



Grede Quality Manual

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SCOPE OF THE GREDE QUALITY MANAGEMENT SYSTEM

Grede designs, engineers, validates and manufactures casting technologies for automotive, commercial and industrial markets. We are a premier Tier 1 and full-service supplier within the various markets, with broad capabilities across multiple product lines to deliver efficient, powerful and innovative solutions for our customers. With robust engineering and project management processes in place, we strive to deliver both an optimized design and product to the market. We've earned the trust of our suppliers and our customers through our steadfast commitments to quality, operational excellence and technology leadership.

The Southfield Business office is located in Southfield, Michigan and is a remote support site to all Grede facilities and provides management support to the casting and machining plants. Corporate level support includes: Quality System Management, Sales and IT, Product Design, Warranty Support, Policy Making and Strategic Planning. Reference Appendix D for details of which functional support is given by plant.

Grede's quality management system (QMS) is based upon the requirements defined in ISO 9001:2015, IATF 16949:2016, customer specific requirements, regulatory and statutory requirements and other standards/applications to which Grede subscribes. The needs and expectations of interested parties along with potential risks are addressed within the Grede Quality system.

Customer Specific Requirements

All Grede sites shall maintain Customer Specific Requirements matrix for their respective customers indicating where the requirements are met in quality management system. These are available for review on site at each location.

Exclusions

Browntown Facility is not IATF 16949 certified but maintains ISO 9001 certification. Product Design exempt plants include Biscoe, Brewton, Browntown, Iron Mountain, Liberty, Menomonee Falls, New Castle. Reference Appendix D.

Grede Quality Policy

To provide products and services that totally satisfy the requirements as defined by our customers. This policy requires each of us to be highly engaged in continual improvement and to utilize the best practices, advanced technologies and robust processes in pursuit of global quality leadership.

Grede Mission Statement

Grede 's mission is to drive industry-leading design and manufacturing solutions in key markets that lead to increased stakeholder value.

Grede Vision

One Grede. One Goal. United.

Grede Anti-Corruption Policy

Grede is committed to conducting business with integrity and in compliance with all applicable anti-corruption laws, regulations and international conventions in effect in the countries in which Grede operates or engages in business transactions. Accordingly, Grede is committed to a zero tolerance policy concerning bribery and an effective program of internal systems and controls to promote adherence with the laws and standards, which include the United States Foreign Corrupt Practices Act (“FCPA”), the principles contained in the Organization for Economic Cooperation and Development (“OECD”) Convention on Combating Bribery of Foreign Public Officials in International Business Transaction (“OECD Anti-Bribery Convention”) and the anti-corruption laws of all countries in which Grede, its subsidiaries and affiliates conduct business. All Grede associates, as well as our Board of Directors, are expected to comply with applicable anti-corruption laws.

Grede Ethical Policy

Grede, quality begins with integrity. It applies to every person and everything that Grede does. Grede’s ethical code maintains that integrity must never be compromised. Associates should immediately report any unethical behavior. Associates are encouraged to speak with their immediate supervisor or human resources representative. Grede will not tolerate retaliation against associates who act in good faith by reporting suspected illegal acts or unethical behavior. Individuals who retaliate will be subject to discipline and possible termination.

Grede Code of Business Conduct

The Grede Code of Business Conduct (the “Code”) provides framework for decision making and conduct in key areas. It applies to all associates and agents of Grede, as well as to our Board of Directors. The code is a business document that should be reviewed regularly to help guide as needed. The document in its entirety can be found on the Grede portal.

4. Context of the organization

- 4.1. Grede determines, monitors and reviews information about external and internal issues that are relevant to its purpose and strategic direction that affect its ability to achieve intended results of its quality management system, shown in Appendix A
- 4.2. Grede determines interested parties and understand their needs and expectations that are relevant to Grede's quality management system as shown in Appendix A.
- 4.3. Scope of Grede's Quality Management System: Grede considers: external and internal issues affecting the Quality Management System, requirements of relevant interested parties and the products and services when defining the scope of the Quality Management System.
- 4.4. Quality management system and its processes
 - 4.4.1. Grede has established and implemented a Quality Management System that includes processes and interactions. Grede continually improves Quality Management System. Grede's processes and interactions are as shown in Appendix A.
 - 4.4.1.1. Grede ensures conformance of all products and processes, including service parts and outsourced parts to applicable customer, statutory and regulatory requirements.
 - 4.4.1.2. Grede has documented its product safety process that addresses all requirements detailed in IATF16949:2016 clause 4.4.1.2 a-m.
 - 4.4.2. Grede controls documented information to support processes and retain information associated with process performance.

5. Leadership

- 5.1. Grede's top management demonstrates leadership and commitment to the quality management system in accordance with ISO 9001:2015 Clause 5.1.1.
 - 5.1.1.1. Grede has defined anti-bribery, code of conduct and ethics escalation policies.
 - 5.1.1.2. Grede reviews the effectiveness and efficiency of the quality management system to evaluate and improve the system.
 - 5.1.1.3. Grede's top management has identified competent process owners for managing its processes and related outputs.
 - 5.1.2. Grede ensures leadership and commitment with respect to customer focus by ensuring that customer and applicable statutory and regulatory requirements are determined, understood and met, risk and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined, addressed and maintained.
- 5.2. Policy
 - 5.2.1. Grede's Quality Policy is appropriate to the purpose and context of the organization, provides a framework for setting quality objectives, and includes a commitment to satisfy applicable requirements and a commitment to continually improve the quality management system.

5.2.2. Grede communicates the quality policy to all employees and ensures that the quality policy is understood and available to relevant interested parties.

5.3. Organizational roles, responsibilities and authorities - The Director of Quality is responsible for ensuring that the quality management system meets ISO 9001:2015 & IATF 16949:2016 requirements. The Director of Quality is responsible for setting quality goals and objectives. Process owners are responsible for ensuring that their processes are delivering the intended outputs. Quality Managers or designees are responsible for reporting on the performance of the quality management system and opportunities for improvement to top management and ensuring that the integrity of the Quality Management System is maintained. The Director of Quality is responsible for promoting customer focus throughout the organization.

5.3.1. Grede's top management ensures that the responsibilities and authorities for relevant roles are assigned, communicated and understood. Site Quality leadership is responsible and has the authority to ensure that customer requirements are met. Manufacturing Managers or designee are responsible for capacity analysis. Product and design development are the responsibility of product engineering leadership at either the corporate site or at each facility (defined at project kick-off). Product engineering is responsible for identifying special characteristics. Materials Managers are responsible for logistics information. The Quality Manager or designee is responsible for reviewing customer portals and scorecards and reporting out to senior management. Plant Managers are responsible for setting plant goals and objectives. Quality Managers are responsible for setting up related training for their teams. Quality Managers are responsible for managing corrective and preventive action.

5.3.2. Grede's plant top management ensures that personnel responsible for conformity of product requirements have the authority to stop shipment. The personnel with authority and responsibility for corrective actions must be promptly informed of non-conforming products and processes. It is also the responsibility of plant top management to ensure that production operation across all shifts are staffed with personnel responsible for ensuring conformity of product requirements.

6. Planning

6.1. Actions to address risks

6.1.1. Grede considers internal and external issues that are relevant to its purpose and determines risks and opportunities that need to be addressed to ensure that the quality management system can achieve intended results, enhance desirable effects, prevent or reduce undesired effects and achieve improvement.

6.1.2. Grede plans its actions to address risks and opportunities, integrates the actions into its quality management system processes and evaluates the effectiveness of these actions.

6.1.2.1. Grede includes lessons learned from product audits, customer returns and complaints, scrap and rework in its risk analysis.

6.1.2.2. Grede determines and implements actions to eliminate the cause of potential nonconformities in order to prevent their occurrence and ensures that actions are appropriate to the severity of potential issues. Grede has established a process to lessen the impact of negative effects of risk including per IATF 16949:2016 clause 6.1.2.2 a-f.

6.1.2.3. Grede develops and conducts its contingency planning in its locations in accordance with the requirements detailed in IATF 16949:2016 clause 6.1.2.3 a-g.

6.2. Quality objectives and planning to achieve them

6.2.1. Grede establishes objectives at relevant functions, levels and processes needed for the quality management system. The objectives are measurable, monitored and communicated and meet all other requirements detailed on ISO 9001:2015 clause 6.2.1 a-g.

6.2.2. Grede determines the following when planning to achieve quality objectives: what will be done, what resources will be required, who will be responsible, when it will be completed and how the results will be evaluated.

6.2.2.1. Grede's top management ensures that objectives to meet customer requirements are defined, established and maintained for relevant functions, processes and levels throughout the organization. Grede reviews and considers the relevant requirements of interested parties when establishing quality objectives and related performance targets (internal and external).

6.3. Planning for changes

Grede carries out changes in a planned manner by considering the purpose of the changes and potential consequences, integrity of the quality management system, availability of resources and allocation or reallocation of resources meeting the requirements detailed in ISO 9001:2015 clause 6.3 a-d.

7. Support

7.1. Resources

7.1.1. Grede determines and provides resources needed for the establishment, implementation, maintenance and continual improvement of the quality management system. Grede considers the capabilities and constraints on existing internal resources and what needs to be obtained from external providers when determining resource needs.

7.1.2. Grede determines and provides the persons necessary for the effective implementation of its quality management system and for the operation and control of its processes.

7.1.3. Grede determines, provides and maintains the infrastructure necessary for the operation of its processes and to achieve conformity of products and services.

7.1.3.1. Grede uses multidisciplinary approach including risk identification and mitigation methods for developing and improving plant, facility and equipment plans. Grede includes in-plant layout designs: material flow optimization, material handling and value-added use of the floor space including control of nonconforming material. Grede has

developed methods for evaluating manufacturing feasibility which includes capacity planning. Grede maintains process effectiveness including periodic re-evaluation relative to risk to incorporate any changes made during process approval, control plan maintenance and verification of job setups. Grede includes manufacturing feasibility and capacity evaluation as inputs to management review.

- 7.1.4. Grede determines, provides and maintains the environment necessary for the operation of its processes and to achieve conformity of products and services. Where third party certification to ISO 45001 or equivalent is recognized, Grede may use it to demonstrate conformity to personal safety aspects of this.
- 7.1.4.1. Grede maintains its premises in a state of order, cleanliness and repair that is consistent with product and manufacturing engineering needs.
- 7.1.5. Monitoring and measuring resources
- 7.1.5.1. Grede determines and provides resources needed to ensure valid and reliable results when monitoring or measuring is used to verify the conformity of products and services to requirements. Grede ensures that resources provided are suitable for the specific type of monitoring and measurement activities being undertaken and are maintained to ensure their continuing fitness for its purpose. Grede retains appropriate documented information as evidence of fitness for purpose.
- 7.1.5.1.1. Grede uses statistical methods to analyze variation present in the results of each type of inspection, measurement and test equipment identified in the control plan per reference manuals on measurement system analysis. Grede focuses it priority for conducting MSA studies on critical or special product or process characteristics.
- 7.1.5.2. When measurement traceability is required or is considered by the Grede to be essential for providing confidence in the validity of measurement results, Grede calibrates and/or verifies measurement equipment at specified intervals or prior to use against measurement standards. When no standard exists, the basis used for calibration or verification are retained as documented information. Grede identifies measurement equipment in order to determine their status. Grede safeguards measurement equipment from adjustments, damage and/or deterioration that would invalidate calibration status and subsequent measurement results. Grede evaluates validity of previous measurements when measurement equipment is found to be unfit for its intended purpose and takes appropriate action as necessary.
- 7.1.5.2.1. Grede has documented the process for managing calibration/verification records. This process applies to all gages, measuring and test equipment, including employee owned equipment, customer owned equipment, or onsite supplier own equipment. Grede calibration process meets the requirements of IATF 16949:2016 clause 7.1.5.2.1 a-i.

7.1.5.3. Laboratory Requirements

7.1.5.3.1. Grede's internal laboratory facilities have defined scope that includes its capabilities to perform required inspection, test or calibration services. Grede laboratories meet requirements defined in IATF 16949:2016 clause 7.1.5.3.1 a-f. Where applicable, Grede may also use third party accreditation to ISO/IEC 17025 to demonstrate in-house laboratory conformity to this requirement.

7.1.5.3.2. Grede may use external, commercial or independent laboratories with defined scope including the capability to perform the required inspection, test or calibration. Grede uses laboratories accredited to ISO 17025 or its national equivalent, laboratories acceptable to the customer or equipment manufactures. When Grede uses laboratories accredited to ISO 17025 or national equivalent, the laboratories are required to include relevant inspections, tests, or calibration service in their scope of accreditation (certificate) and their certificate of calibration/test report shall include mark of a national accreditation body.

7.1.6. Organizational Knowledge

Grede determines the knowledge necessary for the operation of its processes and to achieve conformity of products and services. Grede internal sources of knowledge include: lessons learned from failures and successful projects, intellectual property, results of process, product and service improvements. Grede external sources of knowledge include standards, academia, and gathering knowledge from customers or external providers.

7.2. Grede determines the necessary competence for persons doing work under its control that affects the performance and effectiveness of the quality management system, ensures that such persons are competent and takes actions to bridge gaps in competence. Grede retains documented evidence of this activity.

7.2.1. Grede establishes processes for identifying training needs including awareness and achieving competence of all personnel performing activities affecting conformity to quality requirements, internal requirements, regulatory and legislative requirements.

7.2.2. Grede provides on-the-job training, which includes training on customer requirements for persons with new or modified responsibilities that affect conformity to requirements. Person whose work can affect quality are informed about the consequences of nonconformity to customer requirements.

7.2.3. Grede has documented a process to verify that internal auditors are competent and takes into account customer specific requirements. Grede QMS auditors are required to demonstrate at a minimum, understanding of: the automotive process approach including risk based auditing, applicable customer specific requirements, ISO 9001:2015 & IATF 16949:2016 requirements related to the scope of the audit, core tool requirements related to the scope of the audit, and how to plan, conduct, report and close out findings. Grede's manufacturing process auditors are required to demonstrate technical understanding of the relevant

manufacturing process to be audited including process risk analysis and control plan. Grede product auditors are required to demonstrate competence in understanding product requirements and use of relevant measuring and test equipment to verify product conformity. Grede maintains internal auditor competency by requiring that auditors execute a minimum defined number of audits per year and maintain knowledge of the relevant requirements detailed above.

7.2.4. Grede second party auditors are required to demonstrate all competencies required above for QMS auditors, meet customer specific requirements for auditor qualification, as well as demonstrate an understanding of applicable manufacturing processes to be audited.

7.3. Awareness

Grede ensures that persons doing work under the organizations control are aware of the quality policy, relevant quality objectives, their contribution to the effectiveness of the quality management system, including benefits of improved performance and the implications of not conforming with the quality management system requirements.

7.3.1. Grede maintains documented information that ensures that all employees are aware of their impact on product quality and the importance of their activities in achieving, maintaining and improving quality, including customer requirements and the risks involved for the customer with non-conforming product.

7.3.2. Grede maintains documented processes to motivate employees to achieve quality objectives, to make continual improvements and to create an environment that promotes innovation. This includes promotion of quality and technological awareness throughout the organization.

7.4. Communication

Grede determines internal and external communication relevant to the quality management system including: what is communicated, when to communicate, with whom to communicate, how to communicate and who communicates.

7.5. Documented information

7.5.1. Grede's Quality Management System includes: all documented information required by IATF 16949:2016, ISO 9001:2015 and documented information that Grede determines necessary for the effectiveness of its Quality Management System.

7.5.1.1. Grede Quality Management System documentation includes a manual which contains the scope of the Quality Management System (QMS), details justification for exclusions and documented processes established for the QMS or reference to them. It also contains Grede's processes and sequence of interactions, including type and extent of control of outsourced processes and a document indicating where within the organizations quality management system, their customer specific requirements are addressed. Grede plants will have the following plant specific items as addendums to this Grede Quality Manual: Location activities, list of documented processes if different from

those listed in this manual, interaction diagram including outside processes and a document matrix of where in the process CSRs are addresses.

7.5.2. Grede ensures appropriate identification, format, review and approval for all its documented information.

7.5.3. Control of documented information

7.5.3.1. Grede ensures that documented information required by the quality management system and by ISO 9001:2015, IATF 16949:2016 is controlled, available for use where and when needed, and is adequately protected.

7.5.3.2. For documented information, Grede addresses: distribution, access, retrieval, usage, storage, preservation, preservation of legibility, change control, retention and disposition. Grede identifies and controls documents of external origin necessary for planning and operation of the quality management system.

7.5.3.2.1. Grede has defined, documented and implemented a record retention policy that satisfies statutory, regulatory, organizational, and customer requirements.

7.5.3.2.2. Grede has defined and documented a process to review, distribute and implement customer engineering standards/specification and revisions based on customer schedules as required. Grede reviews changes to engineering standards/specifications within 10 working days of receipt of notification.

8. Operations

8.1. Grede plans, implements and controls processes needed to meet requirements for the provision of products and services and to implement actions determined in clause 6 of the ISO 9001:2015 and IATF 16949:2016 by determining the requirements for the products and services, establishing the criteria for the processes and acceptance of products and services, determining the resources needed to achieve conformity of the product and service requirements, implementing control of processes in accordance with criteria and determining, maintaining and retaining documented information to the extent necessary to have confidence that the processes have been carried out as planned and to demonstrate the conformity of products and services to their requirements. Grede controls planned changes and reviews the consequences of unintended changes and taking actions to mitigate any adverse effects as necessary. Grede ensures that outsourced processes are controlled.

8.1.1. Grede includes topics listed in IATF 16949:2016 clause 8.1.1 a-e when planning for product realization.

8.1.2. Grede ensures confidentiality of customer contracted products and projects under development including related product information.

8.2. Requirements for products and services

8.2.1. Customer Communication

Grede customer communication includes providing information relating to products and services, handling inquiries, contracts or orders including changes, obtaining customer feedback (including customer complaints), handling or controlling customer property and establishing specific requirements for contingency actions when relevant.

8.2.1.1. Grede communicates verbally or in writing to customers in the language agreed upon by the customer and communicates necessary information in customer specified computer language or format.

8.2.2. Grede ensures that applicable statutory and regulatory requirements (including applicable government, safety, and environmental regulations related to acquisition, storage, handling, recycling, elimination or disposal of materials) and requirements considered necessary are defined when determining requirements for products and services offered to customers.

8.2.2.1. Grede review requirements related to recycling, environmental impact, and characteristics identified as a result of its knowledge of the product and manufacturing process when determining requirements for products and services.

8.2.3. Review of requirements of products and services

8.2.3.1. Grede ensures that it can meet the requirements for products and services to be offered to customers. Grede conducts a review prior to committing to supply products and services. The review include customer specified requirements, requirements not specified by customer but necessary for the specified intended use when known, requirements specified by Grede, statutory and regulatory requirements and contract or order requirements differing from previous are resolved. Grede confirms customer requirements prior to acceptance when customer does not provide a documented statement of their requirements.

8.2.3.1.1. Grede retains evidence of customer authorized waiver for requirements stated in ISO 9001:2015 clause 8.2.3.1 for a formal review.

8.2.3.1.2. Grede conforms to customer requirements for designation, approval documentation and control of special characteristics.

8.2.3.1.3. Grede conducts feasibility analysis to determine if it is feasible that its manufacturing processes are capable of consistently producing products that meet all of its engineering and capacity requirements utilizing a multidisciplinary approach. Grede conducts feasibility studies on all new manufacturing or product technology or for changed manufacturing processes or product design. Grede conducts production trial runs to validate ability to make products to specification at the required rate.

8.2.3.2. Grede retains documented information on the results of the review and any new requirements for the products and services.

8.2.4. Grede ensures that relevant documented information is updated, and relevant persons are aware of the changed requirements to products and services.

8.3. Design and development of products and services

8.3.1. Grede has implemented and documented a design and development process that is appropriate to ensure subsequent provisions of products and services.

8.3.2. Grede considers all items listed in ISO 9001:2015 clause 8.3.2 a-j when determining the stages and controls for design and development.

8.3.2.1. Grede uses multi-disciplinary approach for design and development planning in the following activities: project management, product and manufacturing process design activity, development and review of product design risk, and development and review of manufacturing process risk.

8.3.2.2. Grede ensures that personnel with product design responsibility are competent to achieve design requirements and are skilled in applicable product design tools and techniques.

8.3.2.3. All plants have a defined process for monitoring and tracking quality assurance. Where applicable, Grede uses a process for quality assurance for its products with embedded software.

8.3.3. Grede considers all the items listed in ISO 9001:2015 clause 8.3.3 a-e in determining the requirements essential for the specific type of products and services to be designed and developed. Grede resolves all conflicting inputs to design and development. Grede retains the documented information on design and development inputs.

8.3.3.1. Grede identifies documents and reviews product design input requirements as a result of contract review. These input requirements include all requirements listed on IATF 16949:2016 clause 8.3.3.1 a-h. Grede also reviews information from previous design projects, competitive product analysis, supplier feedback, internal input, field data and other relevant sources for projects of similar nature.

8.3.3.2. Grede identify documents and reviews manufacturing process design input requirements including all requirements listed in IATF 16949:2016 clause 8.3.3.2 a-h. Grede includes use of error-proofing methods to the degree appropriate to the magnitude of the problem and proportionate with the risks encountered.

8.3.3.3. Grede uses multidisciplinary approach to establish, document, and implement its processes to identify special characteristics, including those determined by the customer and the risk analysis performed by Grede including all requirement listed in IATF 16949:2016 clause 8.3.3.3 a-d.

8.3.4. Grede applies controls to the design and development process to ensure that requirements listed in ISO 9001:2015 clause 8.3.4 a-f are met.

8.3.4.1. Grede defines measurements at different stages during design and development of products or processes. These measurements are reported out to the customer when

required. When appropriate, these measurements may include quality risks, costs, lead times, critical paths and other measurements.

8.3.4.2. Grede performs design and development validation in accordance with customer requirements including applicable industry and government agency issued regulatory standards. Grede plans timing of design and development validation in alignment with customer specified timing as applicable. Where contractually agreed, Grede includes evaluation of the interactions of its products, including embedded software within the system of the final customer's product.

8.3.4.3. Grede has a prototype program and control plan. Grede uses whenever possible, the same suppliers, tooling and manufacturing processes as will be used in production. Grede monitors performance testing for timely completion and conformity to requirements. When services are outsourced, Grede includes the type and extent of control in the scope of its quality management system to ensure that outsourced services conform to requirements.

8.3.4.4. Grede establishes implements and maintains a product and manufacturing approval process conforming to requirements defined by the customers. Grede approves externally provided products and services per ISO 9001:2015 clause 8.4.3 prior to submission of its part approval to the customer. Grede obtains documented product approval prior to shipment and retains the records.

8.3.5. Grede assures that design and development outputs are met in accordance with ISO 9001:2015 clause 8.3.5 a-d. Grede retains documented information on design and development outputs.

8.3.5.1. Grede expresses product design output in terms that can be verified and validated against product design inputs. Grede includes all items listed in IATF 16949:2016 clause 8.3.5.1 a-j as product design outputs.

8.3.5.2. Grede documents manufacturing process design output in a manner that enables verification against the manufacturing process design inputs and includes all the items listed in IATF 16949:2016 Clause 8.3.5.2 a-n.

8.3.6. Grede identifies, reviews and controls changes made during or subsequent to the design and development of products and services to the extent necessary to ensure that there is no adverse impact on the conformity to requirements. Grede retains documented information on design and development changes, results of reviews, authorization of changes, and actions taken to prevent adverse impacts.

8.3.6.1. Grede evaluates design changes after initial product approval for impact on fit, form, or function. These changes are validated against customer requirements and approved internally prior to production implementation.

8.4. Control of externally provided processes, products and services

8.4.1. Grede ensures that externally provided processes, products and services conform to requirements. Grede determines the controls to be applied to externally provided processes,

products and services when: products and services from external providers are intended for incorporation into Grede's own products and services, when products and services are provided directly to the customers by external providers on behalf of Grede, when a process or part of a process is provided by an external provider as a result of a decision by Grede.

Grede determines and applies criteria for the evaluation selection, monitoring of performance and re-evaluation of external providers based on their ability to provide processes or products and service in accordance with the requirements.

Grede retains documented information of these activities and any activities resulting from the evaluations.

- 8.4.1.1. Grede includes all products and services that affect customer requirements such as sub-assembly, sequencing, sorting, rework and calibration in the scope of their externally provided products, processes and services.
 - 8.4.1.2. Grede has a documented supplier selection process that includes all requirements listed in IATF 16949:2016 clause 8.4.1.2 a-e.
 - 8.4.1.3. When specified by customer, Grede purchase products, materials or services from customer directed sources. IATF 16949:16949 clause 8.4.1.2 does not apply to customer directed buys unless specified agreements are defined contractually.
- 8.4.2. Grede ensures that externally provided processes, products and services do not adversely affect its ability to consistently deliver conforming products and services to its customers. Grede complies with the requirements defined in ISO 9001:2015 clause 8.4.2 a-d.
- 8.4.2.1. Grede has a documented process where applicable to identify outsourced processes and to select the types and extent of controls used to verify conformity of externally provided products, processes and services to internal and external customer requirements. The documented process includes the criteria and actions to escalate or reduce the types and extent of controls and development activities based on supplier performance and assessment of products, material or service risk. Where characteristics or component "pass through" Grede ensures appropriate controls are in place.
 - 8.4.2.2. Grede has documented its process to ensure that purchased products, processes and services conform to applicable statutory and regulatory requirements in the country of receipt, country of shipment and customer identified country of destination if provided. If customer defined special controls for certain products with regulatory or statutory requirements, Grede ensures that they are implemented and maintained as defined, including the suppliers.
 - 8.4.2.3. Grede requires its suppliers of automotive products and services to develop implement and improve a quality management system certified to ISO 9001:2015 at a minimum, unless otherwise authorized by customer with an ultimate objective of becoming certified to IATF 16949. Grede defines the sequence to achieve this requirement unless otherwise specified by the customer.

8.4.2.3.1. Grede will require suppliers of automotive related software or automotive products with software embedded to implement Quality Assurance and assess risk as applicable.

8.4.2.4. Grede has documented a process and criteria to evaluate supplier performance in order to ensure conformity of external provided products, processes and services to internal and external customer requirements. At a minimum, Grede monitors delivered product conformity to requirements, customer disruptions at receiving plant, including yard holds and stop ships, delivery schedule performance, and number of occurrences of premium freight. If provided by customer, Grede plant also monitors special status customer notifications relating to quality, delivery issues, dealer returns, warranty, field actions and recalls.

8.4.2.4.1. Grede has included second party audit process in its supplier management approach. Grede uses second party audits for supplier risk assessment, supplier monitoring, supplier QMS development, and product and process audits. Grede documents the criteria for determining the need, type, frequency and scope of second party audits based on risk analysis, product safety, regulatory requirements, performance of the supplier and QMS certification level. Grede retains records of second party audits.

8.4.2.5. Grede determines the priority, type, extent and timing of required supplier development actions for its active suppliers with inputs from performance issues, second party audit findings, third party QMS certification status and risk analysis. Grede implements actions to resolve open unsatisfactory performance issues and pursue opportunities for continual improvement.

8.4.3. Grede ensures adequacy of requirements prior to communication to external providers. Grede communicates all requirements detailed in ISO 9001:2015 clause 8.4.3 a-f.

8.4.3.1. Grede passes down all applicable statutory and regulatory requirements and special product and process characteristics to its suppliers and require the suppliers to cascade down to the supply chain.

8.5. Production and service provision

8.5.1. Grede implements production and service provision under controlled conditions of ISO 9001:2015 clause 8.5.1 a-h.

8.5.1.1. Grede develops control plans at the system, subsystem, component or material level as applicable. Grede's control plans (prelaunch and/or production) show linkage to design risk analysis, process flow diagram and manufacturing process risk analysis outputs. Grede provides, when required by the customer, measurement and conformity data collected during execution of either prelaunch or production control plan. Grede control plans include requirements defined in IATF 16949:2016 clause 8.5.1.2 a-e. Grede review control plans and update as required for any of the requirements of IATF

- 16949:2016 clause 8.5.1.1 f-i. When required by the customer, Grede will obtain customer approval after review and revision of the control plan.
- 8.5.1.2. Grede standardized work documents are communicated and understood by employees responsible for performing the work. Grede ensures that standardized work documents are legible, presented in the respective languages, understood by the personnel responsible to follow them and are accessible for use at the designated work areas. Grede's standardized work includes rules for operator safety.
- 8.5.1.3. Grede verifies setup when they are performed, such as initial run of a job, material changeover or job change that requires a new setup. Grede maintains documented information of setup personnel, use statistical methods where applicable, perform first off/last off part validation as applicable and retains records of process and product approval following setup and first off/last off part validations.
- 8.5.1.4. Grede has defined and implemented a shutdown/startup procedure that ensures product compliance with requirements after a shutdown.
- 8.5.1.5. Grede has developed, implemented and maintains documented total productive maintenance systems in its locations globally. The system meets the requirements defined in IATF 16949:2016 clause 8.5.1.5 a-j.
- 8.5.1.6. Grede provides resources for tool and gage design, fabrication and verification activities for production and service materials and for bulk materials as applicable. Grede has a system for production tooling management whether owned by Grede or by customer which meet all requirements detailed in IATF 16949:2016 clause 8.5.1.6 a-g. Grede verifies that all customer owned tooling, manufacturing equipment and test/inspection equipment are marked in a visible location so that ownership and application of each item can be determined. Grede monitors these activities if they are outsourced.
- 8.5.1.7. Grede schedules production to meet customer order/demands. Grede includes relevant planning information e.g. customer orders, supplier on-time delivery performance, capacity, shared loading, lead time and inventory level, preventive maintenance and calibration during production scheduling.
- 8.5.2. Grede uses suitable means to identify outputs when it is necessary to ensure the conformity of products and services. Grede identifies the status of outputs with respect to monitoring and measurement requirements throughout production and service provision. Grede controls the unique identification of the outputs when traceability is a requirement and retains necessary documented information to enable traceability.
- 8.5.2.1. Grede conducts analysis of internal, customer and regulatory requirements for all automotive products including developing and documenting traceability plans, based on levels of risk or failure severity for employees, customers and consumers. These plans define the appropriate traceability systems, processes and methods by product, process

and manufacturing location and meet all requirements defined in IATF 16949:2016 clause 8.5.2.1 a-f.

8.5.3. Grede exercises care with property belonging to customers or external providers while it is under its control. Grede identifies, verifies, protects and safeguards such property. When customer owned property is lost, damaged or found to be unsuitable for use, Grede notifies the customer or external provider and retains documented information of the issue.

8.5.4. Grede preserve the outputs during production and service provision to the extent necessary to ensure conformity to requirements.

8.5.5. Grede meets the requirements for post-delivery activities associated with its products and services in compliance with ISO 9001:2015 clause 8.5.5 a-e.

8.5.5.1. Grede ensures that a process for communication of information on service concerns to manufacturing, material handling, logistics, engineering and design activities is established, implemented and maintained.

8.5.5.2. When there is a service agreement with customer: Grede verifies that the relevant service facilities comply with applicable requirements, verify the effectiveness of any special purpose tools or measurement equipment and ensures that all service personnel are trained in the applicable requirements.

8.5.6. Control of changes

Grede reviews and controls changes for production and service provision, to the extent, necessary to ensure continuing conformance with requirements. Grede retains documented information describing the results of review of changes, the persons authorizing the change and any necessary actions arising from the review.

8.5.6.1. Grede has a documented process to control and react to changes that impact product realization. Grede assesses the effect of the changes. Grede defines verification and validation activities to ensure compliance to customer requirements validates changes before implementation, documents evidence of related risk assessment and retains records of verification and validation of changes. When required by the customer, Grede notifies its customers of any planned product realization changes after the most recent product approval, obtains documented approval prior to change implementation and completes additional verification or identification requirements such as production trial runs and new product validation.

8.5.6.1.1. Grede identifies, documents and maintains the list of process controls, including inspection, measuring, test and error-proofing devices, that includes the primary process controls and the approved back-up or alternate methods. Grede has a documented the process that manages the use alternative control methods, which includes risk analysis, severity, and the internal approvals to be obtained prior to production implementation of the alternate control method. If required by the customer, Grede obtains customer approval prior to shipping product that was inspected or tested using the alternative method. Grede maintains and periodically

reviews the list of alternative process control methods referenced in the control plan. Grede ensures that standard work instructions are available for each alternative process control method. When alternative process control methods are in use, Grede reviews, at a minimum, daily to verify implementation of standard work with the goal to return to the standard process as defined by the control plan as soon as possible. Grede documents restart verification for a defined period based on severity and confirmation that all features of the error-proofing device or process are effectively reinstated. Grede implements traceability of all products produced while any alternative process control devices or processes are being used.

- 8.6. Grede implements planned arrangements, at appropriate stages to verify that the product and service requirements have been met. Grede retains documented information on the release of products and services which include evidence of conformity and traceability to the person authorizing the release.
- 8.6.1. Grede ensures that planned arrangements for initial release of products or services encompass product or service approval. Grede also ensures that product or service approval is accomplished after changes following initial release.
- 8.6.2. Grede performs layout inspection and functional verification to applicable customer engineering material and performance standards as specified in control plans. Results will be available for customer release.
- 8.6.3. For manufacturing parts designated as appearance items, Grede appropriates resources, including lighting for evaluation, provides masters for color, grain, gloss, metallic, brilliance, texture, distinctness of image, and haptic technology as appropriate, maintains and controls appearance masters, and verified that personnel making appearance decisions are competent and qualified.
- 8.6.4. Grede has processes to ensure the quality of externally provided resources, products and services by utilizing receipt and evaluation of statistical data provided by supplier, receiving inspection or testing, second party or third-party assessment, part evaluation by designated laboratory or any other method agreed with the customer.
- 8.6.5. Grede ensures that externally provided services, products and processes conform to the latest applicable statutory, regulatory and other requirements in the countries where they are manufactured and, in the customer, identified countries of destination prior to release of externally provided products into the production flow.
- 8.6.6. Grede defines acceptance criteria and where appropriate or required by the customer.
- 8.7. Control of nonconforming outputs
- 8.7.1. Grede ensures that outputs that do not conform to their requirements are identified and controlled to prevent their unintended use or delivery. Grede acts based on the nature of the nonconformity and its effect on the conformity of products and services. Grede deals with nonconformity in one or more of the following ways: correction, segregation, containment, return or suspension of provision of products and services, customer notification and obtaining

approval under concession. Grede verifies conformity to requirements after outputs are corrected.

- 8.7.1.1. Grede assures that it obtains customer concession or deviation permit prior to further processing whenever the product or manufacturing process is different from that which is currently approved. Grede obtains customer approval prior to further processing for “use as is” and repair of nonconforming product. If subcomponents are reused in the manufacturing process, such sub-components reuse is communicated to customer in a concession or deviation permit. Grede maintains a record of the expiration date or quantity authorized under concession and properly identifies materials shipped under concession. Request for concession by suppliers are first approved by Grede prior to submission for customer approval.
- 8.7.1.2. Grede complies with applicable customer specified controls for non-conforming products.
- 8.7.1.3. Grede ensures that products with unidentified and suspect status are classified and controlled as nonconforming product. Grede assures that appropriate manufacturing personnel receive training for containment of suspect and non-conforming products.
- 8.7.1.4. Grede utilizes risk analysis tools such as FMEA methodology to assess risk in the rework process prior to decision to rework the product. If required by the customer, Grede obtains approval prior to commencing rework. Grede documents the process for rework confirmation in accordance with the control plan and other relevant documented information to verify compliance to original specification. Grede make available instructions for rework, disassembly, including re-inspection and traceability to appropriate personnel. Grede retains documented information on the disposition of reworked product quantity, disposition, disposition date and applicable traceability information.
- 8.7.1.5. Grede utilizes risk analysis tools such as FMEA methodology to assess risk in the repair process prior to decision to repair the product. If required by the customer, Grede obtains approval prior to commencing repair. Grede documents the process for repair confirmation in accordance with the control plan and other relevant documented information to verify compliance to original specification. Grede make available instructions for repair, disassembly, including re-inspection and traceability to appropriate personnel. Grede obtains documented customer authorization for concession for the product to be repaired. Grede retains documented information on the disposition of repaired product quantity, disposition, disposition date and applicable traceability information.
- 8.7.1.6. Grede notifies customers immediately when nonconforming product is shipped. Initial communication is followed by detailed documentation of then event.
- 8.7.1.7. Grede has documented a process for disposition of nonconforming product not subject to rework or repair. For products not meeting requirements, Grede verifies that

products to be scrapped are rendered unusable. Grede does not divert nonconforming products to service or other use without prior customer approval.

- 8.7.2. Grede retains documented information that describes the nonconformity, actions taken, concession obtained and identifies authority to decide the action in respect of the conformity.

9. Performance Evaluation

9.1. Monitoring, measurement, analysis and evaluation

9.1.1. Grede determines: (1) what needs to be monitored and measured (2) the methods for monitoring and measurement, analysis and evaluation needed to ensure valid results (3) when monitoring and measurement shall be performed (4) when results from monitoring and measurement shall be analyzed and evaluated. Grede evaluates the performance and effectiveness of the quality management system and retains appropriate documented evidence as evidence of the results.

9.1.1.1. Grede manufacturing sites perform process studies on all new manufacturing processes to verify process capability and to provide additional input for process control including those for special characteristics. Grede maintains manufacturing process capability or performance results as specified by the customers' parts approval process. Grede verifies that process flow, PFMEA, and control plan are implemented, including adherence to measurement techniques, sampling plans, acceptance criteria, records of actual measurement and/or test results, reaction plans and an escalation process. Grede requires its facilities to retain records of significant process events such as tool change and machine repair. Grede sites initiate reaction plans indicated on the control plan and evaluated for impact on compliance to specifications for characteristics that are either not statistically capable or are unstable. These reaction plans shall include 100% inspection as appropriate. Grede develops and implements corrective action plans for such characteristics indicating specific actions, timing and assign responsibilities to ensure that the process becomes stable and capable. Such plans are reviewed and approved by customer when required. Grede maintains records of effective dates of process changes.

9.1.1.2. Grede determines appropriate use of statistical tools which are included as part of advanced product quality planning. These tools are included in the design risk analysis, where applicable, the process risk analysis and the control plan.

9.1.1.3. Grede ensures that statistical concepts such as variation, control (stability), process capability and consequence of over adjustment are understood and used by employees collecting, analyzing and managing statistical data.

9.1.2. Grede monitors customer perception to the degree of which their needs and expectations have been fulfilled. Grede determines the method for obtaining, monitoring and reviewing this information.

9.1.2.1. Grede monitors customer satisfaction through continual evaluation of internal and external performance indicators to ensure compliance to the product and process

specifications and other customer requirements. Grede bases its performance indicators on objective evidence and include delivered part quality performance, customer disruptions, field returns, recalls and warranty (where applicable), delivery schedule and customer notifications. Grede monitors manufacturing processes to demonstrate compliance with customer requirements for product quality and process efficiency. The monitoring includes the review of customer performance data including online customer portals and customer scorecards (where provided).

9.1.3. Grede analyses and evaluates appropriate data and information arising from monitoring and measuring. Grede uses the results of the analysis for evaluating: conformity of products and services, degree of customer satisfaction, performance and effectiveness of the quality management system, if planning has been implemented effectively, effectiveness of actions to address risks and opportunities, the performance of external providers and the need for the improvement to quality management system.

9.1.3.1. Grede compares trends in quality and operational performance with progress towards objectives and this leads to action to support prioritization of actions for improving customer satisfaction.

9.2. Internal Audit

9.2.1. Grede conducts internal audits at planned intervals to provide information on whether the quality management system conforms to its own requirements, ISO 9001:2015 and IATF 16949:2016. Grede ensures that it is effectively implemented and maintained.

9.2.2. Grede plans, establishes, implements and maintains an audit program that includes frequency, methods, responsibilities, planning requirements and reporting which shall take into consideration the importance of the processes concerned, changes affecting the organization and the results of previous audits. Grede defines the audit criteria, scope, select auditors and conduct audits to ensure objectivity and the impartiality of the audit process, ensure that the result of audits is reported to relevant management, takes appropriate corrections and corrective actions without undue delay and retains documented evidence of the audit program and audit results.

9.2.2.1. Grede internal audit program covers the entire quality management system including quality management system audits, manufacturing process audits and product audits. Grede prioritizes the audits based on risk, internal and external performance trends and criticality of the processes. The audit frequency is reviewed periodically and adjusted based on occurrence of process changes, nonconformities and customer complaints. The effectiveness of the audit process is reviewed as part of management review.

9.2.2.2. Grede audits all quality management system processes over each three-year calendar period based on an annual program using a process approach. Grede internal audits sample customer specific requirements for effective implementation.

9.2.2.3. Grede internal audit program requires an audit of all manufacturing processes over a three-year calendar period to determine their effectiveness and efficiency using customer

specified approaches for process audits. When customer approach is not defined by the customer, Grede defines the approach to be used.

- 9.2.2.4. Grede internal audit program requires product audits using customer specified approaches at appropriate stages of production and delivery to verify conformity to specified requirements. When customer approach is not defined by the customer, Grede defines the approach to be used.

9.3. Management Review

- 9.3.1. Grede top management reviews the organizations quality management system at planned intervals to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of the organization.

- 9.3.1.1. Grede management reviews are conducted at least annually. The frequency of management reviews shall be increase based on risks to compliance with customer requirements resulting from internal and external changes impacting the quality management system and performance related issues.

9.3.2. Management review inputs

Grede takes into consideration the following when carrying out management reviews: status of actions from previous management reviews, changes in external and internal issues that affect the quality management system, information on the performance and effectiveness of the quality management system, adequacy of resources, effectiveness of actions taken to address risks and opportunities, and opportunities for improvement.

- 9.3.2.1. Grede includes the following inputs in management review: cost of poor quality, measures of process effectiveness and efficiency, product conformance, assessments of manufacturing feasibility, customer satisfaction, review of performance against maintenance objectives, warranty performance (where applicable), review of customer score cards (where applicable), identification of potential field failures through risk analysis, actual field failures and their impact on safety or the environment.

- 9.3.3. Grede management review outputs include: opportunities for improvement, any need for changes to the quality management system, resource needs. Grede retains documented evidence of management review.

- 9.3.3.1. Grede top management documents and implements action plan when customer performance target is not met.

10. Improvement

- 10.1. Grede determines and selects opportunities for improvement and implements necessary actions to meet customer requirements and enhance customer satisfaction by improving products and services to meet requirements as well as to address future needs and expectations, correcting, preventing or reducing undesired effects and improving the performance and effectiveness of the quality management system.
- 10.2. Nonconformity and corrective actions

- 10.2.1. When a non-conformity occurs, including arising from complaints, Grede acts to control the nonconformity, corrects it or deals with the consequence. Grede evaluates the need for action to eliminate the causes of the nonconformity in order that it does not reoccur, implements action needed, reviews the effectiveness of the actions, updates risk and opportunities, and make changes to the quality management system.
- 10.2.2. Grede retains documented information as evidence of the nature of the nonconformities and any subsequent actions taken and results of the corrective actions taken
- 10.2.3. Grede has a documented process for problem solving which include defined approaches for different types of problems, containment interim actions, root cause analysis, methodologies used, analysis and results, implementation of systemic corrective actions, verification of corrective action effectiveness, update of appropriate documented information. When required by the customer, Grede utilizes customer approved formats, tools and/or systems.
- 10.2.4. Grede has a documented process for determining the use of appropriate error-proofing methodologies. Detail of the methods used are defined in the PFMEA and test frequencies are documented in the control plan. The error proofing process includes testing of error-proofing devices for failure or simulated failure. Grede retains documented evidence of error proofing verification. Grede defines reaction plans for error-proofing device failures.
- 10.2.5. When required by the customer and agreed in the contract, Grede uses its warranty management process to provide warranty for its products which includes a method for part analysis, including No Trouble Found (NTF).
- 10.2.6. Grede performs analysis on customer complaints and field failures including returned parts and initiates problem solving to prevent recurrence.
- 10.3. Grede continually improves the suitability, adequacy and effectiveness of the quality management system. Grede considers the results of analysis and evaluation, and the outputs from management review to determine if there are needs or opportunities that shall be addressed as part of continual improvement.
- 10.3.1. Grede has a documented process for continual improvement which includes: identification of the methodology used, objectives, measurement, effectiveness and documented information, a manufacturing process improvement action plan with emphasis on the reduction of process variation and waste and risk analysis.

Revision History

DATE	SECTION/PAGE	DESCRIPTION	AUTHORIZATION
05/25/2020	All	Initial Release	SKB
3/28/2021	Exclusions	Product Design exemptions	SKB
6/3/2021	Exclusions, Appendix D	Reedsburg – Product Design Support	SKB

Appendix A
Context of the Organization

Quality System processes are developed and maintained on site at each facility.

Appendix B
Interested Parties Matrix

INTERESTED PARTY	EXPECTATIONS	RISKS	MITIGATION	OWNER
Customers	Robust High Performing designs	Design Failure in use	Proactive DFMEA reviews by design	Product Eng.
	Customer satisfaction	Customer dissatisfaction / loss of business	Review customer metrics during operations review and implement actions for negative trends	Quality Systems
	Low warranty costs	High warranty cost and customer dissatisfaction	Proactive DFMEA and PFMEA reviews	Product Eng.
Employees	Consistent employment	High turnover	Employee motivation program	HR
	Reasonable pay and benefits		Continually review salaries and benefits against industry and local rates	
Regulators	Meet statutory requirements and regulatory requirements	Unmet requirements, legal liability	Organization risk analysis, Safety risk analysis, contingency planning	Leadership, Safety, Legal
Suppliers	Stable volumes, competitive pricing	Bankruptcy	Standardized sourcing program (Supplier Quality Manual)	Supplier Quality
Competitors	Fair business practice	Litigation	Grede code of conduct	Grede Top Leadership
Lenders	Return on investment	Insolvency	Periodic financial review (Sarbanes Oxley audits) and corrective actions for negative trends	Finance
Community	Good corporate citizen	Environmental pollution, nuisance, resident dissatisfaction	Participation in charity programs, empowerment programs, community outreach	HR

Appendix C
IATF Required Document Matrix

Documented Processes	Corporate Procedure/Document*	Plant Supporting Procedure
Product safety		Site Specific
Calibration/verification records		Site Specific
Competence		Site Specific
Internal auditor competency	GREDE-Q-0006-P	Site Specific
Employee motivation and empowerment		Site Specific
Quality management system documentation	GREDE-Q-003-P Quality Manual	GREDE-Q-003-P Quality Manual
Engineering specification		Site Specific
Design and development process		Site Specific
Special characteristics		Site Specific
Product Approval Process		Site Specific
Supplier selection process		Site Specific
Type and extent of control		Site Specific
Supplier monitoring		Site Specific
Verification after shutdown		Site Specific
Total productive maintenance		Site Specific
Control of changes		Site Specific
Control of reworked product		Site Specific
Control of repair product		Site Specific
Nonconforming product disposition		Site Specific
Internal audit program	GREDE-Q-006-P	Site Specific
Problem solving		Site Specific
Error proofing		Site Specific
Continual improvement	GREDE-Q-005-P	Site Specific
Problem Solving, Corrective and Preventive		Site Specific
Customer specific requirement	GREDE-Q-004-P	Site Specific
Record Retention	GREDE-A-002-P	Site Specific

* Those without corporate reference are site specific procedures and forms

Appendix D
Corporate Functional Support Matrix

Function	Biscoe	Brewton	Browntown	Iron Mt.	Liberty	Menomonee Falls	New Castle	Reedsburg	St. Cloud
Information Technology	X	X	X	X	X	X	X	X	X
Policy Making	X	X	X	X	X	X	X	X	X
Strategic Planning	X	X	X	X	X	X	X	X	X
Sales	X	X	X	X	X	X	X	X	X
Product Design								X	X
Warranty Support	X	X	X	X	X	X	X	X	X
Quality System Management	X	X	X	X	X	X	X	X	X
<i>** without an X means exempt from that function for that specific plant</i>									