VOLVO

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IATF 16949 Customer-Specific Requirements of the Volvo Group

Quality lasts when we put it first. Every day in the Volvo Group, we are relentlessly working to improve our processes, products, services, and competences to be the best in class in our industry.

This document supplements IATF 16949 requirements and applies to all supply partners for:

- **Volvo trucks,**
- **Mack Trucks,**
- **Renault Trucks,**
- **Volvo Eicher Powertrain (VEPT),**
- **Volvo Eicher Commercial Vehicles (VECV),**

It does not supersede Supply Partner Quality Assurance Manual (SPQAM), Code of Conduct nor any other Supply Partner's related document, which are to be considered as Customer Requirements (as defined in IATF 16949).

They can be downloaded at: https://www.volvogroup.com/en/suppliers/our-supplier-requirements.html.

Martin Ranäng

Head of Supply Network Quality

Section 1 – Volvo Group Customer-Specific Requirements

§ IATF 16949	Customer-Specific Requirement to IATF 16949	Rationale
5.1.1.1 Corporate responsibility	Management must provide evidence that all the Requirements of the Volvo Group Supply Partner Code of Conduct are compliant both internally and throughout all the Supply Partner's supply chain.	To specify some requirements from the Code of conduct that can be easily verified during an audit including but not limited to: • No modern slavery and forced labor. • Respect children's right in line with the UN Convention on the Rights of the Child • Respect Working Hours and Leave • Non-Discrimination and Fair Treatment • Circular Economy, Waste and Water Management
5.3.1 Organizational roles, responsibilities, and authorities	All changes to ownership, management, or management structure and IT systems (ERP/MRP, etc.…), must be notified to Buyer before they are put in place, by sending the PPCN form (SPQAM § 6.13).	To clarify that also specific organizational changes must be notified to the customer.
6.1.2.3 Contingency plan	An Information Security Management System (ISMS) must be put in place. Its minimum requirements are: • Information Security Policy and Governance: To ensure that information security policies are aligned with business objectives and are supported by senior management, creating a culture of security throughout the organization. • Risk Assessment and Treatment: To ensure that the organization systematically identifies, analyzes, and treats information security risks tailored to its specific context, resources, and objectives. • Incident Response Process and Plan: To ensure that the organization is prepared to detect, report, and manage security incidents effectively, minimizing impacts and preventing similar incidents in the future.	To clarify the ISMS requirements.

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	• Access Control: To ensure that only authorized individuals have access to specific information systems or data, based on their role and need to know, which is crucial for maintaining the confidentiality, integrity, and availability of data. A contact point person within the organization where more information about cyber incidents or breaches can be obtained (e.g., an Information Security Officer) must be appointed and communicated to Volvo Group. Volvo must be informed without undue delay, and in any case not later than 3 business days, from discovery of cyber incident or data breach (SPQAM § 6.12).	To clarify the need for a clear emergency communication process.
7.5.3.2.1 Record retention	Minimum record retention criteria: (SPQAM § 7.8) • PPAP documentation: Duration of production and service activity plus 1 year (unless otherwise specified by Volvo Group) • Quality records: 3 years from date of production • Quality system documents: 3 years from date of creation • Product safety related records: Minimum 10 years after product phase-out or end of production. • Conformity of Production parts records: 10 years from date of product manufacture Any additional applicable legal requirement related to retention of product safety parts and conformity of production parts must be compliant. They are defined in Part Version Report (PVR) and in the drawing (SPQAM § 6.1).	To provide specific retention criteria and related source of information
8.1.1 Operational planning and control	AIAG Advanced Product Quality Planning (APQP) must be conducted on all developed products (SPQAM § 4). In addition, planning and completion of the following cross-functional activities must be conducted in cooperation with Volvo Group: • Review of Technical Specifications (RTS) – documented in RTS matrix (SPQAM § 6.1) • Product Application Agreement (PAA) – documented in PAA form (SPQAM § 6.2) • Part Handling Review (PHR) – conducted at Volvo receiving plant(s) (SPQAM § 6.3) • Process audit (SPQAM § 8.5)	To clarify which APQP activities are customer driven and to guide the auditor in gathering the evidence required.

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	For Software (SW) Products, SW APQP must be used in accordance with Supplier Quality Engineer (SQE) requirements (SPQAM § 4.5). Including Product Cybersecurity described in Cybersecurity Quality and Development Process Requirements: CS-QDPR based on the automotive cybersecurity standard ISO/SAE 21434 (SPQAM § 6.12). Functional safety is centered on 6 Functional Safety Joint Reviews which are coordinated with the SW APQP reviews: FSJR0 Project Planning, FSJR1 Component Development Start, FSJR2 Detailed Safety Requirements, FSJR3 Initial Design, FSJR4 Final Design and FSJR5 PPAP (SPQAM § 6.11). A detailed development plan must be developed and included as part of the Request for Proposal (RFP) response package (SPQAM § 3.4). The APQP review template must be completed and reviewed internally before each meeting. Evidence of time plans and their regular reviews with Volvo must be available upon request.	To advise about SW development-specific requirements. To advise about electronics and SW development-specific requirements. To clarify that Volvo driven reviews, occur upon supplier's preparation and completed internal review.
8.2.1.1 Customer communication	The unique system for control of technical documentation, including the drawing, is the Part Version Report (PVR) instead of a drawing as the top-level document. The PVR contains part number, drawing number, current revision data, the applicable Digital Shape Model and references to related technical information (SPQAM § 6.1).	To guide the auditor on where to find the needed information regarding technical documentation hierarchy.
8.2.3.1.3 Organization manufacturing feasibility	Manufacturing feasibility must be conducted before responding to any RFP, including software, and must include a plant capacity assessment (SPQAM § 3.4).	To clarify that it is not limited to new technologies or changed processes.
8.3.3.3 Special characteristics	The selection criteria and guidelines related to special characteristics are based on STD 105- 0007 while standard STD 105-0004 defines the guidelines for grading characteristics (SPQAM § 6.4). Special characteristics and the related performance targets are:	To indicate which customer standard may provide information. To specify indication and performance targets for each critical characteristic and the expected reaction when process is not under statistical control.

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	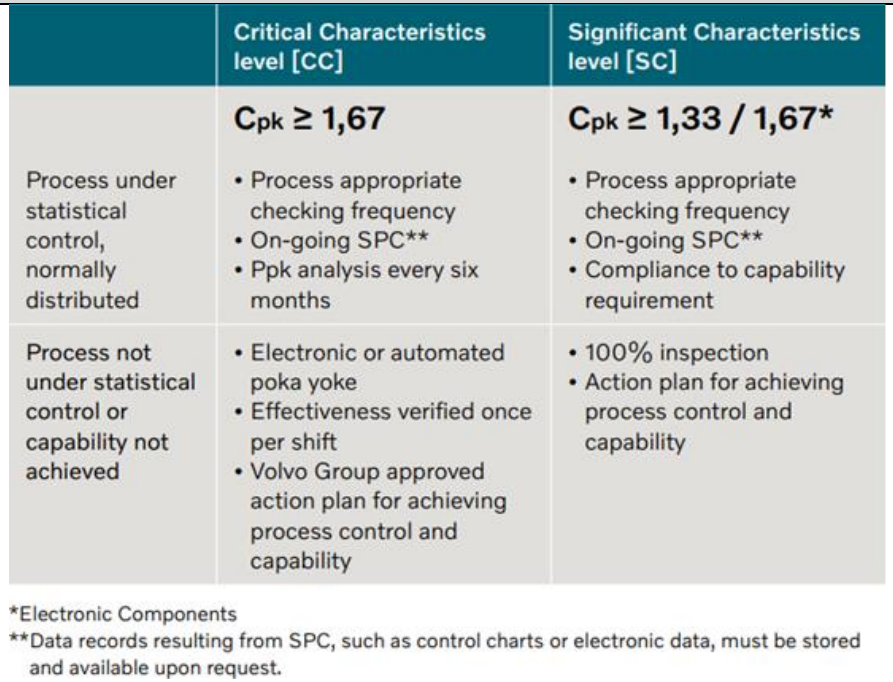 *Electronic Components **Data records resulting from SPC, such as control charts or electronic data, must be stored and available upon request.	
8.3.4.3 Prototype programme	Conforming Part Out of Tool In plant Delivered (CPOT-IPD) and Prototypes are parts requested at different times during the product design (SPQAM § 6.7). The control requirements for the respective levels of prototype parts are: • Prototype parts to the A or B documentation release are expected to be fully conforming to dimensional specifications: 100% measurement/verification evaluation prior to shipment. • Prototype parts to the C documentation release (called CPOT) to ensure the production tooling can produce parts conform to the specifications:	To clarify applicability, time, control level and characteristics of the prototype programs. To specify for which prototype parts a 100%-dimensional check applies on all shipped parts.

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	• Standard parts: Measurement/verification of 100% of the characteristics/dimensions/ features on 5 pieces of the shipment. • [SC], [CC], [2R], [3R]: Measurement/verification of 100% of any applicable Special Characteristics of all parts of the shipped quantity.	
8.3.4.4 Product approval process	AIAG PPAP, at its latest available edition, is the method that must be used for submitting parts for Customer approval including submission level. Unless differently agreed, a Level 4 PPAP package for all components is required (SPQAM § 5). Customer approval is required before first shipment. When Phased PPAP is applied at least product approval is required (SPQAM § 5.2). For Software, SW-specific PPAP checklist and Software Submission Warrant (SSW) must be used (SPQAM § 5.5). Tier 1s must apply this requirement to sub-tier suppliers. They are responsible for the planning, approval, corrective action, follow-up and retention of AIAG PPAPs submitted by sub-supply partners and sub-contractors. Furthermore: • A Significant Production Run (SPR) is required for all new parts. • Cpk studies on special characteristics, identified by [SC] or [CC], must be completed on a minimum of 30 pieces from the SPR parts. • 100%-dimensional evaluation is not required for Service Parts. • Material Data Sheet (MDS) must be submitted via IMDS; It is requested when the Sample Order is sent out and must be submitted 5 weeks prior C-build (SPQAM § 6.8).	To clarify which industry standard is required. To clarify SW requirements To clarify sub-supplier deployment of this requirement. To clarify several mandatory items of this requirement. To clarify IMDS required activities and timing.
8.5.1.1 Control plan	Pre-launch control plans must be developed and applied during ramp-up and early production stages of new part launches. They must be applied from C builds and maintained through early production. A pre-launch control plan is defined by increased frequency, levels of inspection and increased controls.	To clarify time and characteristics of the prelaunch control plan and safe launch control plan.

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	Shipments of products that have been through additional process controls must display prominent notification on each shipping unit (box, package, or skid). Safe-launch control plans must be developed and applied during serial production until exit criteria are met. Both Control plans must be agreed with the SQE (SPQAM § 6.9).	
8.5.2.1 Identification and traceability	For safety critical parts, an effective system of traceability that ensures delivered product can be traced from a finished product in the customer application back to specific lots, sub-components, parts, blanks and raw material, must be put in place. In addition to component/materials traceability, the system must be capable of providing the production history of a lot or serial number. If product is controlled in lots or batches, a documented risk analysis related to severity of non-conformance and probability of occurrence must be conducted and used in establishing the lot sizes to minimize the impact of product recall (SPQAM § 7.3).	To specify traceability requirements for safety critical parts. To specify that risk analysis drives the traceability strategies for all supplied parts.
8.5.6.1 Control of changes	All proposed changes to product, production process, material, or sub-suppliers after PPAP must be submitted to Volvo Group for approval using the Product or Process Change Notification (PPCN) process. Requests for change must be submitted at least 12 weeks prior to its introduction. If the change is impacting a process covered by an index audit performed by Volvo. The request for change must be submitted at least 26 weeks prior to its introduction. Introduction of changes without Volvo Group approval is not allowed (SPQAM § 7.1).	To clarify that change requests and customer approvals are mandatorily done before the introduction.
8.6.2 Layout inspection and functional testing	An annual verification of compliance to specifications, including dimensions, materials, reliability, regulatory and environmental requirements (also called requalification) must be performed on supplied parts. Results must be retained and made available to Volvo on request and any detected deviation must be promptly communicated. Any deviation on this Product Requalification requirement must be agreed in writing between the supply partner and Volvo (SPQAM § 6.14).	To clarify requalification, layout inspection and product audit requirements.

<table>
<tr><th>§ IATF 16949</th><th>Customer-Specific Requirement to IATF 16949</th><th>Rationale</th></tr>
<tr><td>8.6.5
Statutory and regulatory conformity</td><td>Parts that have the potential to impact compliance, legal regulations, or features, are identified using the symbols [2R] or [3R] (SPQAM § 6.5).

Their performance targets are:
<table><tr><th></th><th>COP Characteristics level 2R</th><th>COP Characteristics level 3R</th></tr><tr><td></td><td>$C_{pk} \geq 1{,}33$</td><td>$C_{pk} \geq 1{,}33$</td></tr><tr><td>Process under statistical control, normally distributed</td><td>• On-going SPC*
• Ppk analysis conducted every 12 months</td><td>• Inspection completed to control plan**
• Ppk analysis conducted every 3 years</td></tr><tr><td>Process not under statistical control or capability not achieved</td><td>• Machine or process 100% automated checking surveillance
• Action plan for achieving process control and capability</td><td>• Machine or process 100% automated checking surveillance
• Action plan for achieving process control and capability</td></tr></table>*Data records resulting from SPC, such as control charts or electronic data, must be stored and available upon request.
**Inspection results must be recorded, maintained, stored and available upon request.</td><td>To specify indication and performance targets for each compliance of production (COP) characteristic and expected reaction when process is not under statistical control.

Clarification:
Governmental authorities, the automotive industry and environmental organizations have developed guidelines and regulations that are placed on vehicle manufacturers.
These regulations apply both to the customer vehicle and to the manufacturing processes. Ensuring compliance to these regulations is referred to as Conformance of Production or COP.</td></tr>
<tr><td>8.7.1.1
Customer authorization for concession</td><td>Deviation requests must be sent to volvodeviations@volvo.com (with SQE in copy) and must be approved prior to the shipment using the Global Deviation Form (last issue) and must follow the process available on Supplier Portal in the Quality section of the library (SPQAM § 7.2).</td><td>To specify the deviation approval process flow.</td></tr>
</table>

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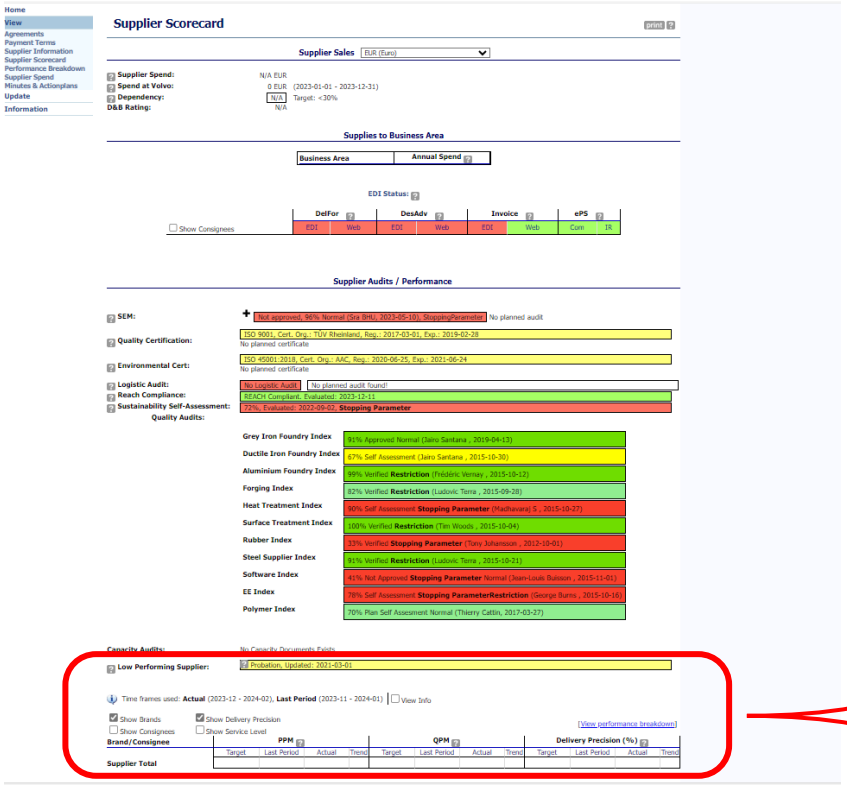
9.1.2.1 Customer satisfaction	PPM and QPM are the metrics used to measure the performance of the parts delivered. They do not concern the field quality issues. Minimum performance levels and details about the metrics are detailed in section #2. For specific products, additional part specific targets may be defined in the RFP. Volvo Group requirement is zero defect unless specified differently by Volvo and visible on the supplier scorecard (SPQAM § 8.4). In case of negative performance trends or significant abnormalities, the Low Performing Supplier process (LPS) is initiated. The LPS process, which consists of three stages, will be notified by a warning letter sent to the supply partners' Quality department (SPQAM § 8.7). Supply partners must inform the relevant Certification Body as part of the audit planning information.	To clarify metrics and targets to be assessed with monitoring and actions in place. To clarify the escalation and notification process.
10.2.3 Problem solving	8 Disciplines (8D) process as common problem-solving process is the mandatory method for any quality issue (SPQAM § 8.2). Reaction timings are the following: • Immediately: Acknowledge receipt of Inspection Report (IR) and initiate containment activities. • 24 Hours: Begin containment activities to include sorting internally, in transit and at Volvo Group facilities, (third party allowed). Problem analysis started. Identify other sites at risk. • 48 Hours: Containment completed, and short-term corrective action fully implemented. • 10 working days: Cause analysis complete for both occurrence and non-detection, permanent corrective action defined and implemented. (Timing starts after confirmation and acceptance of non-conformance.) • 20 working days: Effectiveness of permanent corrective action checked, and recurrence prevented	To clarify mandated methods and timings of the problem-solving process.
10.2.5 Warranty management systems	When Field Failures are determined to be the result of a supply partner's product, it is expected that supply partners will fully participate in the investigation, root cause analysis and corrective action when field failures are identified. A copy of the warranty charter, which defines the conditions defining response timing and responsibility, is included in the Framework Agreement (SPQAM § 8.8).	 To clarify where warranty information can be found.

Section 2 – VOLVO Group Online Supplier Scorecard Guide

Supply Partners shall send a screenshot of the online Supplier Scorecard to their IATF certification body in advance of each audit; more information can be obtained by the relevant Certification Body.

The online Scorecard appears as shown below:



The key information for customer performance evaluation is:

- The target color code (Green positive trend, red negative trend) depends on the brand target value:

PPM				QPM				Delivery Precision (%)			
Target	Last Period	Actual	Trend	Target	Last Period	Actual	Trend	Target	Last Period	Actual	Trend

- **PPM:** The PPM value is defined as the number of rejected parts divided by the total quantity delivered and multiplied by 1 000 000.

- **QPM presentation:** Values (default) displays actual data received. When “points” is selected, the values will be converted and displayed in points. If “Point (values)” is selected, both will be displayed.

  QPM evaluation criteria:

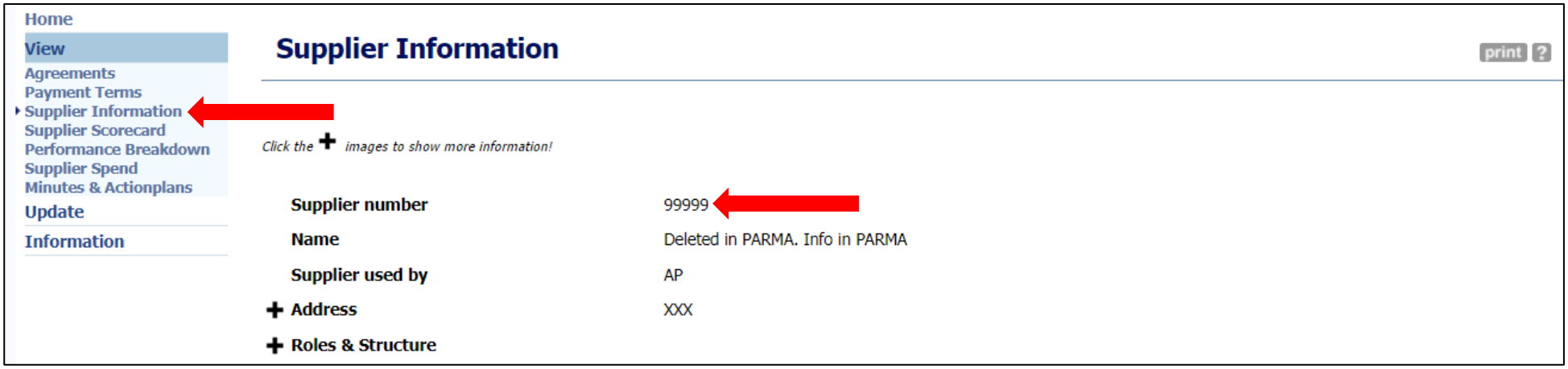
Parts Per Million		Non-conforming parts		Inspection Reports		Volume value	
PPM	Points	NC parts	Points	IRs raised	Points	Vol val %	Points
1-100	0	0	0	0-1	0	<0,01	0
101-500	5	1-5	5	2	5	0,01≤x<0,16	5
501-2000	10	6-25	10	3-4	10	0,16≤x<0,41	10
2001-5000	15	26-250	15	5-8	20	0,41≤x<1,01	15
5001 -	20	251 -	20	9-12	30	1,01≤x	20
				13 -	40		

- **Performance:** Automotive Purchasing displays PPM, QPM, Delivery Precision and Service Level data for actual period and last period.

Section 3 – Volvo Group Supplier Code Guide

Each Supply Partner's plant is assigned a unique Parma code; therefore, 1 Parma code = 1 address

Parma code can be found in the Supply Partner's portal as shown below:



Parma code structure varies depending on the supplied brand; the below are the IATF 16949 applicable brands:

Volvo Trucks	Mack Trucks	Renault Trucks	Volvo Eicher Powertrain (VEPT)	Volvo Eicher Commercial Vehicles (VECV)
From 2 to 7 digits without spaces\dashes	From 2 to 7 digits without spaces\dashes	From 2 to 7 digits without spaces\dashes	From 2 to 7 digits without spaces\dashes	6 digits without spaces\dashes