LINAMAR

Supplier Quality Manual

Revision: XR-12-C03-01-16 6.0

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1.0 INTRODUCTION

Linamar Corporation is a diversified global manufacturing company of highly engineered products powering vehicles, motion, work and lives. The company's Powertrain and Driveline focused divisions are world leaders in the collaborative design, development and manufacture of precision metallic components, modules and systems for global vehicle and power generation markets. The company's Industrial division is a world leader in the design and production of innovative mobile industrial equipment, notably its class leading aerial work platforms and telehandlers.

Linamar Corporation is committed to quality, delivery and service to our customers. Maintaining a high level of customer confidence cannot be sustained without the full cooperation of our Suppliers. In this Linamar Corporation is dedicated to establishing and maintaining mutually profitable relations with its Suppliers. The cornerstone to any relationship is unambiguous, concise and open communications.

In support of this relationship, Linamar Corporation requires that Suppliers commit to, and apply the following objectives:

- Manage facilities, processes, quality systems and personnel to consistently and cost effectively produce products and provide services that meet the needs of Linamar Corporation and its customers.
- Must develop, implement and maintain Quality Planning tools (e.g. APQP, FMEA's and Process Control Plans) to assure that product and service requirements are met.
- Provide objective evidence, using recognized standards that confirm initial sample requirements have been met, and that acceptable process capabilities for all Special/Control Characteristics have been established and are maintained.
- Utilize appropriate statistical techniques for ongoing process control and improvement, reduction in part variation and waste through defect prevention.
- Actively engage in cost reduction / avoidance activities to the benefit of all stakeholders.
- Meet the expectations of society (i.e. – Workplace health and safety, the environment and energy conservation).
- Confirm ability to provide and maintain required capacity to meet program volumes and commit to notifying Linamar of any changes to available capacity.

General

The basis for Linamar Corporations Supplier Quality System Requirements is a combination of the Quality Management System - Requirement ISO 9001 and the AIAG's Quality Core Tools (VDA tools in Europe). Linamar Corporation prefers third party registration and certification to IATF 16949. These systems complement each other and are the framework for the fundamental quality system requirements for all Suppliers. These requirements are an integral and legally binding aspect of Linamar Corporation Purchase Orders and Contracts. Although this does not alter or reduce any other requirements of the contract, it does provide a concise understanding of Linamar Corporation's quality requirements.

Any questions or concerns regarding these Quality tools should be directed towards Linamar Supplier Quality.

1.1. PURPOSE:

The purpose of this manual is to define Linamar Corporation's processes and requirements for Suppliers in a clear logical format. The manual is intended to communicate to all Suppliers,

Linamar Corporation's requirements and expectations, in an effort to eliminate all ambiguities and enhance communication between Linamar Corporation and the Supplier community. The common goal is to meet or exceed customer requirements for quality, cost, delivery and timing.

1.2 APPLICABILITY / SCOPE

This manual applies to all Suppliers of components and/or services to Linamar Corporation, its companies and subsidiaries.

This includes both production and prototype parts.

1.3 RESPONSIBILITY

Linamar Corporation Supplier Quality is responsible for the content of this manual.

1.4 DEFINITIONS / ABBREVIATIONS

1.4.1 DEFINITIONS

Key Suppliers – Suppliers that are critical to the achievement of Linamar Corporation's objectives (new technology, long lead time, high volume, high cost, high risk, safety).

Supplier – Linamar Corporation Tier I

Sub-Contractor – Linamar Corporation Tier II

Supplier-Prototype – Components for prototype build events where design can remain in a state of flux.

1.4.2 ABBREVIATIONS

APQP - Advance Product Quality Planning

CC - Critical Characteristic

CofC - Certificate of Conformance

CSR – Customer Specific Requirements

DFMEA - Design Failure Mode Effects Analysis

ECAP - Equipment Capability Acceptance Process

IMDS - International Material Data System

MSA – Measurement System Analysis

NCMR - Non Conforming Material Report

NIST - National Institute of Standards and Technology

PFMEA - Process Failure Mode and Effects Analysis

PO - Purchase Order

PPAP - Production Part Approval Process

QMS - Quality Management System

RFQ - Request for Quote

RMA - Return Material Authorization

R&R - Repeatability and Reproducibility

RPN - Risk Priority Number

SC - Significant/Special Characteristic

SDR – Supplier Deviation Request

SPC - Statistical Process Control

SPCR – Supplier Process Change Request

2.0 MANUAL

2.1 APPLICATION

2.1.1 This manual and its stated requirements are a part of the Supply Contract and Purchase Orders with all locations of Linamar Corporation and affect all articles.

2.1.2 To cover all particular requirements for product and services, specific supplements to this standard can be agreed upon, but must be documented in the Supply Contract and/or Purchase Order.

2.2 QUALITY MANAGEMENT SYSTEM OF THE SUPPLIER

2.2.1 The Supplier must implement and maintain a quality management system with a goal of having zero defects, to continually improve delivery, product quality, and quality management systems. Supplier must have a documented improvement process.

2.2.1.1 Suppliers of material for prototype build events must continually work to improve performance to timing requirements.

2.2.2 Suppliers of all IATF-16949 certified Linamar plants will at a minimum be certified to ISO 9001 and/or IATF 16949. Any exceptions must be approved by the Director of Supplier Quality and requires further action.

2.2.2.1 At a minimum, for all new suppliers, Supplier Quality or designee will complete a Potential Supplier Assessment for conformity to the IATF 16949-VDA, before approving the Supplier per customer specific requirements, with the exception of off the shelf or catalogue items. Non-automotive Suppliers may be audited annually at Linamar Corporation's discretion.

2.2.3 The environment is a priority to Linamar Corporation and therefore Suppliers are encouraged to be certified to ISO 14001 or working toward certification to ISO 14001.

2.2.4 Calibration and Testing Service Suppliers should be certified to ISO/IEC 17025, or National equivalent.

2.2.5 Supplier shall inform Linamar Supplier Quality of any changes to their quality management system certification status, within 5 business days of the change. This includes, but is not limited to, suspension of any quality system certification, i.e. IATF 16949, ISO 9001, ISO 14001, etc.

2.3 QUALITY MANAGEMENT SYSTEM OF SUBCONTRACTOR

2.3.1 Linamar Corporation requires its Tier 1, Tier 2, and Tier 3 Suppliers to implement and maintain a comparable quality management system.

2.3.2 Suppliers shall have a documented process to verify that incoming components and materials meet requirements.

2.3.3 Linamar Supplier Quality may request evidence from the Supplier that they have verified the effectiveness of their subcontractors QMS, including APQP, applicable CQI assessments, problem solving and performance monitoring.

All Suppliers to Linamar Corporation are responsible for the management and control of their own Suppliers. Sub-contractors that provide material / services with Control Characteristics must implement appropriate documented controls. Visits and audits conducted by Linamar Corporation on Supplier's sub-contractors shall not be considered part of the management and control of the sub-contractor.

Linamar Corporation reserves the right to identify specific sub-contractors that provide unique product or services.

2.3.4 Linamar Supplier Code of Conduct

Linamar's Supplier Code of Conduct, which can be found at www.linamar.com/suppliers, outlines key principles for social responsibility,

environmental responsibility and corporate governance. These principles align with relevant laws and international standards for both Linamar and its Suppliers, including but not limited to the UN Guiding Principles on Business and Human Rights, the United Nations Global Compact and the OECD Guidelines for Multinational Enterprises. These principles are also consistent with the policies Linamar complies with as outlined in our Global Operating System (GOS).

All Suppliers are required to adhere to the standards outlined in Linamar's Supplier Code of Conduct and Linamar encourages Suppliers to uphold these same principles in their own supply chain. Linamar reserves the right to audit any Supplier's compliance with this Supplier Code of Conduct.

2.3.5 REACH regulation Europe

To follow the regulations in Europe the seller warrants that the Goods comply in all respects with all statutory requirements (of any status) or regulations of the United Kingdom and/or European Union applicable thereto which shall be in force at the date of delivery and thereafter, and that the Seller has complied with all of its obligations in relation to the Goods under any such statutory requirements or regulations, including, but not limited to, Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Directive 2002/95/EC restricting the use of certain hazardous substances in electrical and electronic equipment and Directive 2002/96/EC on waste electrical and electrical equipment (WEEE), including any and all domestic legislation enacting or incorporating these regulations and directives into law.

2.4 AUDITS

2.4.1 The Supplier must allow Linamar Corporation to establish through audits whether its quality assurance procedures and policies fulfill the requirements defined in this manual. The audit can be a potential supplier assessment, control plan audit, product audit, MMOG/LE audit, or tooling audit. The Supplier will be notified in advance of the audit date.

The Supplier will allow Linamar Corporation personnel and its customer representatives as applicable all reasonable access to verify, at the Suppliers manufacturing premises, that product and subcontracted product or service conforms to specified requirements. The Supplier will further allow access for Linamar Corporation personnel to evaluate the Supplier's ability to sustain the contracted production capacity. The Linamar Supplier Quality Engineer shall specify both the arrangements and method of performing these verifications

2.4.2 The Supplier is to grant Linamar Corporation all reasonable access to all operating sites, checkpoints, stores, adjoining areas, and related quality documents required to complete the audit.

2.4.3 Linamar Corporation may require the Supplier to implement corrective actions and/or action plans to improve product or processes based on the audit results. The plan must include responsibility and due dates for completion. Supplier will report the status of the plan per agreement to Linamar Supplier Quality.

2.4.4 When quality or other problems emerge that have been caused by products, services, and/or deliveries by the subcontractor of the Supplier, the Supplier is responsible for auditing their Supplier and identifying, implementing all required improvement actions.

2.5 SUPPLIER SELECTION / AWARD PROCESS (RFQ / SELECTION)

2.5.1 The Linamar Corporation Buyers will select Suppliers from the current supply base and other Supplier listings with the agreement of Linamar Corporation Purchasing management. Suggested or customer selected Suppliers must be approved prior to award of business.

All present and potential Suppliers to Linamar Corporation shall be able to demonstrate, with objective evidence, that they have implemented and maintain a Quality Management System that conforms to the requirements detailed in ISO 9001. Third party registration to ISO 9001 (or IATF-16949) is required by Linamar Corporation for automotive Suppliers of all IATF-16949 certified Linamar plants.

A Potential Supplier Assessment (PSA) by a Linamar Corporation Supplier Quality Engineer on behalf of the Buyer may be required prior to the approval of a purchasing agreement. The PSA is structured to evaluate the Supplier's QMS conformance to ISO 9001, AIAG and VDA requirements. The PSA may contain additional requirements, which would be communicated to the supplier prior to the survey.

Further, the Supplier shall be able to demonstrate, upon request, compliance with local, national and international standards and regulations regarding health, safety and environmental issues relevant to the Supplier's business.

Pre-award/Technical review

At the discretion of the Buyer, a pre-award/technical review meeting for new or current Suppliers offering new products or services may be conducted prior to the commencement of supply. Technical, quality, manufacturing, engineering, purchasing, delivery, capacity and business issues shall be reviewed during this meeting to provide:

A. The Supplier with a thorough understanding of Linamar Corporation's requirements and expectations and

B. Linamar Corporation a thorough understanding of the Supplier's capabilities, program risks and limitations.

2.5.2 The Supplier quote must include tooling, equipment, gauging, and piece price costs along with PPAP timing and INCO terms to Linamar Corporation. In some circumstances Tier II Suppliers may be required to identify subcontractors and/or Suppliers of raw material (i.e. steel mill) in their quote response.

2.5.3 The Supplier has accepted manufacturing feasibility of the product by submitting the quote to Linamar Corporation, unless explicitly noted on their feasibility document as an exception(s). **NOTE: This applies to prototype material as well.**

2.5.4 The Linamar Corporation Buyer with input from the program team will select a Supplier based on quality (current or anticipated), tooling cost, piece price, timing, QMS, risk assessment, financial stability, Supplier rating/performance, and PSA results. In Europe, significant energy use will also be taken into consideration for supplier selection, (ISO 50001).

2.5.5 Linamar Corporation will notify the nominated Supplier of the new business award by issuing a Letter of Intent to Purchase and/or a Purchase Order for the program.

2.6 PRODUCT/PROCESS DEVELOPMENT AND PLANNING (APQP)

2.6.1 GENERAL DEVELOPMENT REQUIREMENTS

2.6.1.1 The Supplier shall plan and develop quality systems and manufacturing processes required for product acceptance (PPAP) based on their quote and Linamar Corporation program timing. The plan must facilitate communication within the organization to ensure all required steps are completed on time, at acceptable quality and cost levels.

Each Supplier shall develop a quality plan that promotes continual improvement in all activities such as quality, cost, and delivery and where appropriate, design and development. This plan shall include education and training in problem solving techniques (including statistical problem solving), employee involvement and Cost of Quality data analysis. The plan shall incorporate assigned responsibilities, target dates and regularly scheduled management reviews.

Documentation providing evidence of adherence to this plan shall be made available to the Buyer/SQE upon request. For any characteristic not meeting the capability criteria, a corrective action plan with applicable timing and responsibilities must be submitted to Linamar Corporation Supplier Quality and/or the plant quality engineer for approval.

All correspondence, records and reports provided to Linamar Corporation shall be in the unit of measure of the design data (specification, drawing etc.) identified on the Purchase Order.

2.6.1.2 Supplier must review and approve feasibility of the product required by Linamar Corporation prior to initiating a quote and/or accepting a Purchase Order. Feasibility must include manufacturing, appearance, material performance, and any functional requirement based on customer product requirements. **Note: Suppliers of prototype material are likewise required to review and approve feasibility of their products. Feasibility agreements will be provided by the prototype buyers.**

All production part sample submissions shall include all requirements listed in the AIAG manuals, VDA and customer specific requirements. Any deviations from these requirements shall only be authorized by Linamar Corporation Supplier Quality and/or the plant quality engineer. The need for an Appearance Approval Report (CFG-1002) and other discretionary requirements will be clearly identified as a condition on the Purchase Order.

The default level of PPAP is Level 3.

All PPAP submissions are preferred to be in electronic media.

Changes in Approved Processes

Unapproved changes are considered by Linamar Corporation to be extremely serious and raise very significant risks to the Supplier, Linamar Corporation, and our customers. The conditions which require the resubmission and approval are clearly stated in the AIAG - PPAP manual. To ensure there is no misunderstanding of these conditions, Linamar Corporation feels compelled to restate that the changes to a previously approved manufacturing process, including changes of sub-Suppliers, require the Supplier to contact the appropriate Buyer and/or corporate supplier quality and/or Linamar plant quality engineer. Revalidation testing and its associated costs may be required. Failure to comply with these requirements shall make the Supplier fully responsible for the absorption of all costs relating to customer acceptance of the changed component and any failures (including field failures) attributed to the change. Linamar Corporation may choose to inform the Supplier's third-party registrar of these violations. If there is any doubt on the part of a Supplier regarding the need for re PPAP of a previously approved component, it is strongly recommended that Linamar Corporation Supplier Quality be consulted.

Note: The above applies to prototype material as well where changes are expected.

2.6.1.3 Linamar Corporation expects its Suppliers to identify, document and communicate any issues or concerns with design, materials, performance, appearance, and durability based on their expertise, knowledge and lessons learned from similar products.

2.6.1.4 The Supplier is responsible for disposition of all product requirement concerns prior to accepting the Linamar Corporation Purchase Order.

2.6.1.5 The Supplier must ensure confidentiality of Linamar Corporation designs and specifications for products and processes under development. Linamar Corporation will ensure confidentiality of Supplier's proprietary designs and processes under development. In highly sensitive cases a documented confidentiality or no compete agreement may be required between, Linamar Corporation, and Supplier.

2.6.1.6 The Supplier must allow Linamar Corporation to review product and process development and planning via on-site review and confirmation during development or at any time during part production, if requested.

2.6.1.7 Supplier must notify Linamar Corporation Purchasing/Corporate Supplier Quality/Linamar plant program manager if there is a change in program timing and a risk to meeting agreed upon tooling completion or PPAP date. Supplier will be required to add additional resources and/or work additional hours (7 Days, 24 Hours) to ensure date is met.

2.6.1.8 The qualification and approval of tools, equipment and gauges will be defined and controlled by Linamar Corporation. Approval may include run at rate, process capability, gauge R&R, and PPAP.

2.6.1.9 SAFE LAUNCH Process - It is the Supplier's responsibility to ensure all production processes are launched in such a manner that they will not adversely impact Linamar Corporation or its customer's production processes to meet timing and quantity. In the execution of a SAFE LAUNCH the use of tools such as Pre-production Product Flow Diagrams and Control Plans is, at a minimum, required. See also section 2.6.9.4.

NOTE: Safe Launch does not apply to prototype material.

2.6.2 DESIGN / PROCESS CONTROL

2.6.2.1 The Supplier shall have a process to control and react to design and process changes. The Supplier is responsible for verifying that the required Linamar Corporation written approval or amended, or new Purchase Order has been obtained prior to proceeding with any change.

2.6.2.2 The Supplier is responsible for change feasibility of their product to Purchase Order and Linamar Corporation defined requirements. Documented feasibility is required for any new or changed manufacturing process or product design.

2.6.2.3 Supplier must be capable of receiving all math data files for product development or tool change from Linamar Corporation.

2.6.2.4 All special and critical characteristics must be defined on all process control documents. (I.e., Drawings, Process Flows, Control Plans, PFMEA, Inspection Plans, etc.)

2.6.2.5 Supplier must have an effective continuous improvement process that reduces the Risk Priority Number (RPN) by operation. **Note: RPN reduction does not apply to prototype material.**

2.6.2.6 Dependent upon customer requirements, SPC is required for all SC or CC dimensions and functions listed in the design record and control plan. Process capability must be documented and evaluated. All critical characteristics (CC) should be error proofed to prevent failure modes. 100% verification is required when acceptable capability is not demonstrated. **NOTE: SPC is**

not typically required for prototype material, although Linamar may request analysis of short term, very low volume data.

A significant characteristic is a feature of any component/process, which requires particular attention on the part/process of the manufacturer to ensure conformance to the specification. Some examples are the application of special symbols on the engineering drawings, material & process specifications and appearance on a control characteristic list.

Minimum required ongoing process capability indices for all SC's shall be Cpk 1.33 minimum where index is chosen per AIAG requirements or CSR.

Those items not meeting the capability criteria will be inspected 100% until capability is resolved.

2.6.2.7 Error proofing sensors and function must be verified with test masters or "rabbits" at the beginning of each shift and documented. **Note: Not required for prototype material.**

2.6.2.8 The supplier shall monitor capability data on an ongoing basis and maintain records. Linamar has the option to request this capability data on a periodic basis.

2.6.2.9 To ensure continuing conformance, the supplier shall complete an annual layout inspection unless waived in writing by Linamar Corporation Supplier Quality Engineer or plant Quality Engineer. **Note: Not required for prototype material.**

2.6.3 PROCESS APPROVAL

2.6.3.1 Process requirements and documentation at a minimum must meet the latest edition of the AIAG manuals, VDA and CSR. Linamar Corporation may require additional evaluation or records as required. Linamar Corporation will submit those requirements to the Supplier in advance. **Note: Not required for prototype material.**

2.6.3.2 The Supplier shall provide and maintain a timing plan to meet the contract agreement. Timing status will be submitted to the identified Linamar Corporation team members. **Note: Applies to prototype material.**

2.6.3.3 Equipment, tooling, and components will be evaluated and approved based on drawing or specified requirements along with run at rate and capability evaluation. Capital equipment requires buyoff at the Supplier and Linamar Corporation plant unless otherwise agreed upon.

2.6.3.4 Equipment and tooling ownership must be permanently marked and verified prior to PPAP approval. Identification shall be detailed by customer requirement. **Note: Applies to prototype material.**

2.6.3.5 Special Processes shall be assessed using all applicable CQI's, including, but not limited to:

CQI-8 – Layered Process Audit
CQI-9-Heat Treating System Assessment
CQI-11-Plating System Assessment
CQI-12-Coating System Assessment
CQI-14–Automotive Warranty Management
CQI-15-Welding System Assessment
CQI-17-Soldering System Assessment
CQI-19-Sub-tier Supplier Management
CQI-20 – Effective Problem Solving Practitioner Guide
CQI-23-Molding System Assessment
CQI-24 – Design Review Based on Failure Modes (DRBFM Reference Guide)
CQI-27-Casting System Assessment
CQI-29-Brazing System Assessment
CQI-30-Rubber Processing System Assessment

2.6.4 PROTOTYPE PARTS

2.6.4.1 The goal is to manufacture prototype parts using a production process and tools. At a minimum the Supplier must use process planning (flow charts, control plans, inspection plans, work instructions, this includes any customer required specific documents) to define and implement the prototype build. All special and critical characteristics must be documented on all process control documents.

2.6.4.2 Prototype parts must meet all drawing/model requirements prior to shipment. Supplier must have a dimensional plan to layout or CMM parts to show conformance to drawing requirements for each serial numbered part, as required. Quantity of parts inspected will be documented in the specific build plan.

Engineering prototype parts with documentation of specification conformance shall be submitted for engineering validation testing. Documentation shall meet Linamar, AIAG, VDA and customer specific requirements.

2.6.5 TEST EQUIPMENT AND GAUGES

2.6.5.1 All test equipment and gauges must be calibrated traceable to NIST, or applicable standard such as VDA for Europe.

2.6.5.2 A test and inspection plan must be developed to measure all dimensions or functions and SC or CC requirements in the design record based on the control plan. Variable data is required for all SC and/or CC characteristics unless otherwise authorized in writing by Linamar Corporation Supplier Quality and/or plant Quality Engineer. **Note: SPC is not typically required for prototype material, although Linamar may request analysis of short term, very low volume data.**

2.6.5.3 The gage repeatability and reproducibility (GRR) goal shall be to consume <10% of product tolerance, based on cost and feasibility. Linamar Corporation may accept a GRR at < 20%. GRR of >20% must have a corrective action plan to develop the gauge and improve the R&R to <20%. If <20% is not realized, Linamar Corporation Supplier Quality may approve R&R up to <30% based on product criteria and cost/benefit analysis of data. Customer specific requirements may require reduced GRR percentage limits.

2.6.5.4 Linamar Corporation Supplier Quality may, at its discretion, require full MSA, gauge correlation studies, boundary samples and detailed measurement process instructions to assure comparable measurement results.

2.6.5.5 All test equipment or gauges purchased through a Linamar Corporation Automotive Purchase Order must be permanently identified as detailed by customer requirement.

2.6.6 PLANNING OF PROCESS EQUIPMENT/ PREVENTIVE MAINTENANCE

2.6.6.1 Supplier's manufacturing processes and operating equipment must be planned and developed with sufficient capacity to produce the required features within tolerance at the specified part volume plus customer required percentage increase. Unless otherwise agreed to in writing by Linamar Corporation Purchasing, Supplier shall have sufficient capacity in place to meet contracted volumes on a 5 day, 3 shift operating pattern. Supplier shall also have the capacity/ability to meet a 20% increase in contracted volumes at no additional cost to Linamar Corporation.

Suppliers are not approved to stage equipment and/or tooling to meet launch curves unless approved in writing by Linamar Corporate Purchasing.

2.6.6.2 The process plan includes the Process FMEA development and improvement actions. PFMEA, RPN must be scored correctly to the latest version of the AIAG FMEA Manual.

2.6.6.3 The capability of operating equipment and processes must be demonstrated. Unless

otherwise approved in writing by a Linamar Corporation Supplier Quality Engineer and/or plant quality Engineer, the acceptance criteria for initial study is per AIAG PPAP manual. A formal Run at Rate for high volume components, using the Linamar Corporation Standard form (reference XF-06-C03-01.XX).

2.6.6.4 The Supplier must have a documented process and schedule for preventive maintenance. The maintenance schedule must include all Linamar Corporation or Linamar Corporation customer owned equipment and tooling. Supplier is responsible for identifying and stocking critical spare parts.

Dies, Patterns, Molds, and Special Tooling

The Supplier shall establish preventive/predictive maintenance programs on all tooling. Evidence of program execution shall be available upon request. Preventive maintenance schedules and tool history records shall be documented and available for review. Prior to disposition of Linamar Corporation or customer owned tooling Supplier shall obtain permission in writing.

2.6.7 PACKAGING PLAN / PRODUCT IDENTIFICATION/TRACEABILITY

2.6.7.1 Packaging must be developed and defined to eliminate damage during transportation and storage. Ergonomic handling and environmental criteria must be considered along with inventory restrictions, optimum pack size, and cost.

Material shall be packaged in such a manner that ensures integrity of each piece during all aspects of normal transit. Unless otherwise agreed to in writing, material shall also be protected from corrosion for a minimum of 90 days after delivery. Each shipping container, box, rack, package etc. must be identified with, at a minimum, the Suppliers Name, Part Name, Part Number, Revision Level, Quantity and Date of Shipment. Specific requirements for packaging and identification will be clearly identified as a condition on the Purchase Order.

Note: Cleanliness requirements may be added to packaging requirements.

2.6.7.2 If no specific requirements for packaging are defined by Linamar Corporation, the Supplier must define the packaging agreement with Linamar Corporation Purchasing prior to production PPAP and or delivery. Transportation and/or packaging trials may be required prior to SOP to confirm robustness of dunnage to protect product. This also applies to low volume shipments of material including production and test pieces.

2.6.7.3 The Supplier must ensure identification and traceability of products supplied. This identification includes labeling of packaged products, manufacturing location, mfg date, shift, part identification, and sub-contractor traceability, is required (i.e. steel heat lot details and traceability). **Note: Material for prototype must be "exactly" alike to be shipped in the same container. "Exactly" means multiple part numbers, OK or NOK, or parts incompletely processed.**

2.6.7.4 Traceability is required for all parts and/or services. The Supplier's traceability strategy must enable the Supplier to work back through their process to the incoming material used in the manufacture of defective or suspect product. Certain components, assemblies, services must be individually identified. The receiving plant's engineering department will identify and specify any additional requirements regarding traceability. There shall be a process in place to ensure that lot and/or serial traceability is managed according to customer, industry, government, and/or international standards. This may involve traceability of partial lots and/or individual part/pallet/batches for all stages of inventory (finished goods, WIP, raw material)

2.6.7.5 There shall be a process that ensures traceability and reporting requirements are met. Records are retained according to customer, industry, government, and/or international requirements. Records shall remain legible, readily identifiable, and retrievable.

The Supplier is responsible for collecting, recording, and tracking of lot, partial lot, and/or serial traceability data including automated collection. (e.g. bar coding, RFID)

2.6.7.6 The Suppliers material flow must be designed to support stock rotation methods such as FIFO (First-In-First-Out).

2.6.7.7 The Supplier shall ensure that there is a controlled storage environment that all parts are protected against damage and deterioration. The Supplier shall have a process in place that ensures all defective or obsolete material is contained, segregated, reworked, and/or disposed of properly. The disposal of material and any claims shall be in accordance with Linamar requirements.

2.6.8 TRAINING

2.6.8.1 The Supplier's employees must be competent and qualified for their job function. The Supplier must ensure this through appropriate internal or external training courses. A training record must be available for all employees producing a product or service for Linamar Corporation.

2.6.8.2 All shifts shall be staffed with personnel responsible for ensuring part or product quality.

2.6.9 INITIAL PPAP SAMPLES / IMDS

2.6.9.1 The Supplier is to submit for approval the manufactured first samples off the production process and tooling in the agreed amount. Dimensional results are required on at least one piece per cavity/line/mold/fixture/spindle. All supplied parts shall have a PPAP submitted for approval.

Inspection frequency for capable processes will be per the control plan. Non-capable processes require 100 % gauging or inspection or as agreed upon with Linamar Corporation Supplier Quality. **Note: Not applicable to prototype material.**

2.6.9.2 Supplier shall submit Level 3 PPAP documentation at a minimum unless otherwise agreed upon in writing from a Linamar Corporation Supplier Quality Engineer or plant Quality Engineer. AIAG manuals, VDA and customer specific requirements shall be followed.

2.6.9.3 The Supplier must provide verification of the composition of the materials used and their individual components as well as aspects relating to the environment. Supplier must input the IMDS data into the system prior to delivery of first samples or PPAP package. PPAP shall include PSW and material certifications for all purchased components or services. PPAP shall include MSDS for any rust preventative or coating.

Note: Not required for prototype material.

2.6.9.4 Under the guidance of Linamar Corporation Supplier Quality and/or plant Quality Engineer, the Supplier must develop a SAFE LAUNCH plan. This plan will include method, responsibility, characteristics, frequency and duration. SAFE LAUNCH is required whenever a new component is PPAP'd. At the plant Quality Manager's discretion, they may also require SAFE LAUNCH to be implemented by the supplier for PPAP's not related to a new part. It must be approved by Linamar Corporation Supplier Quality and/or plant Quality Engineer. Linamar Corporation

Supplier Quality and/or plant Quality Engineer may require the continuation and/or modification of SAFE LAUNCH if defects escape the Supplier while SAFE LAUNCH is in operation. Reference the Linamar Corporation SAFE LAUNCH requirement number XR-07-C03-01.XX **Note: Not applicable to prototype material.**

2.6.10 RE-SUBMISSION OF PPAP

2.6.10.1 The Supplier must submit a new PPAP package per AIAG requirements and includes:

- Changes to manufacturing materials (also from subcontractors) defined in the process documents, specifications, and design record.
- Change to process steps or elimination of a process step.
- Changes to the inspection process / equipment defined in the process documents.
- Change of subcontractors.
- Transfer of manufacturing or subcontractor location.
- Transfer of the manufacturing equipment within the location, if and only if, the process sequence or process steps change.
- New start-up after decommissioning of 12 months or more.
- Rework processes whether in process or off line

2.6.10.2 Under certain circumstances Linamar Corporation Supplier Quality may require an exit PPAP to facilitate the transition of tools from one location or machine to another and/or at the conclusion of a serial production program.

2.6.10.3 Annual re-submission of PPAP may be required at Linamar Corporation's discretion.

2.6.11 ACCEPTANCE TESTS / TEST CERTIFICATES

2.6.11.1 Acceptance and test certificates are not required for PPAP product shipments, unless specified. The Supplier must record all test and acceptance data and file it in the case that Linamar Corporation requests to review the documents.

2.6.11.2 The Supplier is stating in the PPAP that the goods delivered are free of defects, have guaranteed characteristics and correspond to the requirements defined in the design and process records.

Certificate of Conformance (CofC)

When a CofC is identified as a condition on the Purchase Order, a copy of the CofC will be required to accompany each shipment of the specified material. The actual content of the CofC will be clearly identified as a condition on the Purchase Order.

Customer Specific Requirements

Due to the globalization and diversification of Linamar Corporation's operations; federal, industry, customer and plant specific requirements will be necessary to ensure conformance to those regulations. These specific requirements may be clearly identified and made a condition of the Purchase Order to which they are relevant.

2.6.11.3 Record retention is defined per AIAG, VDA and customer specifics. Records must be available for review with in twenty-four (24) hours.

2.7 SUPPLY CHAIN MANAGEMENT

2.7.1 SUPPLIER COMMITMENT

2.7.1.1 Linamar Corporation has high expectations of all Suppliers and will seek to work with Suppliers that demonstrate a strong commitment to quality improvement, continuous improvement, and cost savings.

2.7.2 SUPPLIER DEVELOPMENT

2.7.2.1 Per IATF 16949 requirements, the individual Linamar facilities will contact suppliers for QMS development using a risk based model as needed. Linamar Corporation will prioritize Supplier development projects or plans based on potential risks, Supplier performance ratings and importance of the product or component to product quality and customer satisfaction.

2.7.2.2 A Supplier development plan, controlled shipping or Step Up to Green (reference form 1.03.078.XX) shall be initiated based on quality and delivery performance.

2.7.2.3 Supplier development plans may include support in quality systems, Lean Mfg., six-sigma, team oriented problem solving, etc.

2.7.3 CONTROLLED SHIPPING

2.7.3.1 Based on continued poor quality and/or delivery performance a Supplier may be notified by Linamar Corporation that controlled shipping is required to protect Linamar Corporation and their customer from further problems. Linamar Corporation Supplier Quality and/or plant Quality Engineer shall identify specific defect or concern to be controlled. **Note: Not applicable to prototype material.**

2.7.3.2 Controlled shipping (CS) has two levels:

2.7.3.2.1 **Level CS-1** – The Supplier must identify specific personnel to monitor, measure, inspect and certify all product(s) shipped to Linamar Corporation and identify all product that was inspected. A report must be generated that identifies the type and quantity of defects or problems that were found by the CS-1 inspection. Linamar Corporation may request to review the rejected material and/or any report pertaining to the concern. The additional inspection must be separate and distinct from production operations.

2.7.3.2.2 **Level CS-2** – Supplier must employ an independent third party to monitor, measure, inspect, and certify all products. All certified products must be marked and identified. A report must be generated that identifies the type and quantity of defects or problems that were found by the CS-2 inspection and sent to the responsible Linamar Corporation Supplier Quality Engineer and/or plant Quality Engineer. The Supplier must identify the CS-2 organization responsible to Linamar Corporation Supplier Quality personnel. If Supplier refuses to comply with CS-2 request, then Linamar Corporation at our discretion may set-up CS-2 at their facility and charge back the cost to the Supplier. CS-1 operations are required to continue while CS-2 is in effect. Once CS-2 is terminated, defect free days begin to accumulate toward exit from CS-1. CS-2 is initiated by letter from the Director of Supplier Quality and the affected Plant Quality Manager. Reference form XF-10-C03-01.XX.

2.7.3.3 A Supplier will be removed from controlled shipping when inspection data shows a stable defect free process for a minimum of twenty consecutive production days for the specific defect or concern. Linamar Corporation Supplier Quality and/or plant quality engineer will review the data and current issues and if acceptable will remove the Supplier from

controlled shipping. Exit is granted via letter (reference form XF-10-C03.01.XX).

2.8 SUPPLIER RATING / EVALUATION

2.8.1 EVALUATION OF APPROVED SUPPLIERS

2.8.1.1 Performance Monitoring and Reporting

Ongoing performance to key parameters is monitored and reported utilizing the Linamar Corporation Supplier Scorecard System. This system is used to determine the Supplier's performance to requirements, efforts on improvement and is a key tool in determining new business awards. It is reported to the Supply Base regularly via electronic media. When Supplier contact information changes (example; new contact for Quality at the Supplier's location) the Supplier should report the changes to Linamar Corporation, this will enable Linamar Corporation to update databases to ensure continued uninterrupted performance feedback to Suppliers.

Second-party audits may be used for: Supplier risk assessment, supplier monitoring, supplier QMS development, product audits, and process audits. The scope for these audits will be defined when scheduling the audit based on the available data. The frequency of these audits will be determined based on the effectiveness of actions.

2.8.1.2 Delivery

Linamar's expectation is 100% on-time delivery.

The supplier shall notify Linamar supplier quality engineer and/or plant materials planner within 24 hours of a production interruption. A production interruption is defined as an inability to meet the Linamar specified production requirements.

2.8.2 SUPPLIER CHARGE BACK / DEBIT

2.8.2.1 SUPPLIER PRODUCT SHIPPED TO LINAMAR CORPORATION FACILITIES

2.8.2.1.1 In the event that non-conforming material is received by Linamar Corporation. The Supplier is required to take immediate containment action in less than 24 hrs to isolate Linamar Corporation from further delivery of defective material. The Supplier needs to provide a detailed problem solving analysis and 8D within 15 days. If additional time is necessary, the Supplier must contact their Linamar Corporation Supplier Quality Engineer and/or plant Quality Engineer to explain the reason. When required, the specific OEM or Linamar format will be used to document the permanent corrective action.

2.8.2.1.2 Costs incurred by Linamar Corporation due to poor product quality, nonconforming product, and delivery based on contractual requirements may be charged back to the Supplier, using Linamar Corporation's NCMR (non-conforming material report) and matching Supplier RMA.

2.8.2.1.3 Suppliers are expected to sort defective material delivered to Linamar Corporation facilities. If necessary to maintain production, Linamar Corporation may sort defective material at the Supplier's expense.

2.8.2.1.4 Linamar Corporation expects that all Suppliers deliver material ready for use without the need for incoming inspection.

2.8.2.1.5 Special circumstances or unusual situations will be handled on a case-by-case basis through Linamar Corporation Purchasing.

2.8.2.1.6 If non-conforming supplier material/poor quality parts impacts Linamar's ability to meet their customer's requirements, regardless of where in the process the defect(s)

are identified the supplier will be expected to replace that quantity with conforming parts in order to meet their LCR/MCR contractual requirements.

2.8.2.2 SUPPLIER PRODUCT SHIPPED DIRECTLY TO THE CUSTOMER (i.e. Supplier sends product to heat treat, and then product is shipped directly to Linamar)

2.8.2.2.1 If Linamar Corporation receives a rejection from the customer on a direct shipped product; the Supplier is fully responsible for the following costs:

Linamar Corporation travel costs to attend meetings at the customer facility to correct or support a quality or delivery issue.

All costs related to Controlled Shipping Level CS-1 and/or Controlled Shipping Level CS-2 per OEM requirements.

All customer debits for line stoppage, sorting, replacement of parts, expedited shipments, and other charges incurred because of an issue with the Suppliers product.

2.8.3 PRODUCT / SUPPLIER RE-SOURCING

2.8.3.1 If a Supplier continues to have quality or delivery issues with Linamar Corporation, re-sourcing of that product to a different Supplier may be considered.

2.8.3.2 Upon request, the Supplier shall provide a detailed list of Linamar Corporation owned tooling and gauges along with specific capital equipment attached to the tooling to complete the current process. Linamar Corporation may request an exit PPAP, including tooling models, and CMM programs.

2.8.3.3 Supplier is required to provide product up to the contract and additional amounts as required building the necessary product bank to protect product availability and quality to the customer.

2.8.3.4 Linamar Corporation may witness the build out, transfer of tooling, gauges and address any issues or concerns that arise during the process.

3.0 NON-CONFORMING MATERIALS

3.1 NON-CONFORMING MATERIAL – IMMEDIATE ACTION

Suppliers are required to inform Linamar Corporation as soon as non-conforming material is discovered.

Upon discovery of a Supplier non-conformance all suspect material, at all points of manufacture, will be placed in quarantine until one of the following conditions are met;

- Product is confirmed to be conforming

- An Engineering Deviation is approved

- Product is reworked and verified for conformance via an approved rework procedure

- Product is scrapped

The Supplier is required to account for and document the disposition of all nonconforming material, Linamar Corporation at its sole discretion, may request formal confirmation/photos of the disposal and/or scrapping of non-conforming or obsolete material. Samples of the non-conforming material will be sent to the supplier upon request whenever possible.

3.2 NON-CONFORMING MATERIAL - CORRECTIVE ACTION REPORTS (INFORMAL)

A Corrective Action Report (CAR) will be issued when Linamar Corporation receives material or service that fails to conform to specification. The CAR shall detail the root cause of the non-conformance, and the corrective actions implemented to prevent future recurrence as a result of the identified root cause. This response must also include an updated FMEA, Control Plan and verification of the effectiveness. Informal CARs do not impact 'Quality Performance Status' and are used solely to record the non-conformance elimination efforts.

3.3 NON-CONFORMING MATERIAL - CORRECTIVE ACTION REPORTS (FORMAL)

A formal notification of non-conformance will be issued when there is evidence of a systemic failure of Suppliers QMS (e.g. repeat occurrences, failure to inform Linamar Corporation of a known quality issue, failure to implement corrective actions or lack of responsiveness, delivery) wherever they are found, (including the OEM customer).

3.4 DEVIATIONS FOR NON-CONFORMING MATERIAL

Linamar Corporation does not accept products that do not meet the required specifications.

However, in the rare case of exceptional circumstances, Suppliers may approach Linamar Corporation for relief of specific requirements. Linamar Corporation may choose to request a concession on non-conforming material. Requests should be submitted to the Linamar Corporation Supplier Quality Engineer and/or plant Quality Engineer using the supplier proposed change request form – SPCR. (XR-16-C03-01) Any such request must be accompanied with a completed CAR and any statistical or process capability data necessary to support the request. Any and all costs relating to a deviation are the responsibility of the Supplier. Supplier must not ship without a formal deviation authorization.

3.5 RISK MANAGEMENT

Linamar Corporation utilizes an early warning risk assessment form as part of our program launch process in order to mitigate risk to all parties.

This form will be used at the start of a launch process in combination with the Linamar Potential Supplier Assessment, and will also be used as required at critical milestones during the launch process. (Form # XF-03-C03-01.XX)

Linamar Corporation requires all suppliers to have a documented safety protocol that will be enacted immediately in response to a pandemic or similar localized outbreak. This protocol shall be made available to Linamar upon request.

4.0 REFERENCE DOCUMENTS

VDA (https://www.vda.de/en.html)

AIAG PPAP Manual
AIAG FMEA Manual
AIAG MSA Manual
AIAG APQP Manual
AIAG CP Manual
AIAG SPC Manual
Available Publication

The latest edition of each of the following publications is considered part of all contracts with Linamar Corporation.

ISO 9001 Quality Management System – Requirements

This document can be purchased from:
International Organization for Standardization

Phone: +41-227-490-111
Fax: +41-227-490-947
E-mail: sales@iso.org
Post: ISO, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland

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Advanced Product Quality Planning manual (APQP)
Control Plan manual (CP)
Potential Failure Mode Effect Analysis - (FMEA) manual
Measurement System Analysis (MSA) Reference manual
Statistical Process Control (SPC) Reference manual
Production Part Approval Process (PPAP) manual

These documents can be purchased from:

Automotive Industry Action Group (AIAG)
26200 Lahser Road, Suite 200
Southfield, MI 48033-7100 USA
Phone: 248 358-3003
Email: order_inquiry@aiag.org
Website: www.AIAG.org

Other documents from these and other sources will, when appropriate, also be part of the contract with Linamar Corporation. These additional documents will be clearly identified as a condition on the Purchase Order.

All applicable CQI's, including, but not limited to those listed below:

Examples are:
CQI-8 – Layered Process Audit
CQI-9 – Heat Treatment System Assessment
CQI-11 – Plating System Assessment
CQI-12 - Coating System Assessment
CQI-14 – Automotive Warranty Management
CQI-15 - Welding System Assessment
CQI-17 - Soldering System Assessment
CQI-19 – Sub-tier Supplier Management
CQI-20 – Effective Problem Solving Practitioner Guide
CQI-23 – Molding System Assessment
CQI-24 – Design Review Based on Failure Modes (DRBFM Reference Guide)
CQI-27 – Casting System Assessment
CQI-29 – Brazing System Assessment
CQI-30 – Rubber Molding System Assessment

Rev Level / Date	Description of the Change	Revised By:	Approved
2.0 - 4.7 21OCT10 - 21DE20	Revision logs for revisions 2.0 thru 4.7 dated 21OCT10 thru 21DE20 are available on previous revisions of this manual	S. Brook	R. Burns M. Russell
4.8 02MR21	1. 2.5.1 - Added 2nd sentence to 3rd paragraph that begins, "The PSA is structured….." 2. 2.6.1.2 - Added 1st sentence to 2nd paragraph that begins, "All production….." 3. 2.6.3.1 - Added 1st sentence that begins, "Process requirements and ……." 4. 2.6.4.2 - Added last sentence that begins, "Documentation shall meet……." 5. 2.6.5.3 - Added last sentence that begins, "Customer specific requirements……." 6. 2.6.9.2 - Added last sentence that begins, "AIAG manuals, VDA and……." 7. 2.6.11.3 - Added 1st sentence that begins, "Record retention is defined……." 8. 2.8.2.1.6 - Added verbiage after 1st comma that begins, "regardless of where……" 9. 3.1 - Added last sentence that begins, "Samples of the non-conforming……." 10. 3.3 - Added verbiage to end of paragraph that begins, "wherever they are……." 11. 4.0 - Added "VDA (https://www.vda.de/en.html)	S. Brook	R. Burns M. Russell
4.9 12AP23	1. 2.2.2.1 and 2.6.1.6 - Remove reference to document number 2. 2.2.5 - Added last sentence that begins, "This includes, but……." 3. 2.6.2.6 - Changed Ppk to Cpk in 2nd last paragraph 4. 2.6.3.5 and 4.0 - Added CQI-29 and CQI-30 5. 2.6.6.3/2.6.9.4/2.7.3.2.2/2.7.3.3 and 3.4 - Added "XX" suffix to end of referenced document numbers 6. 2.3.4 and 2.6.10 - Changed formatting of bullet points 7. 2.7.2.2 - Changed the referenced document number 8. 2.5.4 - Add "and PSA results", to end of 1st sentence	S. Brook	R. Burns M. Russell
5.0 15JL24	1. 2.6.3.5 and 4.0 - Added CQI's # 8, 14, 19, 20 and 24 2. 4.0 - Added (CP) - Contol Plan manual 3. Changed approvals - removed Mike Russell, replaced with Mike Jelinek	S. Brook	R. Burns M. Jelinek

Approvals:

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Mike Jelinek
Vice President of Purchasing

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Rob Burns
Director of Supplier Quality