Heartland Automotive, L.L.C.

IQMS - #9011

Supplier Quality Manual

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Note: Current and prospective Heartland suppliers can view a controlled copy of this manual on our website: www.hauto.net

All printed versions of this manual are uncontrolled.

TABLE OF CONTENTS

1. GENERAL INFORMATION

The Heartland Automotive Supplier Quality Manual has been issued in accordance with the requirements of ISO-9001: 2015 and IATF16949:2016. Heartland Automotive must ensure all providers of goods and services incorporated into Heartland's products are integrated within the scope of our Quality Management System. Heartland will continuously review its supplier management process, and make revisions as needed to improve our business and to support compliance with the latest versions of these international standards. All suppliers of goods and services affecting the conformity of Heartland Automotive's products are expected to understand and implement the provisions of this Supplier Quality Manual with respect to the goods and services they deliver to Heartland. For additional information or questions, please contact Heartland Automotive Quality Department. The original copy of this manual is maintained by Heartland Automotive Quality Department. Suggestions for changes should be communicated to your assigned buyer or the Heartland Quality Department.

1.1. Heartland Quality Policy

Heartland commits to providing world-class automotive parts by:

Honoring our commitment to environmental protection and pollution prevention
Ensuring compliance to customer and regulatory requirements
Achieving quality – the first time, every time
Reviewing and continually improving our Management Systems
Training our associates in their roles to improve environmental and quality performance

1.2. Heartland / Supplier Business Relationship

A clear understanding of the relationship between Heartland Automotive, LLC (Heartland) and its suppliers is essential to minimize miscommunication and misunderstanding. Business relationships between Heartland and its suppliers are established directly through Purchasing using a Purchase Order. Any difference between the Purchase Order and the supplier's quote shall be addressed in writing to Heartland Purchasing. The supplier shall not proceed until these differences have been resolved. Any remaining differences must be documented in a Purchase Order amendment. Verbal communication of requirements is not acceptable.

1.3. ISO 9001 / IATF 16949 and This Quality Manual

Suppliers must be compliant to ISO 9001 through second-party audits with the ultimate objective of becoming certified to IATF 16949 by an IATF-recognized certification body. The purpose of this quality manual is to clarify and expand the requirements of the supplier's quality management system (QMS).

Heartland suppliers are required to flow down the requirements of this manual to sub-tier suppliers.

Suppliers can obtain additional reference publications from the Automotive Industry Action Group (AIAG). These publications should be treated as resources to establish, implement and maintain an effective quality system and assist the supplier in meeting the requirements set forth in this manual.

The following documents are recommended as QMS development resources for suppliers:

- *Advanced Product Quality Planning and Control Plan Manual (APQP)*
- *Potential Failure Mode and Effects Analysis (FMEA)*
- *Measurement Systems Analysis Reference Manual (MSA)*
- *Statistical Process Control Reference Manual (SPC)*
- *Production Part Approval Process (PPAP)*
- *Effective Problem Solving*
- *Guidelines for Auditing Management Systems*
- *Molding System Assessment (CQI-23)*

2. CONTROL PLANS

2.1. Control Plan

The supplier shall develop control plans at the system, subsystem, component, and/or material level for the relevant manufacturing site and all product supplied, including those processes producing bulk materials as well as parts. Family control plans are acceptable for bulk materials and similar parts using a common manufacturing process. The supplier shall have a control plan that shows linkage and incorporates information from the process flow diagram and manufacturing process risk analysis (PFMEA). The supplier shall review control plans and update as required.

The control plan shall include but not be limited to:

- Controls used for process control, including verification of job set-ups.
- First-piece checks.
- Methods for monitoring special characteristics.
- Customer-related information, if applicable.
- Specified reaction plan when nonconforming product is detected.

A copy of the control plan must be forwarded to Heartland Quality Department as part of the PPAP submission and shall be maintained throughout the life of the program and made available for review upon request.

2.2. Work Instructions

The supplier shall ensure that standardized work documents are:

- Communicated to and understood by the employees who are responsible for performing the work.
- Legible.
- Presented in the language understood by the personnel responsible for following them.
- Accessible for use at the designated work area.

The standardized work documents shall also include rules for operator safety.

2.3. Verification of Job Set-Ups

The supplier shall:

- Verify job set-ups when performed, such as initial runs or material changeovers.
- Maintain documented information for set-up personnel.
- Use statistical methods of verification.

- Perform first-piece checks / last-off checks, as applicable – where appropriate.
- Retain records of process and product approval following set-up and first/last-off part validations.

2.4. Preventive Maintenance

Preventive and predictive maintenance are critical to ensuring the continued delivery of conforming product. A preventive maintenance schedule must be developed and cover all machinery and tooling used to produce Heartland product. This schedule should assign intervals for service (30,000 cycles), track completed and future dates of preventative maintenance, and provide an emergency strategy in the event of machine failure. The preventive maintenance checklist should include teardown, cleaning, lubing, and inspection. The completion of preventive maintenance and any repairs/concerns must be documented in writing (PM check sheets) and reported to Heartland monthly. This documentation must be available for Heartland review and will be included as part of the supplier's system audit assessment. Responsiveness to tooling PM surveys will also be an input to the supplier scorecard rating.

The supplier shall develop, implement, and maintain a documented total productive maintenance system. At a minimum, the system shall include the following:

- Identification of process equipment necessary to produce conforming product at the required volume
- availability of replacement parts for the equipment identified in process equipment
- provision of resource for machine, equipment, and facility maintenance
- packaging and preservation of equipment, tooling, and gauging
- use of preventative and predictive maintenance methods, as applicable
- documented maintenance objectives
- regular review of maintenance plan and objectives with periodic overhaul
- mean time between failures, mean time to repair, & overall equipment effectiveness

2.5. Identification and Traceability

The supplier must adhere to the part identification methods called out on the part drawing and must maintain product traceability back to the production date/shift and lot of raw material. The supplier must use a "FIFO" system (First In, First Out) for raw parts, parts purchased from subcontractors, and the supplier's own produced parts. Material with a limited shelf life must be controlled to ensure that expired material is not introduced to the supply chain. The supplier shall use suitable means to identify the status of all parts and materials.

The supplier shall develop and document a traceability plan based on level of risk or failure severity for employees, customers, and consumers. The plan shall define the appropriate traceability systems, processes, and methods by product, process, and manufacturing location that:

- Identify and segregate nonconforming and/or suspect product
- Ensure the ability to meet the customer and/or regulatory response time
- Ensure documented information is retained
- Ensure serialized identification of individual products
- Ensure the identification and traceability requirements are extended to externally provided products with safety/regulatory characteristics

2.6. Verification After Shutdown

The supplier shall define and implement the necessary actions to ensure product compliance with requirements after a planned or unplanned production shutdown period.

2.7. Change Management

A variety of changes may occur from time to time, but in all cases, quality control must be managed

and change points shall be verified to be acceptable. The supplier shall ensure that relevant documented information is amended when an engineering change has been issued. Occasionally, a "Break Point" may be required to establish a clear change point with specific shipment tags. These are available on the Heartland website (www.hauto.net).

Prototype parts are to be treated as sellable product. The submission and approval requirements apply per the provisions of this manual and must be distinguished and labeled as such. Specific events may require specific colored paper tags. Material supplied for Fit Try (FT) or later trial events may be used to complete Product Validation (PV) testing for the Heartland products they are incorporated into. Some of the Heartland parent products may be safety-rated. Therefore, trial parts for "FT" or later events are required to be "off-tool / off-process" parts, meaning that the production process used to produce them must be as intended for mass production. Blank trial parts tags are available on the Heartland website (www.hauto.net).

Once the PPAP has been approved, any deviation from the approved process must be submitted for customer approval prior to shipping product. All product or process modifications must be approved by a Heartland SQE before any change action is taken. Some changes may require a new PPAP submission, with approval prior to shipment of affected product.

Depending on the nature of the change, the following forms may be used to communicate the change to Heartland: *(Please clearly describe what changes are planned and how they will affect the product.)*

- **Request for Engineering Approval (REA)** – for part drawing changes.
- **Deviation Request** – for temporary approval of limited quantities of parts which do not conform to the part drawing (permanent changes to part conformity require REA, above).
- **Process Change Request** (PCR) – for production process changes which do not affect conformity of the part to the drawing.

A process change includes, but is not limited to, any of the following:

- Addition or replacement of tooling or machines
- Changes in raw material or processes fluids to make the part
- Manufacturing location changes within the plant or to a new geographic location
- Movement of tools or subcontracting to any sub-supplier
- Changes in processing including cycle time reductions in excess of 10% of overall cycle time
- Any changes of the above nature carried out within the process scope of a sub-supplier, subcontractor, or supplier of outsourced processes

Process changes are not required for the following: replacement/relocation of small hand tools, improvised jigs, tables, assembly aids without fixed asset tags, perishable tools or regularly scheduled tool maintenance.

The supplier shall identify, document, and maintain a list of primary processes and approved back-up or alternative methods. Before using an alternate method, the supplier shall obtain approval from a Heartland SQE. Standard work instructions shall be available for each alternate process method. Daily focused audits, reviews, and leadership meetings shall be implemented with the goal of returning to the standard process as soon as possible. The supplier shall implement traceability of all products produced while any alternate process control devices or processes are being used.

3. PROCESS APPROACH

3.1. Process Application

The supplier shall define its product realization system. Each process and subprocess shall be defined. Each defined process shall be implemented and controlled including the interactions and linkages between processes. The processes shall be monitored for effectiveness.

3.2. Advanced Product Quality Planning (APQP)

The supplier shall designate internal multi-disciplinary teams to prepare for production of new or changed products. Methods shall be developed and implemented to evaluate manufacturing feasibility for new product or new operations. These methods shall also be applicable for evaluating proposed changes to existing operations. The APQP process must begin immediately upon issuance of a purchase order or a letter of intent. This is to ensure that delivered parts will meet all specifications set forth by Heartland.

The supplier must submit an organization chart (revision-dated) that identifies individuals, title, contact information, organization, and reporting structure, particularly for the quality organization. If an organization has a management change, the supplier shall submit a revised/dated copy of the organizational chart in a timely manner.

The supplier shall have documented processes for the management of product-safety related products and manufacturing processes, which shall include but are not limited to special approval of control plans, process FMEAs and product traceability throughout the supply chain.

3.3. Project Schedule

Based on the master schedule furnished by Heartland, the supplier shall prepare a schedule for its own project management. This project plan shall include major milestones related to the Heartland schedule, internal milestones and targets for achieving the Heartland schedule, and the timeline for submission of the required forms referenced in this manual. The supplier must provide updates to Heartland as requested. Heartland is committed to working with suppliers during pre-production planning to resolve issues, improve product quality and reliability and reduce cost. The supplier shall create and utilize a detailed project plan for program management for all new part development. Heartland will schedule supplier visits to review the project plan and progress for each part number. In the event the supplier finds drawing or specification errors, please immediately contact Heartland's Purchasing and/or Quality Department. Heartland will make every effort to address these concerns in a timely manner.

Supplier must have at least one individual designated as responsible for generating and maintaining the project plan. This project plan will provide a description of each step in the design, development, preparation, procurement, pre-production of equipment (tooling & gauges), pre-production of process, trial runs, initial sample, capability studies, APQP steps, PPAP submission, Supplier Self Assessments, etc. Each detailed description shall include the duration, start date and finish date. This supplier project plan shall be prepared for each part number the supplier is committed to provide to Heartland. This supplier project plan shall be furnished in electronic form to the Heartland Purchasing and Quality Departments within two weeks of official kick-off notification from Heartland. Updates shall be provided monthly or as requested.

3.4. Feasibility Study

The supplier shall utilize a multidisciplinary approach to conduct an analysis to determine if it is capable of consistently producing product that meets all the specified requirements through production runs, validation of run at rate, benchmarking studies and other appropriate methods. Manufacturing feasibility assessments shall include but not limited to capacity planning, recycling, environmental impact, safety/government regulations related to acquisition, storage, handling and disposal of material.

The supplier shall complete the "Supplier Feasibility Checklist" for new or changed parts. The completed Feasibility Checklist* must be supplied to Heartland prior to supplier's quote. It should be resubmitted with any change to the items listed above, especially if the change affects pricing, capacity, shipping integrity or part/material specifications. The checklist shall be completed for internal parts and parts purchased by the supplier (raw parts, subcontracted processing, production or inspection). Special attention and additional resources shall be applied as necessary for any items determined to be "Feasible – with changes." Any exceptions noted in the feasibility review must be described in detail and communicated to the Heartland Purchasing and Quality Departments.

** or equivalent AIAG format. A blank copy of the Heartland document is available for download in the Supplier Quality section of the Heartland Automotive website (www.hauto.net).*

4. PERFORMANCE

4.1. Supplier Scorecards

Each supplier will receive a monthly scorecard from Heartland Purchasing detailing performance in the areas of quality, delivery, cost, and tool maintenance. This scorecard is an overall corporate measurement that includes performance data for parts supplied to both the Lafayette and Greencastle facilities and may be used as an input to sourcing decisions. The exact composition of the metrics may change over time to meet business needs.

The Quality-related factors of the scorecard rating include, but are not limited to, the following:

- PPM, recalls, and warranty
- Line disruptions
- Response to RMA and sorting requests
- Timeliness of corrective action responses

4.1.1. Logistics and Packaging

From time to time, various issues may arise that could cause missed or delayed shipments. Anytime planned production must stop or change, this is considered a line disruption. Please notify Heartland via PAVF form as soon as a disruption becomes apparent.

The supplier and the Heartland Packaging Department are responsible for the design and approval of part packaging. However, it is the supplier's responsibility to ensure that their parts adhere to cleanliness and contamination specifications called out on the drawing and in other technical standards. To prevent damage to products during transport, appropriate means of transport and handling must be planned. This will be negotiated between the supplier and Heartland Production Control.

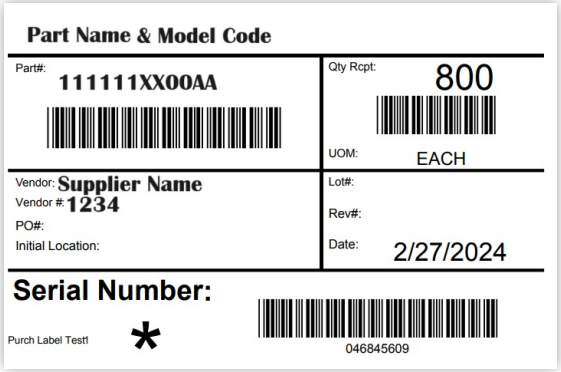
Further details about supplier packaging can be found in the **Heartland Supplier Packaging Manual, available from the Heartland Engineering Department.*

4.1.2. Product Identification and Traceability

The supplier must adhere to the part identification methods called out on the part drawing and must maintain product traceability back to the production date/shift and lot of raw material. The supplier must use a "FIFO" system (First In, First Out) for raw parts, parts purchased from subcontractors, and the supplier's own produced parts. Material with a limited shelf life must be controlled to ensure that expired material is not introduced to the supply chain. Accurately identifying and labeling products is a vital control to ensure FIFO, organization, staging, traceability, etc. Each tote or rack must have its own label. Special event/trial/etc. parts may require additional tags. Shipment tags are available on the Heartland website. (www.hauto.net)

Label information must include the following information: *(See example below)*

- Supplier's name
- Part name, number and model code
- Date
- Quantity
- PO number
- Lot number



4.1.3. Prototype Product and Pre-Production Samples

The supplier shall use the same subcontractors, tooling and processes for making prototype or pre-production parts as those intended for mass production. The supplier shall perform dimensional inspection on each lot of sample product as required by Heartland Quality. Pre-production samples must be identified by placing a Supplier Trial Parts Tag on each container / box of parts (available on the Heartland website (www.hauto.net). Material supplied for Fit Try (FT) or later trial events may be used to complete PV (Product Validation) testing for the Heartland products they are incorporated into. Some of the Heartland parent products may be safety-rated. For this reason, supplier trial parts for "FT" (Fit-Try) or later events are required to be "off-tool / off-process" parts, meaning that the production process used to produce them must be identical to that used for mass production.

4.2. Incoming Product Conformity to Requirements

The supplier shall have a process to ensure the quality of externally provided processes, products, and services utilizing one or more of the following methods:

- Receipt and evaluation of statistical data
- Receiving inspection and/or testing
- 2nd or 3rd party audits
- Part evaluation by a designated laboratory

**Certificate of Analysis (COA) submissions must include Heartland part number, lot number, and be dated to be accepted.*

4.3. Design Control

4.3.1. Design Records

The supplier shall maintain records of engineering changes that affect the finished product supplied to Heartland. These changes shall include design specifications, raw material, process parameters and validation/reliability testing methods. This log, using a format selected by the supplier, must be submitted with PPAP and other significant process events. It will be maintained at the supplier facility as a controlled document.

4.3.2. Design and Development Process (design-responsible suppliers)

The supplier shall establish and maintain documented procedures to control and verify the design of the product in order to ensure that the specified requirements are met. The supplier shall prepare plans for each design and development activity. The plans shall describe or reference these activities, and define responsibility of their implementation. The design and development activities shall be assigned to qualified personnel equipped with adequate resources. The plans shall be updated as the design evolves.

4.3.3. Design Input (design-responsible suppliers)

All Heartland, Shigeru and customer requirements, product life, reliability, durability and maintainability objectives shall be included in design inputs. Design input requirements relating to the product, including applicable statutory and regulatory requirements, shall be identified, documented and their selection reviewed by the supplier for adequacy. Incomplete, ambiguous or

conflicting requirements shall be resolved with those responsible for imposing the requirements. Design input shall take into consideration the results of any contract review activities.

4.3.4. Validation of Design Outputs (design-responsible suppliers)

Design validation follows successful design verification and shall be performed to ensure that product conforms to Heartland-defined needs and requirements. The validation process shall follow a defined qualification program and shall be performed in conjunction with Heartland timing requirements.

4.4. Inspection Standard and Special Characteristics

The supplier shall apply appropriate methods to control all product characteristics.

The supplier shall complete and submit the "Supplier Inspection Standard" to Heartland Quality and secure approval prior to PPAP submission. This document must capture all part characteristics detailed on the control plan, as well as the method of measurement and the tolerance. A ballooned drawing of the part with all drawing characteristics numbered according to the same sequence as the Inspection Standard must also be included with the form. Heartland will use this document for PSW authorization and incoming product control related to these characteristics. This form may also be used for other instances requiring part dimensional data submission to Heartland.

Any special characteristics designated on the part drawing require capability studies with short term (PpK) capability of at least 1.67 and long term (CpK) capability >1.33 and should be addressed in the supplier's control plan. Continuous improvement must be implemented for special characteristics to maintain the required process capability.

However, based on product performance requirements and the nature of the process, the supplier may not be required to perform capability studies for specific product characteristics. These will be communicated to the supplier, as applicable, by the Heartland Quality Department once an agreement has been reached with the Design Department.

4.5. Measurement, Testing, and Monitoring Resources

All measuring devices used to determine conformity of product deliverable to Heartland must be under the control of a suitable accuracy management system that identifies the calibration status of the gauge (traceable to national standards) and the calibration interval. The supplier must assure that operators and other affected personnel are able to quickly visually verify the calibration status of measuring and monitoring equipment prior to use. Gauge R&R studies shall be performed on all inspection instruments used for Heartland products, in accordance with the provisions of the AIAG MSA manual, and utilizing actual production appraisers in the conduct of the study. These studies shall be maintained for review upon request.

4.6. Safe-Launch Process (initial production containment)

For the first 90 days after launch of a new part, the supplier is required to implement an initial product containment process, consisting of an additional 100% visual inspection of all parts after the production process is complete. This containment process is a flow-down of a Subaru quality requirement and is designed to protect the customer from quality spills during the critical first 90 days of production, when a vehicle is being newly introduced to the market and initial dealer inventories are being established.

- Additional 100% visual inspection of all parts is required after the production process is complete.
- Each skid of product must be identified with a Safe Launch inspection tag.
- Inspection data (containment results) must be documented and provided to your Heartland SQE on a weekly basis.

4.7. Sub-Tier Supplier Monitoring & Purchasing

Suppliers shall have a documented process and criteria to evaluate supplier performance to ensure conformity of externally provided products, processes, and services.

Suppliers to Heartland are required to share information with their sub-suppliers which is pertinent to complying with the quality requirements of this manual. This information may include, but is not limited to:

- Drawings and specifications
- DFMEA's/PFMEA's and control plans
- Quality planning requirements (SQ Manual, project plans, master schedules)
- Engineering and process change information
- Results of corrective actions

The supplier shall also conduct audits to assess the subcontractor's quality management system and production capability. Any deficiencies noted during the audit require corrective action with an implementation schedule. Audit results and completed corrective actions must be kept on file at the supplier's facility and be available for review by Heartland upon request.

4.8. Problem Solving and Root Cause Analysis

The supplier shall have a documented process for problem solving including:

- Defined approaches for various types of problems
- Containment activities
- Root cause analysis
- Implementation of systemic corrective actions on similar processes and products
- Verification of the effectiveness of implemented corrective actions
- Reviewing and, where necessary, updating appropriate documented information

4.8.1. Warranty Cost-Sharing Agreement (design-responsible suppliers)

Design-responsible suppliers may be requested by Heartland Purchasing to participate in a Warranty Cost-Sharing Agreement. This agreement will be executed by Heartland Purchasing as part of the Quoting and Purchase Order process.

4.8.2. Corrective and Preventive Action

Heartland places great emphasis on the timeliness and thoroughness of the supplier's corrective action process. Upon reject notification, and regardless of defect part disposition, the supplier must provide information regarding containment steps taken within 24 hours of defect notification. The supplier is required to implement and maintain a status sheet to track all open corrective action reports, which shall be available for review upon request. A Heartland SQE must approve the corrective action before the 5-Why or Problem Report is considered closed. There are two levels of customer complaint which may be issued to a supplier:

- **Problem Reports –** Problem Reports are issued in situations where Heartland's customer has requested a rapid response with a lesser level of detail. Completed problem reports must be returned to your Heartland SQE within 3 calendar days.
- **5-Why Reports –** 5-Why Reports require a greater level of detail. A complete 5-Why response (all steps) must be submitted to your Heartland SQE within 10 calendar days.

5. INTERNAL AUDITING

5.1. Quality Management System Audit

Each supplier shall confirm the quality management system sustains ongoing compliance with the requirements of this manual by planning and carrying out a system of internal audits. An audit plan must be established which defines and documents the scope, frequency, and attainment percentage of internal audits. In addition to System audits in accordance with ISO 9001, the complete audit program shall consist of process and product audits.

5.2. Manufacturing Process Audits

The supplier shall conduct process audits to verify production processes and procedures comply with the technical and quality requirements of the part. An audit should also be conducted when there is a change in the process, significant change in key process personnel, failure to maintain process control, failure to meet delivery requirements, or otherwise at a minimum of an annual basis for each production process used to produce deliverable product for Heartland. The scope of a process audit should include, but is not limited to, the following:

- Production, measuring, and test equipment
- Employee training
- Compliance with standard work documents
- Effectiveness and use of machine set-up documentation
- Verifications of the machine and process capability
- Continuous improvement processes
- Packaging and transport
- Subcontractors and outsourced processes (if any)

5.3. Product Audits

Product audits must be carried out on completed parts in accordance with the control plan. A product audit should assess conformity to all customer requirements including drawings, standards, packaging, cleanliness, function, or external appearance. There shall be a minimum of one product audit per calendar year. A product audit shall include 100% inspection of all Heartland product requirements.

5.4. Internal Audit Plans

Internal audits must be conducted at a minimum within a 3-year cycle. The effectiveness of the audit program shall be reviewed as part of a management review meeting. It shall be prioritized based on risk, performance trends and criticality of the processes.

5.5. Internal Auditor Qualification

The supplier shall have a documented process to verify that internal auditors are competent on customer-specific requirements. The supplier shall maintain a list of qualified internal auditors.

**The requirement for documented process may be waived if audits are conducted under the guidance of a qualified customer second-party auditor.*

6. CONTROL OF NON-CONFORMING PRODUCT

6.1. Control of Non-conforming Product

Upon discovery of nonconforming supplier material at Heartland, suspect product will be quarantined, a rejection notification will be communicated to the supplier via email, and the supplier will be charged an administrative fee on a per-RMA basis to account for lost time, handling, and administrative costs. The supplier may also incur third-party sorting and/or rework costs at the discretion of Heartland Supplier Quality. In addition, if requested by your Heartland SQE, completed corrective action documentation is due within 10 calendar days. Non-conformances will affect the performance rating on your supplier scorecard, which is distributed monthly by the Heartland Purchasing Department.

6.1.1. Return Material Authorization

The supplier has three (3) calendar days to respond to Heartland's request for Return Material Authorization (RMA). The supplier is entitled to make arrangements to review the material at Heartland's facility within a reasonable timeframe, or to receive defect samples shipped at the supplier's expense. If Heartland does not receive RMA within three (3) calendar days and arrangements have not been made, we reserve the right to scrap the subject defective material at

supplier expense and debit the supplier for the entire cost thereof. Storage space is at an absolute premium in our facilities. Heartland does not have physical space to safely store defective supplier material for indefinite periods of time while awaiting RMA responses from suppliers. Please ensure all stakeholders in your quality and financial functions are aware of this policy and understand that it will be enforced.

6.1.2. Third Party Sorting

If sorting defect product is required to support Heartland's production line, the supplier is required to provide authorization to one of Heartland's designated third-party sorting companies within one hour of defect notification, to begin the sort on supplier's behalf. These sort companies are operating within the scope of Heartland's health, safety, product identification and quality management system. The third-party sorting may be discontinued when Heartland has received three (3) defect-free shipments of the parts from the supplier, provided that all in-house material at Heartland has been sorted. For pre-existing Heartland inventory that is not time critical to production needs, arrangements can be made for the supplier to sort parts at the Heartland location or have product returned to the supplier if an agreement can be made between the supplier and Heartland quality & PC.

The following criteria are used to initiate a third-party sort of supplier product:

- Three (3) defects on the same part number within a production shift, or an accumulation of five (5) defects on the same part number within a week
- Left- and right-hand parts are treated as the same part number, for purposes of initiating a sort (example: 3 RH defects + 2 LH defects = sort both).
- Colors: different colors are also treated as the same part number, except for paint defects in parts painted by the supplier. For those, the 3/5 rule still applies, but only the colors for which defects have been found will be sorted.
- If a "containment break" occurs (defects are found in certified product) as a result of a sorting company's mistake, re-sorting will occur at the sorting company's expense, with cc: notification made to the part supplier's Quality contact.
- If a supplier defect is found at the customer location, the supplier is required to initiate sorting regardless of the defect quantity.
- Mislabels will be treated as one defect if all parts are the same. If parts are mixed within a container, defects will count per part.

Certification of product must remain in place at the supplier's location until a permanent countermeasure has been implemented and verified.

In the event the product does not meet Heartland requirements (drawings, specifications, quality requirements, etc.) a written deviation request and appropriate Heartland formal approval is required, prior to shipment of affected product. The blank deviation form is available for download in the "Supplier Quality" section of the Heartland Automotive website (www.hauto.net).

If the supplier discovers that non-compliant or suspect product has already been shipped to Heartland, the Supplier must immediately notify the Heartland Quality Department by email. This notification must include details of the product condition, the quantity of suspected product, lot or identification numbers and dates shipped. The Supplier must take immediate containment actions to prevent further shipment of non-compliant or suspect product and notify Heartland of such containment actions. The blank form for this purpose (Problem Advanced Follow-up Sheet) is available for download in the Supplier Quality section of the Heartland Automotive website (www.hauto.net).

If the supplier delivers product to Heartland which does not meet all product requirements or those of this manual, payment for that product may be delayed or withheld.

In the event the supplier finds drawing or specification errors, please immediately contact Heartland's Purchasing and/or Quality Department. Heartland will make every effort to address these concerns in a timely manner.

6.2. Control of Reworked Product

6.2.1. Rework & Repair Inspection

All rework and repair items must be 100% re-inspected afterward to ensure suitability for use. This inspection must include verification of the reworked or repaired characteristic(s), plus any associated characteristics which could be adversely affected by reprocessing (i.e. checking trim lines or removal of blemishes, etc....).

6.2.2. Rework

Rework is understood to mean a process resulting in a part which fully conforms to all requirements. The supplier must ensure the rework process has no negative impact to fit, form, or function for the end user. Rework is limited to a "one-cycle repletion" of some portion of the existing mass-production process documented in the approved PPAP (excluding special processes). If more than a "one-cycle repletion" of the manufacturing process is required to correct the defect, a documented rework process must be developed and agreed-to by the assigned Heartland SQE before the rework process can commence. A risk analysis should be performed and documented on each repair process in the FMEA. FMEAs should also identify each possible rework of characteristics in the control plan.

6.2.3. Repair

Repair is different from rework, in that it is understood to mean a process which modifies a nonconforming part to make it functionally suitable for use, but the repaired part remains nonconforming after repair is complete. The supplier must ensure the repair has no negative impact to fit, form, or function for the end user (i.e., dimensions, function, strength, appearance, and service life). A documented repair process must be developed, and a Deviation Form must be submitted and approved by Heartland before the repair may commence.

6.3. Customer Information

The supplier shall immediately notify Heartland in the event that nonconforming product has been shipped. Initial communication shall be followed with detailed documentation of the event. Please email Heartland via PAVF form.

6.4. Customer Waiver

The supplier shall obtain a deviation prior to processing whenever the product or process is different from that which is currently approved. The supplier shall obtain authorization prior to further processing for "use as is" and rework dispositions of nonconforming product. If sub-components are reused in the manufacturing process, that sub-component reuse shall be clearly communicated to the customer in the deviation request. The supplier shall ensure compliance with the original requirements. Materials shipped under a deviation shall be properly identified on each shipping container.

7. PART APPROVAL

7.1. Product Approval Process

The supplier shall establish, implement, and maintain a product and manufacturing approval process conforming to requirements defined by Heartland Quality Department.

Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) are critical processes. If the supplier elects to use sub-suppliers for any portion of the manufacturing process, including inspection work, those sub-suppliers must be identified on the (PSW) Part Submission Warrant form. Once the manufacturing process is approved via APQP and PPAP, the supplier may not under any circumstance change the manufacturing process, without prior Heartland Quality Department approval obtained via the Process Change Request (PCR) process described in this manual. This includes but is not limited to sub-suppliers, equipment, materials, machines, tools, processes or drawing/specification characteristics, as well as movement of equipment or reprocessing of parts. The blank PCR form is available for download in the Supplier

Quality section of the Heartland Automotive website (www.hauto.net).

7.2. PPAP Submission

PPAP submission is required for new parts and significant process or part changes, and in some cases after production interruptions of significant duration. The default submission level for supplier PPAPs is Level 3, in accordance with the most-recent edition of the AIAG PPAP manual. The language of submission is to be English. A PFMEA, Control Plan and Flow Diagram must be submitted with the package, created in accordance with the most-recent editions of the respective AIAG manuals.

The PPAP submission must account for all processing steps used to produce the part. The supplier must provide data to establish conformity to all drawing characteristics and requirements on five (5) part samples, which must be representatively sampled from a production run of 300 parts or more. For multiple die / mold cavities, five (5) samples from each die / mold cavity must be accounted for. Record the data on an appropriate inspection layout form, with characteristics identified by ballooned drawing number.

The PPAP submission will only be approved when all necessary documents have been submitted and are acceptable. Mass production parts may not be shipped without PPAP approval. Final payment for tooling cost will only be initiated after PPAP approval.

7.2.1. Failure Mode and Effect Analysis (FMEA) for Design and Process

The most important task of the supplier in quality planning is to develop a "Zero Defect Strategy" and to take all necessary measures to achieve this objective. The failure analysis of the FMEA contributes considerably to the success of the zero-defect strategy.

Process Failure Mode & Effects Analysis (PFMEA)

A PFMEA must be carried out in accordance with AIAG guidelines to examine possible defect risks in terms of severity to the plant, process, customer and end-user, probability of occurrence, and potential for detection in your process. The PFMEA must incorporate all processes, including delivery of the product to Heartland. Appropriate controls should be documented and implemented to mitigate the potential failure modes identified. The PFMEA shall be completed within the first one-third (1/3) timeframe of product development, and a copy must be forwarded to your Heartland Supplier Quality Engineer (SQE) for review as part of your PPAP submission package.

The PFMEA must be revised on the following occasions:

- Development/production of new parts
- Introduction of new manufacturing processes
- Changes to parts or processes
- Defect occurrences and rejections from the customer
- Particularly important is the revision of the PFMEA when a defect occurs.

Design Failure Mode & Effects Analysis (DFMEA)

A DFMEA must be completed for all components for which the supplier is design responsible.

7.2.2. Check Fixtures

Dimensional check fixtures may be delivered to the supplier, as a Heartland fixed asset which accompanies the production tooling. If required by your Heartland SQE, your control plan must include maintaining the part check fixture at your facility, in a location protected from damage and degradation, and collecting full part dimensional data at least monthly. This data is required to be kept on file and available for review upon request.

7.2.3. Alternate Machines

If a supplier wishes to obtain approval to run dies/molds in alternate machines, samples must be generated on the alternate machine(s), and representative, separately marked data for five (5) pieces per cavity must be included with the PPAP submission, with data on layout forms identified by machine number.

7.2.4. Regrind (plastic molding suppliers)

Drawings created by Shigeru Co., Ltd. are generally silent with regard to allowable regrind percentages in molded parts. If a molding supplier wishes to use regrind material at any time during mass production, it must be validated as part of the initial PPAP approval for the part. Representative samples should be produced using the intended maximum percentage of regrind material, with this percentage being specifically noted in the "Comments" section of the PSW. In addition, samples containing the intended regrind level must be provided to Heartland in time to be built into our PV samples which are sent to Japan for validation testing. Merely providing PPAP samples containing regrind at time of PPAP submission may not be sufficient to obtain approval for use of regrind, if validation testing has already begun. Please contact Heartland Purchasing Department to determine the due date. If this window of opportunity for Japan validation testing is missed, the supplier will not be allowed to use any regrind in deliverable product at any time during the life of the part. All suppliers should understand that this quality requirement flows down from customer specification requirements and cannot be negotiated or altered in any way by quotation verbiage, Purchase Order text, or verbal or written agreement with a Heartland Purchasing agent or tooling engineer.

7.2.5. Balloon Drawings

A balloon drawing must be created by the supplier and included with the PPAP package. The balloon drawing must provide a numerical index for each characteristic on the drawing, including:

- All drawing notes (including but not limited to, testing and identification requirements)
- All tolerance dimensions (including dimensions which revert to the general tolerance specified in the title block of the drawing)
- "Reference Dimensions" do not need to be ballooned.

Rules for Creating Balloon Drawings:

- Begin with numeral "1," for the first drawing note (if any) on the first page of the drawing.
- After drawing motes have been ballooned, begin applying numbers to the characteristics in the upper left-hand corner of the first page of the drawing, and proceeding in a clockwise direction around each view. After the first view has been ballooned, assign balloons to the dimensions in the remaining views on the drawing in the same manner, proceeding around the drawing page in a clockwise direction until all dimensions have been ballooned on all drawing pages.
- If a drawing characteristic is deleted by a subsequent engineering change (EC), the number corresponding to the deleted characteristic should not be re-assigned to any other characteristic (this is to avoid confusion between data sets created at different revision levels; each dimension will always have the same balloon number for the life of the part, regardless of revision level). On subsequent revisions of the balloon drawing, the deleted number should be moved to the upper margin of the page where it originally appeared and should be identified with the note "Characteristic deleted by EC # ____." The remaining drawing characteristics should not be re-numbered.
- If an engineering change (EC) adds a drawing characteristic, it should be given the next-highest unassigned number on the balloon drawing, regardless on which page it appears. For example, if the highest balloon number on a 3-page drawing is "119," and an EC adds a new note on Page 1 of the drawing, that new note would be assigned balloon number "120".

7.2.6. Controls on Chemical Contents

If requested by Heartland, the supplier must input material data to the International Material Data System (IMDS) and indicate completion of this step on the Part Submission Warrant (PSW).

7.3. Engineering Specifications

The supplier shall have a documented process describing the review, distribution, and implementation of all engineering standards. When an engineering specification change results in a product design change, a break point must be implemented in production. This shall include

updating all documentation and may require submitting a new PSW or PPAP.

7.4. Statutory and Regulatory Requirements

The supplier shall document their process to ensure that purchased products, processes and services conform to the current applicable statutory and regulatory requirements in the country of receipt, shipment, and destination. All suppliers shipping product across the Canada/US/Mexico border are required to provide a United States-Mexico-Canada Agreement (USMCA) Certificate of Origin annually at least.

7.5. Automotive Product-Related Software

The supplier shall implement and maintain a process for software quality assurance for their products.

7.6. Monitoring and Measurement of Manufacturing Processes

The supplier shall perform process studies on all new manufacturing processes to verify process capabilities. Batch conformance can be used in lieu of a process capability study if CpK cannot be demonstrated.

7.7. Measurement System Analysis

Statistical studies shall be conducted to analyze the variation present in the results of each type of inspection, measurement, and test equipment system identified in the control plan. The analytical methods and acceptance criteria used shall conform to those in reference manuals on measurement systems analysis. Other analytical methods and acceptance criteria may be used if approved by a Heartland SQE.

7.8. Calibration/Verification Records

Record retention requirements for inspection and test documents relating to work performed under the Purchase Order is five (5) years after completion for General Parts, and 15 years for Safety-related parts & calibration records (or as otherwise specified by Heartland). Subject records are to be made available to Heartland upon request. Accordingly, the supplier should receive written approval from Heartland Authorized Representative prior to destroying any of these records. The supplier shall have a documented process for managing calibration/verification records and will need to provide evidence of conformity to internal requirements, legislative and regulatory requirements.

**Third Party accreditation to ISO/IEC 17025 (or equivalent) may be used to demonstrate compliance with in-house laboratory conformity requirements.*

7.9. Change Control and Change Control Notification

The supplier shall have a documented process to control changes. The supplier shall:

- Define & retain records verification and validation activities
- Validate changes before implementation
- Document the evidence of related risk analysis

Changes should require a production trial run for verification of changes to validate the impact of any changes on the manufacturing process. Depending on the change, the supplier shall:

- Notify Heartland of any planned product changes after the most recent product approval
- Obtain documented approval, prior to implementation of the change
- Complete additional verification or identification requirements, such as a trial run

8. MANAGEMENT RESPONSIBILITY

8.1. Process Monitoring

Top management shall review the product and realization processes and support processes to evaluate and improve their effectiveness and efficiency. The results of the process review activities shall be included as inputs to the management review.

8.2. Quality Objectives

The supplier shall establish quality objectives for the quality management system. The quality objectives shall:

- Be consistent with the quality policy
- Be measurable
- Take into account applicable requirements
- Be relevant to conformity of products and services
- Be monitored
- Be communicated
- Be updated as appropriate

The supplier shall maintain documented information on quality objectives. When planning how to achieve its quality objectives, the supplier shall determine:

- What will be done
- What resources will be required
- Who will be responsible
- When it will be completed
- How the results will be evaluated

Top Management shall ensure that quality objectives are defined, established and maintained throughout the organization. Performance targets should be based on Heartland's customer's targets and reviewed annually.

8.3. Responsibility for Quality

Top management shall ensure that:

- Personnel responsible for conformity to product requirements have the authority to stop shipment and stop production to correct quality problems.
- Personnel with authority and responsibility for corrective action are promptly informed of products or processes that do not conform to requirements to ensure that nonconforming product is not shipped, and all potential nonconforming product is identified and contained.
- Production operations across all shifts are staffed with personnel in charge of ensuring conformity to product requirements.

8.4. Customer Representative

Top management shall assign personnel with the responsibility and authority to ensure that all customer requirements are met and documented. This includes special characteristics, quality objectives, training, corrective actions, process development, capacity analysis, logistics, etc.

8.5. Quality Management System Performance

Management review shall include an assessment of risk and compliance to Heartland's requirements outlined in this manual; and shall be conducted at least annually. Suppliers to Heartland must have established a quality management system (QMS) certified to ISO 9001 and compliant with the provisions of this quality manual or have a plan in place to obtain certification. In addition, suppliers must ensure that the quality system requirements defined by ISO 9001 and this quality manual are implemented by their sub-suppliers.

8.6. Management Review Inputs

Input to management review shall include:

- Cost of poor quality
- Measures of process effectiveness
- Measures of process efficiency

- Product conformance
- Assessments of manufacturing feasibility made for changes to existing operations or new product
- Customer satisfaction
- Review of performance against maintenance objectives
- Warranty performance (where applicable)
- Review of scorecards
- Identification of potential failures through risk analysis
- Actual field failures and their impact on safety or the environment

8.7. Management Review Outputs

Top management shall document and implement an action plan when performance targets are not met.

8.8. Corporate Responsibility

The supplier shall define and implement corporate responsibility policies, including at a minimum an anti-bribery policy, an employee code of conduct, and an ethics escalation policy.

9. RISK MANAGEMENT

9.1. Risk Management

The supplier shall include in its risk analysis, at a minimum, lessons learned from product recalls, product audits, field returns and repairs, complaints, scrap, and rework. The supplier shall retain documented information as evidence of results of risk analysis.

The supplier shall determine and implement action to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive actions shall be appropriate to the severity of the potential issues. The supplier shall establish a process to lessen the impact of negative effects of risk including the following:

- Determining potential nonconformities and their causes
- Evaluating the need for action to prevent occurrence of nonconformities
- Determining and implementing action needed
- Documented information of action taken
- Reviewing the effectiveness of the prevention action taken
- Utilizing lessons learned to prevent recurrence in similar processes

9.2. Contingency Plans

The supplier shall:

- Identify and evaluate internal and external risks to all manufacturing processes and infrastructure equipment essential to maintain production output and to ensure that Heartland's requirements are met.
- Define contingency plans according to risk and impact to Heartland.
- Prepare contingency plans for continuity of supply in the event of any of key equipment failures, interruption from externally provided components, natural disasters, fire, utility interruptions, labor shortages or infrastructure disruptions.
- Include a notification process to Heartland and other interested parties for the extend and duration of any situation impaction operations.
- Periodically test the contingency plans for effectiveness.

- Conduct contingency plan reviews using a multidisciplinary team, including top management, at least annually.
- Document the contingency plans and retain documented information describing any revision, including the person who authorized the change.

The contingency plans shall include provisions to validate that the manufactured product continues to meet specifications after re-start of production following an emergency in which production was stopped and if the regular shutdown processes were not followed. Any disruptions to Heartland's production should be notified to Heartland as soon as possible via email (PAVF form).

10. SAFETY

The supplier shall have documented processes for the management of product-safety related products and manufacturing processes, which shall include but are not limited to the following, where applicable:

- Identification of statutory and regulatory product-safety requirements
- Heartland notification of requirements in item (above)
- Special approvals for design FMEA
- Identification and controls of safety-related characteristics of product and at the point of manufacture
- Special approval of control plans and process FMEA
- Reaction plans
- Defined responsibilities, definition of escalation process and flow of information, including top management, and customer notification
- Training identified for personnel involved in product-safety related products and associated manufacturing processes
- Changes of product or process shall be approved prior to implementation, including evaluation of potential effects on product safety from process and product changes
- Transfer of requirements with regard to product safety throughout the supply chain, including customer-designated sources
- Product traceability by manufactured lot throughout the supply chain
- Lessons learned for new product introduction

11. GLOSSARY

Advanced Product Quality Planning (APQP) – A structured method of defining and establishing the steps necessary to assure that a product satisfies the customer. The goal is to facilitate communication with everyone involved to assure that all required steps are completed on time. A company's top management must be committed to and involved in the process.

Audit – An official inspection of supplier's capability, capacity, special processes, quality management system, or other critical performance factors.

Capability Study – A statistical study of a process involving measurement of a finite quantity of parts, to allow calculation of the Capability Index.

Capability Index (C_{pk}) – A statistical study of a process involving measurement of a finite quantity of parts, to allow calculation of the Capability Index.

Checking Fixture – A gauge used to evaluate the dimensional fit of a part to a simulated mating positioning in the vehicle.

Critical Characteristic – A product characteristic (with Safety or Legal considerations) for which variation could significantly affect the product's safety or its compliance with government regulations (such as: flammability, occupant protection, steering control, braking, emissions, noise, radio frequency interference, etc.).

Feasibility Study – An assessment of the practicality of proposed project or plan. It evaluates various critical aspects, such as technical, economic, legal, operations, and environmental factors. It determines the likelihood of success and the feasibility of cost. It helps decision-makers to decide whether or not to proceed with the project.

Failure Mode & Effective Analysis (FMEA) – An analytical tool intended to recognize and evaluate the potential failure modes of a product/process and its effects and identify actions which could eliminate or mitigate the chance of the potential failure occurring and document the process.

Gauge Repeatability & Reproducibility (GRR) – A statistical analysis of measurement system repeatability and reproducibility, in which multiple appraisers use a measurement tool to assess several parts multiple times. Mathematical reduction of the data will yield measurements error as a percentage of part tolerance and/or total variation. These values are useful in determining the suitability of the measurement system for the intended application.

In-Process Checking Fixture (gauge) – Similar to a Check Fixture, but typically used during manufacturing (e.g. used to check subassembly vs. final assembly).

Inspection Standard – A supplement to the part drawing and Control Plan, presenting the frequency and sample size of quality checks with a greater amount of detailed sketches and diagrams, and normally provided on a customer-specified document format.

Key Characteristics – A product characteristic for which variation is likely to significantly affect customer satisfaction with fit, form, function, or appearance, or the ability of a downstream customer to process or build the product into the next higher assembly.

Part Submission Warrant (PSW) – An industry standard document, usually the cover page in the PPAP submission, which lists all pertinent information including the part number, revision level, supplier production location, reason for submission, and actual production rate, and confirms that inspections and tests have been performed on actual process-representative parts demonstrating conformance to all customer requirements. Customer approval of this document signifies authorization to produce a new or changed part with the process documented in the PPAP.

Process – A combination of people, machines, methods, material, and work environment which produces an output in the form of a product or service. A process can involve any aspect of a business.

Process Audit – An on-site evaluation of a supplier's process, in accordance with documented quality criteria, for confirmation or problem-solving purpose.

Process Change – Any deviation from the PPAP approved process. Requires a Process Change Request to be approved by Heartland in advance of the change.

Process Control – Systems and methods for preventing the manufacture of non-conforming products through data collection, analysis and feedback to the process.

Process Flow Diagram – A diagram which depicts the flow of materials through the process, including any rework, repair and audit operations.

Production Part Approval Process (PPAP) – The output of this process is a documentation package, referred to as the PPAP, which describes the production process in detail and documents finished part conformity with all product requirements. The purpose of PPAP is to document that all customer engineering design and specification requirements are properly understood and accounted for by the supplier, and that the process defined in the PPAP package can make product consistently meeting these requirements during an actual production run at the quoted production rate.

Production Tooling – Tooling for permanent mass-production use, which has been PPAP – approved and is capable of producing parts that meet production Drawing and Inspection Standard requirements at Mass Production volumes.

Prototype Tooling – Tooling not intended for mass production, capable of producing parts that meet production Drawing and Inspection Standard requirements, but at low volumes only, typically for part/ product trial purposes.

Prototype Part – A before mass-production part made to establish manufacturability and validate design adequacy.

Raw Material – Any material in its basic form used to manufacture Heartland products.

Repair – Act of reprocessing a defective part to a reduced defect state (to a deviated but acceptable to Heartland Condition) and not to a completely defect free condition; any such reprocessing of part requires approval from Heartland.

Rework – Act of reprocessing a defective product, through use of original or equivalent process, in a way that assures conformance of the product with applicable drawing or specifications. It is also a disposition type used when the defect can be reprocessed to conform completely to the drawing, specification or contract requirement.

Special Process – Those processes which cannot be verified by Heartland prior to installation or delivery. Typically, these processes can only be tested or inspected by destructive testing. Examples include: Welding, plating, heat treating, non-destructive testing, etc. Note that Heartland may elect to control certain processes as though they were Special Processes even if they do not meet the definition listed here.