

This Document contains the applicable Quality Assurance Clauses of the RUAG Switzerland Ltd. for orders to supplier.

**Area of Application within RUAG Switzerland Ltd.:**

- RUAG Aviation including the following locations:  
Agno, Alpnach, Emmen, Geneva, Interlaken,  
Locarno, Lodrino, Mollis, Sion, Stans, Zweisimmen.
- RUAG Aerostructures including the following location:  
Emmen.

No.	Rev.	Title and text
Q1010(E)	18.09.12	<p><b>Performance of ISO 9001</b></p> <p>The supplier shall have a quality system that complies with International Organization for Standardization document ISO 9001 „ Quality management systems – Requirements “.</p> <p>RUAG Switzerland Ltd. recognizes the award of ISO 9001 to suppliers who can provide a copy of the evidence of their registration from an official certification body. At the request of RUAG Switzerland Ltd., the supplier shall provide a copy of the audit report prepared by the certification body.</p> <p>If the supplier loses registered status, the procurement office at RUAG Switzerland Ltd. has to be informed immediately.</p> <p>RUAG Switzerland Ltd. reserves the right to evaluate the quality capability of the supplier before awarding a contract and to keep it under review during the period of the contract.</p> <p>The supplier shall grant access for RUAG Switzerland Ltd. to all areas of its premises in which work is being carried out in accordance with the purchase document. The rights of examination have to be extended to the customers of RUAG and regulatory authority (supervisory board/ end-user).</p>

C H A N G E S					
REV	PAGE	CHAPTER	DESCRIPTION	DATE	SIG
L	diverse	diverse	Q1050, 1620, 1630, 1760, 1800 revised; Q1810 added	21.07.14	Kaps
M	divers	diverse	Q1160, 1225 deleted; Q 1090, 1100, 1300, 1220, 1310, 1520, 1680, 1750, 1900, 1910 revised	01.10.17	KNP
N	2, 4	diverse	Q1050 adjusted; Q1155 added	01.09.18	KNP

<p>REVIEWED BY:</p> <p>Name                      Date, Visa</p> <p>P. Kaufmann, RAQMC    24.08.18, KNP</p> <p>V. Gedikli, RCQS2        24.08.18, GEDV</p>	<p>APPROVED BY:</p> <p>Name                      Date, Visa</p> <p>F. Ammann, RAK        28.08.18, AMMF</p> <p>C. Streuli, RCAS        10.09.18, STRC</p>	<p>CONTROL:</p> <p>Revision service provided for registered owners only</p> <p>Source:</p> <p><input checked="" type="checkbox"/> Intranet   <input checked="" type="checkbox"/> SAP   <input type="checkbox"/> Andere</p>
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No.	Rev.	Title and text
Q1050(E)	21.07.14	<p><b>Performance of AS/EN9100</b></p> <p>The supplier shall have a quality system that complies with International Organization of Standardization document AS 9100 (EN 9100) “Quality Management Systems — Requirements for Aviation, Space and Defense Organizations”.</p> <p>RUAG Switzerland Ltd. reserves the right to evaluate the quality capability of the supplier before awarding a contract and to keep it under review during the period of the contract.</p> <p>The supplier shall give access to RUAG Switzerland Ltd. to all details of AS/EN9100 certification audits on the IAQG Oasis data base.</p> <p>The supplier shall grant access to all areas of its premises in which work is being carried out in accordance with the purchase document. The right of examination has to be extended to the RUAG Switzerland Ltd. customers and regulatory authority (supervisory board/ end-user).</p> <p>At least annually, the supplier shall conduct an internal audit to ensure compliance to their quality system and the controlling quality assurance document.</p> <p>The supplier shall immediately notify RUAG Switzerland Ltd. in writing of any changes in the management representative with assigned responsibility and authority for the quality system.</p> <p>The Supplier shall immediately notify RUAG Switzerland Ltd. in writing of any change to the manufacturing facility location of the contracted part number or assembly.</p> <p>The supplier shall immediately notify RUAG Switzerland Ltd. in writing of any changes to the quality control system that may affect the inspection, conformity or airworthiness of the Product.</p> <p>The supplier shall maintain an English language translation of</p> <ol style="list-style-type: none"> <li>(1) its quality manual,</li> <li>(2) the operating instructions that implement the quality manual requirements and</li> <li>(3) an index of all other supplier procedures that contain quality requirements.</li> </ol> <p>RUAG Switzerland Ltd. may require additional documentation to be translated, including but not limited to: shop orders, technical specifications, certificates, reports and non-conformance documents.</p> <p>The supplier will notify RUAG Switzerland Ltd. in writing within twenty-four (24) hours when discrepancies in Supplier's or subcontractor's processes or product are discovered or suspected for products Supplier has delivered or will deliver under this Purchase Document line item.</p> <p>RUAG Switzerland Ltd. reserves the right to reject any root cause and/or corrective action determination provided by the supplier, and may request subsequent investigation and/or corrective action to either RUAG Switzerland Ltd. or supplier-initiated corrective action requests. If the supplier is late in responding to RUAG Switzerland Ltd. corrective action requests, or if RUAG Switzerland Ltd. requires subsequent corrective action, RUAG Switzerland Ltd. reserves the right to withhold acceptance of shipments either at source or destination until supplier corrective action is submitted to RUAG Switzerland Ltd.'s satisfaction.</p>
Q1060(E)	18.09.12	<p><b>Requirements on the Quality Management System for Airbus Products</b></p> <p>This order is in furtherance of an Airbus order. The supplier and their subcontractors must hold a current Airbus Approval. Supplier shall inform RUAG Switzerland Ltd. procurement within 5 work days of any changes of their Airbus approvals.</p>

No.	Rev.	Title and text
Q1070 (E)	05.01.10	<p><b>Requirements on the Quality Management System for Bombardier Products</b></p> <p>This order is in furtherance of a Bombardier order. The supplier and their subcontractors must hold a current Bombardier approval. Supplier shall inform RUAG Switzerland Ltd. procurement within 5 work days of any changes of their approved supplier listing by Bombardier.</p>
Q1090(E)	01.10.17	<p><b>Article needs no further requirements</b></p> <p>The person responsible for procurement at RUAG Switzerland Ltd. has checked the procurement documents and determined that the article as described in the procurement documents does not need to satisfy any further quality clauses.</p>
Q1100(E)	01.10.17	<p><b>Supplier self-assessment of quality requirements</b></p> <p>The supplier is bound to complete the self-assessment form FRM-6010-003 (RUAG Aviation) or F3.1-90-EM (RUAG Aerostructures) and submit to corresponding RUAG division.</p>
Q1110(E)	01.10.01	<p><b>Establishment of a quality plan for hardware</b></p> <p>The supplier shall establish a quality plan according to LQA-004 within 30 working days after the issue of the order, if no other period is mentioned in the procurement documents. Acceptance of the quality plan will be given in writing.</p>
Q1120(E)	01.10.01	<p><b>Establishment of a quality plan for software</b></p> <p>The supplier shall establish a quality plan according to LQA-004 within 30 working days after the issue of the order, if no other period is mentioned in the procurement documents. Acceptance of the quality plan will be given in writing.</p>
Q1130(E)	01.10.01	<p><b>Establishment of an SPC plan</b></p> <p>Statistical process control (SPC) is required for the manufacture of the article. To this end, the supplier shall submit an SPC plan to the RUAG Switzerland Ltd. procurement office for their approval, 30 days before starting work on the article. As a minimum, the SPC plan shall contain the following details:</p> <ul style="list-style-type: none"> <li>- definition of the product characteristics to be controlled</li> <li>- definition of the process control chart(s) used</li> <li>- definition of the measuring methods</li> <li>- definition of the sampling sizes</li> <li>- definition of the frequency of inspection</li> </ul> <p>At the request of RUAG Switzerland Ltd., copies of the control cards and other relevant statistical data on products that have been subject to a statistical method are to be provided to RUAG Switzerland Ltd.</p>

No.	Rev.	Title and text
Q1140(E)	01.10.01	<p><b>Sampling inspection</b></p> <p>If not otherwise specified, the sampling inspection is to be accepted if documented processes are in use that contain the following as a minimum:</p> <ol style="list-style-type: none"> <li>1. the method for the selection of the sample that represent the batch appropriately</li> <li>2. method for the change of the sampling plan based on acceptance of the batch and the quality history as well as moving to 100% testing if nonconformities are discovered that could have an effect on safety</li> <li>3. ensuring that statistical inspection is carried out according to the requirements laid down ensuring that the batch size, size of sample and batch description are shown in the test records</li> <li>4. ensuring that the sampling plan does not allow the acceptance of „known defects“ in a batch that could have an effect on safety</li> </ol> <p>Remark: instead of rejection of the batch, 100% inspection and separation of nonconforming parts is allowed.</p>
Q1150(E)	01.10.01	<p><b>Production planning</b></p> <p>The supplier shall submit the production and inspection planning documentation to the RUAG Switzerland Ltd. for evaluation at least 30 days before starting work on the items of the contract.</p>
Q1155(E)	01.09.18	<p><b>Changes of Manufacturing Processes</b></p> <p>Should the Supplier plan a significant change to a manufacturing process, this must be promptly reported in written form to RUAG SCHWEIZ AG. Before announcing the change, the Supplier must assess the effect of the change on subsequent process steps and on part or assembly and define appropriate measures for verification. A written approval of the change must be issued by RUAG SCHWEIZ AG before the change may be implemented. The Supplier must give RUAG SCHWEIZ AG adequate time to clarify any potential effect of the change and build up safety stock.</p> <p>Applicable as significant changes are principally all changes which may affect the safety or effectiveness of the part / assembly or subsequent process steps. Significant process changes include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>- Changes in the production process which may have an effect on the part / assembly</li> <li>- Changes in critical manufacturing media or processing aids</li> <li>- Any change in the packaging, transport packaging of the part or assembly.</li> <li>- Relocation or new arrangement of machines or entire manufacturing units; new or modernized production facilities</li> <li>- Change in sub-contractors – for raw materials or outsourced processes, for example, as well as changes of manufacturing between supplier 's internal production and sub-supplier's and vice versa</li> </ul> <p>The same provisions apply to process changes arising with sub-contractors. The Supplier undertakes to have corresponding changes to processes also approved by Ruag Schweiz AG before implementation. This must be assured through corresponding agreements with sub-contractors.</p>
Q1170(E)	15.02.11	<p><b>Right of access</b></p> <p>The supplier shall grant right of access by RUAG Switzerland Ltd., their customer and regulatory authorities to the applicable areas of all facilities, at any level of the supply chain, involved in the order and to all applicable records.</p>

No.	Rev.	Title and text
Q1180(E)	10.01.13	<p><b>GQA Activities according to AQAP 2110</b></p> <p>All requirements of the existing contract may include the GQA (Government Quality Assurance) activities. A notification about all the GQA activities is required.</p> <p>A GQA has no influence to the contractual requirements to a supplier.</p> <p>If products, recognized as fraught with risk, are rejected or refurbished by RUAG, the GQA shall be informed.</p>
Q1185	10.01.13	<p><b>Rights of the official GQA inspector according to AQAP 2110</b></p> <p>Agreed an official Government Quality Assurance (GQA) according to AQAP 2110, an official quality assurance test in the facilities of the supplier must be approved.</p> <p>The government Officer shall have access and insight to ensure the system and operational procedures and documents which are linked to an order processing; in particular:</p> <ul style="list-style-type: none"> <li>- management review</li> <li>- contract and contract review</li> <li>- design review</li> <li>- treatment of defective products</li> <li>- all kinds of quality records</li> <li>- results of internal audits</li> </ul> <p>For product approval, a certificate of conformity (CoC) shall be provided.</p> <p>The supplier shall grant right of access to all premises that are relevant to the fulfilment of the contractual requirements.</p> <p>If the GQA officer likes to perform his own retesting, the supplier shall provide suitable work spaces, facilities and means of communication. On his request, support staff must be issued.</p> <p>The GQA is to inform in the following cases:</p> <ul style="list-style-type: none"> <li>- Quality tests, which are carried out by a subcontractor</li> <li>- defective deliveries from subcontractors</li> <li>- exceptional difficulties during the tests</li> <li>- errors and corrective actions</li> <li>- provided products, if they are lost or damaged</li> </ul>
Q1190(E)	05.01.10	<p><b>Configuration management requirements (Cofima)</b></p> <p>As a minimum, the Supplier shall describe and document the Cofima procedures for:</p> <ul style="list-style-type: none"> <li>- Configuration Identification</li> <li>- Configuration Control</li> <li>- Configuration Status Accounting</li> <li>- Configuration Audit</li> </ul>
Q1200(E)	01.10.01	<p><b>Design changes</b></p> <p>After the configuration has been defined, no changes to the design may be made without the written permission of RUAG Switzerland Ltd.. For in writing allowed changes, the process is to determine and RUAG Switzerland Ltd. procurement office to notify.</p>

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Q1210(E)	01.10.01	<p><b>Traceability requirements</b></p> <p>For the follow listed parts a traceability system is required that makes a recall of unqualified parts (restricted parts) possible at any time. The control system shall include as a minimum:</p> <ul style="list-style-type: none"> <li>a. a method for the unique recording of the part identification</li> <li>b. a system for tracking the restricted parts from the time of manufacture to the time of integration and shipment</li> <li>c. a system for recalling delivered and built-in parts that require reworking</li> </ul>
Q1220(E)	01.10.17	<p><b>Digital Product Definition for Boeing Products</b></p> <p>The supplier shall comply with the requirements of BOEING Document D6-51991, „Quality Assurance Standard for Digital Product Definition“, when using Boeing furnished datasets as authority for design, manufacture and inspection. The above mentioned document is available at the following link: <a href="http://www.boeing suppliers.com/dpd.html">http://www.boeing suppliers.com/dpd.html</a></p> <p><b>Supplier Developed Digital Product Definition (SDPD):</b></p> <ul style="list-style-type: none"> <li>a. Supplier electing to develop digital manufacturing processes from two dimensional (2D) engineering provided by Boeing shall obtain written approval from RUAG Switzerland Ltd. and/or Boeing prior to changing the currently approved process.</li> <li>b. The supplier shall develop a Quality System to verify digital controlled processes are traceable to the Boeing product approved type design. The supplier shall treat all SDPD for Boeing product as derivative datasets and protect the SDPD as Boeing type design. The supplier shall demonstrate configuration management to ensure engineering revisions are incorporated at the proper effectivity.</li> <li>c. The supplier shall not modify tooling-controlled processes using SDPD when Boeing Master tooling has been developed as the source data for the tooling; unless Boeing Tool design has developed a DPD Master Graphics Model to replace hard Master tooling. Boeing Tooling Inspection must validate tooling reconfigurations necessitated by the development of digital definition per clauses Q152.</li> <li>d. The supplier shall develop and provide RUAG Switzerland Ltd. Quality Assurance with a comprehensive plan describing the supplier's quality system for management of the supplier developed digital data and SDPD processes throughout its production facilities. The requirements, procedures and process references described in the plan shall provide the basis for the supplier organizations to implement user-level procedures and documentation.</li> <li>e. Supplier electing to develop digital manufacturing processes from two dimensional (2D) engineering provided by Boeing shall obtain written approval from RUAG Switzerland Ltd. and/or Boeing prior to changing the currently approved process.</li> <li>f. The supplier shall develop a Quality System to verify digital controlled processes are traceable to the Boeing product approved type design. The supplier shall treat all SDPD for Boeing product as derivative datasets and protect the SDPD as Boeing type design. The supplier shall demonstrate configuration management to ensure engineering revisions are incorporated at the proper effectivity.</li> <li>g. The supplier shall not modify tooling-controlled processes using SDPD when Boeing Master tooling has been developed as the source data for the tooling; unless Boeing Tool design has developed a DPD Master Graphics Model to replace hard Master tooling. Boeing Tooling Inspection must validate tooling reconfigurations necessitated by the development of digital definition per clauses Q152.</li> <li>h. The supplier shall develop and provide RUAG Switzerland Ltd. Quality Assurance with a comprehensive plan describing the supplier's quality system for management of the supplier developed digital data and SDPD processes throughout its production</li> </ul>

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		<p>facilities. The requirements, procedures and process references described in the plan shall provide the basis for the supplier organizations to implement user-level procedures and documentation.</p> <p>i. The supplier shall provide inspection plans for all product and tooling manufactured using digital definition. RUAG Switzerland Ltd. and/or Boeing Tooling Inspection must approve supplier's digital definition for inspection media unless delegated in accordance with clauses Q152.</p>
		<p>j. The supplier shall develop and maintain procedures to ensure identification and the configuration of SDPD controlled production hardware, tooling and the following SDPD systems:</p> <ul style="list-style-type: none"> <li>• Supplier developed Product Acceptance Software (PAS)</li> <li>• Computerized Measurement Systems (CMS)</li> <li>• CAD/CAM software and datasets</li> <li>• Supplier Data Analysis Software</li> <li>• Supplier generated datasets (derivative datasets)</li> <li>• Supplier Inspection datasets</li> <li>• Datasets flowed to subcontractors</li> </ul>
Q1230(E)	01.04.09	<p><b>Revision Status of Material Specifications</b></p> <p>The supplier shall, unless otherwise noted, deliver the material/standard parts to the latest revision of specification.</p>
Q1300(E)	01.10.17	<p><b>Selection of Lower-tier Suppliers</b></p> <p>If the supplier delegates subassemblies, machining or tests to a third party, this has to be approved by RUAG Switzerland Ltd. in advance. If this is not followed, RUAG Switzerland Ltd. reserves the right to decline parts, subassemblies or inspection results.</p> <p>The supplier shall evaluate and select lower-tier supplier on the basis of their suitability for fulfilling the requirements laid down. A document is to be drawn up in respect of acceptable lower-tier suppliers and submitted to RUAG Switzerland Ltd. procurement office. The document shall contain the following details:</p> <ol style="list-style-type: none"> <li>a. part number</li> <li>b. nomenclature</li> <li>c. volume of order</li> <li>d. special processes and identification of the process specification</li> <li>e. name and full address of the lower-tier supplier</li> <li>f. contact person</li> </ol>
Q1310(E)	01.10.01	<p><b>Raw material for Boeing Products</b></p> <p>Boeing Products containing metallic raw material from foreign producers required to conform to federal, military or industrial specifications shall be procured from suppliers listed in Douglas Material Specification (DMS) 2201. The supplier shall maintain certifications listing the material and the foreign producer's name and address in accordance with the record retention requirements of this document.</p>
Q1400(E)	01.03.10	<p><b>Approval of special processes by RUAG Switzerland Ltd / or its customers</b></p> <p>The supplier is responsible for the identification of special processes that require approval by RUAG Switzerland Ltd or its customer. The use of the RUAG Switzerland Ltd/or customer-certified or RUAG Switzerland Ltd-recognized process houses is written to be confirmed.</p>

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Q1410(E)	01.03.10	<p><b>Approval of special processes by Boeing</b></p> <p>Suppliers and / or supplier's subcontractors shall be an approved processor or shall use approved processors as required by D1-4426, "Approved Process Sources". A list of the approved processors and associated processes are available at the following link: <a href="http://www.boeingsuppliers.com/d14426/index.html">http://www.boeingsuppliers.com/d14426/index.html</a></p>
Q1420(E)	18.09.12	<p><b>Approval of special processes and Test facilities by Airbus</b></p> <p>This order is in furtherance of an Airbus order. The supplier and their subcontractors must hold a relevant Airbus Approval of the Qualified special Process List (QSPL) or Airbus Qualified Test Method List (QTML). Supplier shall inform RUAG Switzerland Ltd. procurement within 5 work days of any changes of its sources Airbus Approval.</p>
Q1500(E)	01.10.01	<p><b>Release of Production Tooling and special Inspection Equipment</b></p> <p>Production tooling used as a media of inspection and special inspection equipment shall be inspected and released prior to first use. Subsequently they shall be controlled and undergo periodic inspection. Such measurements shall be documented individually in the test report. Subsequent changes require the written approval of RUAG Switzerland Ltd. RUAG Switzerland Ltd. tooling may not be changed or reworked without the written permission of RUAG Switzerland Ltd.</p>
Q1510(E)	01.10.01	<p><b>Verification of tooling at supplier's facility</b></p> <p>The verification of tooling by RUAG Switzerland Ltd. at the supplier's facility before use is a requirement. The RUAG Switzerland Ltd. Quality Assurance is to be informed at least five days in advance. RUAG Switzerland Ltd. can carry out specific inspections itself or require them to be carried out by the supplier. The necessary inspection equipment and space is to be made available at no cost. The verification of tools by RUAG Switzerland Ltd. will be confirmed in a protocol.</p>
Q1520(E)	01.10.01	<p><b>Tooling Used to Manufacture Boeing Product</b></p> <p>The supplier shall comply with the below noted instructions in lieu of D33200. These instructions apply to suppliers fabricating, performing rework, repair, or modifications to airframe and structure component type tooling for Boeing product. Suppliers' electing to use Electronic datasets to define supplier tooling used to control Boeing product must communicate such intent, the supplier will be evaluated on the type of equipment used to establish such controls. Computerized Measurement Systems (CMS), used by a supplier must be certified to the accuracy required to meet Tool Design tolerances.</p> <p>The supplier shall utilize the following tool categories:</p> <ol style="list-style-type: none"> <li>a. Category I Tooling includes the following: Master tooling, interface control tooling, master control tooling, master models, master graphics models, master gauges, master templates, two dimensional (2D) and/or three dimensional (3D) electronic models and all other tooling establishing or controlling the tool definition.</li> <li>b. Category II Tooling includes the following: Interchangeability and Replaceability (I&amp;R) tooling, production end-item inspection tooling, check fixtures, inspection gauges, major structure assembly jigs and sub-assembly jigs for end item assemblies (when characteristics cannot be validated in the end item assembly tool), and or I &amp; R assemblies.</li> <li>c. Category III Tooling includes, but is not limited to the following: Hammer dies, blanking tools, hydro blocks, post form blocks, router boards, spin blocks, non-inspection media trim templates, and drill bars.</li> </ol>



No.	Rev.	Title and text
		<p>The supplier and their subcontractors shall inspect tools under contract with RUAG Switzerland Ltd. and shall establish and maintain a documented system for the control, accountability and configuration management of tooling to Boeing Engineering Type Design and Quality requirements.</p> <p>The supplier and their subcontractors must be approved by RUAG Switzerland Ltd. and/or Boeing prior to design and/or fabrication of Category I and Category II tooling.</p> <p>The supplier shall contact RUAG Switzerland Ltd. procurement office and request a Tooling Systems Survey when conducting tooling work for Boeing product.</p> <p>All "Category I" and "Category II" tooling fabricated, reworked or repaired by the supplier must have a supplier and RUAG Switzerland Ltd. respectively Boeing Supplier Quality Tooling stamp on the documentation and tool prior to use, except flat pattern tooling fabricated from Boeing Supplier Quality Tooling-approved Master Lay-Out (MLO), customer-furnished MLO/Computer Produced Vellum Overlay (CPVO), or Boeing furnished Un-Dimensioned Drawings (UDDs).</p> <p>All "Category I" tooling fabrication/rework/repair requires communication with RUAG Switzerland Ltd. Quality Assurance prior to starting work to enable acceptance planning by RUAG Switzerland Ltd. respectively Boeing Supplier Quality Tooling.</p> <p>When the supplier detects damage or deviation to any Category I and II tool, the supplier must record all deviation and report the information with corrective actions to RUAG Switzerland Ltd.</p> <p>The supplier shall not modify, rework, or repair any Boeing tooling without prior RUAG Switzerland Ltd. approval.</p> <p>Verification that an article conforms to blueprint requirements made from a tool used as a Media of Inspection (MOI) does not constitute acceptance verification of Category I &amp; Category II tooling.</p>
		<p><b>1. Master Tools (Category I)</b></p> <ol style="list-style-type: none"> <li>a. The prime responsibility for the creation, accountability, control, and maintenance of Master tools is vested in RUAG Switzerland Ltd. and/or Boeing</li> <li>b. Master tools shall not be reworked, repaired, modified, duplicated, or have any part deleted without specific written approval of RUAG Switzerland Ltd. and/or Boeing</li> <li>c. A Tool Design is required for every Master Tool and all gauges set to Masters in the possession of a supplier.</li> <li>d. The supplier shall verify and record the Master reference system dimensions prior to cycling Master in any assembly tooling.</li> <li>e. Master Tooling shall not be used to directly produce Boeing product.</li> <li>k. Master Tooling Designs shall include the proper storage container for the Master Tool. The supplier shall ensure the Master Tools are stored to prevent distortion, corrosion or weather damage.</li> </ol> <p>When the supplier elects to convert physical Master tooling to Electronic Definition the supplier shall follow this preferred process for gage elimination and replacement with digital configuration control. Digital configuration will replace the use of physical Category I Tooling as a Manufacturing control Media. Digital configuration will also be used to perform periodic tool inspection (routine check) of manufacturing production tooling, replacing the use of Master Models and Physical Gauges.</p>

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		<ul style="list-style-type: none"> <li>a. The supplier must have a RUAG Switzerland Ltd. approved CAD/CAI CMS capability</li> <li>b. Tooling must be physically capable of conversion to and applying CMS digital control</li> <li>c. The business case must support conversion effort.</li> <li>d. The supplier must request to RUAG Switzerland Ltd. via a gauge less Tooling Conversion Request Form</li> </ul> <p>The supplier shall contact RUAG Switzerland Ltd. Quality Assurance for verification of Master Tooling condition prior to the opening and/or closing of customer provided Master Tooling containers. The supplier shall notify RUAG Switzerland Ltd. procurement office in the event of any damage to the Master Tooling container.</p>
		<p><b>2. Tool Inspection</b></p> <ul style="list-style-type: none"> <li>a. The supplier and the subcontractor tooling shall be inspected by the supplier prior to first usage. Quantitative inspection results shall be recorded on a format approved by RUAG Switzerland Ltd.</li> <li>b. All MOI tooling and any other tooling identified by RUAG Switzerland Ltd. Quality Assurance or the supplier shall undergo periodic inspection by the supplier to verify continued conformance of the tool.</li> <li>c. Initial Periodic checks shall be witnessed and concurred with by RUAG Switzerland Ltd. Quality Inspection for all new, relocated, reactivated, or converted Category II tools. The supplier shall notify RUAG Switzerland Ltd. Quality Assurance when an initial periodic inspection will occur. Periodic inspections shall not be delayed due to absence of RUAG Switzerland Ltd. Quality Inspection. Records of periodic inspections will be made as part of the Tool history data maintained by the supplier, and shall be made available for review during RUAG Switzerland Ltd. System Survey activities.</li> <li>d. New, relocated, reactivated, or converted Category I and II tools require acceptance by RUAG Switzerland Ltd. and/or Boeing . Acceptance of Category III tools is the responsibility of the supplier. Category III tools shall be subject to acceptance by RUAG Switzerland Ltd. Quality Assurance.</li> <li>e. The supplier shall notify RUAG Switzerland Ltd. Quality Assurance of intent to use Electronic Digital Data to validate any Category I and II tooling and any other tooling when used to control an Interchangeable Part or Assembly. RUAG Switzerland Ltd. will evaluate the supplier's capability to implement and control digital inspection datasets.</li> </ul> <p>The supplier shall notification RUAG Switzerland Ltd. at least 30 working days in advance to complete required tool acceptance to the supplier's location. The documentation of the in-process and final inspection must be available.</p>
		<p><b>3. Supplier Mylars</b></p> <ul style="list-style-type: none"> <li>a. All new or modified, supplier Mylars, including those created from electronic data, shall be validated by the supplier and accepted by RUAG Switzerland Ltd. and or Boeing.</li> <li>b. Reproduced supplier Mylars must be full size and include the customer acceptance stamps. Reproduced Mylars do not require reacceptance by RUAG Switzerland Ltd. When reproduced, the original supplier Mylar shall be maintained by the supplier as the Master. Reproduced supplier Mylars shall be checked for dimensional accuracy by measuring the ten (10) inch grid line, or valued targets on the Mylars. The supplier shall have a documented process for reproduction and control of any Mylar.</li> </ul>

No.	Rev.	Title and text
		<p><b>4. Customer-Furnished Mylars</b></p> <p>a. The supplier shall not modify customer-furnished Mylars used for product/process acceptance. Mylars must be approved and stamped with an RUAG Switzerland Ltd. respectively Boeing "Q" Stamp prior to use as an MOI tool. Mylars at supplier's locations shall be validated as current to the manufacturing planning document, engineering revision, and have product number identification. Reproduced customer-furnished Mylars shall be checked for dimensional accuracy by measuring the ten (10) inch grid line, or valued targets on the Mylars. Un-Dimensioned Drawings (UDDs) are full sized engineering drawings and require an engineering title block, and released engineering signature.</p> <p>b. Customer-furnished Mylars may be reproduced by a supplier, provided controls are in place to recall all reproductions when revisions are issued. Reproduced Mylars must be full size and include the RUAG Switzerland Ltd. respectively Boeing acceptance stamp or Boeing engineering signature for UDDs. Reproduced Mylars do not require reacceptance by RUAG Switzerland Ltd. or Boeing Quality Assurance. When reproduced, the original Boeing furnished Mylar shall be maintained by the supplier as the Master. The supplier shall have a documented process for reproduction and control of any mylar.</p>
Q1600(E)	01.10.01	<p><b>RUAG Switzerland Ltd. in-process inspection</b></p> <p>Inspection by RUAG Switzerland Ltd. at the supplier's facility during the manufacturing process is a requirement. The articles are to be submitted to the RUAG Switzerland Ltd. Quality Assurance prior to assembly and throughout all processes and testing as determined by the RUAG Switzerland Ltd. Quality Assurance. If required, the supplier should include all the inspections planned by RUAG Switzerland Ltd. in the planning documentation. The supplier shall consult the RUAG Switzerland Ltd. Quality Assurance during the planning of the First Article Inspection process in order to determine and coordinate the inspection points required by RUAG Switzerland Ltd.. The documented RUAG Switzerland Ltd. inspection points remain valid for all purchase document line items until the supplier is informed in writing of a change in the RUAG Switzerland Ltd. inspection points. The RUAG Switzerland Ltd. Quality Assurance is to be informed at least five days in advance. RUAG Switzerland Ltd. can carry out specific inspections itself or require them to be carried out by the supplier. The inspections carried out will be confirmed by a inspection report. A copy of the inspection report is to accompany the delivery and to be referenced in the certificate.</p>
Q1610(E)	01.10.01	<p><b>Pre-acceptance by RUAG Switzerland Ltd. at supplier's facility</b></p> <p>Inspection by RUAG Switzerland Ltd. at the supplier's facility after final testing by the supplier and before packing and delivery is a requirement. The RUAG Switzerland Ltd. Quality Assurance is to be informed at least five days in advance. RUAG Switzerland Ltd. can carry out specific inspections itself or require them to be carried out by the supplier. The necessary inspection equipment and space is to be made available at no cost. The tests carried out will be confirmed by an inspection report. A copy of the inspection report is to accompany the delivery and to be referenced in the certificate. Without special permission from RUAG Switzerland Ltd., the supplier may not undertake any additional work on a product that has been accepted by the RUAG Switzerland Ltd. Quality Inspection.</p>
Q1620(E)	21.07.14	<p><b>First Article Inspection at supplier's facility</b></p> <p>The First Article Inspection (FAI) shall be carried out by the supplier at the supplier's facility in accordance with LQA-005. The results of the inspections or tests are to be recorded in a First Article Inspection Report. The RUAG Switzerland Ltd. Quality Assurance is to be informed at least ten (10) working days in advance. RUAG Switzerland Ltd. will carry out a FAI subsequent to the supplier's FAI or confirm the conformity of the supplier's FAI. The necessary inspection equipment and space is to be made available at no cost. The FAI shall be released by RUAG Switzerland Ltd. before delivery of the batches in accordance with the delivery plan.</p>

No.	Rev.	Title and text
Q1630(E)	21.07.14	<p><b>First Article Inspection at supplier's facility and verification by RUAG Switzerland Ltd. on receipt of the goods</b></p> <p>The First Article Inspection (FAI) shall be carried out by the supplier at the supplier's facility in accordance with LQA-005. The results of the inspections or tests are to be recorded in a First Article Inspection Report. A copy of this FAI has to be submitted to RUAG Switzerland Ltd. At least 5 working days before the delivery of the part. In case of deviations in the FAI report RUAG Switzerland Ltd. keeps the right to reject the planned delivery. A further copy has to be submitted together with the First Article for verification. RUAG Switzerland Ltd. will verify and confirm the supplier FAI. The FAI shall be released by RUAG Switzerland Ltd. before delivery of the batches in accordance with the delivery plan.</p>
Q1640(E)	01.10.01	<p><b>Qualification of the First Article</b></p> <p>The supplier shall take the scope of the qualification testing from the technical documentation and submit a qualification procedure to the RUAG Switzerland Ltd. procurement office at least 30 days before the start of the qualification testing.</p>
Q1650(E)	01.10.01	<p><b>Interchangeability</b></p> <p>The supplier shall conduct interchangeability demonstrations on products identified as Interchangeable and Replaceable (I &amp; R) on the drawing.</p> <p>Interchangeability demonstrations shall be completed on the first production article manufactured from production tooling. Subsequent demonstrations shall be completed on each follow-on article manufactured, until an acceptable quality history is developed which justifies skip-lot inspections and is approved by RUAG Switzerland Ltd. Quality Assurance.</p> <p>Demonstration of the Interchangeability may be accomplished by any one of the following methods:</p> <ol style="list-style-type: none"> <li>a. two or more parts (with the same part number) selected at random and installed on the next assembly or end-item</li> <li>b. one part selected at random and installed on two or more next assemblies or end-items</li> <li>c. one part checked in a certified tool then installed in the next assembly or end-item without alteration</li> <li>d. two or more parts (with the same part number) checked in a certified tool</li> </ol>
Q1660(E)	01.10.01	<p><b>Fit check at RUAG Switzerland Ltd.</b></p> <p>After receipt at RUAG Switzerland Ltd. and before acceptance, a fit check will be carried out on the First Article. The fit check is a physical installation of the article and a visual evaluation of the installation to determine its acceptability.</p>
Q1670(E)	01.10.01	<p><b>Test report requirement</b></p> <p>The supplier shall submit a complete copy of the results of all the tests and inspections that shall be carried out, confirmed by the initials of an authorized person, with each batch delivered. If the specifications contain variable values with tolerances, the test report shall contain the actual values and the tolerances. Traceability data such as manufacturing batch, serial number of the material tested etc. shall also be contained in the test report.</p>

No.	Rev.	Title and text
Q1680(E)	01.10.17	<p><b>Confirmation of working processes on RUAG Switzerland Ltd. shop orders (Routing sheets)</b></p> <p>The person carrying out the work shall confirm every step of work carried out in the manufacturing process for completeness and correctness by signing and dating the Routing Sheet provided. In addition, the authorized inspector shall confirm, by initials/ stamp and date, every examination carried out to ensure that each previous stage of work has been completed and the quality requirements have been fulfilled. If the procurement documents specify acceptance by RUAG Switzerland Ltd. at the supplier's facility, the RUAG Switzerland Ltd. Quality Inspector will confirm acceptance by date and stamp on the Routing Sheet.</p>
Q1750(E)	01.10.17	<p><b>Control of nonconforming product</b></p> <p><b>1. Material disposition authorization</b></p> <p>Nonconforming products that relate to the supplier's own design are to be evaluated by the supplier according to its normal material review practices as long as the nonconformity has no effect on the next stage of assembly or an overall design specification or drawing forming a part of the purchase document.</p> <p>For all other products, except if the following two decisions can be taken, the supplier or its lower-tier supplier may take no material review without the written permission of RUAG Switzerland Ltd.:</p> <p>a. <b>reworked to specification</b> –products which can be made to fulfill the specified requirements by completion of work omission or rework to specification are to be returned by the supplier for reworking and released after finalization of the reworking and re-inspection.</p> <p>b. <b>scrapped</b> –products which are obviously unfit for use or which are not economically repairable may be scrapped by the supplier. Obtain this product customer supplied products, RUAG Switzerland Ltd. shall be notified. Scrap material is to be disfigured that its use by mistake and/or delivery under the terms of the procurement document is excluded. Scrap material that is used for training purposes shall be identified with an unmistakable identification to prevent its use by mistake. Unusable parts provided by RUAG Switzerland Ltd. may not be scrapped without the written permission of RUAG Switzerland Ltd.</p> <p><b>2. Material disposition requests (requests for concession)</b></p> <p>For nonconforming products that cannot be decided according to section 4.13.1 shall not be delivered before there has been a decision by the RUAG Switzerland Ltd. material review board. The supplier shall submit a material disposition request to RUAG procurement office (RUAG Switzerland Ltd. FORM-7080-001 „Nonconformity report“) for disposition. The following information shall be provided, as a minimum:</p> <p>a. description of the nonconformity (i.e. what it is and what it should be)</p> <p>b. applicable drawing number(s) and zone(s)</p> <p>c. affected serial number(s)</p> <p>d. recommended disposition, if any</p> <p>e. work stations checked to prevent repetition of the nonconformity</p> <p>f. cause of the nonconformity</p> <p>g. corrective action taken by the supplier to prevent recurrence</p> <p>h. effectiveness of the corrective action</p> <p>The shipment shall be accompanied by copies of the approved material disposition request.</p>

No.	Rev.	Title and text
		<p><b>3. Rejections</b></p> <p>Deliveries of nonconforming products without passing RUAG Switzerland Ltd. disposition are subjected at reception to the material disposition and rejected. The products are returned to the supplier for reworking, repair, or replacement. If not possible, the product will be reworked, repaired or scrapped by RUAG Switzerland Ltd. with charge of cost after consultation with the supplier.</p> <p>If parts on the production line are rejected and the cause lies with the supplier, the supplier will receive the nonconforming part together with a copy of the RUAG Switzerland Ltd. nonconformity report and a complaint for reworking, repair or replacement.</p> <p>The supplier must ensure that subsequent deliveries do not contain the same nonconformity.</p> <p>The rejection will influence the appraisal of the supplier. If the supplier is not in agreement with the determination, a written proposition is to be delivered within 30 calendars days for the new appraisal at RUAG Switzerland Ltd. The proposition must contain a found proof.</p> <hr/> <p><b>4. Shipment of reworked, repaired or replacement parts to RUAG</b></p> <p>The supplier shall carry out the work according to the RUAG contract and applicable design requirements. The use of RUAG - approved repair manuals is acceptable, provided that all tolerances and part comply with the original design requirements. After completion of the work, the parts shall be submitted to RUAG with a copy of the reworking/repair details. The details shall include, as a minimum, as applicable:</p> <ul style="list-style-type: none"> <li>a. certificate of conformity that the rework/repair was done in according to the original specification and conforms to the design requirements</li> <li>b. applicable drawings utilized to accomplish the reworking/repair</li> <li>c. applicable material specifications</li> <li>d. applicable overhaul procedures</li> <li>e. applicable processing specifications</li> <li>f. inspection and test results</li> </ul> <p>In the event that a repair is made which adversely affects health, safety, performance, interchangeability, fit, reliability, effective use/operation, weight or appearance (where a factor), the supplier shall submit a material disposition request to the RUAG Switzerland Ltd. procurement office for disposition. The form to be used is determined specifically for the order.</p>
Q1760(E)	21.07.14	<p><b>Corrective and preventive action</b></p> <p><b>1. Response times for RUAG Switzerland Ltd. requested corrective action</b></p> <p>When RUAG Switzerland Ltd. issues a corrective action notice, the supplier shall conduct a preliminary investigation, define the containment actions and inform RUAG Switzerland Ltd. about it within three (3) working days after receipt, if requested. The preliminary investigation shall show the effect of the discrepancy on work in progress at the supplier's and/or sub-tier supplier's premises, if applicable, and contain a plan for further action. If not otherwise marked, the supplier shall make a formal response within 30 working days after receipt of the request, containing the following details:</p> <ul style="list-style-type: none"> <li>a. description of the problem</li> <li>b. qualitative and timing effect of the problem on work in progress</li> <li>c. cause of the problem</li> <li>d. corrective action taken</li> <li>e. effect of the corrective action (serial number or date)</li> <li>f. planned method of checking the effectiveness of the corrective action</li> </ul>

No.	Rev.	Title and text
		<p><b>2. Acceptance/rejection of corrective action</b></p> <p>RUAG Switzerland Ltd. has the right to reject any planned/implemented corrective action taken by the supplier or to require further investigations and/or corrective action. If the supplier is late with its response to RUAG Switzerland Ltd.'s order or if further action is necessary, RUAG Switzerland Ltd. reserves the right to hold back shipments either at source or destination.</p> <p>All corrective actions are to be submitted for RUAG Switzerland Ltd. review, upon request.</p>
Q1800(E)	01.10.01	<p><b>Record retention period</b></p> <p>If not otherwise marked in the procurement documents, records are to be retained for at least 13 years after their creation. The supplier is bound, at any time during the retention period, to provide RUAG Switzerland Ltd. with the desired records, or extracts therefrom, at no cost to RUAG Switzerland Ltd. RUAG Switzerland Ltd. is to be informed in writing before records are destroyed.</p>
Q1810 (E)	21.07.14	<p>If not otherwise marked in the procurement documents, records are to be retained for at least six (6) years after end of lifetime of the end product (aircraft).</p> <p>The supplier is bound, at any time during the retention period, to provide RUAG Switzerland Ltd. with the desired records, or extracts therefrom, at no cost to RUAG Switzerland Ltd. RUAG Switzerland Ltd. is to be informed in writing before records are destroyed.</p>
Q1900(E)	01.10.17	<p><b>Requirements for Certificate of Conformity (CoC)</b></p> <p>The supplier shall accompany each delivery with a certificate that confirms the conformity of the product delivered with the requirements laid down in the technical documentation and the procurement documents.</p>
Q1901(E)	20.09.05	<p><b>Mill Certificate for raw material</b></p> <p>The goods supplied must be accompanied by a work inspection certificate, indicating:</p> <ul style="list-style-type: none"> <li>- chemical analysis for each charge</li> <li>- information on effected heat-treatment</li> <li>- mechanical properties</li> </ul> <p>information and results of non-destruction testing</p>
Q1910(E)	01.10.17	<p><b>Requirements for Airworthiness Certification</b></p> <p>An EASA Authorised Release Certificate for the article is a requirement. An original EASA Form 1 or FAA form 8130-3 or TCA FORM ONE „Authorised Release Certificate“ shall accompany every delivery. The certificate shall contain the EASA / FAA registration number of the manufacturer/ maintenance company and be stamped/initialed by an authorized person.</p>

### Change Service

The LQA-001 is usually checked and revised every two years for being up-to-date. Once a change has been done by the customer the LQA-001 has to be updated immediately.

The Leaders of Supply Chain Management RA and RC are responsible for any amendments in this LQA.