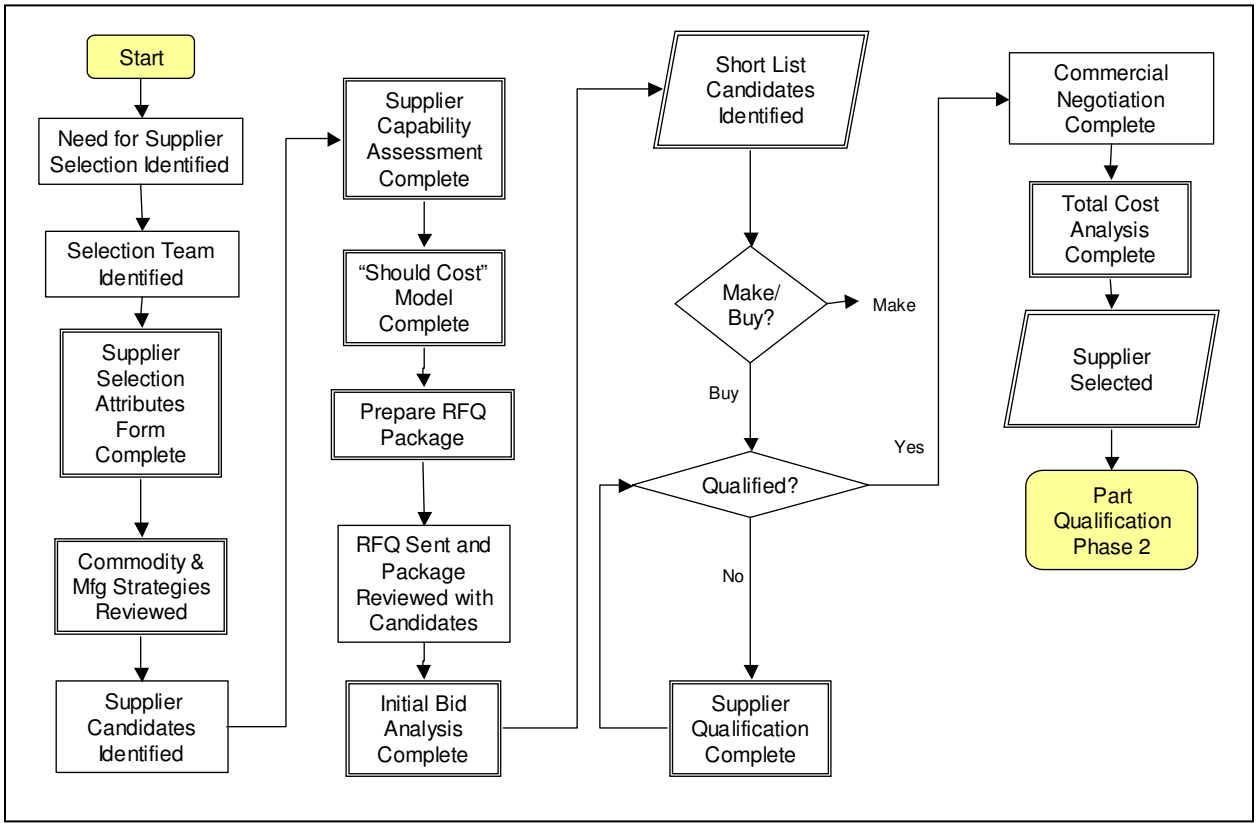

Figure 1. Supplier Selection Process

7.0 Part Qualification

Part qualification may be required for any of the following conditions or situations:

- New part or design
- New supplier
- New supplier plant or manufacturing location
- Change in form, fit or function
- Modifications required by an engineering change order
- Use of an optional process or material that was not included in the original qualification
- Production from new or modified tools (except perishable tools), dies, molds, patterns, including additional or replacement tooling
- Production following any change in process or method of manufacture

- Production from tooling and equipment transferred to/from a different plant or manufacturing location
- Change of source for subcontracted parts, materials or services (e.g. heat-treating, plating)
- Product re-released after the tooling has been inactive from volume production for twelve (12) months or more

Any change, as depicted in the above conditions, must be communicated to Kollmorgen.

Part Qualification will follow the process depicted in Figure 2.

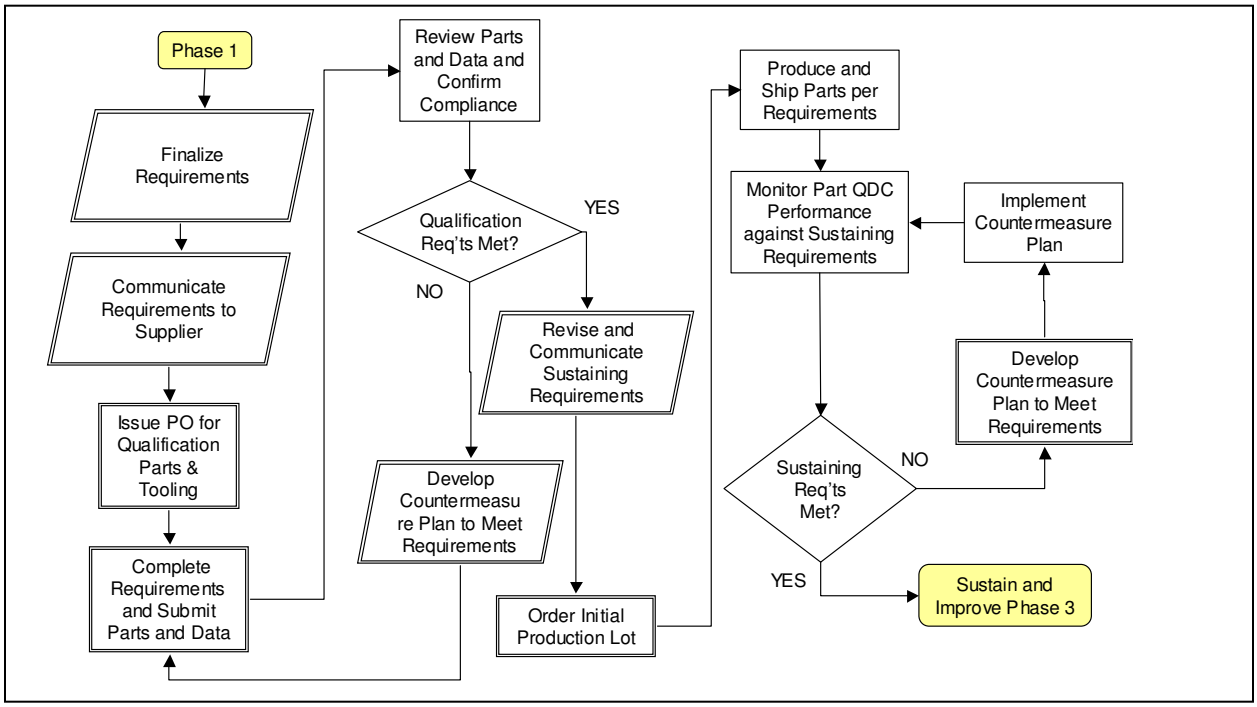

Figure 2. Part Qualification Process

Specific qualification requirements for any part, component, or assembly will be communicated to the supplier via the Part Qualification Check Sheet (PQCS) or an equivalent document. Qualification requirements will be communicated to the supplier via email or Kollmorgen's web based supplier management tool (CX4). The PQCS or its equivalent will be prepared by Kollmorgen and provided to the supplier early in the procurement process. Suppliers should review all qualification requirements, ensure that all requirements are understood (both part and process requirements), and then approve and return the PQCS or its equivalent to Kollmorgen as requested. A sample PQCS form is included on the Website link provided in Section 11 of this manual.

The supplier must work with Kollmorgen to provide all requested information so that production representative parts and production processes can be verified. Unless specified by Kollmorgen, all qualification requirements shall be met with production specific tooling, equipment, line, factory and sub-tier production processes.

Data submitted MUST be representative of the serial production process. The supplier must meet all conditions and requirements for part and process qualification as specified and defined by Kollmorgen. If any condition or requirement cannot be met, the supplier must notify their Kollmorgen representative and initiate the Supplier Deviation Request form as directed.

When to Submit Part Qualification Information: Suppliers must submit Part Qualification documents and information to Kollmorgen for approval **PRIOR to the first production shipment** unless specifically waived in writing by Kollmorgen.

What to Submit for Part Qualification: All information, data, and deliverables specified in the Part Qualification Check Sheet or its equivalent must be completed and submitted to Kollmorgen as requested.

The following items may be requested by Kollmorgen:

- **Sample Pieces:** Sample quantities are specified in the Part Qualification Check Sheet. Where multiple production molds, cavities, dies or machines are utilized, samples must be submitted from each. Samples shall be from actual production tooling or processes unless otherwise approved in writing.

- **Dimensional Analysis:** The dimensional results for each submitted sample shall be provided for 100% of the dimensions and all notes on the respective drawing, unless otherwise approved or waived by Kollmorgen. Specifications requiring variable data will require data derived from actual measurements unless otherwise approved or waived by Kollmorgen.

- **Material Analysis, Performance, and Durability Test Results:** The supplier shall provide material analysis, performance, and/or durability test results, as specified in the Part Qualification Check Sheet. Kollmorgen may require testing by qualified third parties.

- **Control Plan:** The Control Plan is a written description of the systems for controlling parts and processes. The Control Plan shall include inspection steps taken during manufacture as well as upon receipt of materials used during manufacture.

Control Plans for families of similar parts may be acceptable. Control Plans shall be revision controlled. Significant and critical characteristics, as specified on the drawing, should be included in the Control Plan. Critical Characteristics are depicted on Kollmorgen designs with a black diamond (◆) and identify product characteristics that if not controlled within the specified limits, *will have an unacceptable affect* to form, fit, function, safety, performance, agency approvals, or any government regulations. Significant Characteristics are depicted with a black triangle (▼) and identify product characteristics that if not controlled within the specified limits, *may negatively affect* form, fit, function, safety, performance, agency approvals, or any government regulations.

A Control Plan is a living document, and shall be updated as control methods are evaluated and improved. Kollmorgen shall be notified of changes that affect significant and critical characteristics. See the Website link provided in Section 11 of this manual for a sample Control Plan.

- **Process Capability Studies:** Capability is the total range of inherent variation in a stable process. As specified below, Kollmorgen requires a minimum **Ppk** of 1.33 to complete part qualification on a 30-piece sample. It is expected that a minimum **Cpk** of 1.33 will be achieved during serial production runs. In some cases, as specified, a higher value may be required.

  Kollmorgen requires capability data for significant and critical characteristics, as well as any other characteristics specified on the PQCS. Kollmorgen reserves the right to designate critical product or process characteristics beyond those formally identified on engineering drawings and specifications. These additional requirements may be based on known process issues, production problems, or field problems.

  For production processes that cannot meet the above criteria, the supplier should complete a corrective action plan and implement 100% inspection to screen out non-conforming products until process capability requirements are met.

  Where a product does not lend itself to discrete measurements (for example, PCB boards, tested as “Go/No Go”) the supplier shall implement 100% inspection until an alternate method for evaluating process capability is agreed to and accepted by Kollmorgen.

- **Other Documentation as Specified:** Kollmorgen may impose other requirements as necessary, such as gauge repeatability and reproducibility (GR&R) studies, Gauge Correlation, and Failure Mode and Effects Analysis (FMEA). Kollmorgen will identify these additional requirements on the Part Qualification Check Sheet.

Part Qualification Approval: Kollmorgen is responsible for communicating part qualification status to the supplier. Part qualification status is defined as:

- **Approved:** All qualification requirements met. Written approval provided by Kollmorgen authority.
- **Conditional Approval:** Not all qualification requirements met. Written conditional approval provided by Kollmorgen authority stating conditional requirements. Conditional requirements specified and agreed to by Kollmorgen and the supplier.
- **Rejected:** Fails to meet Kollmorgen requirements. Not approved.

8.0 Production Sustainability

Sustainability Requirements: In addition to part qualification requirements and approval, additional requirements for managing quality, delivery, and cost during production may be specified by Kollmorgen. These requirements will be depicted and communicated to the supplier on the Part Sustainability Check Sheet (PSCS) or its equivalent. Sustainability requirements may include periodic verification of process capability, verification of material properties, or any requirement specified by Kollmorgen. The supplier will be responsible for submitting required data, information, or deliverables at intervals outlined and defined by Kollmorgen in the PSCS or its equivalent.

Supplier Corrective Action Requests (SCAR): In the event that a non-conformance is discovered, ALL parts/components in question must be identified and segregated. Kollmorgen will evaluate the non-conformance situation and determine the necessary actions required to contain and disposition the affected parts. As needed, Kollmorgen will issue a supplier corrective action request (SCAR) to the supplier.

Kollmorgen may require a supplier to submit a formal written corrective action to address a non-conformance. The need for a SCAR will be evaluated in terms of the potential impact to production costs, quality costs, performance, reliability, safety, and customer satisfaction. Suppliers must fully comply with the SCAR and work with Kollmorgen to develop and implement all required corrective actions.

The supplier's SCAR response must address all requirements as depicted and defined within the SCAR. See Appendix for an example SCAR form. The following requirements must be met:

- The supplier is required to communicate Immediate Containment Actions to Kollmorgen and acknowledge receipt of the SCAR within **24 hours** from the date of notification.

- The supplier is required to provide an initial situation update within **72 hours** of notification.

- The supplier is required to complete failure analysis leading to the determination of root cause. Permanent corrective action and formal SCAR response is requested within **10 business days**.

- If Kollmorgen disagrees with a portion of the SCAR response, supplier feedback regarding the area of disagreement is requested within 24 hours.

Supplier Deviation Request: In certain instances, it may be permissible for the supplier to temporarily deviate from Kollmorgen requirements and specifications. Request for such deviations shall be made using the Kollmorgen Supplier Deviation Request (SDR) form. See Appendix for SDR form and SDR process flow.

A deviation request may arise from situations including (but not limited to) the following:

- Non-conforming material
- Any deviation from specified requirements
- A substitution of material
- Change in process
- Change in supplier
- Change in manufacturing location
- New or modified tools (except perishable tools), dies, molds, patterns, including additional or replacement tooling
- Tooling and equipment transferred to/from a different plant location

The Supplier Deviation Request form must provide all required and pertinent information concerning the requested deviation. If non-conforming material is associated with the SDR, the supplier is responsible for the segregation of the non-conforming material until SDR approval is granted and SCAR procedures will be implemented at the request of Kollmorgen. Any discrepant material received at Kollmorgen without an approved SDR may be rejected and returned to the supplier at the supplier's expense with all additional handling and shipping costs incurred by the supplier. No discrepant or suspect material should be processed or delivered until a SDR is formally approved by Kollmorgen.

Once approved, all material shipped to Kollmorgen must be accompanied by a copy of the signed and approved SDR. For process deviations, the supplier must make the necessary changes to update process documentation such as the Control Plan, Process FMEA, and Work Instructions. Kollmorgen views the excessive use of SDRs for non-conforming material as abusive and an indicator that a supplier may have a serious breakdown in their quality system.

9.0 Revision Control

Kollmorgen will provide the supplier with drawings and/or specifications for all revision changes. The supplier must inform Kollmorgen of the date these changes are incorporated. The supplier must ensure all related changes are implemented and all supporting documents are updated. The supplier must be able to provide evidence of all related changes upon request from Kollmorgen.

10.0 Shipping Label and Packing Slip Requirements

At a minimum, all Shipping Labels and Packing Slips must include:

- Kollmorgen PO Number
- Quantity (Pieces)
- Supplier Name & Manufacturing Location

As specified in Section 8.0, approved supplier deviation requests must be included with the packing slip information.

11.0 Counterfeit Part Policy

Please visit http://www.kollmorgen.com/en-us/service-and-support/partners/supplier-forms/ and review the Kollmorgen Standard Operating Procedure for counterfeit parts. Compliance is required.

12.0 Supplier Code of Conduct

Please visit http://www.kollmorgen.com/en-us/service-and-support/partners/supplier-terms-conditions/ and review the Kollmorgen Supplier Code of Conduct. Compliance is required.

12.0 Supplier Information and Forms

Please visit http://www.kollmorgen.com/en-us/service-and-support/partners/supplier-forms/ for location and current contact information as well as Control Plan, PFMEA, DFMEA, Gauge R&R, Dimensional Submittal, and Supplier Deviation Request templates provided for your convenience. Please use the appropriate template or form as directed by the Kollmorgen representative that is managing your project or issue. Each respective Kollmorgen site may have additional forms or templates that they require.