

# GARDNER AEROSPACE

## SUPPLIER QUALITY REQUIREMENTS MANUAL



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## Revision Summary

Revision	Date	Amended by	Details of amendment
1	12/9/14	M.Rae	New Document
2	12/8/15	M.Rae	Revision to section 3 including update of customer specific requirements.
3	23/10/17	M.Rae	Amended content to include AS9100 Rev D requirements
4	18/1/17	M.Rae	Update to digital data requirements listed under Triumph purchase requirements
5	24/4/18	M.Rae	Creation of Section 11
6	18/9/19	D Hardie	Incorporation of GACL requirements and general update
7	5/1/21	M.Rae	Incorporation of requirements for Collins Aerospace packages. Re-ordering of customers in section 3 in to alphabetical order
8	8/10/21	M.Rae	Update to the customer requirements for Safran, and update to the reference procedure for Airbus Transfer of Work
9	1/6/23	M.Rae	Update to section 7.1.3 and 7.14 regarding obsolescence management and change notification. Update to comments in section 3 around Airbus applicable contractual documents, and addition of Appendix A to the procedure. Updates are highlighted in red

## 1.0 Introduction

This document details the quality requirements for suppliers delivering items against Gardner Aerospace purchase orders. The aim of this document is to ensure that all suppliers into Gardner Aerospace understand the required Quality conditions and to ensure that all suppliers are aware of Gardner, and their customers, requirements.

The quality requirements include the supplier's process of procurement, planning, manufacturing, inspection and testing, storage, packaging and release against Gardner purchase order requirements.

Suppliers shall comply with these requirements in full, and should the supplier be in doubt about whether they can comply with these requirements, they shall notify Gardner Aerospace listing any discrepancies.

In case of any conflict between this document and the commercial terms and conditions listed at [www.gardner-aerospace.com/terms](http://www.gardner-aerospace.com/terms), the commercial terms of contract shall take precedence. Suppliers should read this document in conjunction with our commercial terms of purchase to understand all Gardner requirements are being fulfilled.

## 2.0 Supplier Quality System Requirements

Suppliers into Gardner Aerospace will require varying level of approvals, depending on the product and service they are providing to Gardner Aerospace. The minimum approval requirements for each category are given below. Exceptions to this list may be possible, but only when a Quality Plan is in place between Gardner and the supplier in question to support this exemption.

If a supplier believes they have been asked to provide services in contradiction to the below requirements, they shall contact Gardner Aerospace to advise them of the potential discrepancy.

Should a supplier lose any of their accreditations they shall notify Gardner as soon as possible to ensure the risk to supply can be assessed and mitigated by Gardner.

Product Category	Gardner Order Type (signified by first letters of PO number)	Supplier Service	Minimum Quality system Approval	Remarks
AIRBORNE SERVICES	Production, Sub-Contract	Manufacturer	AS9100 or EN9100	1,2
	Production, Sub-Contract	Special Process provider (i.e anodising, welding)	AS9100 or EN9100 and NADCAP approval for applicable process	1,2,3
	Production , Consumable	Stockist	AS9120 or EN 9120	2,4
NON-AIRBORNE SERVICES	Consumable	Tooling	No Approval requirements	
	Consumable	Calibration	UKAS or ISO17025, or equivalent national/international approval	5
	Consumable	General supplies	No Approval requirements	

- 1) Prime customer approval may be required for specific processes, depending on the particular quality clause as per section 3 of this document.
- 2) Items are to be supplied with a certificate of conformity providing evidence of conformity to the order requirements, as per section 9 of this document.
- 3) Gardner internal companies do not require NADCAP approval to complete special process work for other Gardner sites providing that they have prime approval to complete the process.
- 4) Prime customer approval may be required for stockists, depending on the particular quality clause as per section 3 of this document
- 5) All calibration activity completed on behalf of Gardner Aerospace must be completed using equipment that is traceable to national/international measuring standards. See Section 11 for specific notes regarding acceptance standards for measurement equipment

### 3.0 Purchase Order Clauses

For all airborne requirements, as defined in Section 2, Gardner Aerospace will list the applicable Quality Clauses against the particular order line on the supplier purchase order. These purchase order clauses are specific to the package of work and the prime customer, and the supplier requirements for each clause are defined below. It may be possible that more than one clause will apply for certain product, and in case of any conflict between the two documents the supplier shall seek clarification from Gardner.

Note that if the purchase order does not specify release conditions to work to, it shall be assumed that the release conditions of the drawing owner shall be applied (i.e Airbus release conditions apply to Airbus drawings, Rolls Royce conditions to Rolls Royce drawings etc).

In addition to the purchase order clause, each purchase order line may include reference to a customer condition of supply, a copy of which will be made available to the supplier by the Gardner purchasing function.

Each purchase order clause listed, and its definition is given below. These are organised in alphabetical order.

<b>Airbus</b>	<p>Supply in accordance with your Airbus approval number.</p> <p>All special processes shall only be completed by approved suppliers listed on the QSPL available at <a href="http://www.airbus.com/tools/airbusfor/suppliers/">http://www.airbus.com/tools/airbusfor/suppliers/</a></p> <p>All standard parts and materials must be supplied from approved sources as listed on the Airbus Qualified Parts List, a copy of which is available within the Airbus supplier portal or from Gardner on request. Any products that do not have a listing on the QPL shall be highlighted to Gardner for query with Airbus.</p> <p>Please reference your Airbus approval number on any certificates of conformity released to Gardner.</p> <p>In certain circumstances, suppliers may be approved by Gardner to supply product for use on Airbus contracts without the supplier having direct Airbus approval. This is limited to non special processes as defined in the 'MASTERLIST ME0721033' or for stockists. For stockists approved under this method, the requirements to procure product from the Airbus Qualified Parts List still applies and a quality plan shall be generated between Gardner and the supplier.</p> <p>Retention of records in support of Airbus contracts shall be in accordance with Airbus directive A1001.0.</p> <p>All transfer of work packages shall be completed in accordance with M1008.2, and notification shall be provided to Gardner Aerospace to initiate this process.</p>
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	A full list of contractual documents applicable to Airbus contracts is shown in Appendix A of this procedure, and suppliers shall validate they comply with any applicable requirements.
<b>Airbus GRAMS / ASR</b>	As per Airbus clause above, but with the following addition:  Items are to be planned, manufactured, inspected and tested in accordance with AP2190 GRAMS (General requirements for Aerostructure and Material suppliers) or A1500 to A1506 (Airbus Supplier Requirements)
<b>Augusta Westland</b>	Supply in accordance with Agusta Westland Supplier Quality requirements for Suppliers (QRS01), a copy of which can be found <a href="http://www.agustawestland.com/content/agustawestland-ltd">http://www.agustawestland.com/content/agustawestland-ltd</a>
<b>BAE Systems</b>	Supply in accordance with BAE Systems Aircraft Business Units Quality Management Requirements for Suppliers BAE/AG/QC/SC1
<b>Boeing</b>	This order is subject to certification and inspection by your Quality Assurance Organisation as approved by Boeing D1-4426 <a href="http://active.boeing.com/doingbiz/d14426/GetAllProcessors.cfm">http://active.boeing.com/doingbiz/d14426/GetAllProcessors.cfm</a>
<b>Cobham</b>	Process and release in accordance with FRL-QAM-10, a copy of which is available on request from Gardner Aerospace. The release certificate in to Gardner shall confirm compliance with FRL-QAM-10 requirements.
<b>Collins Aerospace</b>	All work shall be undertaken in accordance with the requirements of UTC Supplier Quality System Requirements ASQR-01 latest revision (available on <a href="http://www.utc.com">www.utc.com</a> ), COL-ASQR-PRO-0003 latest revision and CTG-QI-02-POL latest revision (available on Collins Aerospace Supplier Portal or upon request). All Special Processors shall be approved by Collins Aerospace Banbury and listed in the Approved Special Processors Register CTG-QI-03-POL latest revision (available on Collins Aerospace Supplier Portal or upon request). If the special processes are requested to Airbus specification requirements, then the processor shall also appear on the Airbus QSPL.
<b>EASA Part 21G</b>	Release in accordance with your EASA Part 21G approval
<b>EASA/FAR Part 145</b>	Release in accordance with your EASA/FAR Part 145 approval (EASA form 1 release with FAA release in remarks box is acceptable if approved in your approved Maintenance Organisation Exposition, otherwise an FAA Form 8130 is required)
<b>GKN Cowes</b>	Supply in accordance with GKN Cowes Supplier Quality Requirements (SQA01), a copy of which is available at <a href="https://www.gkncowes.co.uk/store.asp?f=">https://www.gkncowes.co.uk/store.asp?f=</a> under 'Quality Documents'.



<b>Gulfstream</b>	Release in accordance with the requirements of your Gulfstream approval.
<b>Pilatus</b>	Release in accordance with the requirements of your Pilatus approval.
<b>Rolls Royce</b>	Manufacture in accordance with Sabre requirements, which are available on the Rolls Royce supplier website. Please reference your Rolls-Royce approval number on any certificates of conformity released to Gardner.
<b>Safran</b>	Supply shall be in accordance with Safran documents GRP-0087 and G005 (available upon request from Gardner). For sub-contract suppliers in to Gardner, the Provider must accompany the delivery of parts with: <ul style="list-style-type: none"> <li>• the full file (trailer card, process sheet, drawing) and other inspection records,</li> <li>• an inspection report</li> <li>• a certificate of conformity which must clearly contain the following information: <ul style="list-style-type: none"> <li>- purchase order No.,</li> <li>- quantities and part numbers of items delivered.</li> </ul> </li> </ul>
<b>Triumph</b>	Supply in accordance with Triumph Supplier Quality Assurance Requirements (SQAR), a copy of which is available at <a href="https://www.triumphsupplysource.com/suppliers/index.php">https://www.triumphsupplysource.com/suppliers/index.php</a> under 'Quality Requirement', or from your Gardner contact.  Note that all metallic components are subject to additional hardness & conductivity requirements as per SQR-010.  Note that all data relating to this project shall be controlled in accordance with SCMP 7.3a, available at the above website address.

Sections 4- 8 list key clauses that suppliers of airborne products into Gardner Aerospace are expected to comply with. Gardner may choose to audit suppliers against these requirements.

For Non-Airborne suppliers, Sections 4-8 are for information only, however they can be utilised by those suppliers for further information, or to help identify continuous improvement actions.

## **4.0 Supplier Quality Management Systems**

### **4.1 General Requirements** – as per AS9100 standard

The supplier shall ensure that Gardner Aerospace, their customers and regulatory bodies are given full right of access to the suppliers premises, and to any of the suppliers sub-tiers premises, within a reasonable period of notice.

### **4.2 Documentation Requirements**

#### **4.2.1 General**

The supplier shall establish, document and maintain a Quality Management System - QMS in accordance with the latest revision of the AS/EN 9100 standard as requested in section 2 of this document.

#### **4.2.2 Quality Manual**

The supplier shall prepare a quality manual covering the requirements of AS9100, including any specific variations listed within this document. The quality manual shall include or make reference to the quality system procedures and outline the structure of the documentation used in the quality system.

The supplier shall:

a) Prepare documented procedures consistent with the requirements of AS9100 and this Manual

b) Effectively implement the quality system and its documented procedures.

The range and detail of the procedures that form part of the quality system shall be dependent upon the complexity of the work, the methods used, and the competence needed by personnel involved in carrying out the activity.

#### **4.2.3 Control of Documents**

Suppliers shall be fully responsible for the safe custody of all drawings, instructions and specifications supplied by Gardner Aerospace. The supplier shall ensure revision levels of drawings, specifications, operation sheets and technical plans are as stated on the Purchase Order. Any discrepancies shall be resolved with the Gardner Aerospace Purchasing department prior to commencing work. The supplier shall ensure that only the relevant issue levels of documents are readily available for personnel at required work areas. Supplier shall not use or disclose to third parties any customer and or Government design data without prior authorisation of Gardner Aerospace. **NOTE: Some sites do not call up drawing or specification revisions on purchase orders unless the required revision is not the current one. In this case the latest revision of specification or drawing supplied shall be used.**

#### **4.2.4 Control of Records**

Supplier shall establish a documented procedure to define the controls needed for the identification, storage, protection, retrieval, retention and disposition of records. Suppliers shall meet any specific records requirements specified by purchase order or by the terms of the relevant prime customer approval.

No records shall be destroyed without written permission from Gardner Aerospace. Retention periods begin upon shipment of the item specified in the Purchase Order to Gardner Aerospace.

Quality records shall be legible, identifiable to product involved and be stored and maintained in such a way that they are readily retrievable. Originals of documents shall be retained in an area that meets all local fire and life safety codes.

Sub-Tier Supplier quality records shall be maintained in the same manner, and suppliers shall flow down requirements to their sub-tiers as required.

Quality records shall be available for viewing by Gardner Aerospace and regulatory authorities upon request.

## **5. Management Responsibility**

The Supplier's management is responsible for providing and maintaining resources to the extent necessary to comply with the Gardner Aerospace purchase order requirements. Suppliers shall provide training to their employees to the extent necessary in order to carry out and meet Gardner Aerospace and its customer's requirements. Training shall include interpretation of Gardner specific requirements including the requirements of this document. The Supplier's management shall be focussed on customer satisfaction with emphasis on the key performance activities of on time delivery, zero quality defects, continuous improvement and risk management.

The supplier's management is responsible for ensuring that all employees within their organisation are aware of the following:

- Their contribution to product or service conformity
- Their contribution to product safety
- The importance of ethical behaviour.

## **6. Resource Management**

The Supplier's management is responsible for providing and maintaining resources to the extent necessary to comply with Gardner Aerospace requirements. This shall include, but is not limited to, training of the supplier's employees to meet purchase order requirements for any identified special processes, quality inspection, test functions and ITARs compliance.

Supplier management shall focus on customer satisfaction and continuous process improvement.

The supplier shall ensure that personnel performing tasks on behalf of Gardner Aerospace are competent on the basis of appropriate education, training or experience and the supplier shall retain associated records.

A skills matrix is suggested by Gardner as a means for suppliers to identify skill sets within the business, and to identify potential further training requirements to ensure adequate coverage of key skill requirements.

## 7. Product Realisation

### 7.1 Planning of Product Realisation

1) All manufacturing and process operations needed for product realization should be planned by the supplier.

If Gardner specifies that a process must be completed to a specific customer specification, the supplier shall comply with that specification, and any invoked specifications, unless otherwise agreed by prior arrangement with Gardner Aerospace.

Gardner aerospace may use certain suffixes to a part number to identify the condition of parts to be supplied into Gardner. Some of these are defined below:

Part Suffix	Definition
<p style="text-align: center;">PF (i.e L57551234200PF)</p>	<p>Part Finished- Supplier is to provide the items less any surface treatments (Surface treatments include NDT processes), however mechanical tests related to prior processes (i.e heat treatment verification activities) must be completed by the supplier prior to supply into Gardner Aerospace.</p> <p>Applicable to Gardner <b>Basildon</b> purchase orders only, note that PF can alternatively mean that items are to be supplied treated, but less assembly. This shall be specified in the relevant contractual documentation if applicable.</p>
<p>LT (i.e L57551234200LT)</p>	<p>Less Treatments- Supplier is to provide the items less any surface treatments (Surface treatments include NDT processes), however mechanical tests related to prior processes (i.e heat treatment verification activities) must be completed by the supplier prior to supply in to Gardner Aerospace.</p>

NOTE: Variations to these descriptions may be agreed for individual parts or specific sites in which case the purchase order or condition of supply shall describe these individual variations.

The manufacturing plan generated by the supplier shall address the manufacturing sequence and identify the inspection verification points, including key characteristics and/or critical to quality characteristics, and process controls selected by suppliers or identified by Gardner. The plan shall also include, as applicable all characteristics which are not verifiable upon receipt have been adequately controlled and verified.

2) The plan shall, where the manufacturing process requires the use of consumable items, i.e. weld wire, braze alloy etc. ensure that traceability of the consumable has been recorded and maintained.

3) Subsequent to the acceptance of technical plans, prototypes or samples by Gardner or its customers, the supplier shall not make any change to plans to produce acceptable product without first obtaining the written consent of Gardner.

4) Software Quality Control shall be established for software (i.e., CNC programs) related to the design, fabrication, inspection and/or test of deliverable articles to Gardner.

5) The supplier shall establish and maintain documented procedures for final inspections, testing activities and any in process inspection deemed necessary in order to verify that the specific requirements for finished product are met. The supplier shall work within, and inspect to tolerances and limitations specified on the drawings. Final inspection shall include verification of acceptance of all previous inspection activities. All inspection and testing operations must be done by authorized personnel.

6) Sampling inspection shall only be used providing that it is based on known statistical standards, or is based on internal studies of process performance. In the absence of such statistical analysis, parts shall be 100% inspected.

7) Purchase orders may be subject to source inspection at suppliers or sub tiers facility, and this will be communicated in the purchase order requirements.

8) First Article Inspection: The requirements for First Article Inspection (FAI) are provided in Section 7.5.1.1. Again, Gardner may choose to complete source inspection at the First Article stage.

9) The supplier shall maintain appropriate inspection and test records to substantiate conformance or non-conformance to the specified requirements. The quality status must be easily identifiable during all stages of manufacture. All quality and environmental records shall be legible and identifiable to the product involved. All records maintained at the suppliers facility must be made available to the purchaser as and when requested. Record retention shall be as defined in Section 4.

10) Where required by specification, or as requested on Gardner purchase orders, suppliers shall provide test specimens with deliveries of parts to allow for approval or test by Gardner Aerospace.

### **7. 1. 1 Project Management**

The supplier shall employ a project management approach to the management of products based on product and organization as appropriate. Supplier shall select the life cycle phases (such as concept, design, planning, execution and closing of the project) processes, tools and techniques that appropriately fit to meet project requirements.

Managing a project includes, but is not limited to:

- Identifying and adhering to customer requirements
- Establish clear and achievable objectives
- Balancing the competing demands for quality, scope, time, and cost

The supplier shall adapt a project management culture and structure (project manager, project team, as appropriate) to deal with scheduled constraints, mitigate risk, manage resources to successfully achieve goals and objectives.

### **7. 1.2 Risk Management**

The supplier shall establish, implement and maintain a process for managing risk to meet the requirements specified on Gardner Aerospace purchase orders. Risks that may affect delivery, cost or quality shall be identified prior to the supplier's commitment to supply product to Gardner Aerospace.

Tools such as FMEA, Process flows and control plans shall be considered for use in the risk analysis of product manufacture, and the use of these tools (or equivalent) is mandatory when Airbus GRAMS or ASR requirements are specified as per section 3 of this document.

### **7.1.3 Configuration Management**

Suppliers shall maintain a configuration management system to ensure the requirements of Gardner Aerospace purchase orders are met. Suppliers shall have a defined process to review and incorporate drawings, specifications and supplemental instructions and changes to the extent necessary to ensure that only documents of the revision specified in the Gardner Aerospace purchase order are used.

If the purchase order does not specify the issue number of drawings/condition of supply to be used, Gardner shall have issued these to the supplier separately, and the supplier shall assume that these documents shall remain at the same issue status until Gardner Aerospace notifies the supplier otherwise through a condition of supply change request (COSCR). This requirement only applies to drawing/condition of supply data, and does not absolve the supplier of the requirement to ensure they are working to the latest copy of manufacturing specifications. The supplier shall always work to the latest manufacturing specifications,

unless otherwise specified on the purchase order, and the supplier shall have a process for reviewing the manufacturing specifications to ensure they are working to the latest issue.

Supplier shall manage any obsolescence issues related to their processes or products and shall communicate any obsolescence related risks to Gardner in advance in order to ensure continuity of supply can be maintained.

#### **7.1.4 Supplier Driven Changes/ Work Transfers**

Suppliers shall communicate any significant changes affecting their organisation in advance to Gardner Aerospace. This includes changes of ownership, certification status, approval status, changes of senior or key personnel or ERP system changes.

Suppliers undertaking any industrial change or transfer of work that may have impact upon deliveries into Gardner Aerospace shall notify Gardner Aerospace of their intention to instigate the change prior to commencement of transfer. The supplier shall present full details of the transfer, including a risk analysis and time plan for the change. Suppliers are required to provide Gardner Aerospace 3 month's formal written notice prior to initialisation of the transfer to allow Gardner Aerospace to approve the transfer and dedicate the necessary resource to monitor project and to continually assess the risks involved.

Gardner may have to provide notification to their customer of any work transfers being completed, and any specific requirements required by any customers of Gardner will be flown down to the supplier at the relevant time.

## **7.2 Customer-related Processes**

### **7.2.1 Requirements Related to the Product**

The supplier shall review requirements required by Gardner Aerospace purchase orders to meet product requirements. The supplier shall ensure they comply with all requirements of the purchase order, and of this document, with particular attention being paid to the quality clauses stated on the purchase order and defined within section 2 of this document.

Gardner Aerospace shall provide the supplier with a condition of supply requirement to allow the supplier to determine the supply requirements into Gardner Aerospace. This condition of supply will detail any deviations from the standard drawing condition that Gardner required. If no condition of supply has been provided the supplier shall assume that Gardner Aerospace require the parts to be manufactured fully to drawing requirements, noting the requirements in section 7.1 of this document.

Should the supplier identify that they cannot comply with the requirements of the Gardner Aerospace purchase order, they shall notify Gardner Aerospace as soon as possible.

For suppliers with a contract purchase order in place, the supplier can review the Gardner Aerospace supply chain portal to determine future order forecasting.

## **7.4 Purchasing**

Supplier purchasing processes shall be in accordance with 8.4 of AS/EN9100, with the following points to be noted:

Suppliers shall ensure that the requirements of this document dictating the minimum quality system requirements are flown down to their own sub-tier suppliers, with particular attention being paid to the quality clause requirements as defined in section 2 of this document.

Suppliers shall flow down the transfer of work process as defined in 7.1.4 of this document to their own sub-tier suppliers to ensure Gardner Aerospace are fully aware of any potential impacts within the supply chain that may affect delivery in to Gardner Aerospace.

Suppliers shall ensure they flow down the requirement to allow right of access by Gardner Aerospace, our customer, and regulatory authorities to the applicable areas of all facilities within the supply chain.

Suppliers shall request First Article Inspection Reports from all their sub-tiers on commencement of new product introduction or a change in supply process, and these shall be presented to Gardner Aerospace for approval.

Suppliers into Gardner Aerospace plan, implement, and control processes, appropriate to the organization and the product, for the prevention of counterfeit or suspect counterfeit part use and their inclusion in product(s) delivered to Gardner.

## **7.5 Production and Service Provision**

### **7.5. 1 Control of Production and Service Provision**

As per AS9100

#### **7.5.1.1 Production Process Verification**

When requested by purchase order, or for first time manufacture of airborne products, the supplier shall perform and submit a report on first article inspection (FAI) in conformance with SAE AS9102 to the drawing revision stated on the purchase order/condition of supply. If a supplier has previously completed a First Article for a different customer that matches the new item being supplied in to Gardner, then the original FAIR can be used provided that a new FAIR cover sheet is presented that links the batch of the first delivery in to Gardner with the original FAIR report.

All First Article Reports shall be submitted with the first delivery into Gardner, and the supplier CofC shall be annotated with the relevant FAI report number. No further deliveries, after the FAIR delivery, are permitted by the supplier until they have received authorisation from Gardner that the FAIR has been approved and accepted.

The supplier shall perform and submit a full first article inspection (FAI), or a partial (delta) FAI for affected characteristics, when any of the following events occurs:

- A change in the drawing revision (e.g. Drawing, Parts List, CAD Models, Engineering Changes, Specification Changes, etc.)
- Any of the following changes that can potentially affect fit, form or function
  - 1) Manufacturing source(s) - Use of new forging, casting, swaging supplier, or use of new processing house, that accounts for the creation of design characteristics.
  - 2) Process(s) - Any method that effects the generation of design characteristics. This includes routing (Routers) sequence, methods of machining, or assembly and test.
  - 3) Inspection method(s) - Gauges designated by supplier to accept design characteristics features have been changed.
  - 4) Location of manufacture - Product is no longer manufactured in its entirety at supplier facility.

- 5) Tooling - Supplier designed fixture that holds the part during inspection has been modified, added, removed.
- 6) Materials - Part is manufactured and/or processed from an optional material type than the one called out on the engineering drawing.
- 7) A change in numerical control program or translation to another media
- 8) Movement of machinery to another location of the supplier's facility.
- 9) A lapse in production for two years since the last production date

#### **7.5.1.2 Control of Production Process Changes**

Changes shall be limited to approved personnel within the business, and note shall be taken of point 7.5.1.1 to determine if a FAIR is required on completion of the change.

Any major changes to the production process will require notification to Gardner as per section 7.1.4.

The supplier shall have a process for managing change requests from Gardner Aerospace, to ensure that changes are implemented as part of a planned process and that all elements have been reviewed and implemented by the supplier.

#### **7.5.1.3 Control of Production Equipment, Tools and Software Programs**

All equipment, tools and software shall be validated at the FAIR stage prior to commencement of serial production as per 7.5.1.1.

Suppliers shall have a process in place to monitor the condition of Gardner supplied tooling/equipment on a regular basis to ensure that items remain in a serviceable condition. If a tool is worn or damaged, then Gardner shall be contacted to determine corrective actions to be taken. The supplier is responsible for the routine calibration of this Gardner supplied tooling/equipment in line with the supplier's calibration system requirements.

A preventative maintenance plan shall be in place at the supplier, based on a risk analysis to determine potential high impact or high probability breakdowns, to ensure that equipment remains available and serviceable to meet Gardner Aerospace delivery requirements. In the case of a supplier not having duplicate capability in critical areas of production, the supplier shall have a mitigation plan in place to support Gardner delivery requirements in case of long-term breakdown.

#### **7.5.1.4 Post -Delivery Support**

As per AS9100 requirements

#### **7.5.2 Validation of Processes for Production and Service Provision**

As per AS9100, taking note of the specific quality clauses related to the contract being manufactured, as detailed in section 2 & 3 of this document.

#### **7.5.3 Identification and Traceability**

As per AS9100, with the following additional points:

- For sub-contract processes, the supplier shall identify the Gardner batch number on their internal shop traveller or have a method for linking the Gardner batch number to their own internal traceable number. Sub-contract suppliers shall always reference the Gardner batch number on their release paperwork back to Gardner.



- All items being delivered into Gardner shall be marked with either permanent markings in line with drawing requirements, or labelled, such that Gardner can match the batch traceable details on the supplier CofC to the received parts during the goods in process.

#### **7.5.4 Customer Property**

The supplier shall take care with Gardner supplied property and shall assume responsibility for any loss, damage or destruction while it is under the supplier's control or being used by the supplier.

Any materials free issued to a supplier for furtherance of a Gardner order shall only be utilised on Gardner product. Suppliers shall maintain traceable records of all free issued items for potential future audit by Gardner Aerospace. The supplier must maintain identity of all surplus material and tooling for return to the purchaser at the end of the contract unless otherwise directed by the purchaser.

Suppliers shall have a process in place to monitor the condition of Gardner supplied tooling/equipment on a regular basis to ensure that items remain in a serviceable condition. If a tool is worn or damaged, then Gardner shall be contacted to determine corrective actions to be taken. The supplier is responsible for the routine calibration of this Gardner supplied tooling/equipment in line with the supplier's calibration system requirements.

#### **7.5.5 Preservation of Product**

As per AS9100, with the following points:

- Suppliers shall have a process to eliminate Foreign Object Debris (FOD) from their products, and from their deliveries into Gardner Aerospace.
- Any materials being shipped to Gardner that have a shelf life shall have the shelf life clearly labelled on the incoming goods and on the incoming paperwork so that Gardner can identify the shelf life window. Goods shall not be supplied with a shelf life lower than 6 months without prior approval from Gardner Aerospace.
- Parts being supplied to Gardner shall be packaged sufficiently to avoid any damage during transit. All bare metal components being shipped into Gardner shall be suitably protected from corrosion through the use of temporary protection methods applicable to the contract as defined in section 3 of this document.

### **7.6 Control of Monitoring and Measuring Equipment**

As per AS9100

## **8. Measurement, Analysis & Improvement**

### **8.1 General**

As per AS9100, with the following points:

- Suppliers completing packages under Airbus GRAMS or ASR requirements, as defined in section 3 of this document, are required to complete Failure Mode Effect Analysis (FMEA) to identify key risks to the programme being supplied to Gardner and to identify any key characteristics for the process. Suppliers shall implement a control plan to monitor any key risk areas during the product lifecycle.

## **8.2 Monitoring and Measurement of Product**

### **8.2.1 Monitoring of supplier performance**

Gardner Aerospace use the Gardner Aerospace supplier portal to monitor supplier performance. The supplier portal automatically updates with information from the Gardner MRP system based on supplier deliveries and returns logged within the MRP systems.

Suppliers shall have access to the Gardner Aerospace Supply Chain portal where they can review their delivery and quality performance into Gardner Aerospace. The data held on this system may be used by Gardner for future supplier selection, and so it is essential that suppliers review this data and question any performance metrics which they do not feel accurately represents the supplier's performance.

Gardner Aerospace may, based on the performance indicators listed in the Gardner Aerospace Supply Chain portal, request an improvement plan from a supplier on Quality or Delivery issues. Failure of a supplier to respond to a performance improvement request, may result in the supplier being de-selected from the Gardner Aerospace approved supplier listing.

For access queries to the Gardner Aerospace Supply Chain portal, please contact your local Gardner purchasing officer.

Access to the portal is available at <https://gardner.valuechain.com>

### **8.2.2 Internal Audit**

As per AS9100

## **8.3 Control of Non-Conforming Product**

As per AS9100 but with the following points:

- When a supplier identifies product received from Gardner Aerospace that is in a non-conforming state, the supplier shall notify Gardner immediately for disposition.
- When Gardner identifies product received from a supplier that is non-conforming, it shall reject any items back to the supplier for review/re-work. These rejections shall appear on the Gardner Aerospace Supply Chain portal, where suppliers are required to provide actions they have taken to contain, identify the cause, and to prevent the non-conformance recurring. For further information on the Gardner Aerospace Supply Chain portal, please see section 10 of this document.
- When a supplier produces scrap material from Gardner supplied product, the supplier shall notify Gardner Aerospace prior to scrapping of any product to ensure that it is correctly accounted for on the Gardner system.
- When a supplier produces a non-conformance that they believe will be acceptable under a concession, this concession shall be applied for in writing to the Gardner Aerospace quality department. All concessions shall be closed prior to shipment of the product into Gardner. Gardner Aerospace reserves the right to pass on any costs relating to concession application from their customer to the supplier at fault for the original non-conformance
- When a supplier identifies a non-conformity with product after it has been shipped to Gardner Aerospace, a notification of escape shall be made to Gardner Aerospace.

This shall be completed in writing and addressed to the relevant Quality Manager of the Gardner Aerospace receiving site. The following information shall be included:

- Part numbers affected
- Delivery dates, release note numbers and batch numbers of product affected
- Details of the root cause of the fault
- Details of the corrective actions taken by the supplier to rectify the fault.

## **8.4 Analysis of Data**

As per AS9100

## **8.5 Improvement**

### ***8.5.1 Continual Improvement***

Gardner Aerospace encourages suppliers to have systems in place to promote and implement continuous improvement activities in quality, service, delivery, value, and environmental management. This philosophy should be fully deployed throughout the supplier's organization.

Gardner Aerospace wish to develop a steady and healthy supply chain, and so are willing to engage with suppliers to develop best practices across supplier sites and to share Gardner methods of improvement.

### ***8.5.2 Corrective & Preventative Action***

Suppliers shall have a process to implement corrective and preventative actions within their business when non-conformities are identified.

As per section 8.3, suppliers will be requested by Gardner Aerospace via the supply chain portal, to provide details of the actions taken as a result of supplier non-conformities identified at Gardner.

In the case of repeated non-conformities from a supplier, or continued poor performance, Gardner may request an improvement plan from the supplier where the supplier will be expected to identify and implement preventative actions to eliminate poor performance.

If a supplier fails to adequately answer non-conformities being raised by Gardner Aerospace, then the supplier risks being removed from the Gardner Aerospace approved supplier register.

## **9 Supplier Documentation Requirements**

Suppliers shall provide a certificate of conformity with delivery of Goods In to Gardner Aerospace. This certificate of conformity shall contain the following information:

- Part number as per Gardner purchase order
- Part issue number
- Part Description
- Quantity of parts
- Supplier Address
- Gardner purchase order number
- Batch or serial number of delivered product
- Copy of manufacturers certificates for standard parts

- Statement of conformity and reference to the relevant approval numbers to match the quality clauses as given in section 3 of this document.
- Reference to relevant FAIR paperwork if the CofC is accompanying a first delivery.
- Signature from an approved signatory of the supplier
- Details of any applicable concessions, along with a copy of the relevant approved concession paperwork.
- Details of any special processes if applicable.

## **10 Gardner Aerospace Supply Chain Portal**

Gardner Aerospace has an online supply chain portal for communication with suppliers on delivery and quality issues.

Access to this portal is available at <https://gardner.valuechain.com>

Suppliers will require an account to log on to this portal, and suppliers shall contact their Gardner Aerospace purchasing or quality contact to obtain a log on.

The Supply Chain Portal displays delivery and Quality performance for all suppliers in to all Gardner sites, and allows Gardner Aerospace to continually monitor supplier performance. The performance displayed in the portal is determined from deliveries made by the supplier to Gardner against purchase order requirements, and also takes in to account the number of rejections the supplier has received from Gardner.

These performance measures could be utilised by Gardner Aerospace for future supplier selection, and so it is essential that suppliers regularly use the portal to ensure all data is collaborated with Gardner contacts to ensure accuracy of the performance figures.

Where forecasting data is available for a product, the supplier shall have access to the forecasting data via the portal.

When a reject part from a supplier is identified within Gardner, a reject will be raised on the portal and the supplier contact will be automatically e-mailed with a request for a corrective action. Supplier contacts are required to log on to the portal to register their responses to each reject, and to detail the actions taken by the supplier to prevent re-occurrence of the non-conformity. If the supplier fails to respond to the corrective action request, the portal will continue to e-mail the supplier contact until a response is received, and the lack of action from the supplier will be recorded against their responsiveness score which is visible to Gardner.

Based on poor supplier performance on delivery or quality, Gardner may request initiation of an improvement plan from suppliers to achieve required targets.

Repeated failure of a supplier to address issues raised by Gardner, and to implement improvements to meet Gardner requirements, may result in the supplier being removed from the Gardner approved supplier list.

## **11 Calibration Requirements**

All calibration activity completed on behalf of Gardner Aerospace must be completed using equipment that is traceable to national/international measuring standards. Acceptance standards shall also be as per a national/international standard. Where no national/international standard exists, are no standard has been specified by Gardner, clarification shall be sought from your Gardner Aerospace contact.

A certificate of calibration shall be provided for each item of equipment which demonstrates this traceability to a national standard.

The following references are given as examples for acceptance standards. Other applicable national standards, depending on worldwide location, may be utilised in place of the standards given below.

<b>Instrument Type</b>	<b>Applicable standards*</b>
Dial Indicators	BS 2795
Verniers	BS887, DIN862, JIS B 7507
Micrometers	BS870, ISO 3611
Height Gauges	BS1643
Surface Plates	BS817
Plain Plug Gauges	BS969
Plain Ring Gauges	BS969
Thread Gauges	BS1580-1, BS919, BS A 345, ISO 3161
Heat Treatment Equipment	AMS2750
Gauge Blocks	ISO3650
Depth Micrometer	BS6468
Bevel Protractor	BS1685
CMM Machines	ISO10360-2
NDT Equipment	Internal Gardner Instruction GA-NDT-002

\*Where purchase orders specifically specify different acceptance standards to those listed above, the purchase order or contract requirements shall take precedent. Where multiple standards are listed, any of the applicable standards can be used.

## Appendix A- Airbus Contractual Applicable Documents

The below table shows a complete list of Airbus contractual documents that exist in contracts between Gardner Aerospace and Airbus. Suppliers should validate they comply with any applicable requirements listed below.

Document	Title
A1001.0	General Requirements for Archiving
A1011	Requirements for Airbus Supply Chain - Supplier Driven Transfers
A1015	Requirements on Information Security for Suppliers
A1015.0	Requirements on Information Security for Suppliers
A1056	Requirements for Identification and Marking of Aircraft Items
A1057	Requirements for Foreign Object Prevention Management
A1079	Structures, Systems Installation and Cabin Installation Definition Dossier Top Level Rules
A1080	Aircraft Configuration Management Rules
A1083	Qualification and Certification of Personnel for Non-Destructive Testing
A1091	Airbus Requirements for the Management of Hazardous Substances
A1094	Airbus Supply Chain Tooling -Specific Tooling Requirements
A1113	Requirements for Traceability of Aircraft Items
A1117.1	Requirements for Release Items
A1261	ICT Requirements for Suppliers
A1500	Airbus Supplier Requirements- General
A1501	Airbus Supplier Requirements- Plan and Manage
A1502	Airbus Supplier Requirements- Design and Develop
A1503	Airbus Supplier Requirements- Make (including assembly and test)
A1504	Airbus Supplier Requirements- Buy
A1505	Airbus Supplier Requirements- Deliver
A1506	Airbus Supplier Requirements- Customer Support
A2406.2	Manage Concession
A2752.1	Manage Occurrences and Unsafe Conditions
A2838.0	Manage Design Non Conformance
A2838.1	Manage Design Query Note
A2845	Manage Configuration Conformity and Attestation
A2846	Manage Special Instructions
A2854.1	Develop & Qualify Materials & Processes
A2854.2	Define and Perform Structure Test
A2875.0	Manage Certification
A5140	Manage Reallocation of Constituent Assemblies
A5242	Perform an Intervention on Constituent Assemblies or Production Aircraft
A5376	Perform First Part Qualification
A5404.9	Perform Tear Down
A5464	Define Geometrical Tolerances
A5507.1	Manage Propulsion System Acceptance Up to Final Assembly Line Delivery
ABD0003	Identification & Marking of Aircraft Items Design Rules and Process Codes
ABD0004 Part 0	Definition Dossier - Management Rules
ABD0004 Part 1	Drawing Set Definition - Common Rules

ABD0004 Part 2	Mechanical Drawing Set - Definition
ABD0092	Packaging Requirements for Spares & Kits
AM2016	Geometric Key Characteristics and Tolerancing
AM2216	Sheet Metal Parts: Manufacturing Skill Rules for Design
AM2217.1	General Practices of Metallic Parts Recommended Detailed Design Practices for Compliance to Machining Constraints
AM2217.2	Metallic Fueslage panel recommended detailed design practices for compliance to machining constraints
AM2620	Convention of 3D Measurements
AP1003	Environmental Requirements for Airbus Suppliers
AP2020.0	Continued Airworthiness Process for all Airbus Aircraft Civil Aspects
AP2100	Industrial Interface Documentation Procedure
AP2127	Basic Rules for Protection
AP2149	Production and Inspection Tools for Contractually Interchangeable Airbus Proprietary Parts
AP2157	Demonstrating contractual interchangeability
AP2655.2	Managing Nonconforming Items with Suppliers
AP5024.4	Mass Reporting
AP5024.6	Weighing
AP5242	Performing an Intervention on Constituent Assemblies or Production Aircraft
AP5866	Perform First Part Qualification (FPQ)
M1008.2	Method - Transfer of Work for Airbus Suppliers
M1016	Method for Production Process Verification
M1025	Method for Systems Engineering Data Exchange with Suppliers
M1028	Substances requirements for Airbus Suppliers
M1041	Method for Suppliers to Access and Maintain the POA Compliance Table
M1056	Method for Selection and Implementation of Marking Processes for Aircraft Constituent Items
M1117.1.1	Usage of the Authorised Release Certificate to Declare the Conformity/Airworthiness of New Items
M1119.5	Method for Managing Parachevement
M1123	Method for Technical Logbook
M1187.0	Customs Method for suppliers shipping goods to Airbus
M1187.1	Customs Method for suppliers shipping goods to Airbus in USA
M1194	Airbus Supply Chain - Specific Tooling Requirements
M1215.1	Method for Upper and Configuration Levels Naming & Numbering of Product Structure
M1215.2	Method for Lower Level & Equipment Naming & Numbering of Product Structure
M1215.3	Method for Special & Extended Items Naming & Numbering of Product Structure
M1356	Defining and cascading Critical Items/ Key Characteristics to Production
M1571	Method for Using Equipment Label for Equipment Data Tracing
M2000	Labelling Implementation Guide - Advance Shipping Notice & 2D Data Matrix Barcodes
M20060.2.2	Airbus Process Instruction Deviation (APID)
M20060.4.2	Technical Qualification of Manufacturing Processes
M20109.1	Manage Configuration Conformity at Constituent Assembly Level in CAIR Application



M20109.2	Manage Configuration Conformity at Constituent Assembly Level in eCAIR Application
M20139.0	Manage Mass Properties Measurement - General
M20139.1	Manage Mass Properties Measurement - Assemblies & Elementary Parts
M20144	Packaging Design Manual
M20166.5	Good Receipt of Material in 3S or V2V Logistic Flow
M20182.0	Composite General Design Rules
M20182.1	Composite Design Method and Rules with CATIA V5
M20182.2	Composites Design Product Data Management Rules
M20258	Jigs and Tools Naming and Numbering
M20260	Jigs and Tools Identification Manual
M20684.1	Comparison Tests Principles
M20691.1	Supplier/Service Provider Compliance Rules for In Situ Industrial Activities
M20691.2	Perform Couple <Product/Supplier Site> Compliance and Maturity's Activities for Material Products Suppliers
M20691.3	Perform Couple <Product/Supplier Site> Compliance and Maturity's Activities for Aerostructure Parts Suppliers
M20691.4	Perform Compliance Verification Activities for Equipment, Systems and Cabin Systems
M2215.1	Naming & Numbering of Product Structure and CAD Models
M2215.1.7	Numbering of Models for Part/Assembly/Equipment
M2223.1	Classification for Structural Concession Impacting Structural Repair Manual/Aircraft Structural Repair
M2238.0	Common Rules and Description of the Different Types of Aircraft Markings
M2238.1	Implement the Identification Marking of an Aircraft Constituent Item in the Design Data Set
M2238.2	Design and Graphical Creation of Cabin and Cargo Placards with Adobe Illustrator
M2259	3D Modelling Rules for CATIA V5 -General
M2266.2	Data Quality Requirements for CATIA V5
M2847.1	Management of "Movable" Components in the cDMU
M2881.0	General Rules for Content of Structure Design Data Set
M2881.1	Rules for Structural Assembly Design Data Set Content
M2881.2	Elementary Metallic Part Design Data Set Content
M2887.1	Rules to Optimize Creation, Update and Reutilization of Released Structure, System and Cabin Installation (SSCI) Design Data
M2928	Manufacturing Nonconformity Codes (NC-Codes)
M2946	Manage Equipment Assemblies