
Work and Inspection Instruction

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Responsible: Paula Silva
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Title: Allied Motion Portugal Specific requirements for components suppliers

Organization Process: PS 14 – Purchasing and Procurement

Document

1. OBJECTIVE

The target of this procedure is to establish Allied Motion Portugal specific requirements for components suppliers on the phases of pre-launch, production and continuous improvement.

2. SCOPE

This procedure is applied for all new suppliers of automotive components.

It is the Supplier obligation to ensure that all quality rules set out in this Agreement are transmitted, implemented and committed to by the members of Supplier's sub-supplier panel.

3. DEFINITIONS

APQP – Advanced Product Quality Planning

NCN – Non-Conformance Note

Cmk – Machine Capability Index

Ppk – Preliminary Process Capability Index. The estimate of sigma is based on total variation (all of individual sample data using the standard deviation)

Cpk – Process Capability Index. Capability index for a stable process. The estimate of sigma is based on *within subgroup* variation ($R\text{-bar}/d2$ or $S\text{-bar}/c4$)

PPAP – Production Part Approval Process

PFMEA – Process Failure Mode and Effect Analysis

MSA – Measurement System Analysis

KPC – Key Product Characteristics

8D – 8 Disciplines

RPN – Risk Priority Number

Study R&R – Reproducibility and Repeatability study

PSW – Part Submission Warranty

PCN - Product Change Notification

4. RESPONSABILITIES

The supplier is responsible to fulfill what is established on this document as well as in the Quality Assurance Agreement (QAA). The supplier undertakes that his QM System commits to the zero-defect strategy.

Allied Motion contact for the supplier is the Development Engineer for the pre-launch and the Quality Engineer for serial production and continuous improvement.

It is the Development Engineer responsibility to send to the new supplier a copy of this document.

It is the Quality Engineer responsibility to maintain the supplier updated by sending him the updated versions of this document

5. PROCEDURE

The procedure is divided on three phases:

1 – Pre –launch

2 – Serial production

5.1. PRE-LAUNCH

5.1.1. APQP

The supplier shall perform APQP for each new project using the form “Mod 14.27– APQP for suppliers of components”. This form needs to be filled on each meeting, which should be made periodically, with or without Allied Motion presence. The APQP needs to be used as an historical document, which will contain all actions decided and needs to be followed up to the end. It must be available for Allied Motion analysis if requested.

5.1.2.KPC

The supplier shall identify KPC’s. All KPC shall be identified on PFMEA, Control Plan and Flow Chart.

KPC are listed on “Mod 14.28 – Customer Special Characteristics – Advanced Quality Planning Form”. KPC can have a severity of **7 or 8** which means affects **fits or functional** or a severity of **9 and 10** which means that affects **Safe and Regulatory Requirements**

The minimum requested capability for KPC is:

Severity	Cmk and Ppk (PPAP)	Cpk (Serial production)
7 and 8	≥ 1,67	≥ 1,33 ≥ 1,5 (only when specified on MOD 14.28 by Allied Motion)
9 and 10	≥ 2,00	≥ 1,67

Capability studies should be done following the **AIAG Manual - Statistical Process Control - last edition**, and the required number of samples for determination of **capability is minimum 60 samples up to a maximum of 125 samples as defined by Allied Motion during APQP and/or PPAP request (MOD 14.21)**.

If established by Allied Motion, the supplier shall send capability reports on a frequency basis, for one or all KPC.

The “Mod 14.28 – Customer Special Characteristics – Advanced Quality Planning Form” needs to be filled with the controls implemented during prototype phase, PPAP and serial production. In every phase, Allied Motion needs to approve the controls proposed by the supplier.

If the supplier needs to change the initial controls established in order to update the frequency, sample size or equipment used, the supplier will inform Allied Motion and obtain approval by generating a new revision to the previous MOD 14.28.

5.1.3.PFMEA

The supplier shall make a **PFMEA following the punctuation established on the AIAG Manual – Process Failure Mode and Effect Analysis – last edition**

Allied Motion will establish the severity rate for the KPC

Suppliers shall have a process in place to report on their highest RPN numbers and take actions for the high severity failure mode, and/or higher RPN.

This report may be in the form of a Pareto chart, displaying the RPNs from highest to lowest. This system shall include documentation of recommended actions and verification of their implementation.

5.1.4.Process Flow

The supplier shall make a **Process Flow** with a clear overview of the sequence of operations: inspection, transportation, storage, sub-contractors, services, and alternative paths (rework, repair & backup) on manufacturing process flow chart. Process flow-chart must have special characteristics identified and physical manufacturing process corresponds to process flow-chart and layout

5.1.5.Control Plan

The supplier can use its own format to build the Control Plan. Nevertheless, that format needs to have at minimum the following information:

- 1) N° of operation
- 2) Process Name

- 3) Product or process characteristic
- 4) Specification
- 5) Control Equipment
- 6) Sampling and Frequency
- 7) Record
- 8) Reaction plan for non-conformance

Allied Motion reserve the right to ask the supplier to build a Prototype and a Pre-launch Control Plan, if it believes it is necessary to assure the quality of the product.

Note: For the KPC, process control must be: 100% inspection, poke yoke or statistic control (this last one is only valid for processes that were proven to be capable and stable)

5.1.6.PPAP

The supplier shall submit a PPAP according the **AIAG Manual – Production Part Approval Process – last edition**

At the beginning of APQP, Allied Motion will send to the supplier the PPAP requirements using the form “*Mod 14.21 – PPAP request for component suppliers*”, as well as all other formats that need to be used on submission. At this document it is defined the submission level and number of samples to produce dimensional report.

On the following table it is mention the minimum documents that need to be submitted with the first PPAP.

#	Form n.º	Documents
1	CFG-1001	Part Submission Warrant
2	CFG-1003	Dimensional Results
3	CFG-1004	Material Test results
4	CFG-1005	Performance test Results
5	Mod.14.28	Designated Characteristics
6	Mod.14.24	Environmental Survey and IMDS
7	Mod 09.05	Gauge R&R study
8	Mod 14.31	Manufacturing Feasibility Sign-Off
9	Mod 14.30	Capacity Verification
10		Process Flow Diagram
11		FMEA
12		Control Plan
13		GM drawing
14		Engineering changes

After the analysis of the PPAP documentation, Allied Motion will send the result of the analysis of the report using “*MOD 14.33 - PPAP Check-List & Evaluation*” where it will be cleared identify the status of each document and if actions are need.

5.1.7.Manufacturing feasibility sign off

The supplier shall make a feasibility analysis of the product and shall send it to use form “**Mod 14.31 - Manufacturing feasibility sign off**”. This document needs to be submitted to Allied Motion **before prototype order is issued**.

5.1.8.Capacity verification

The supplier shall identify the bottlenecks on his manufacturing process by using the form “**Mod 14.30 – Capacity Verification**”.

The supplier shall point out the capacity of the process. This document shall be submitted before prototype order is issued. If required by Allied Motion the supplier shall do a run with Allied Motion presence, in order to be able to execute capacity verification

5.1.9.Confidentiality

The supplier is obliged to maintain confidentiality of all information given by Allied Motion.

If necessary, Allied Motion will raise a Confidentiality Agreement which will be given to the supplier to sign off.

5.1.10. IMDS

The supplier is obliged to enter the data of the production material to be supplied to Allied Motion by no later than the PPAP submission into the International Material Data System (mdsystem.com) Any data shall be kept up to date by the Supplier. Allied Motion IMDS ID is 187171.

In the prototype phase, on request from Allied Motion, a provisional material data sheet is to be prepared and delivered in accordance with IMDS Recommendation 023

Supplier shall comply with EU Directive on End-of-Life Vehicles and REACH regulation.

5.1.11. R&R Study

The supplier shall do R&R studies on all measuring equipment used to control KPC, following the *AIAG Manual – Measurement System Analysis* – last edition. The record of these studies needs to be submitted with PPAP and the format used can be, if the supplier does not have his own, the form “*Mod 09.05 – Gage R&R Study*”.

5.1.12. Environmental Survey

The supplier shall fill and submit the form “*Mod 14.24 – Suppliers Environmental Survey*” to Allied Motion before prototype order is issued.

5.1.13. Process Audit

Allied Motion will perform process audits to the supplier using “*Mod 14.42 – Part & Process Audit*”. The supplier must answer with an action plan.

5.2. – SERIAL PRODUCTION

5.2.1. Authorization to ship

The supplier is only authorized to ship to Allied Motion after approval of the PSW and after receiving the Purchase Order.

5.2.2. Non Conformities

There are two types of non-conformities:

- Product Non-Conformity – the supplier is informed of this situation through the “*Quality Rejection/Alert Report*” – The supplier has to initiate on the first 24 hours the containment actions, which needs to be defined with Allied Motion and to cover the stock at Allied Motion, in transit and inside the supplier facility. The Rejection Report is used when parts have a defect that affects fit, function and performance. If the defect allows parts to be used under concession, an Alert Report will be used. If the supplier is the one to detect nonconformance product that has been ship to Allied Motion, the supplier needs to alert Allied Motion and to give product traceability to allow the recall; stock must be replaced.
- Logistic Non-Conformity – this is related with delay on deliveries, packaging damaged, incorrect quantities compared with the purchase order (see point 5.3). The supplier is informed of this situation through email or through the “*Logistic Rejection & 4D Report - Mod 14.32*” depending if it is a reoccurrence or the occurrence gravity.

5.2.3. Answer to non conformities

- Product Non-Conformity
The answer to the Alert/Rejection Report for Product Non-conformity needs to be made using 8D format. This document needs to be submitted to Allied Motion:
 - **In 24 hours for the containment actions**
 - **In 10 working days for corrective and preventive actions.**The supplier must follow up the 8D until it is closed, having to be able to show that actions were efficient to solve the problem.
- Logistic Non-Conformity
The supplier must initiate on the first 24 hours the containment actions, which need to be defined with Allied Motion and to cover the stock at Allied Motion, in transit and inside the supplier facility. Until the next delivery, the supplier shall send Allied Motion the 4D with causes and corrective actions

5.2.4.NCN

When Allied Motion detects non-conform product or there is a logistic non-conformity, an NCN will be generated. The document will contain all costs incurred with transportation, inspection and disposal (scrap) of defective components, that will be supported by the supplier. After receiving the NCN, the supplier has 10 working days to sign it and send it back to Allied Motion.

5.2.5.Product Identification

Product delivered shall be packed according to what has been approved on PPAP and defined on “*MOD 14.63 – Packaging Concept*” and needs to be identified with an Odette Label, which in the minimum has to contain Allied Motion part number, engineering level, supplier code, quantity and supplier batch number to allow traceability of the components. From 2018 onwards all new supplied references must have an identification label for each packaging unit (single box) and other for the handling unit (pallet).

5.2.6.Delivery Documentation

Delivery documents according to Galia/Odette standards or in the minimum has to contain Allied Motion part number, purchase Order number, engineering level, supplier code, quantity and supplier batch number to allow traceability of the components

5.2.7.Traceability

The supplier shall deliver product always with the documentation that has been agreed on PPAP (raw material certification, capability results, etc). Product traceability shall obey to the procedures established during APQP defined on “*MOD 14.62 – Traceability Concept*”.

5.2.8.Customer notification and submission requirements

The supplier shall notify Allied Motion and obtain approval before performing process changes defined on pages 13, 14 and 15 of the *AIAG Production Part Approval Process* – last edition. The request for modification shall use “*Mod. 14.56 Product Change Notification*”. If change is approved, the supplier will receive the “*Mod 14.21 – PPAP request for components supplier*”, where it will be defined the level of submission and the documentation for PPAP.

Allied Motion can request an engineering change to a supplier which will be notified by sending a new drawing and a request for quotation. After agreement, Allied Motion will send the document mention above with the PPAP requirements.

5.2.9.Annual Layout

Each year, if requested, the supplier shall submit a full dimensional report and the raw material certificate (if applicable), equal to what has been submitted with PPAP, in order that Allied Motion can check if there has been any change.

If during a period of one year, there has been an engineering change, which has already obliged to a full dimensional report; this request won't be applied on that period.

5.2.10. Special Process requirements

The supplier shall demonstrate compliance to the *AIAG CQI-9 Heat Treat System Assessment*, to the *AIAG CQI -17 Soldering System Assessment*, to the *AIAG CQI - 15 Welding System Assessment*, to the *AIAG CQI - 12 Coating System Assessment* and *AIAG CQI-23 Molding System Assessment*, whichever is applicable to the supplier and his subcontractors process. Each year, if requested, the supplier shall conduct a self-assessment and send a copy to Allied Motion. If during the assessment some items are identified as not satisfactory, a corrective action plan shall be raised by the supplier and submitted to Allied Motion. The action plan shall be completed in 90 days.

5.2.11. Record Control

The supplier shall keep the following documents during the time below define:

- PPAP, annual layouts, validation records, engineering records, tool records, purchase orders, contract and contract amendments – 20 years after production is terminated
- Process control records, inspections and test records, corrective action records, traceability records and maintenance records – 20 years after production is terminated
- Internal process and product audits – 3 years

5.2.12. Customer owned tools

Tools that are Allied Motion propriety shall be identify with Allied Motion identification method, which will be given to the supplier after the last payment of the tool. If the tools are Allied Motion Customer propriety, the supplier should also identify them using Allied Motion Customer identification method, which will be communicated through Allied Motion. The supplier shall assure the correct tool preservation and shall send to Allied Motion the tool drawings, and shall keep them updated.

5.2.13. Conflict Minerals

On August 22, 2012, the U.S. Securities and Exchange Commission (“SEC”) adopted final rules to implement reporting and disclosure requirements related to “conflict minerals,” as directed by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. The rules require manufacturers who file certain reports with the SEC to disclose whether the products they manufacture or contract to manufacture contain “conflict minerals necessary to the functionality or production” of those products that directly or indirectly finance or benefit armed groups in the Democratic Republic of the Congo or an adjoining country.

The term “conflict minerals” is defined as gold, tantalum, tin, tungsten, and any other mineral or its derivatives determined by the U.S. Secretary of State to be financing conflict in the Democratic Republic of the Congo or an adjoining country.

To ensure compliance with these requirements for reporting manufacturers who are direct or indirect customers, Allied Motion will request information regarding the use of conflict minerals from its suppliers, who, in turn, must solicit that information from the next tier of suppliers, continuing on down the supply chain.

Annually, Allied Motion will request the Supplier to submit their Conflict Minerals declaration using the Electronic Industry Citizenship Coalition and Global eSustainability Initiative Conflict Minerals Reporting Template available at www.conflictreesmelter.org.

5.3. – CONTINUOUS IMPROVEMENT

The annual performance will be communicated to the supplier at the end of the year, and every quarter if the target is not reached.

Annually, Allied Motion will establish targets for:

- Quality Performance
 - PPM/incidents: based on a 50% improvement of the result from the previous year.
 - Number of customer incidents: linked with Allied Motion customer disruptions including field returns.
 - 8D’s Average Response Time: it’s measured as the number of days until an 8D with preventive actions is received counted from the date of the claim.
 - Fulfillment of requests for Annual Layouts and CQI assessments: if applicable, these requests will be made in the “Targets Letter” sent at the beginning of each year; this indicator is measured annually as the percentage of documentation received on time.

In the case that Quality performance is below the target, the suppliers could be required to submit a Quality Improvement Plan, using "MOD 14.54 - Quality Improvement Plan" or the supplier can use his own QIP format

- Logistic Performance
 - The delivery performance: measured by the number of shipments that:
 - Are in delay or advance more than 2 days,
 - The quantity delivered is more or less 10% than the one mention on the PO,
 - The shipment presents some damage.
 - Communication behavior and Information: This measure the communicational behavior of the Supplier towards Allied Motion (information requests, action plan follow up after a visit or negotiation, order confirmations, etc) as well as a proactive behavior on keeping Allied Motion informed regarding operational events (vacation periods, absence, strikes, organizational changes, etc).

In the case that Logistic performance is below the target, the suppliers **may** be required to submit a Logistic Rejection & 4D Report, using MOD 14.32.

6 ANNEX

- MOD 14.17 Non Conformance Note
- MOD 14.21 PPAP request for component suppliers
- MOD 14.24 Suppliers Environmental Survey
- MOD 14.27 APQP for component suppliers
- MOD 14.28 Customer Special Characteristics - Advance Quality Planning Form
- MOD 14.30 Capacity Verification
- MOD 14.31 Manufacturing Feasibility Sign-Off
- MOD 14.32 Logistic Rejection & 4D Report
- MOD 14.33 PPAP Check-List & Evaluation
- MOD 14.42 Part & Process audit
- MOD 14.54 Quality Improvement Plan
- MOD 14.56 Product Change Notification
- MOD 14.62 Traceability Concept
- MOD 14.63 Packaging Concept