

KAMAN

Air Vehicles



Supplier Quality Requirements Manual (SQRM)



Kaman SH2-G

Kaman KMAX



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Notice:

The SQRM Manual is a controlled document in electronic format. If a hard copy version is utilized, it is considered to be a reference tool. It is important to verify the currency of a hard copy by viewing the online electronic SQRM Manual on the Kaman Air Vehicles Web Site. It is possible that an unincorporated change may be initiated during the current SQRM revision life cycle. If/when this were to occur, the change will be posted to the Kaman Air Vehicle Web Site under SQRM Quality Alert Section. Thus, it is important to routinely check for any such changes. Un-incorporated changes will be incorporated at the next general SQRM Manual Revision.

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1.0 Section One – General Requirements

1.1 Preface

This manual contains requirements that are applicable when invoked by Kaman Aerospace Purchase Orders. Requirements include the mandatory use of this manual for Contract Review and Quality Planning activities. The SQRM is controlled in Electronic format as presented on the Kaman Supplier Web page noted below. Paper copies, and electronic copies downloaded and saved to a local hard drive are Uncontrolled and suppliers shall visit the manual online to check for changes that may be identified in the electronic Quality Alert Unincorporated change page at:

<https://www.kaman.com/aerosystems/solutions/air-vehicles-mro>

1.2 Applicability

The Kaman Purchase Order, along with Vendor Instructions, are the official binding contract in the order of precedence described in the Terms & Conditions of Purchase. If conflicts between flow down documents and the Purchase Order are detected, the Supplier shall immediately notify the Kaman Buyer.

Verbal and/or email authorizations are not permitted.

Handwritten, lined-out or initialed changes to purchase orders or Vendor Instructions are not allowed. Handwritten, lined-out or initialed changes to engineering drawings/specification or technical data are not allowed, except where:

- Provided for by Kaman procedure, **and**
- Signed by an authorized Kaman agent.

1.2.1 Subcontracting Policy

Kaman suppliers shall ensure flow down to, and compliance with, all applicable Purchase Order and Engineering requirements to their sub-tier suppliers, including approved Special Process providers. For Kaman designed hardware, Supplier/subcontractor Purchase Orders to special processing providers must contain the following as a minimum:

- Reference to the applicable Kaman CAGE Code, or request for material.
- Applicable SQRM or Vendor Instruction elements.
- Kaman part number and nomenclature of subject part.
- Special Processes to be performed and the applicable specification(s), revision letter(s) including the type, class, or methods and testing that are required by drawing or specification. Any special drawing instructions/notes (as applicable) such as; inspection class, inspection grade and inspection acceptance requirements, Engineering changes, or special handling requirements not otherwise stated, etc.
- KSD 0408 Fixed / Frozen process revision level and approval date (Form K922). If not provided on the Kaman purchase order, contact the Kaman buyer for proper information to flow down.

1.3 Quality Requirements

The core quality requirement is for all features to comply to specifications 100% for all parts produced and shipped. If the process is not capable of meeting

100% yield it is Kaman's expectation that all suppliers pursue measurable continuous quality and delivery improvements.

1.4 Quality Alerts

Quality Alerts are issued as a means of notifying suppliers of potential problems, or clarifying policies, procedures, work instructions, or drawings or changes. Alerts are usually issued for an interim period only. Open/active Supplier applicable Quality Alerts are located on the Kaman Air Vehicles Supplier Web site at: <https://www.kaman.com/aerosystems/solutions/air-vehicles-mro> (QPSL and KPS Quality Alerts are noted within each applicable folder.)

1.5 Audit Rights Reserved / Right of Entry

Kaman, Kaman Partnerships, customers and Regulatory Authorities reserve the right to perform audits and/or inspections at the Supplier's and/or supplier's subcontractor's facility on the manufactured and/or repaired parts. Supplier material, records, process and routing sheets, manufacturing, and test and inspection facilities are subject to review by Kaman and/or Kaman customers (Commercial, designated Government representatives, Regulatory authorities). When on-site verification of Contract / Purchase order conformance is required, the supplier shall provide the equipment, facilities, and personnel necessary for the Kaman representatives to verify compliance.

1.6 Changes in Process, Design, Quality System, Facilities, Management or Ownership

1.6.1 Suppliers shall comply with all contractual requirements, (including but not necessarily limited to Long Term Contract and general purchase order provisions agreed between the parties), for notification and approval of changes in design, material, manufacturing location, manufacturing equipment, production processes, and any other process related to the Goods in place as of the purchase order issuance date.

1.6.2 In addition to the requirements imposed by Sec 1.6.1, Suppliers shall immediately notify the Kaman Buyer and Kaman Quality Assurance Director of any changes in quality leadership, scope, name, address of Quality Management System registrations, or controlled processes certification status, including suspensions or disapprovals. Suppliers shall also notify the above parties in the event of complete company closure with no transition plan managed by its corporate office.

1.6.3 Supplier change notifications shall be addressed by completing required fields on Form QF 4.1.857 (Supplier Web site).

1.7 Configuration Management

The Supplier shall ensure that the current configuration of all drawings, specifications, and instructions required by the Contract / Purchase Order (as well as authorized changes) are used for manufacturing, inspecting, and testing. Current revision status of QPSL and KPS listings are located on the Kaman Air Vehicles Web Page. Actual documents (to include configuration); contact the Kaman buyer.

1.8 Notification of Design and Manufacturing Changes

Suppliers with design authority are required to notify Kaman promptly, in writing, of any changes of fit, form or function, or safety of product and obtain approval prior

to manufacture and delivery. Supplier shall submit proposed changes to the Buyer including but not limited to: process – material – design – software.

1.9 Quality Records

1.9.1 Access to Records

Kaman reserves the right to access records at the PO holder, or its sub-tiers involved in the manufacture of Kaman product. The Supplier shall make the records available within 48 hours, or 2 business days, of the request for access.

1.9.2 Records Storage

Records must be stored in an area which meets all local Fire and Life Safety Codes that prevents loss, damage or deterioration. All data stored by electronic means shall be secure with back- up procedures, and audited to verify the integrity of the data.

1.9.3 Disposition of Records

The supplier shall contact the Kaman Buyer for disposition of records upon termination of business activity.

1.9.4 Corrections

Changes or corrections to records, regardless of the media, shall be made as follows: draw a single line through the old data, enter the correct data, date, and apply stamp or initials or signature of individual making the correction. No erasures, covering, or "white-out" allowed.

1.9.5 Record Retention

Records of product, material manufacture, test, inspection (including radiographic film), calibration and acceptance/certification, are considered quality records and shall be retained as follows:

Records in Support of	Minimum Retention Period¹
Radiographic Film, Digitized Film or Digital Radiographs	10 years
Non-traceable, non-serialized parts	10 years
Traceable parts as identified on the Kaman drawing or purchase order	10 Years
Serialized parts as identified on the Kaman drawing or purchase order	10 Years
Critical parts as identified on the Kaman drawing	10 Years
Distributor standard off the shelf product	10 years

1. MINIMUM retention periods, beginning with the date the order was completed. In the case where a specification, contract or purchase order requires a greater retention period, the more stringent requirement will apply. Refer to Kaman Terms and Conditions.
2. Quality records shall be retained as defined within the AS9100 Standard, unless otherwise noted in Kaman Terms and Conditions.

1.10 Prohibited Practices

The following acts or practices are prohibited:

- Unauthorized Repair - Repairs (by welding, brazing, soldering, or the use of adhesives) of parts damaged or found faulty in the fabrication process; repairing holes in castings, forgings or other materials by plugging or bushing without authorization from Kaman Air Vehicles.
- Unauthorized Processing - Addition, revision, or deletion of thermal, chemical, or electrochemical processes in manufacturing when processes are subject to specification control by Kaman Air Vehicles.
- Improper Material Submittal - Submission of material having known defects/problems to Kaman without notification.
- Improper Material Re-submittal - Resubmission of material to Kaman without material being clearly identified as resubmitted material.
- Unauthorized Material and Information Transfer – No supplier shall buy, sell, trade, or transfer Kaman owned/supplied drawings, data, material, parts, devices, assemblies or end equipment for purposes other than the performance of Kaman business, without prior written approval.
- Reclaimed Material – No supplier shall use reclaimed material without prior written approval from the Buyer.

1.11 General Quality System Requirements

Suppliers and supplier sub-tiers providing product, are responsible for maintaining Quality Systems that are compliant to applicable Kaman Quality System Requirements. Suppliers shall be third-party registered and receive periodic system audits, or be subject to periodic compliance audits by Kaman. Kaman's preferred Quality Systems levels are as follows:

- **Manufacturing with Design Authority:** AS/EN/JISQ 9100; design must be included in scope of registration, and suppliers may not exclude design portions of the Standard.
- **Manufacturing without Design Authority / Special Processes:** AS/EN/JISQ 9100
- **Repair and Overhaul:** National Aviation Authority (NAA) Certification (local and/or international regulatory agency) and/or AS9100 or AS9110
- **Special Processors (non-manufacturing):** AS9003 or satisfactory audit to NADCAP (AC7004)
- **Materials Laboratories and NDT Laboratories:** ISO 17025, or AS9003, or satisfactory audit to NADCAP (AC7004)
- **Distribution and Brokers:** AS/EN/JISQ 9120
- **Calibration Laboratories:** ISO 17025
- **Software Suppliers:** AS/EN/JISQ 9100 and AS9115

Alternate Quality System standards which do not meet the above requirements must be approved by the Supplier Quality Director (or designee) of Kaman. The supplier shall provide evidence of a certificate of registration from an organization accredited by a member of international accreditation forum (IAF) to the industry

standard listed above, or successfully pass a compliance audit conducted by Kaman or Kaman's approved designee.

1.12 Obsolescence

For component parts (COTS) or Kaman designed parts or assemblies, the Supplier shall notify the Kaman Buyer regarding part or material obsolescence as soon as the information becomes available, with an expectation to provide notification at least six months prior to the last date an order will be accepted. Kaman requires sub-tier/subcontract suppliers to manage obsolescence on the assemblies where they own the design.

For products where the Supplier has design responsibility, the Supplier shall develop and implement a Part Obsolescence Management Process. This Process shall include the following elements at a minimum:

- Annual assessment of Product Bill of Material(s) (BOMs) to identify any obsolescence that will potentially impact delivery of product to Kaman.
- Proactive identification and detection of part, material or manufacturing/test equipment obsolescence issues
- Action Plan to resolve each obsolescence issue, including forecast analysis and product support decision(s) (i.e. Life Time Buy, redesign or product sunset)
- Life Time Buy inventory management plan to ensure long term ability to produce product
- Advanced notification to the Kaman buyer of any potential interruption in the ability to meet Kaman forecasted demand due to an obsolescence issue.

1.13 Kaman-Consigned Material

1.13.1 The Supplier shall not return unused consigned material without authorization from the Kaman

1.13.2 Nonconforming Consigned Material - If authorized for return, the material shall be labeled "Return of Consigned Materials, Do Not Route to Stores" on the outside of the shipping container. The Supplier shall identify part number and dash number, and the reason for return on the packing slip.

1.14 Business Continuity Management

1.14.1 The Supplier shall ensure their Company has robust Business Continuity Management (BCM) processes in place that include disaster recovery and preparedness

1.14.2 The Supplier shall document a Business Continuity Plan which details what the Company would do in the event that key People, Processes or Technology was to become unavailable. This Business Continuity Plan shall be applicable, including but not limited to, natural disasters, labor disputes, lockouts, evictions, power or systems failures, hazardous spills, fire, floods, explosions, sabotage, riots, war or other civil disturbances, and voluntary or involuntary compliance with any laws, regulations, or requirements of any government authorities.

1.14.3 The supplier shall ensure their employees are aware of their contributions to; Product or Service conformity, Product Safety and, the importance of Ethical Behavior in the work place. The supplier should provide this guidance and acknowledgement as well within their own QMS documentation.

1.14.4 Sub-Tiers - The Supplier's BCM Plan should also include planned actions to mitigate any disruptions in supply from critical sub-tiers.

1.15 Crisis Management

1.15.1 Notification - The Supplier must use best efforts to notify Kaman Commodity Manager or Buyer within 24 hours if they experience an incident, including but not limited to those listed in 1.16.1 above that may impact their ability to make their scheduled shipments to Kaman.

1.15.1.1 Sub-Tiers - Supplier must notify Kaman Commodity Manager or Buyer within 24hrs of receiving notification that any of their critical sub-tiers have experienced an incident, including but not limited to those listed in 1.14.1 above, that may impact their ability to provide materials or components to the Supplier that are required in the manufacture or assembly of Kaman product.

1.15.2 Disaster Recovery - In the event of a supply interruption, Kaman may engage the Supplier to collaborate on recovery. Supplier is expected to fully support any such engagement until the delivery schedule to Kaman is recovered.

2.0 Section Two – Safety Critical Component Items

2.1 The requirements of this section shall be enforced whenever KSD 0408 is referenced on the Kaman drawing, Purchase Order (PO) or Vendor Instruction (VI).

2.2 Following initial Kaman qualification, the supplier shall not change manufacturing method, sequence, equipment or site location of a qualified items without Kaman Approval (see K927 form).

2.3 The supplier shall define a system for controlling processes, process changes and it shall address:

- Responsibility and methods for identifying controlled processes.
- The method used to obtain Kaman approval of process data including manufacturing sequence.
- Coordinating internal approval of process change (controlled and uncontrolled) and
- Methods to assure changes are not introduced in the manufacturing cycle without formal approval.

2.4 The supplier shall maintain records of original Kaman approval of process data and approval of changes to controlled processes. Process changes not identified as controlled must be documented for the supplier's record, but do not require Kaman approval.

2.5 The supplier shall prepare and maintain routing sheets for the step by step sequence of all processes used in producing the component.

- The supplier shall identify any processes deemed proprietary and obtain agreement from Kaman prior to manufacture.

- If only certain portions of such a process are considered controlled, they may be identified instead of the entire operation.

2.6 The supplier shall submit to Kaman Purchasing:

- Routing sheets with controlled operations identified,
- Process sheets for each operation identified as controlled and
- A completed Controlled Process List (CPL), K922. A copy of this form is located on the Kaman Web Supplier page.

2.7 Kaman acceptance of the proposed processing and any requirements for additional data or changes shall be relayed to the supplier via the CPL.

- The Kaman VI shall define any specific laboratory analyses required from the supplier or the need for submitting lab samples. With Kaman approval, the supplier may use samples taken from nonconforming material as long as the non-conformances do not alter results.

2.8 The supplier shall complete a First Article Inspection report (FAI) as instructed by this manual.

2.9 The supplier shall obtain Kaman approval, via Kaman Purchasing, of any subsequent change in controlled process sequence, controlled process or supplier of controlled processes.

- A Controlled Process Change Request (CPCR), K927, shall be submitted to Kaman before introducing any of the above. A copy of this form will be found on the Kaman Web Supplier page. When submitting process change requests, the supplier shall identify the old and new processing method in sufficient detail to permit evaluation of the proposed changes.
- Kaman shall determine the acceptability of the proposed changes and notify the supplier of this decision on the K927. A copy of the approved change must be filed with the processing data discussed previously.

3.0 Section 3 - Source Controlled Items/Drawings

3.1 When a supplier receives a drawing identified as “Source Controlled Drawing”, the following requirements apply:

- The supplier shall provide one (1) reproducible and one (1) reproduced copy of each assembly, installation and detail drawing, as well as specifications and standards.
- The drawing(s) shall define:
 - The item and its components as necessary for the fabrication, assembly and maintenance thereof
 - Include tolerances and,
 - Actual or calculated weight information.
- This drawing shall conform to ASME Y14.100 and shall be provided to and approved by Kaman prior to or concurrent with the delivery of the first production article along with any applicable technical data.

- Without prior Kaman approval, the supplier shall not use any substitute materials in the product or make any changes to his/her product that will affect interchangeability, either of the part as a whole or of its components, or the performance of the unit.
- The supplier shall submit all revisions to drawings, specifications, standards and other documents to Kaman prior to, or concurrent with, the delivery of the first article in which the changes were incorporated. These changes require Kaman approval. Such documents shall be kept up-to-date by the supplier until delivery of the last article or spare part to Kaman.
- The supplier shall ensure that all name or manufacturing address changes are reported to Kaman immediately. Product release authority may be withheld pending correction of this information on the drawing and related documentation.
- The supplier shall utilize approved subcontract suppliers that are noted in their approved supplier listing. Suppliers approved by Kaman may also be used. If any supplier is specifically named as part of any specification requirement, that supplier must be used.
- It is the supplier's responsibility to maintain correct configuration control of assemblies and their detail parts.

4.0 Section Four – First Article Inspection Reports/Supplier Inspection Plans

4.1 First Article Inspection Reports – Scope

The Supplier holding the Kaman Purchase Order is responsible for assuring completion of the First Article Inspection Report (FAIR) per AS9102 (latest Revision) and this SQRM for all Kaman designed characteristics generated by the supplier or their sub-tiers. The supplier shall use forms referenced in AS9102 or, supplier generated forms that meet all form requirements of the AS9102 forms. FAI requirement applies to each bill of material or parts list item with a Kaman part number that is invoked in the product design, including lower level Kaman detailed drawings identified on top level assembly drawing(s), and each cavity or tool serial number for products whose dimensions are controlled by the tool. FAIRs may be required on Customer or Supplier Drawings that are non-Kaman designs or CAGE codes if specified on the Purchase Order.

The following items are exempt from the requirements of this section requirements:

- Bar and sheet stock.
- Unaltered material consigned by or purchased from Kaman Aerospace or its authorized distributors.
- Discrepant hardware either returned to the manufacturing supplier or sent to an alternate supplier and dispositioned rework or repair.
- Nonfunctional hardware (protective covers, shipping hardware, etc.), unless otherwise specified.
- Off the shelf sheet stock, unless post-milled processed.

4.2 FAIR interval requirements

- Kaman reserves the right to exercise the requirement of additional and/or periodic/repeat FAI requirement on a part number basis to assure continued product conformity; to include the right to validate multiple production lots as needed to determine overall process capability.
- The below represents FAIR Event Tables in accordance with Kaman and AS9102 requirements:

Table 1

Event Description	FAIR type due	Note
New base part number or first time supplied by source	FULL	
New dash number(s) issued and manufactured. See note *	FULL	Consult Kaman to request partial FAIR per AS9102 If Kaman approved Full / Baseline FAIR on other dash number(s)
Current FAIR conditionally accepted based on Deviation, VRV, MRB or Manufacturing Revision authorizing rework or requirement modification	PARTIAL FAIR due on next lot manufactured or expiration of deviation / waiver	
A change in process, material, tooling, or inspection method that can potentially affect form, fit, or function. This includes changes in Approved Sources For Controlled Processes since last approved Kaman FAI.	PARTIAL	KSD 0408 may require further requirements
Change Special Process source since last Kaman approved First Article.	PARTIAL	KSD 0408 may require further requirements
A change in manufacturing source or location of manufacturing equipment, including tooling transferred from another Supplier or division of the same supplier	FULL	Consult Kaman to request partial FAIR per AS9102
Two year (2) lapse in production *	FULL	Reference Table 1 Notes 1, 2, 3
Casting tool reaches Table 2 usage levels	FULL	

Notes Table 1):

- 1) The 1st tier supplier holding the Kaman Purchase Order shall have the responsibility of assuring hardware manufactured internally and/or procured from their suppliers are maintained and are in compliance with the Two Year (2) lapse in production requirement in accordance with AS9102. Evidence of continued manufacturing may be requested by Kaman either at the 1st tier Purchase Order Holders facility or at their sub-tier suppliers as applicable.
- 2) For Stock / Inventory hardware that was manufactured and placed in inventory/stock at a supplier BEFORE the two year lapse in production (and which was covered by a Kaman-approved FAIR at time of manufacture), a full FAIR with Kaman approval will be required for the next lot manufactured.
- 3) Unless otherwise specified by the Kaman Supplier Quality Department or by specific purchase order text, a 2-year lapse in casting production will require the casting supplier to create a casting level partial FAIR. AS9102 forms 1 and 2 shall be fully

complete forms with all supporting certifications attached—the same as if the supplier were executing a new FAIR. Form 3 needs to report only design characteristics that are not a direct product of the casting tool/pattern. Some examples are: dimensions which are straightened, added part marking, machining or targeting, gating removal, welding, or other features which were altered in the casting manufacturer’s process. The partial casting FAIR Package shall be subject to approval by Kaman or authorized agent.

Part Type / Process / Pattern	Frequency of FAIR based on number of pieces <u>produced</u> by tool since date of last full FAIR
Solid Blades / Vanes / Investment	50,000
Cored Blades / Investment	25,000
Die Casting	25,000
Nozzle Segment / Investment	10,000
Small Structure / Investment (NO dim/dia. OVER 19.999 inches)	10,000
Wheels / Investment	5,000
360 Nozzles / Investment	5,000
Large Structure / Investment (ANY dim/dia. 20.000 inches or over)	2,000
Metal / Sand	1,000
P-Mold	1,000
Plastic / Sand <u>Note:</u> Tooling made from combined materials default to plastic frequency.	800
Wood / Sand	350

4) Additional Casting Requirements Frequency of FAIR is based on the number of production pieces since the last approved FAIR. The Supplier shall assure that all Event Table 1 conditions have been satisfied prior to usage of the Casting Tool Life Management Table below. Frequencies are, at a minimum, tracked by the Supplier/Manufacturer and do not relieve the Supplier of the responsibility/liability to meet the drawing and/or authorized deviation. The Supplier is required to establish and maintain written procedures to assure compliance with these frequencies.

- When a FAIR is required per Tables 1 or 2, a Kaman representative or authorized Delegate is required to review FAIRs prior to hardware release. First Article Planning is critical and, the Supplier shall notify a Kaman Supplier Quality at least two (2) weeks prior to the anticipated completion of the FAIR for effective FAI scheduling. Suppliers should also include FAIR planning and completion time as part of their delivery schedule of Kaman shipments.
- Documentation and Records shall be retained by the supplier in accordance with AS9100, or as prescribed in section one.

4.3 Supplier Inspection requirements

- Suppliers shall have a verifiable methodology for controlling and recording inspection of all design characteristics, as well as a method of validating received components from sub-tiers. Sampling plans should follow industry standards as outlined in AS13002.
- A Detail Inspection Plan (DIP) documents the inspection plan for a part to ensure that all engineering drawing characteristics and notes are inspected and/or controlled by appropriate methods. DIPs shall be documented in a manner that meets the intent

of the AS9102 FAIR form, or supplier generated forms that capture all characteristics inspected.

- A DIP may be used as a record, or may reference supporting records such as routings, receiving or in-process inspection sheets, final test/inspection reports, or statistical data as long as the DIP and/or supporting records is complete, accurate and reproducible.
- DIPs which contain characteristics which are “tool controlled” (castings, molded parts, etc.) may contain less than 100% of the Kaman drawing characteristics provided the following conditions are met:
 - A number of characteristics shall be selected as “control” dimensions. Control dimensions shall be of quantity and type such that inspection of these characteristics will give the supplier enough information (based on tool construction, assembly, process variation, and drawing tolerance) to assure that all other drawing characteristics are in conformance.
 - The supplier shall maintain a plan which clearly documents the control dimensions for all design characteristics.

5.0 Section Five – Non-Conforming Material

- 5.1** Suppliers shall establish and maintain procedures for the identification and segregation of nonconforming manufactured, procured, contracted and/or subcontracted supplies/product.
- 5.2** In no case, shall the supplier accept or repair and, in turn, ship product that contains nonconforming characteristics which dimensionally, functionally or metallurgical violation of Kaman prescribed parameters (e.g., Kaman or customer drawings and/or specifications) as described by the PO.
- Authorization for disposition of nonconforming product shall be requested through submission of the Vendor Request for Variation (VRV) through Kaman Purchasing to the Material Review Board (MRB). Acceptance of nonconforming material is the sole prerogative of Kaman or its customer. Refer to Kaman Web Supplier Page for Vendor Request for Variation form K198.
- 5.3** Suppliers of proprietary design items are not authorized to conduct material review action on any nonconformance that will result in a departure from the requirements of the Kaman or customer “source control drawing” or specification. Such nonconformance items must have review and disposition by Kaman MRB.
- 5.4** If a Kaman supplier discovers that discrepant material has been delivered, the supplier must promptly notify Kaman in accordance with contractual requirements. The supplier shall provide a written notification of nonconformities that may have affected parts or services delivered to Kaman within 24 hours of the realization of the escapement. The supplier shall notify Kaman’s Buyer of the discrepant part via Form K2193, Supplier Quality Escape. The supplier is required to provide a clear and concise description of the discrepancy vs the expected requirements which includes as a minimum: part number, purchase order number, quantity, containment activity and the date the parts were delivered to Kaman; to include any affected historical shipments. The buyer will notify

Kaman's quality leadership to segregate parts for inspection immediately. As applicable, quality leadership will write a SCAR (Supplier Corrective Action Request) against the supplier and determine necessary actions. A formal written corrective action plan is required from the supplier within 30 days of notification of escape.

- 5.5** Parts that can be reworked to conform to requirements shall be retained by the supplier for rework. Reworked parts shall be re-inspected by the supplier and resubmitted to the Kaman source inspector, if applicable, prior to shipment.
- 5.6** Parts that cannot be reworked to drawing requirements shall be replaced by the supplier or submitted to Kaman MRB disposition on a VRV. The supplier shall submit any discrepant part requested by Kaman MRB for evaluation or disposition.
- 5.7** A separate VRV form is required for each part number or dash number. Each discrepant characteristic shall be listed as a separate item on the VRV form. For example, if the nonconforming part has two different discrepant dimensions, one would be listed as item A and the other, item B.
- The original VRV will not be returned to the supplier with a disposition. The Kaman buyer must transfer the VRV information into the Kaman automated nonconformance reporting system. This system will assign a new nine digit alpha-numeric identification to the nonconformance and, a new form will be dispositioned and issued to the supplier.
 - Upon receipt of the dispositioned form, the supplier shall take action, as directed by Kaman Engineering disposition, to complete the part (s). The new alpha-numeric number must be marked on the part (s) and recorded on the packing slip, which will accompany the shipment. When allowed, bag and tag identification may be substituted for part marking.
 - Discrepant detail parts, which through VRV action, are to be incorporated into an assembly, and shall not be acceptable for use until the VRV number is marked adjacent to the detail and assembly part number.
- 5.8** If repairs have been performed, a copy of the VRV shall be signed by the supplier's inspection or by Kaman source inspection to certify the accomplishment of work in accordance with the MRB disposition.
- 5.9** When the VRV requires "rework" or "repair", the detail must be further identified by a supplier rejections tag that shall be securely attached to the detail prior to shipment. In cases where progress is recorded in logs, the tag is to be attached to the log. The VRV number must be entered in the log upon receipt. After complying with the requirements, the supplier shall insert a copy of the VRV in the log to accompany the shipment of material/part (s) to Kaman.
- 5.10** When "rework" or "repair" is authorized by a VRV for detail parts not requiring logs, a copy of the VRV containing the information specified must accompany each shipment.
- 5.11** In accordance with AS9100 the supplier shall initiate and take prompt action to determine cause (s) and to correct conditions which have resulted or could result in nonconforming supplies or services. This includes initiating and confirming corrective action with any of his/her procurement sources when applicable.

- 5.12** When Kaman identifies a discrepant supplier part or material either upon receipt or later on in the Kaman manufacturing process, Kaman Quality shall record the information on a nonconformance report (NCR).
- A copy of the NCR shall be included in all return shipments of rejected parts or material.
 - If corrective action is required, the Kaman buyer will issue the request to the supplier.
 - Kaman Quality may issue a SCAR to a supplier when conditions warrant corrective action based on nonconforming product, unacceptable supplier rating and/or trend analysis. Suppliers receiving a CAR must respond within thirty (30) Calendar days from the CAR initiation date.

- 5.13** Supplier Rating - Kaman monitors supplier performance through a supplier performance rating. The supplier rating is a ratio based on part accepted versus parts inspected.
- The supplier rating is automatically calculated monthly, quarterly and annually for each supplier.
 - No follow-up action is required for suppliers who maintain a quarterly and annual performance rating above the current minimum performance goal (95%).
 - Kaman Quality conducts an analysis of all suppliers whose rating falls below the minimum requirement. When a supplier’s rating falls below 95% and the analysis determines a need for corrective action, Kaman Quality shall provide a CAR to the supplier via Kaman Purchasing.
 - Active suppliers with four consecutive quarterly ratings of less than the minimum requirement shall not be considered for future procurement without written authorization from the head of Kaman Quality Manager

6.0 Section Six – Certification Requirements

- 6.1** Scope – The supplier is responsible for maintaining and supplying accurate and legible certification documentation as objective evidence of meeting drawing, Vendor Instructions, technical data or, purchase order requirements.
- 6.2** A Certificate of Conformance (C of C) shall be provided with each shipment. The C of C can be a separate document, or it can be included as part of the shipping declaration/packing slip text. The following tables list the C of C data/information requirements as applicable:

Certificate of Conformance (C of C) Requirements	
1.	Supplier Name and Address
2.	Statement that parts conform to the requirements
3.	P.O. and line item number
4.	Original Manufacturer' name and part number (when source of supply is a requirement)
5.	Kaman part number and as applicable, part revision and/or BOM revision level
6.	Quantity shipped (listed quantities to be broken out by lot, and also totaled)
7.	Date and identity (hand signature or electronic 'signature') of quality representative or company official

8.	Evidence of Source Acceptance or Waiver
9.	Technical data and revision
10.	When required by drawing, Vendor Instruction, PO or technical data: Lot Numbers, Serial Numbers, Date Code.
11.	MRB (VRV) number, as applicable
12.	Kaman shipper number (as applicable for consigned material)
13.	Date of shipment
14.	For returned parts, the supplier shall indicate if parts are reworked or replacements on the C of C.

6.3 Shelf Life Limited Certificate of Conformance Requirements – The following information shall be included on each C of C for shelf life limited product or material as applicable to the specification or requirements:

Shelf Life Limited Certification Requirements	
1.	Manufacturers name
2.	Environmental storage conditions
3.	Date of manufacture and/or cure date (month/year or quarter/year)
4.	Date of shipment
5.	Lot number, or batch number and compound number (as applicable)
6.	Shelf life expiration date (MM/YY). If there is no Expiration Date or Shelf Life required, indicate such (examples include "None", "No Expiration Date", etc.)

6.4 Certification Package Requirements - The following items, when applicable to the drawing, specifications, technical data or purchase order, shall be maintained and made available by the supplier unless otherwise specified on the purchase order to submit with shipment.

Certification Package Requirements	
1.	Fixed process certification
2.	Device Test traveler and Assembly record cards
3.	Regulatory Airworthiness Forms
4.	Material certifications
5.	Controlled process certification
6.	Test Reports or Functional Test Data sheets
7.	FAIR Package
8.	Log maintenance cards
9.	Discrepant material report
10.	Inspection results or report
11.	Rework route tag or equivalent
12.	Teardown or findings report
13.	Kaman shipper
14.	Manufacturer's Certificate of Conformance
15.	MRB (VRV, or similar vehicles such as Waiver or Engineering document per the Kaman requirements)

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|-----|---|
| 16. | When material is consigned by, or purchased from, Kaman Aerospace or a licensed distributor of Kaman Aerospace, the supplier shall retain a copy of the Procurement Shipping Order (PSO), Kaman Shipper, or licensed distributor's Certificate of Conformance for the material and treat such items as customer supplied material |
| 17. | Physical and Chemical Analysis certified by an independent laboratory, if applicable |
| 18. | Required Hardness Values |

Notes:

1. Certifications shall include name of process source, specifications and revision letters used. The actual physical and chemical process and heat numbers as applicable shall be indicated. Certifications of Conformance (C of C) must clearly state conformance to all specifications in their entirety, including type, class and grade and material hardness values exactly as described from the drawing or BOM note, embedded specifications that contain specific acceptance testing criteria, additional processing requirements, and/or any specific requirements that pertain to hardware approval or acceptance.
2. Each inspection lot must be listed as a separate line item along with evidence of electrical testing to the applicable specification as required. All required documentation shall be completely legible, and reproducible.

6.5 Bulk Raw Materials - Unless otherwise specified, purchased bulk raw material (sheet, strip, plate, wire, rod, bar, tubing, solder, powder, paint, oil, fluids, etc.) shall be supplied to the latest procurement specification issue. Material certified to a previous specification issue and of the proper type, grade, or class called for by the engineering drawing or technical data, may be used until depleted, unless restricted by the superseding specification revision. Certifications for material shall include specification number and revision letter applicable to each lot of material.

6.6 FAA Tags - In addition to the certifications required in Table 1, Suppliers holding an FAA production approval shall ship parts with 8130-3 tags reflecting newly manufactured certification and not returned to service or repaired status to all Kaman OEM sites. This requirement applies to both new shipments and parts that may have been rejected or returned by Kaman or from a Kaman customer location. Suppliers shall contact buyers if there are any questions in issuing new 8130-3 tags as Kaman can only return parts to suppliers requiring Part 21 type rework and have not been used in revenue flights.

7.0 Section Seven – Control of Items with Limited Shelf-Life

7.1 Scope - This section defines remaining life requirements and the communication of date control information on items that require shelf life control per their product specification.

Typical commodities that require shelf life controls are:

- Uncured compounds (for example: paint, adhesives, curing agents, primers, film adhesive, varnishes, elastomeric molding compounds, pressure sensitive adhesives, Pre-pregs, sealants, inks etc.)

NOTE: Items such as tapes and labels which have pressure sensitive adhesive (PSA) back are categorized under uncured compounds. This includes metal nameplates with PSA backing applied.

7.2 System for Shelf Life Control - The supplier shall maintain a documented system for using, storing and controlling items with limited shelf or storage life. The system shall include a method of identifying and controlling such items to ensure expired items were not used in products shipped to Kaman and that items shipped met remaining life requirements. Shelf life shall apply per manufacturer expiry date or "use-by" date but not supersede applicable specifications.

Item	Percentage of Shelf Life required to be remaining upon receipt by Kaman (unless otherwise specified by Kaman, Military, Industry product specification or PO/VI line item flow-down)	Data Requirements	Identification Requirements
Uncured Compounds	33% Minimum but not less than 6 months	See Section	Traceability of expiration date to unit container marking. (i.e. via lot, batch, PO, or direct marking of expiration date).
Cured Elastomers- Uninstalled	33% minimum of life as defined by ARP5316	See Section	Cure date and/or Storage Life expiration date on the part or container as defined by applicable specification or flowed by customer
Cured Elastomers- Installed	N/A	Supplier to retain evidence of Storage Life compliance	Assembly Date marking if required by assembly design requirements
Applied Bearing, Assembly Preservative Fluid (Installed)	Unless otherwise required by specification, items lubricated with preservative compounds shall be inspected for corrosion prior to shipping if more than 5 years from the application date.		Lubricant application date on unit package in addition to marking required by specification
Lubricants, Grease (Containers)	33% minimum of life as defined by material manufacturer but not less than 18 months		Traceability of expiration date to unit container marking. (i.e. via lot, batch, PO, or direct marking of expiration date).
Installed Greases	N/A	Supplier to retain evidence of Storage Life compliance	Assembly Date marking if required by assembly design requirements
Applied Bearing Operating Lubricant Installed	Bearings that are lubricated for use shall be shipped to Kaman less than 18 months from the lube application date	Expiration date (as required by applicable specification) on Certification.	Traceability of expiration date to unit container marking. (i.e. via Lot, batch, PO, or direct marking of expiration date)

7.3 Requirements – Table Above:

7.4 Cure Date Identification for Storage Life Controlled Elastomers - Elastomeric parts shall be identified by marking the cure date (quarter and year) on the part or container:

- The year shall be divided into quarters as follows:
- 1st quarter: January, February, March 2nd quarter: April, May, June
- 3rd quarter: July, August, September
- 4th quarter: October, November, December

The cure date shall show the applicable quarter of the year by number, the letter “Q”, and the last two digits of the applicable year. Example: May 2008 would be designated by 2Q08. An elastomeric part cured during any given quarter is not considered one quarter old until the end of the succeeding quarter.

7.5 Certification Requirements - When shipping shelf-life controlled compounds and storage-life controlled elastomers, the supplier shall include the following additional information on the Certification of Conformance:

- Date of manufacture for shelf-life controlled compounds

- Cure date (QQ/YY) for storage-life controlled elastomers
- Shelf-life expiration date (MMYY) for shelf-life controlled compounds
- Storage life expiration date (QQ/YY) for storage-life controlled elastomers
- Batch and or lot number as applicable
- Date of shipment
- Manufacturer's name

7.6 Shelf Life of Uncured Compounds shipped to Kaman – Items that have exceeded their expiration date shall be removed from the supplier's inventory and conspicuously identified as scrap to preclude inadvertent use. All lots must be segregated and identified to maintain batch and/or lot number and cure date. Shelf life of any uncured material as certified to by the material manufacturer will not be extended unless authorized either by the material manufacturer, or by Kaman.

- Expiration date of Pressure Sensitive Adhesive (PSA) used on name plates shall be identified in the Certificate of Conformance. This expiration date shall be stamped on each container of name plates shipped to Kaman. Expiration date of the adhesive also applies to the name plate to which the adhesive is applied.
- In any case of conflict between documented expiration dates, the Kaman receiving site reserves the right to return the material to the supplier, or resolve the conflict internally via Kaman Engineering and Quality.
- On the shipment date, uncured items/compounds must have 25% or greater shelf life remaining, but not less than 6 months unless otherwise approved by the procuring site. Exceptions are noted below.

7.7 Shelf Life of Cured Elastomers Shipped to Kaman - On the shipment date, unless otherwise specified or required by drawing or specification, elastomers which have a storage life control in accordance with ARP5316 for elastomer seals must have 50% or greater storage life remaining. Elastomeric hoses which have a storage life control in accordance with AS1933 must have 75% or greater storage life remaining. Where no storage life information is available consult the procuring Kaman site for direction. All separate lots and/or batches of shelf-life controlled elastomers shall be segregated and identified to maintain lot and/or batch number and cure date.

7.8 Bearing Lubrication - Unless otherwise required by specification: Bearings that are lubricated for use shall be shipped to Kaman less than 18 months from the lube application date. Bearings lubricated with preservative compounds shall be inspected for corrosion prior to shipping if more than 5 years from the application date.

8.0 Section Eight – Control of Kaman/Customer Owned Property

8.1 The Supplier shall have a system, which includes written procedures for control of all tooling, test equipment and material. Procedures shall be in accordance with the controls specified within the terms and conditions. The supplier shall maintain a record of all Government/customer and Kaman owned property. The list shall include:

- Description and gage/tool name
- Kaman identification number (applicable to equipment, tooling, test equipment, gages, etc.)

- Part Number (applicable to material)
- Kaman Purchase Order number, contract or equivalent code
- Part numbers used to manufacture
- Unit of measure (material)
- Quantity (if other than 1)
- Unit price

The list may also include (when applicable):

- Weight,
- Material content (wood, steel, aluminum, etc.),
- Supplier name,
- Signature of the company's approved representative,
- Date of certification,
- Program name (if supplied),
- Kaman Purchase Order site supplier code
- When the property is transferred to another supplier or returned to Kaman, supplier is required to maintain the records of the move for 5 years.

- 8.2** Maintenance - The supplier shall maintain calibration on all the gages as shown in ISO10012-1 or ANSIZ540. Maintain, protect and preserve tooling and test equipment. Supplier is required to report immediately to the Buyer any loss, theft or destruction of, or damage to, the Government/customer or Kaman owned property while in its possession. No modifications or changes to any of the test equipment or tooling are permitted without prior Kaman approval. Contact the Kaman Buyer before the transfer of test equipment, or tooling between supplier facilities (address location) or to other suppliers.

9.0 Section Nine - Kaman Product Release Process

- 9.1** Scope - Kaman product may only be released for shipment from the supplier by either of the one methods below:

9.1.1 Source Inspection performed by supplier DIR: Designated Inspection Representative (DIR) status is awarded to those Kaman Air Vehicles Suppliers that maintain or exceed Supplier Quality Rating Program requirements and have proven ability to sustain highest quality standards. If unable to achieve (DIR) authority, source inspection services are required.

9.1.2 Kaman Representative or Third Party Source Inspection. Note: Source Inspection approval does not relieve the supplier of the responsibility and/or liability for full compliance with all purchase order/contract requirements.

9.1.3 Kaman Approved Source Inspection Waiver (Form Q.F. 4.1.412 or Q.F. 4.1.412A as applicable). Note: Source Inspection Waiver does not relieve the supplier of full responsibility and/or liability for compliance with all contractual requirements.

- The supplier shall provide all required documentation (i.e. Inspection, Testing, Certifications, etc.) with shipment of product to Kaman.
- Source Inspection will be performed at Kaman Air Vehicles upon receipt. Non-conformances will be processed in accordance with section 5.12 of this SQRM as noted in this section.

9.2 Designated Inspection Representative (DIR) Program Requirements

9.2.1 The supplier shall establish a Kaman DIR procedure for review and approval by Kaman Supplier Quality that contains minimum requirements below. The Supplier's Quality Management is responsible for the implementation and control of this procedure:

- Evidence that only qualified personnel are eligible for assignment as a DIR.
- Only a Kaman approved DIR possesses and uses the **supplier issued acceptance stamp**. Issued stamp must be under supplier stamp control system and an impression noted on DIR procedure with DIR name.
- Parts requiring FAI may only be shipped after the FAI has been accepted by Kaman.
- The DIR shall comply and record all documentation noted herein.
- The DIR shall be responsible for verifying process operations performed by sub-tier suppliers are compliant and complete.
- Issues relative to quality shall be reported to Kaman receiving inspection.
- The DIR function shall be subject to audit verification prior to, and after, issuance of approvals.
- Notification of any previously assigned DIR inspectors' change in employment status.

9.2.2 The supplier shall submit resumes of prospective DIR inspectors to Kaman Supplier Quality for review/approval (It is recommended the supplier maintain (2) employees for DIR to ensure coverage but not more than). The resume must include all available information pertinent to the education and experience relative to the type of work the inspector shall perform. After an inspector has been accepted by Kaman for the DIR program, he/she shall receive training by a Kaman representative.

9.2.3 Following approval, Kaman shall issue a Kaman final acceptance stamp to the approved DIR. **NOTE:** Only a Kaman approved DIR shall be assigned a Kaman acceptance stamp. It is the responsibility of the DIR to maintain control and prohibit unauthorized use of the inspection stamp. Any change in the employment status of any DIR, the Supplier's Quality Management shall report to Kaman immediately.

9.2.4 The DIR is subject to periodic audits by Kaman personnel. Discrepancies discovered during Kaman audits of DIR inspected items shall be investigated and appropriate follow-up action shall be implemented. If the investigation warrants, Kaman will submit a CAR to the supplier for action or remove supplier from DIR program.

9.2.5 In addition, a DIR supplier must also maintain a continued quality performance rating that meets or exceeds 95% (parts accepted versus parts inspected). If the supplier's rating slips below that threshold, Kaman may implement one or more of the following actions:

- Tighten the frequency of audits
- Impose additional inspections
- Issue a Supplier Corrective Action Request

- Perform an on-site visit of the supplier's facility
- Rescind the DIR approval.

9.2.6 The Supplier DIR will complete, and digitally sign and/or stamp form Q.F.4.1.750 form for each part number source inspected (form is located on the Kaman Supplier Web site). The DIR will maintain a copy of the form (per prescribed retention requirements) and send a copy with each shipment.

9.2.7 Disapproval or revocation of DIR authority shall be in effect upon official written notification by an authorized Kaman Aerospace Quality representative. Once revocation occurs, all products require source inspection prior to shipment to Kaman, including parts from finish stores that were accepted by the supplier DIR prior to revocation.

9.3 Kaman's Third Party Source Inspection – Kaman currently uses Verify Contracting services for Source Inspection. All suppliers providing product or services that require source inspection at the supplier's facility must sign-up for, and use, the Verify SPP (Supplier Performance Platform) system as noted below:

9.3.1 In order to establish your company as an authorized user you will need to sign up via our secure web connection as follows:

1. Point your browser to <https://spp.verifyglobal.com/Public/supplier/registration.aspx?id=ae375288-73a4-4aaa-9a10-be2436461ed0>
2. Fill in the form providing both customer and authorized user details,
3. Verify will then issue you an e-mail providing user name, password, and instructions for use.

9.4 Suppliers are responsible to maintain each completed form in accordance with this document and/or AS9100; a minimum for the life of the contract. Completed forms may be requested by Kaman as objective evidence of DIR Source Inspection and, may be used as part of the DIR audit process.

10.0 Section Ten – Kaman's Approved Process Supplier Listing (QPSL) and Kaman Process Specification (KPS) Revision Listings.

10.1 Supplier procured processes or services (e.g., plating, heat treat, non-destructive testing, etc.) from an outside source shall be provided only by those sources approved by Kaman or Kaman's customer (when stated on the Kaman P.O.). Process suppliers who support manufacturers of proprietary items do not have to be approved by Kaman.

10.2 The Kaman Qualified Process Supplier List (QPSL) is available on the Kaman website. If you have trouble accessing the system, please contact your Kaman buyer or the quality department for direction. Noted differences between the supplier listed and current supplier status (i.e. name change, etc.) shall be directed to your buyer before processing.

10.3 Kaman will publish new version (revision controlled) of the QPSL on a bi-annual basis. Changes to the QPSL will be documented on a monthly or as needed basis using the Kaman Quality Alert which will be located in the same website location. The Quality Alert will reflect current supplier status that deviates from the main QPSL listing.

10.4 The supplier is responsible for ensuring that all Kaman (or Kaman customers as applicable per PO/VI) specifications, /requirements (to include revisions, types, class, etc.) are flow-down on the supplier's purchase order agreement with their sub-tier supplier.

- 10.5** Compliance to processing and approval status of sub-tier is the responsibility of the supplier using such services. Process supplier approvals may change periodically; please check with respective sub-tier suppliers prior to placing PO for services to assure valid Kaman approval status.
- 10.6** All documentation is subject to Kaman review to ensure adequate quality control records and certifications are compliant.
- 10.7** The supplier shall subject incoming material or process certifications to inspection as necessary to ensure conformance to contract requirements. Objective evidence of such validations shall be readily available.
- 10.8** The supplier shall be held accountable for all shelf life or shelf limited material/products as required in section 7.0 of this SQRM and, have robust system to monitor the process controls/documentation system internally. Audits of such controls may be reviewed by Kaman as deemed necessary.

11.0 Section Eleven – Model Based Definition (3DMBD)

- 11.1** Suppliers providing inspection and manufacturing support for product derived from electronic media, i.e., model based definition, computer aided engineering (CAE), and etc., shall maintain a control system necessary to meet the minimum requirements necessary to support the contract.
- 11.2** When the contract does not flow product specific requirements for this product group, the supplier shall comply with requirements included in this document.
- 11.3** Suppliers shall develop a quality assurance plan (QAP) that shall contain definition control for:
- Electronic data acquisition through a secure site
 - Configuration control and incorporation of engineering changes
 - Software translation process and verification
 - Electronic data interpretation
 - Software security
 - Control and flow down of datasets to sub-tier suppliers
 - Schedule of minimum points to define features inspected on CMM
 - Product manufacturing
 - FAI
 - Product inspection
 - Computerized measurement system support
 - Tooling
 - Operator training
 - Processing and reporting of nonconforming material
- 11.4** Suppliers shall submit their QAP to Kaman for initial review and acceptance prior to delivery of production material. Changes to the approved plan shall not be implemented until submitted to Kaman for review and acceptance.
- 11.5** When required by contract, Kaman shall submit their supplier's QAP to the customer.
- 11.6** Kaman shall audit the supplier's facility to verify capability and control for 3DMBD product support.

- 11.7 Any supplier, using sub-tier sources for manufacture and process support, shall ensure compliance to these requirements by on-site audits and supplier support as needed to meet contractual requirements. When required by contract, supplier sub-tier compliance shall be submitted to Kaman.
- 11.8 When source inspection is invoked by contract, the supplier shall provide Kaman and Kaman's customer(s) access to product, tooling, electronic data, drawings and QAPs necessary to validate compliance to contract.
- 12.0 Section Twelve – Counterfeit Parts Program**
- 12.1 If a part is not available from an authorized distributor/manufacture, it may be purchased from the following sources, if approved by Kaman.
- After market suppliers
 - Authorized Brokers
 - Customers with excess inventory
 - Independent/Certified distributors and dealers
 - U.S. Government stores
 - Non-franchised distributors (with Kaman Approval)
 - Internet sources (with Kaman Approval)
- 12.2 The supplier shall require actual manufacturer's certifications be supplied with all purchases.
- 12.3 The supplier shall assure that the PO includes the following requirements:
- Complete traceability of the product
 - Tests and inspection necessary to assure pedigree of material
 - Level of quality management system
 - Required documentation and certification
- 12.4 As a minimum: The supplier shall verify that material is received with manufacturer's certifications, check for manufacturer's markings on material and inspect for suspicious markings, repackaging, labeling and visible product defects.
- 12.5 The manufacturer's certification of conformance must include the following to Kaman:
- Manufacturer's name, address
 - Part number and dash number
 - Batch identification such as codes for date, lot, serialization, etc.
- 12.6 Suppliers who receive approval to purchase from companies must have all electrical characteristics verified by an independent testing facility. This testing shall be accomplished on 100% of the material. No sampling plan is allowed. Testing results shall be included with the certification package and provided to Kaman.
- 12.7 Under no circumstances, should any defective or counterfeit part be provided to Kaman.
- 13.0 Electro-Static Discharge Requirements**
- 13.1 For ESDS (Electrostatic Discharge Sensitive) items, the Supplier shall establish and maintain a written electrostatic discharge control program for the control of Electro-Static Discharge (ESD) during fabrication, handling, and packaging of electrical and electronic

parts, assemblies, and equipment. The program shall be based on and meet the intent of ANSI/ESD S20.20 (or equivalent).

14.0 Foreign Object Damage (FOD) Control

14.1 The supplier shall ensure that Foreign Objects and subsequent Foreign Object Damage (FOD) is eliminated from all parts prior to shipment. In addition to maintaining compliance with cleanliness specifications, all suppliers must maintain a FOD free environment during machining, manufacturing, assembly, maintenance, inspection, storage, packaging and shipping.

- Potential FOD includes but is not limited to burrs, chips, dirt, corrosion and contamination resulting from the manufacturing, assembly, maintenance, processing, cleaning, storage and subsequent packaging of parts.
- Suppliers must ensure all passageways- cast and/or machined are clear of chips, core material, dirt, breakout of cast walls, etc.
- Prior to closing inaccessible or obscured areas and compartments during assembly, supplier shall ensure the areas are free of FOD.
- Suppliers must ensure all parts are clean and FOD free prior to shipment.
- Suppliers are required to maintain a FOD prevention program, which includes prevention and elimination of FOD from the manufacturing processes and work area.

14.2 Specific attention should be given, where applicable, to items such as:

- Housekeeping and cleanliness
- Food and beverage control
- Tool and small part accountability
- Loose objects
- Material handling and parts protection
- External cleaning following evidence of external contamination

14.3 Supplier shall ensure that the responsibility for the FOD prevention program is clearly defined and appropriate personnel have received FOD awareness training.

14.4 Suppliers are responsible for flow down of these requirements to their sub-tier suppliers to ensure FOD free products.

14.5 Suppliers FOD prevention program and controls are subject to periodic audits by Honeywell as deemed necessary to ensure program effectiveness and compliance. This includes, but not limited to, Failure Analysis Reports, Containment and Preventive Corrective Action Plans taken to preclude recurrence.

15.0 Reference Documents

- 15.1 Kaman Purchase Order
- 15.2 Kaman Vendor Instructions
- 15.3 Kaman Terms and Conditions
- 15.4 KSD 0408 Critical Parts
- 15.5 K922, Controlled Process Listing (CPL)
- 15.6 K927, Controlled Process Change Request
- 15.7 K198, Vendor Request for Variation
- 15.8 K740, Corrective Action Request Form
- 15.9 K2193, Supplier Quality Escape
- 15.10 Q.F. 4.1.412 Source Inspection Request and Waiver Form
- 15.11 Q.F. 4.1.412A Source Inspection Waiver Authorization Form – Kaman/Verify SPP system

16.0 Concurring Area reviews

- 16.1 **Roy Sabo, Quality Director**
- 16.2 **Mariann Porubszky, Supply Chain Director**
- 16.3 **Ben Cusick, Quality Supervisor**
- 16.4 **Edward Frates, Senior Supplier Engineer**

Document Revision History

Rev	Description of Change	Date Released	Training Required? (Y/N)
0	Original Release	04/11/97	
6	Complete rewrite – combined all previous chapters into single document	5/15/2018	N
7	Revised Process Owner, Approvals, added definition of Escapement and revised Section 7, Para 5.8.1.4 to provide instructions regarding the reporting process for Quality Escapes from Suppliers/Sub tiers. Corrected numbering of section headers 8 & 9. Added Form K2193 to Reference Documents. 3.1 changed Kaman Quality Manager to Kaman Quality Leadership,	07/02/2019	Y
8	Complete Re-write	12/17/2019	N
9	Minor revision (in blue) to sections 1.14.3, 9.2.1 and 9.2.2.	3-5-2020	N
10	Added Section 9.1.3 and QF Forms 4.1.412/412A	4-21-2020	N