Voss Supplier Quality Manual
Voss Industries, LLC

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VOSS INDUSTRIES, LLC

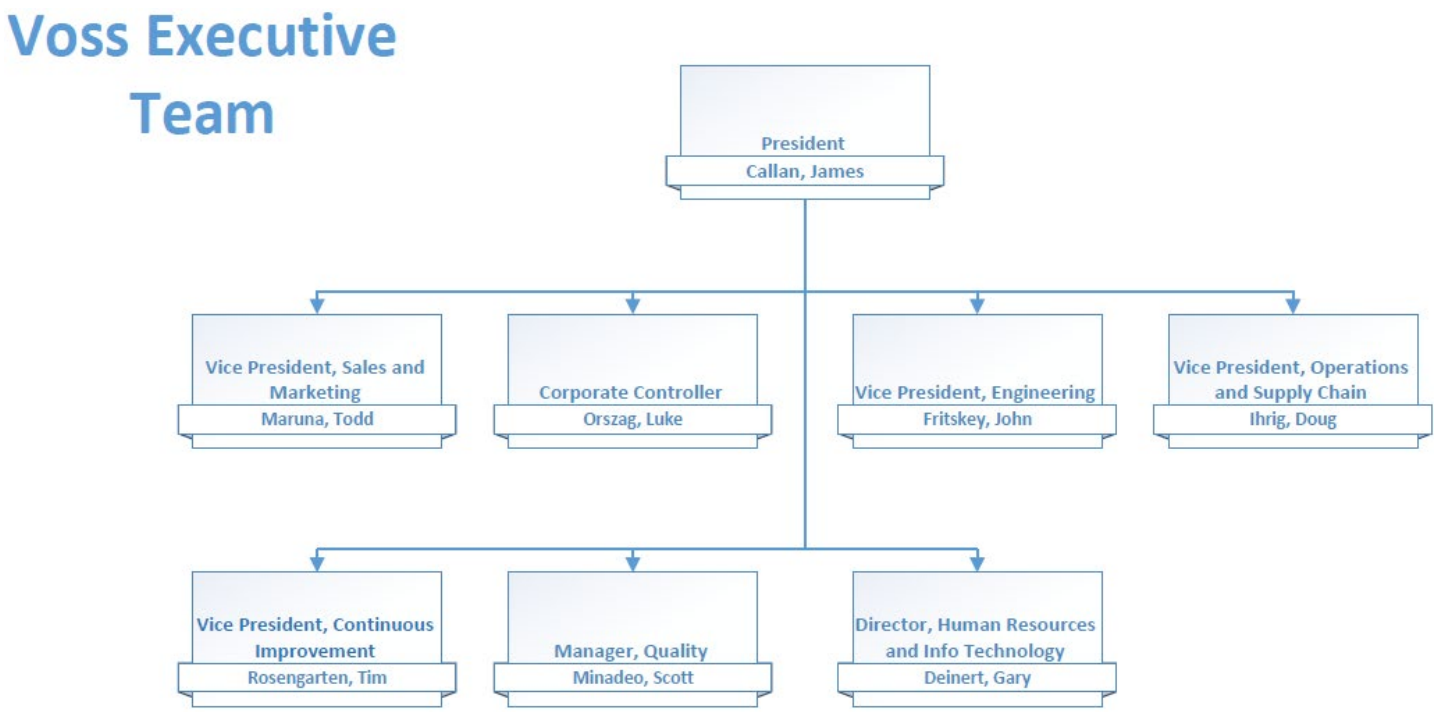
Corporate Overview

Voss industries has grown to become one of the world's leading suppliers of highly engineered V-retainer couplings, mated flanges, T-bolt band clamps, strap assemblies and special fabricated products to an extensive list of industries, including aerospace, food and chemical processing, medical, telecommunications and transportation.

Corporate Mission

Provide a caring, proud, safe, and challenging environment that allows employees to thrive with resolute integrity to exceed our customers' needs. We will proactively leverage the creative thinking and problem solving of all the employees. We will grow our company through open communication, strong leadership, and continuous improvement that ultimately benefits our customers, employees, and their families.

VOSS ORGANIZATIONAL CHART



Voss Supplier Quality Manual

1. INTRODUCTION

1.1 Suppliers are responsible for the quality of their products and services.

1.1.1 The goal of this Voss Industries, LLC Supplier Quality Manual is to clearly communicate the conditions for doing business with Voss by setting high quality expectations. The quality of purchased parts, materials, and services is a direct reflection of the supplier's quality management system, product development cycle, manufacturing processes, customer focus, organizational leadership, and continual improvement efforts. Therefore, Voss suppliers are expected to operate within a "Zero Defects" philosophy while maintaining flawless on-time delivery schedules.

1.1.2 This standard applies to all purchased direct materials, select indirect materials, and supplier services that become a part of the products sold by Voss Industries, LLC.

1.1.3 Suppliers are expected to comply with all sections of this Supplier Quality Manual as well as to the General Terms and Conditions of the Purchase Order. Any requirement section not referenced in this document indicate there are no additional requirements from Voss Industries, LLC. Voss Purchasing and Quality will provide additional clarification or direction, as needed.

1.1.4 In this manual, the terms "shall" and "must" mean that the described action is mandatory; "should" means that the described action is necessary and expected with some flexibility allowed in the method; and "may" means that the described action is permissible or discretionary.

1.1.5 Direct Materials: are materials (raw material, hardware) that become a part of the products sold by Voss Industries, LLC. It also includes services used to produce (in whole or part) product sold by Voss Industries, LLC.

1.1.6 The scope of this manual applies to the product quality of all suppliers of direct production materials, production or service parts, and manufacturers of machinery and related components.

1.1.7 The original of this manual is a controlled document. Copies of the Voss Supplier Quality Manual distributed to suppliers, printed or downloaded are considered uncontrolled and will not be automatically updated.

1.1.8 Suppliers to Voss Industries, LLC are responsible for obtaining and following this document via the Voss Industries website at http://www.vossind.com. Suppliers are required to check the website periodically for revisions and updates to this document.

1.1.9 Suppliers are responsible for ensuring that products and services they supply conform to the latest revision of this document when shown on purchase orders, supply agreements, or as mailed, electronically transmitted or viewed online at http://www.vossind.com.

1.1.10 Failure to include reference to the Voss Supplier Quality Manual in a request for quote, purchase order or supply agreement does not excuse Suppliers from compliance.

1.1.11 This manual defines the specific processes and information necessary to fulfill the intent of our Quality Policy. It is expected that our suppliers will use a continual improvement approach to assist Voss Industries, LLC in creating a lean supply chain that minimizes the total cost of ownership for the supplier and Voss Industries, LLC through:

- Customer focused leadership – Striving to understand and anticipate the needs of Voss Industries, LLC, and proactively establishing the infrastructure to meet those needs. This includes innovation, collaboration, speed, inventory management, and cost competitiveness.

- Execution excellence – Flawless delivery performance with zero disruptions and zero quality issues.

1.1.12 The remainder of this manual provides additional details of how Voss Industries, LLC will manage its supplier relationships.

2. SUPPLIER CODE OF CONDUCT

2.1 Suppliers shall ensure operations are being performed in a manner that is appropriate, as it applies to their ethical, legal, environmental, and social responsibilities. Below is a listing of the basic requirements:

2.1.1 Compliance with local laws and regulations

2.1.1.1 Suppliers must adhere to the laws and regulations in the locality in which they reside. This includes all local. State, and federal laws/regulations in the country of origin.

2.1.2 Compliance with Environmental, Health, and Safety Laws

2.1.2.1 The Supplier must maintain and operate its manufacturing/production facilities and processes in accordance with local, state, and federal laws/regulations in the country of origin. At no time shall any Voss person be exposed to hazardous materials or unsafe conditions as a result of Supplier shipments to a Voss location, or while visiting a Supplier's location. For items with inherent hazards, safety notices must be clearly visible. As applicable, documented safety handling and protection information must be provided.

2.1.3 Product Conformity and Safety

2.1.3.1 In all instances where a product is manufactured to a new design, for a new system, or for a new application, it is important that Supplier and Voss allocate responsibility for assuring that all conformity, performance, endurance, maintenance, safety and warning requirements are met. It is preferred that this allocation of responsibility be in writing.

2.1.4 Workmanship

2.1.4.1 In all instances where a product is manufactured to a new design, for a new system, or for a new application, it is important that Supplier and Voss allocate responsibility for assuring that all conformity, performance, endurance, maintenance, safety and warning requirements are met. It is preferred that this allocation of responsibility be in writing.

2.1.5 Non-Discrimination

2.1.5.1 Suppliers shall not discriminate against race, color, sex, religion, age, physical disability, political affiliation, or other defining characteristics as prohibited by local, state, and federal laws/regulations in the country of origin.

2.1.6 Ethics

2.1.6.1 Evidence of corruption, bribes, improper advantage, or any other form of illegal practice by the Supplier or associated operations will terminate all relations with Voss. Suppliers will conduct their business in a manner that meets the 'Code of Ethics' policy of AS9100. In addition, for those Suppliers contracting with Voss for U.S. Government contracts, Aerospace policy on contracting with the United States Government shall apply.

2.1.7 Confidentiality

2.1.7.1 The Supplier shall ensure the confidentiality of Voss-contracted products and projects under development, and related product information, as well as intellectual property shared as a result of the working relationship.

2.1.8 Intellectual Property

2.1.8.1 To respect the intellectual and other property rights of Voss Industries, LLC and of third parties, including all patents, trademarks, and copyrights.

3. AS9145 STANDARD QUALITY REQUIREMENTS

3.1 To be a supplier to Voss Industries, LLC, all suppliers must meet our requirements for quality. Our standard requirements include:

3.1.1 Advanced Product Quality Planning (APQP): Supplier must have resources available and capable of participating in quality planning activities.

3.1.2 Failure Mode and Affects Analysis (FMEA): Supplier must have FMEA documentation available for review upon request.

3.1.3 Measurement System Analysis (MSA): Supplier must have records available for review when assessing measurement capability.

3.1.4 Statistical Process Control (SPC): Supplier must have data ready for review upon request of process capability.

3.1.5 Product Part Approval Process (PPAP): Supplier must be ready and capable of providing first production run validation data.

3.1.6 Corrective Action: In the event of a quality issue related to a supplier's product, the supplier will be required to provide a written corrective action report, filed electronically.

3.1.7 Management of Change: Suppliers must agree to notify Voss of any intended process change and receive Voss approval prior to the implementation. Supply is also to make this a condition of their entire suppl chain.

3.1.8 Non-Conforming Product: Suppliers must ship only product that meets specification or submit a deviation request to receive written approval to ship the product. Consent to shipping the non-conforming product does not relieve the supplier of its responsibilities to Voss.

3.1.9 Maintain certain records for defined length of time. Voss will provide guidance on identity of those records.

3.1.10 Shipment and Packaging Requirements: Suppliers must comply with Voss specifications unless not included on PO. In this event the supplier must package the material to provide adequate protection to prevent damage during shipping and handling.

3.1.11 Traceability: Product traceability is a requirement. Suppliers must provide unique identification of product batches/lots as required by Voss.

3.1.12 Verification of Purchased Product: Suppliers must allow on-site product verification by Voss, its customers, or customers' representatives.

In the case where a supplier may not have the above processes in place due to business conditions Voss will determine the supplier's eligibility based on product, application, value, criticality, and other pivotal considerations.

4. Supplier Quality Management System - Maintenance

4.1 As a minimum, suppliers to Voss Industries, LLC are required to conform and may be required to acquire the latest revision of ISO 9001:20xx, AS9100:20xx or ISO/TS 16949:20xx registration unless otherwise specified or approved by Voss Industries, LLC Quality Department.

4.2 In the event that a supplier to Voss Industries, LLC is so small as to not have adequate resources to develop a Quality Management System according to ISO/TS 16949:20xx, AS9100:20xx or ISO 9001:20xx, Voss Quality Department will conduct audits on site using Supplier Risk Assessment audit or via the desk audit approach to assess gaps, identify risks and take appropriate actions to protect Voss and ultimate customers.

4.3 In the event that a supplier to Voss Industries, LLC is so small as to not have adequate resources to develop a Quality Management System according to ISO/TS 16949:20xx, AS9100:20xx or ISO 9001:20xx, Voss Quality Department will conduct audits on site using Supplier Risk Assessment audit or via the desk audit approach to assess gaps, identify risks and take appropriate actions to protect Voss and ultimate customers.

4.4 Suppliers are required to notify, on a timely basis, the appropriate Voss contact if an ISO/TS/AS registered supplier quality management system is notified of special status conditions (such as new business hold – quality, needs improvement status, Q1 revocation) by any of the IATF (International Automotive Task Force) or other organizations.

4.5 Voss Industries, LLC reserves the right to perform an on-site audit as deemed appropriate to verify conformance of supplier Quality Management System or to verify effectiveness regarding corrective or preventive actions related to supplier escalation.

4.6 Direct Material suppliers must allow Voss' customers, the customer's representatives, government or regulatory agencies the right to conduct surveillance of the supplier's quality systems at the Supplier's premises. This may include visits extended to sub-contracted suppliers of the supplier.

4.7 All such visits will be approved and arranged by Voss Industries, LLC.

4.8 Direct Material suppliers sub-contracting products or services to suppliers are required to provide to sub-tier suppliers the applicable requirements in the purchasing documents, including key characteristics (however named), material or process requirements where required.

5. Inspection of Product

5.1 All products provided to Voss Industries, LLC shall be inspected by the supplier according to an agreed upon control plan. In the absence of a purchasing or a supply agreement, the supplier must develop, implement and maintain inspection methods necessary to assure the product conforms to the requirements of Voss Industries, LLC. The supplier shall conduct in-process and outgoing audit inspections or tests as defined in the product / process control plan. Inspection data shall be retained by the supplier and be made available upon request.

5.2 Suppliers must allow Voss, its customer(s), its customer's representative(s), government or regulatory agencies the right to verify at the supplier's premises that the purchased products conform to specified requirements. The Supplier shall not use such verification as evidence of effective control of quality.

5.3 Verification by Voss, its customer(s), or its customer representative(s) shall not absolve the supplier of the responsibility to provide acceptable products, nor shall it preclude subsequent rejection by Voss or its customer(s) subject to final acceptance at its destination.

5.4 Where applicable, a quality history for the product shall be provided to Voss Industries, LLC. The quality history shall contain all verification documents generated during manufacturing, processing or fabrication.

6. Non-conforming (Discrepant) Product

6.1 Non-conforming or discrepant product is defined as: deviation from drawing specifications, purchase order requirements, Voss Industries, LLC product and process specifications or standards and industry product and process specifications and standards, including but not limited to the areas of quantity, appearance, material, metallurgy, packaging, handling, shipping, delivery, cleanliness and dimensions. Counterfeit Parts shall be treated as nonconforming material.

6.2 When non-conforming product is detected by the supplier after product has shipped, is in transit or delivered to Voss, supplier shall take appropriate action to mitigate the effect including formal, detailed notification to Voss Industries, LLC.

6.3 Notification shall include a clear description of the non-conformity, which includes as required: parts affected, part numbers, quantities and dates delivered or in-transit. If required by Voss, supplier shall provide traceability information for lots or batches of material or product.

6.4 Non-Conforming Ticket (NCT) is used to notify the supplier of non-conformance, discrepancy and/or rejection. The NCT is sent via e-mail directly to the Supplier contact using Voss' internal delivery system and can be initiated from any Voss facility receiving Direct material. A NCT may be initiated upon detection of non-conforming product. Requests for corrective action may be required from the supplier.

6.5 The supplier must respond directly to the NCT issuer within the directed timeframe using email.

6.6 Supplier Responsiveness – Voss Industries, LLC will monitor speed, timeliness and effectiveness of corrective or preventive actions, and may use the supplier's response as input for awarding future business and monitoring performance.

6.7 Specific timing requirements will be stated on the NCT, if required. The provided general or default requirements are:

6.7.1 An initial response (team/person assigned, problem description, containment action) for a NCT shall be supplied to Voss Industries, LLC within 3 working days.

6.7.2 Aerospace suppliers must respond within 24 hours.

6.8 If Voss Industries, LLC requires an 8D process, the initial 8D report shall be submitted within 15 calendar days.

6.8.1 Aerospace suppliers must submit within 5 calendar days.

6.8.2 A complete 8D report must be submitted to Voss Industries, LLC within 30 calendar days.

6.9 If a supplier's product is determined to be defective in material and/or workmanship, as defined by the design requirements, product(s) will be immediately contained.

6.10 Voss Industries, LLC and the supplier shall determine if the product can be inspected to remove defects from the "lot" that has been contained.

6.11 If time does not allow the supplier's personnel to arrive, the supplier shall provide detailed inspection instructions to Voss Industries, LLC.

6.12 Voss Industries, LLC reserves the right to approve all inspection methods.

6.13 If it is determined that inspection alone cannot detect the defect, the product(s) will be returned to the supplier or scrapped as agreed upon by the supplier and Voss.

6.14 Voss Industries, LLC will identify any costs incurred from these defective parts and will initiate the Supplier Cost Recovery Chargeback procedure with the supplier.

6.15 If the purchased product is needed for urgent production at Voss Industries, LLC, the supplier shall provide a rapid inspection team to Voss' production facility for inspection, or agree (by providing purchase order to the third party) to the use of a third party inspection service with the cost of service being assumed by the supplier.

6.16 In most cases, as appropriate, the supplier shall be given the option regarding sorting methodologies by the effected Voss facility.

6.17 The use of a third party to sort defective product does not relieve the supplier of their responsibility for the quality or delivery of product.

6.18 Voss Industries, LLC shall have the right to perform any, and all, necessary safe, destructive and non-destructive tests to evaluate fully the performance of the supplier's product or services.

6.19 Voss Industries, LLC shall have the right to utilize the service of an independent ISO 17025 accredited testing laboratory.

6.20 The supplier shall reimburse Voss Industries, LLC for the expense of said tests only if testing confirms the product or service is defective.

6.21 Voss Industries, LLC must provide proper accounting of hours for inspection to the supplier.

6.22 If the purchased product is determined to be defective or non-conforming for reasons other than those defined on the design prints, the two parties will discuss and determine if containment action is required.

6.22.1 If containment action is required, inspection criteria will be established. If containment action is not required, the supplier's product will be approved for use in production with a proper record of using the deviation process.

7. Management of Design and Process Changes

7.1 After product approval, suppliers shall not make any type of change without prior written notification and approval from Voss Industries, LLC. Suppliers must also make this a condition of their own entire supply chain.

7.2 Changes are defined as alteration in the product design; product specification; purchased parts; material, service supplier or provider; manufacturing location; method of manufacturing; processing; testing; storage; packaging; preservation or delivery.

7.3 Changes shall be communicated through the Supplier Product/Process Change Request Form. These include changes to part design, material, sub-tier supplier, manufacturing location or process. When in doubt, suppliers are encouraged to contact their respective Voss sales or sourcing representative.

7.4 The supplier shall notify Voss Industries, LLC in advance and obtain approval for all design or process changes affecting the product manufactured, processed or serviced for Voss Industries, LLC.

7.5 Changes are classified based upon impact or the most adverse effect, either in the subsequent processing of a part, in its handling, or in its intended or foreseeable application.

7.6 The supplier change can be initiated by:

7.6.1 Voss Engineering department

7.6.2 Customer-initiated change communicated to Voss Industries, LLC by the customer's engineers or marketing department

7.6.3 Voss' Purchasing and Quality departments

7.6.4 Voss' manufacturing plant

7.6.5 Supplier

7.7 The supplier shall issue the change request using the Supplier Product/Process Change Request Form. Submit the request to Voss Industries, LLC for approval to proceed with a defined validation plan. This plan may include or require new Production Part Approval Process (PPAP) submission or FAI (First Article Inspection).

7.8 For permanent changes, Voss Industries, LLC representative determines if a new Production Part Approval Process is required and advises the supplier accordingly.

7.9 Following validation and/or Production Part Approval Process (PPAP) approval, the Supplier Product/Process Change Request is granted or denied and the supplier is advised accordingly. At this stage, the timing to phase in the approved change is established and communicated to the supplier and all interested parties.

8. Purchased Product Submission and Approval Proces

8.1 Purchased Product Submission and Approval Process is implemented to determine if all design and specification requirements of purchased product are properly understood by Voss suppliers and to ensure that the supplier production process is capable of meeting Voss and the Voss' customer's technical and quality requirements. The supplier submits documentation, determined during feasibility review with Quality, using Supplier PPAP/ISIR Submission Request Form.

8.2 The submission requirements will typically include initial sample parts; design review; dimensional layout; performance test results; material certifications; capability studies; process flow diagram; design FMEA (Failure Modes and Effects Analysis); process FMEA and supplier process control plan.

8.3 This process follows Voss' customer and Voss' internal requirements in accordance with the latest version Production Part Approval Process (PPAP) manual or First Article Inspection (FAI) manual.

8.4 Unique customer specific requirements are addressed as defined and required. Voss Industries, LLC follows Production Part Approval Process notification and submission requirements defined in the Production Part Approval Process manual, unless otherwise specified by the customer.

8.5 Voss-specific requirements related to the initial sample parts and identification include the following:

8.5.1 Samples must be from production tooling operating under production conditions.

8.5.2 Samples are to be uniquely identified, so that measurement correlation may be performed.

8.5.3 Sample quantity may vary according to the nature of the product and the manufacturing process.

8.5.4 Production material and processes

8.5.5 Analysis/Development/Validation Documentation (when requested).

8.5.6 Unless sample quantities are defined in a Voss standard or specification, the following guidelines may be used:

8.5.6.1 A minimum of 5 samples (out of a 300 piece production run) is required from any single part producing tooling.

8.5.6.2 A minimum of 1 sample per cavity is required from multiple part tooling.

8.6 Suppliers are strongly encouraged to work with their Voss Quality representative or designated plant quality personnel to obtain a full approval on time.

8.7 Supplier production parts are not to be released for shipment to the Voss plant until the supplier receives notification from Voss that the PPAP has been approved or interim approved for volume production.

8.8 When requested by Voss Quality personnel, the supplier shall establish a Safe Launch process, which will serve to validate the Production / Process Control Plan (PCP) and ensure that all shipped products meet Voss' expectations. (Reference Supplier Safe Launch)

9. Measurement System Analysis

9.1 To fully understand the supplier measurement abilities, as appropriate and defined by the Quality representative, the supplier shall perform a measurement system analysis (MSA) in accordance with the latest version of the AS9145 Measurement System Analysis manual.

10. Prototype Submission Requirement

10.1 The intent of the prototype activity is to assemble and test product, processes and assembly systems, and perform conformance/measurement/design validation.

10.2 Part approval at Prototype ensures component part problems are identified and corrected to minimize the impact of part variation upon design evaluation, manufacturing and assembly.

10.3 Suppliers of prototype parts are required to have completed, documented and available for review the items listed below:

10.3.1 Voss Supplier Warrant of Material for Prototype

10.3.2 Design records.

10.3.3 Inspection results and inspection and/or test devices.

10.3.4 Material certification.

10.3.5 Part weight (mass)/Serialization information.

11. Documentation, Certification, and Data Requirements for Proprietary Information

11.1 Voss Industries, LLC and its customers may review, in the presence of the supplier and on the supplier premises, documentation that contains confidential and proprietary supplier information pertaining to the product manufactured for Voss Industries, LLC.

11.2 Where applicable, a quality history for the entire product shall be provided to Voss Industries, LLC. The quality history shall contain all verification documents generated during fabrication of the product or service.

11.3 The supplier shall provide Voss Industries, LLC with appropriate documentation during the course of design, manufacturing, inspection and testing. Documents shall include (where applicable) design records such as:

11.3.1 Design Failure Mode and Effects Analysis (DFMEA)

11.3.2 Design Validation Plan and Report (DVP&R).

11.3.3 Quality Planning / Advanced Product Quality Planning (APQP) Status Report.

12. Hazardous Materials (Chemicals)

12.1 All materials used in or incorporated into Voss Industries, LLC products shall satisfy current governmental and safety constraints on restricted, toxic, and hazardous materials; as well as environmental, electrical, and electromagnetic considerations applicable to the country of manufacture and sale.

13. Shipment and Packaging Requirements

13.1 In some cases, Voss designates “VS” specifications to define shipping and packaging requirements.

13.2 Requirements in any ‘VS’ specification shall be considered an extension of the purchase order and /or product drawing / agreement. General packaging requirements can also be found included within the Terms & Conditions of the Purchase Order.

13.3 Unless alternate methods have been agreed upon in writing with the receiving location, all production shipments must include or be preceded by the following:

13.3.1 Material certifications as specified in all applicable material specifications.

13.3.2 Applicable Statistical Process Control (SPC) data (for all print designated special or critical characteristics) unless instructed differently from Voss Quality or the receiving location.

13.3.3 Labeling, or bar code labeling, must be in accordance with appropriate AS9145 guidelines or plant specific requirements.

13.4 Production shipment and packaging requirements discussions should begin during APQP activities or Feasibility review. All requirements shall be finalized prior to first shipment and PPAP submission.

14. Supply Chain Management

14.1 Suppliers must be willing to identify and manage, as appropriate, their entire supply chain. This includes raw material suppliers or manufacturers and any suppliers of components or processing used for products supplied to Voss Industries, LLC.

14.2 As appropriate, suppliers shall impose all of Voss' quality requirements on the entire supply chain used to produce the items supplied to Voss Industries, LLC.

15. Supplier Material Traceability

15.1 As required, suppliers shall be able to demonstrate adequate product traceability. Specific traceability requirements are identified and reviewed at initial feasibility, planning for Quality or APQP meetings. Suppliers to Voss Industries, LLC shall establish and maintain documented methods for unique identification of product, batches or lots, including product marking as necessary for identification or traceability purposes.

15.2 Lot numbers, as identified on shipping labels, must provide traceability from receipt and during all stages of production by the supplier, including shipment to Voss Industries, LLC.

15.3 Voss Industries, LLC reserves the right to perform an on-site audit or request appropriate, timely documentation to verify conformance to traceability requirements.

15.4 Traceability information must include and begin with an individual raw material heat/batch number, or equivalent..

15.4.1 A lot cannot contain more than one material heat / batch number.

15.4.2 Control Item () Part & Special Product or Process Characteristics.

15.5 Control Item Parts are products with characteristics normally identified on drawings by an arrow (⇨) preceding the part and/or raw material code number. Control Item parts may affect the safe operation and/or compliance with government regulations.

15.6 Special characteristics are those product or process requirements for which reasonably anticipated variation is likely to affect a fit, function or the ability to process or build the product.

15.7 Special characteristics are those product or process requirements for which reasonably anticipated variation is likely to affect a fit, function or the ability to process or build the product.

15.8 Requirements for Special / Specific Characteristics are:

15.8.1 All Special Characteristics must be made in a process having a special control method(s).

15.8.2 SPC is the most common and preferred special control method.

15.8.3 To be considered valid, Cpk values cannot be calculated until there is a stable and capable process.

15.8.4 Cpk is typically calculated based on data from 20 days of production; minimum is 100 individual sample or data points.

15.8.5 The Cpk value must be noted on control charts.

15.8.6 Reaction plans to out-of-control signals must be indicated on the chart. Both parts and process must be described.

15.8.6.1 Refer to the AS9145 SPC manual for out-of-control signals.

15.8.7 On occasion, the Special Characteristic designation will be applied to characteristics, such as raw material, hardness, etc., and therefore, typical SPC cannot be applied. In such cases, you must identify the special controls used for these characteristics in your quality control plan.

15.9 Your control plan will require concurrence from Voss prior to PPAP. This discussion should begin at the initial Quality Planning, APQP or Feasibility meetings.

16. Records

16.1 Suppliers shall maintain appropriate records on file according to requirements of the supplier, Voss Industries, LLC or regulatory bodies.

16.2 Quality performance records, including control charts, inspection and test results shall be retained for one calendar year after the year in which they were created.

17. Supplier Evaluation and Performance

17.1 Voss has recognized that certain processes and operations in our supply base required to make our product have levels of risk that must be managed appropriately. Voss has processes to evaluate levels of risk with our supply base. If during the course of business we determine a process or operation to have an unacceptable level of risk,

we will contact supplier directly with specific measures that will need to be implemented to bring the level of risk to a manageable level.

17.2 The Voss Industries, LLC supplier evaluation process is designed to measure supplier performance over time. The evaluation typically focuses on two performance areas:

17.2.1 Quality

17.2.2 Delivery

17.3 The evaluation is completed on a periodic basis by a cross-functional team, which typically consists of Voss plant purchasing and Quality personnel. Explanations of the two performance measures are as follows:

☐ Quality – Product Quality (QA%) is measured by the total quantity accepted / total quantity received within the measurement period. Quantity accepted is extracted from Receipt Disposition in Receipt Routing process. If a part number does not go through Receipt Routing or not rejected via Receipt Disposition, the QA% will not be accurately represented.

Quality = (Good pcs / All pcs)

☐ Quality – Adherence to Quality (AQ%) – is measured by the total quantity received in full /total PO quantity. A receipt is considered received in full if the receipt qty equals to or greater than the qty to receive.

Adherence to Quality = (total qty accepted / total qty received)

☐ Delivery – On-time delivery (OTD%) is measures by the total # of on-time receipts total # of receipts. A receipt is considered on time if received within 30 calendar days prior to or 3 days after Promised Delivery Date (NOTE: this will soon be changed to Original Promised Date).

On-Time Delivery = (Total # of OT Receipts / Total # of Receipts)

18. Supplier Escalation Process

18.1 The supplier escalation process is an increased level of activity with a supplier resulting from the supplier's continuing failure to perform in the areas of quality, delivery or cost. Escalation may also be initiated when there are noticeable trends that indicate that quality systems may be stressed or deteriorating at a supplier.

18.2 Supplier Quality Escalation is the methodology used by Voss personnel to define actions, resolve and improve overall supplier performance.

18.3 Supplier escalation definition, consequence and entrance criteria, refer to below link: Supplier escalation process

18.4 Escalation stages vary up to and include notification to the supplier's registrar of ongoing systemic quality issues or recognition that it may be in the best interests of Voss Industries, LLC and supplier to discontinue doing business.

19. Supplier Development and Recommended Best Practices Advanced Product Quality Planning and Prevention

19.1 When requested, the supplier shall provide Voss Industries, LLC with a product quality plan prior to or upon receipt of a purchase agreement.

19.2 For each stage of product / process design and development, product and process validation and verification, feedback, assessment, and corrective action, the product quality planning process shall include but not be limited to:

19.2.1 Advanced Product Quality Planning

19.2.2 Special characteristics

19.2.3 Feasibility reviews

19.2.4 Product safety

19.2.5 Process Failure Mode and Effects Analysis

19.2.6 Mistake / error proofing

19.2.7 Control Plan to cover three distinct phases: Prototype, Pre-launch, and Production

19.2.8 Supplier design integrity. Suppliers that use Voss-generated designs are not responsible for Design FMEA activities but those that are design responsible for Direct material are expected to use the DFMEA approach for robust product design. Supplier's may participate in DFMEA planning activities with Voss.

19.3 Voss requirements and reference to its technical specification shall be included (documented) in the planning of product manufacturing or processes as a component of the quality plan. Suppliers shall incorporate lessons learned from previous experiences, process knowledge or other sources into quality planning documentation.

19.4 Lesson learned are to be identified as such throughout the entire quality planning documentation process and available to Voss personnel upon request.

20. Goal Setting and Problem Resolution

20.1 Voss and its suppliers strive to achieve excellence in manufacturing and may review certain CAM units and other companies for examples of best practices.

20.2 Best practices are business principles, often identified through benchmarking, that produce better results. Suppliers are strongly encouraged to become familiar with these concepts and become effective practitioners of continual improvement.

20.3 Suppliers shall be able to determine areas that need correction and improvement:

20.3.1 Quality results

20.3.1.1 Supplier quality performance indicators - e.g. PPM, number of Discrepant Material Reports, etc.

20.3.2 Delivery

20.3.2.1 On time delivery, deviations in deliveries, etc.

20.3.3 Cost

20.3.3.1 Price reduction, cost of quality, etc.

20.3.4 Service and innovation

20.3.4.1 Continual improvement initiative, capacity planning, invoicing problems, responsiveness to change notices, etc.

20.4 The supplier should be able to relate all goals to Voss requirements and priorities.

20.5 It is very important to determine the scope of the issues or processes to be studied. The supplier should identify any gaps between current processes and the requirements, determine severity of the gaps, and prioritize its efforts to minimize and eliminate gaps, using a structured, and improvement methodology.

20.6 Voss Industries, LLC recognizes the 8D Process for problem solving. Especially in the resolution of a nonconforming (discrepant) product using Voss 8D Process spreadsheets.

20.7 It is a disciplined eight-step problem-solving process and report format. This technique is applicable also to continual improvement initiatives.

20.7.1 Use the team approach
Establish a key group of people with the process/product knowledge, allocate time, authority, and skill in the required technical disciplines to solve the problem and implement corrective actions. The group must have a designated champion.

20.7.2 Describe the problem
Specify the internal/external customer problem by identifying in quantifiable terms the who, what, when, where, why, how, how many (5W, 2H) for the problem.

20.7.3 Implement and verify interim (containment) actions
Define and implement containment actions to isolate the effect of the problem from any internal/external customer until corrective action is implemented. Verify the effectiveness of the containment action.

20.7.4 Define and verify root causes
Identify all potential causes, which could explain why the problem occurred. Isolate and verify the root cause by testing each potential cause against the problem description and test data. Identify alternative corrective actions to eliminate root cause.

20.7.5 Verify corrective actions
Quantitatively confirm that the selected corrective actions will resolve the problem for the customer and will not cause undesirable side effects. Define contingency actions, if necessary, based on risk assessment.

20.7.6 Implement permanent corrective actions
Define and implement the best permanent corrective actions. Choose on-going controls to ensure the root cause is eliminated. Monitor the long-term effects and implement contingency actions if necessary.

20.7.7 Prevent recurrence
Modify the management systems, operating systems, practices, and procedures to prevent recurrence of this and all similar problems.

20.7.8 Congratulate team / Read Across
Recognize the collective efforts of the team.

20.8 The supplier shall apply (Read Across) to similar processes, services or products the corrective action, and controls implemented, to eliminate the cause of a potential nonconformance in other areas.

21. Cost Recovery Process

21.1 Voss Industries, LLC, when appropriate, can recover costs associated with a supplier not meeting defined expectations. The issuance of an 8D NCT initiates the recovery process.

21.2 Voss Industries, LLC may recover additional costs using the Voss Industries, LLC Supplier Chargeback process or by direct negotiations with the supplier.

22. Mistake – Proofing

22.1 Voss Industries, LLC expectation is zero defects.

22.2 Achieving this level of quality requires capable processes combined with statistical process control techniques and the utilization of mistake-proofing methodology.

22.3 When potential causes of non-conformance are determined, the supplier shall employ solutions in the process to prevent or detect these non-conformances. These solutions shall be independent of operator's actions.

22.4 Solutions should be designed and installed integral to the process to prevent or detect a wrong setting of an element (e.g. the proper position or inverted), defects in the element, machine, or standard, thereby making further use impossible.

23. Statistical Techniques

23.1 Suppliers shall monitor process performance using the appropriate statistical techniques in accordance with the latest revision of AS9145 Statistical Process Control manual. The determination of need is based on the ability to control and verify the process capability and product characteristics. The use of quality planning tools such as Design Failure Mode and Effects Analysis (DFMEA) and/or Process Failure Mode and Effects Analysis (PFMEA) is essential. The supplier shall submit capability data for key characteristics when requested by Voss personnel.

23.2 The supplier is encouraged to use statistical techniques including:

23.2.1 Gage R&R study

23.2.2 Predictive maintenance

23.2.3 Defect analysis

23.2.4 Sampling and (C=0)

23.2.5 Process analysis and control charting methods

23.2.6 Regression analysis - analysis of variance

23.2.7 Other graphical methods

24. Continual Improvement Process

24.1 The supplier should promote and implement a continual improvement philosophy that provides a sustained approach to achieving competitively superior performance in those areas critical to business success by rigorously applying proven methodology and processes.

24.2 Voss recognizes that the Voss Quality Management System (VQMS) provides elements that provide a foundation for continual improvement.

24.3 VQMS Supplier Fundamentals provides a systematic approach that helps suppliers achieve flawless launches, zero defects and a higher level of customer satisfaction, enabling continual process improvement.

24.4 VQMS Supplier Fundamentals complements the supplier quality management system by applying tools to reduce errors, improve productivity and ensure closed-loop feedback.

24.5 Supplier VQMS elements include:

24.5.1 Quality System Certification

24.5.2 RPN Reduction Methodology

24.5.3 Standard Work

24.5.4 Standard Training

24.5.5 Layered Process Audits

24.5.6 Control of Non-conforming Material

24.5.7 Error Proofing Verification

24.5.8 Fast Response

24.6 These methods and processes shall be used throughout the Supplier organization to continually improve the quality, delivery, service, and cost of Supplier products to the benefit of its customers and associates.

24.7 The Supplier should perform the functions of leading importance to continual improvement by means of:

24.7.1 Continual improvement of own actions and distribution of resources.

24.7.2 Advising the employees of objectives and tasks

24.7.3 Voss Supplier Requirements Manual XX Revision

24.7.4 Providing an environment which encourages open communication.

24.7.5 Supporting every employee and any process improvement efforts covering all employees with a training system.

24.8 Additional recommended tools that assist in the implementation of the continual improvement process are:

24.8.1 Benchmarking

24.8.2 Brainstorming

24.8.3 Pareto Analysis

24.8.4 5-Why Analysis

24.8.5 Affinity Diagram

24.8.6 Involvement Worksheet

24.8.7 Cost Benefit Analysis

24.8.8 Cause and Effect Diagrams

24.8.9 Process Capability/Performance

24.8.10 Process Mapping

25. Environmental, Health and Safety

25.1 Suppliers are expected to adhere fully to all applicable governmental laws and regulations to protect the environment and ensure the health, safety and quality of life within their communities.

25.2 Suppliers must adhere to laws and regulations that apply to the health and safety of their workers.

25.3 No abnormal or harmful radioactivity levels shall be permitted in any material. Nor harmful elements or additives shall be permitted that are listed in any EU, ISO or local standards banning such materials at the time of shipment to Voss.

25.4 All materials used in product manufacture shall satisfy current government and safety constraints on restricted, toxic and hazardous materials.

25.5 Suppliers shall not supply chemicals detailed on the following list:

25.5.1 Controlled Substances List (Click here for list)

25.5.2 Suppliers are required to comply with appropriate restricted or reportable substance notification on PPAP submissions.

25.6 Suppliers are encouraged to define, implement and maintain environmental management systems such as ISO 14001:20xx

25.7 Goals of the Supplier environmental management program should be:

25.7.1 Commitment to compliance with all applicable laws, regulations and company policies relating to environmental protection, to prevent pollution at its source by minimizing emissions, effluents, and waste in the design, operation and maintenance of their facilities

25.7.2 Commitment to prevention including source reduction, recovery, reusing and recycling. Where feasible, eliminating negative environmental impacts associated with Suppliers operations and products.

25.7.3 Commitment to continual improvement to increase the general awareness of environmental requirements among associates, facilitating an understanding of the environmental implications of their day-to-day responsibilities. Developing the capabilities and support mechanism necessary to achieve the Suppliers environmental policy, objectives and targets.

26. Supplier Quality Assurance Aerospace Provisions
Sample Plan Requirements

26.1 Sampling inspection must be in accordance with the latest revision of ANSI/ASQC Z1.4, “Sampling Procedures and Tables for Inspection by Attributes”.

26.2 Acceptance criteria shall be defined by the supplier and, where required, approved by Voss. For all data sampling, the acceptance level shall be zero defects C=0.

27. Inspection and Test Report

27.1 The seller shall maintain on file and submit upon request a report for the delivered end items or assemblies with the following information included as a minimum: part number, revision letter, part name, purchase order number, lot number, lot quantity, inspection sample size, characteristics/ parameters inspected and/or tested, inspection test data, quantity passed/rejected by characteristic, date of inspection/test, and signature/stamp of seller's inspection / test representative.

28. Certificate of Conformance (C of C)

28.1 Seller shall prepare and submit a certification of conformance to Voss for each shipment made under a Purchase Order (or each designated item if specific items are designated in the body of the Purchase Order.) The certification shall be signed by the Seller’s Responsible Quality Representative as evidence that the deliverable product conforms to stated requirements: i.e., Material Certifications, Process Requirements, Supplier Qualification Status, Hardware Qualification, etc.

28.2 Completion of the Certificate shall not modify or limit any representations, warranties or commitments made or in any way affect the obligation of seller to perform strictly in accordance with the provisions of the Purchase Order.

28.3 The following information shall be provided as a minimum: seller's name, quantity of shipment, lot numbers/date codes/serial numbers if applicable, Voss part number and drawing revision, country in which the part was manufactured, Voss purchase order number and revision, and a statement that all other applicable requirements as called out by the purchase order, drawings or specifications have been met.

29. First Article Inspection

29.1 On the first initial production and the first article produced, subsequent to design change incorporation, the seller shall perform and document a comprehensive inspection and test of that article to assure articles' conformance with all drawing and specification requirements. When multi-cavity molds/dies are used, First Article Inspection is required for each cavity.

29.2 A new First Article Inspection shall be required if:

29.2.1 A significant design or process change has been made that affects the original First Article and is applicable only to those characteristics affected by the change.

29.2.2 The item has not been produced for a period of one year.

29.2.3 A change in manufacturing location.

29.3 The seller's report shall provide, as a minimum: purchase order number, part number, revision level, part name, seller's name, drawing requirements (including tolerances), method used to obtain results and actual results of each measurement. Part(s) used for the inspection shall be identified when shipped to Voss as "First Article Inspection Sample". First Article data, regardless of format, shall accompany the first shipment to be delivered.

30. Traceability

30.1 The seller shall establish and maintain a system for traceability of supplies to their source (including sub tier suppliers) by lot, batch, heat, melt and part. Records of traceability shall be maintained by the supplier as part of this objective evidence of quality control and acceptability, and such records shall be made available to representatives of Voss. See section 1.13 for additional details.

31. Documentation Retention

31.1 All aerospace suppliers, unless otherwise specified by the purchase order, require indefinite record retention. All other requirements of the modified notes(s) are still applicable. Compliance with documentation required by the drawing or specification is required.

32. Change Approval

32.1 Upon approval by Voss as a qualified source, through first article or first lot acceptance, the seller shall not make any changes in design, materials or processes which may affect the acceptability (dimensional, visually, functionally, durability, etc.) of the items to be delivered to Voss without prior notification and approval of Voss. For the purpose of this clause, a process is defined as any procedure, system or practice used during the manufacture or production of a deliverable item (i.e. machining, de-burring, heat treating, soldering, cleaning, finishing, etc.).

32.2 Examples of process changes that require customer notification and approval are as follows:

31.2.1 Change in inspection and/or testing methods.

32.2.2 Changes in product or processing of components used in the manufacture of the end item including components manufactured by the seller or a sub-tier supplier.

32.2.3 Change of sub-tier suppliers.

32.2.4 Production from new or modified tools, dies, molds including replacements (excluding perishable tools).

32.2.5 A change in manufacturing location.

32.2.6 A special process change.

33. MRB Authority

33.1 Unless otherwise specified in the purchase order, the seller and/or any of their sub-tier suppliers do not have authority to process “USE-AS-IS”, “REPAIR”, “STANDARD REPAIR PROCEDURES (SRPS)” or “NON-SRPS” via their internal material review board (MRB).

33.2 These dispositions, as well as deviations and request for waivers, requiring MRB disposition shall be submitted to Voss for approval (this does not include rework or scrap). The seller shall contact Voss purchasing to obtain a waiver form.

34. Government Property

34.1 In furtherance of the performance of a purchase order, Voss may deliver Government Property to Supplier. "Government Property" is property owned by or leased to the U.S. Government or acquired by the U.S. Government and placed in the possession of a supplier.

34.2 Supplier shall comply with the requirements of FAR 52.245-1 with respect to any Government Property delivered to Supplier in connection with a Voss purchase order. Without limiting the foregoing, Supplier shall not remove, rework, repair or scrap Government Property without the prior written approval of the Voss Contract Administrator.

35. Right of Access

35.1 Voss and/or its customers may conduct an audit of Supplier's and/or Supplier's sub tier supplier's facility, including without limitation all manufacturing processes and documentation used in the manufacturing of products under the purchase order, to determine compliance with the requirements of the purchase order.

36. DFARS 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals (supersedes 252.225-7014)

36.1 Pursuant to contracts with the U.S. Government and U.S. Government contractors, Voss is subject to DFARS 252.225-7009, which places certain restrictions on the acquisition of articles containing specialty metals. This regulation requires that specialty metals be melted or produced in the United States, its outlying areas, or a qualifying country. To the extent that articles supplied by Supplier contain specialty metals, as defined in paragraph (a) below, the articles must comply with the requirements of DFARS 252.225-7009. Additionally, supplier must insert this clause in its contracts with vendors supplying articles in support of a Voss purchase order.

37. Nadcap Required for Special Processes

37.1 Special Processes are defined as Heat Treat, Welding, Plating, Passivation, Coatings, Non-Destructive Testing, and Eddy Current. The use of a Nadcap certified supplier is required when special processes are performed for Voss. Voss must be notified if the vendor loses Nadcap accreditation or if there are findings as a result of an audit conducted by Nadcap/PRI.

38. Foreign Object Damage (FOD)

38.1 Supplier must have a program in place to protect product from damage during production and handling from foreign debris.

39. Government Rated Orders (DPAS)

39.1 Voss receives rated orders from the U.S. Government and U.S. Government contractors for national defense use. In turn, Voss is required to flow priority ratings to suppliers of items needed to fulfill these rated orders. Likewise, suppliers receiving rated orders from Voss must comply with the requirements of 15 CFR 700 and give due priority to rated orders to meet required delivery dates.

40. Compliance with International Traffic in Arms Regulations (ITAR)

40.1 Terms in quotations below in this Section 3.16 are as defined in the Arms Export Control Act ("AECA" at 22 U.S.C. 2778) and the International Traffic in Arms Regulations ("ITAR" at 22 CFR 120-130).

40.2 If Supplier is providing to, or on behalf of, Voss, a "defense article" or a "defense service" then the following apply:

40.2.1 Supplier shall be registered with the Directorate of Defense Trade Controls ("DDTC"), U.S. Department of State

40.2.2 Supplier shall not permit any "Foreign Person" (not a U.S. citizen or permanent resident alien), access to any technical data relating to the defense article or defense service

40.2.3 Supplier shall not "Export" any "defense article" or "defense service" unless Supplier has first obtained a license from DDTC and provided prior notification to Voss

40.2.4 Supplier shall otherwise comply with the ITAR and AECA

40.2.5 Supplier shall indemnify and hold Voss harmless from and against any cost or other liabilities arising out of Supplier's failure to perform the above.

41. Non-Disclosure of Proprietary Information

41.1 Voss' Non-Disclosure Agreement shall be reviewed and signed by all suppliers having access to material that is considered intellectual property of Voss. Compliance to Voss' Terms and Conditions apply.

QF 343A

Change Request

Requisitioner: Jim Phillips
Title: Voss Supplier Quality Manual
Document: VSQM
Revision: 0
Owner: Quality Manager

Training Required		
		Yes
	X	No

From: _____

To: _____

Reason: Original Issue

Quality Engineer	_____	Date	_____
Manufacturing	_____	Date	_____
Engineering	_____	Date	_____
Department	_____	Date	_____
Document Control	_____	Released	_____