Supplier Quality Assurance Manual

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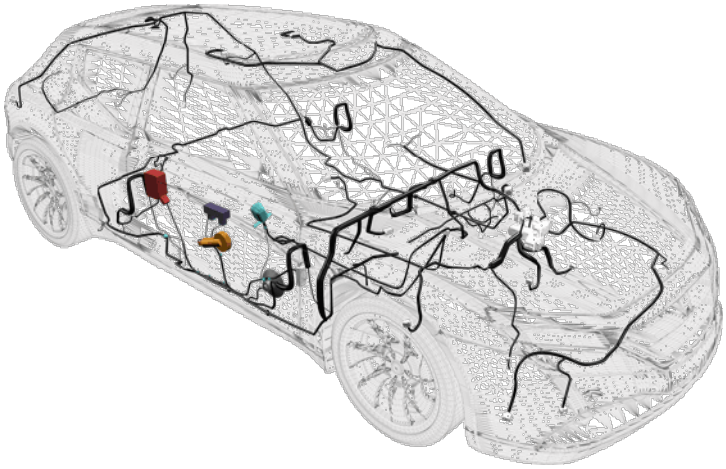

ISSUED BY:

Vendor Development and Procurement Department
Motherson

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FOREWORD

Dear Valued Supplier Partner,

With potential new challenges ready to present themselves at any time, the need of the hour is to further strengthen our supply chain, which must be ethical, traceable, and sustainable. At Motherson, we have been able to tide over these challenging times with your constant support basing ourselves on our mantra “together we make it happen."

In addition, there is a growing need for integrating sustainable choices into supply-chain management. We at Motherson are committed to manufacturing our products responsibly and sustainably. Beyond a compliance approach, Motherson recognizes the significant role our suppliers can play in building and maintaining a resilient and responsible supply chain.

This manual describes the expectations, requirements, guidelines, and practices expected of our suppliers. Our goal is to work closely with our suppliers to develop a strong, stable, structured relationship in a long-term partnership rather than transactional relationships.

It is expected that the requirements in this manual will be passed on to sub-tier suppliers to ensure that quality is consistent through the entire supply chain.

Dated: 23.02.2023

Shashi Gupta
Head (Vendor Development & Procurement)

1. INTRODUCTION

In the current times, customers have clear set of demands and have a key focus on “zero defect”. Motherson is committed to a **Zero-Defect Approach** and have undertaken several initiatives and drives with vendor partners towards achieving this goal.

We expect our suppliers to demonstrate this commitment through:

- **Delivery of fully conforming parts or products**
- **On-time delivery**
- **Rigorous adherence to approved processes and requirements**
- **Proactive risk management**

Considering this, the requirements stated in this document would help you in meeting the goal of zero defect as well as add value for our customers.

Requirements shared in this document are dynamic and we would communicate the same to you from time-to-time.

With your commitment as a Motherson supplier, we will together begin a long-term and mutually beneficial relationship, thereby creating true customer value.

1.1. Scope

This manual applies to all suppliers supplying to Motherson at all locations for all the parts supplied for usage in Wiring Harnesses.

Suppliers must take responsibility to instruct their sub suppliers based on the content of this manual.

1.2. Purpose

The purpose of this Supplier Quality Manual is to:

- Communicate Motherson quality management system requirements & expectations throughout the entire supply chain.
- Develop an Advanced Product Quality Plan to ensure a smooth start up at both Mothson & supplier end based on effective planning & communication.
- Define the Quality Assurance procedures and documents that supplier shall follow to assure the application of a Quality System that is based on Continual Improvement & Qualitative approach towards products & processes to ensure Zero Defects.
- Provide a proactive approach that caters to planned and unplanned change scenarios efficiently without affecting the supply chain process.

2. MANAGEMENT SYSTEM

A **management system** is a set of policies, processes and procedures used by an organization to ensure that it can fulfil the tasks required to achieve its objectives. A simplification of the main aspects of a management system is the 4-element "**plan, do, check, act**" approach. A complete management system covers every aspect of management and focuses on supporting the performance management to achieve the objectives. The management system should be subject to continuous improvement as the organization learns.

2.1. Policies

Supplier Top Management shall ensure the alignment of all organizational policies and practices with Motherson policies and practices (mentioned in this document) & their deployment across the organization.

a) Motherson Quality Policy

We at Motherson are committed to providing products and services to the delight of our customers. To achieve this, we shall:

- Fulfil all applicable requirements.
- Engage all employees to enhance the efficiency and effectiveness of processes.
- Improve the established quality management system on continual basis.

b) Motherson EHS Policy

Motherson is committed to adopt measures for protection of the environment, ensure safe and healthy working conditions and minimize occupational health & safety risks. As a responsible corporate citizen, we aim to provide a sustainable future for our business and society at large. To achieve this, we shall:

- Educate, train, and motivate employees at all levels of organization to work in safe & environmentally responsible manner.
- Eliminate waste, prevent pollution, and optimize the consumption of natural resources.
- Reduce the environmental impacts of our product & processes.
- Prevent injury & ill health by proactively managing risk.
- Seek participation & consultation of employees at all levels to establish & maintain defined EHS management system.
- Ensure compliance of all relevant legal and other requirements concerning our activities and products.
- Consider EHS issues in all strategies & initiatives for business sustenance.

We are further committed to enhance our EHS performance through regular reviews and continual improvement of our EHS Management System.

This policy shall be made available to all the employees, contractors, suppliers, and other interested parties.

c) Motherson Product Safety Policy

We at Motherson are committed to supply safe products to our customers by:

- Complying to customer requirements related to product safety.
- Complying to all applicable statutory and regulatory requirements related to product safety.
- Deploying necessary controls in processes making an impact on the product safety features.
- Communicating the impact of their work on the product safety to all related employees.

d) Motherson Material Policy

Motherson is committed to continuously improve material management practices throughout supply chain by participation of its Customers, Suppliers and Employees to achieve total customer satisfaction."

e) Conflict Minerals Policy

We at Motherson, support the goals and objectives of Section 1502 of the Dodd-Frank Act, which aims to prevent the use of conflict minerals that directly or indirectly finance, or benefit armed groups in The Democratic Republic of the Congo (DRC), or an adjoining country as defined in the Act as "Covered Countries", (Conflict Region). We are committed to source products and materials in a responsible manner from suppliers that share its values around human rights, ethics, and environmental responsibility with an aim to ensure that only "Conflict-Free" materials and components are used in products that we procure.

To achieve this, we shall:

- Promote awareness in supply chain regarding the use of conflict minerals (tin, tungsten, tantalum, and gold, or "3TG" and Cobalt) and their derivatives or any other minerals specified from time to time.
- Educate and train suppliers on reporting requirements regarding conflict minerals.
- Incorporate **Conflict Minerals** compliance requirements in our sourcing protocol.
- Maintain transparency in implementing this policy by sharing all relevant information with concerned stakeholders.

We expect all our suppliers to carry out sufficient due diligence to ensure that their supply chain is also in compliance with requirements of this policy.

We further strive to work cooperatively with our customers and supply chain partners in implementing conflict minerals compliance programs.

***NOTE**: Supplier shall submit the declaration to all above compliances once a year.*

2.2. QMS Certification

Supplier must be 3rd party certified in accordance with the currently valid version of ISO 9001/IATF 16949. **IAF logo on the ISO certificate is a must**.

Supplier having ISO 9001 certificate are further expected to implement and maintain a Quality Management System that complies with the requirements of the IATF 16949 standard.

Suppliers are required to produce evidence of their compliance by submitting their current certificate for the above-mentioned standard, issued by an accredited certification association.

2.3. Single Window Customer Interface Setup

Supplier's Top Management shall define a Customer Interface set-up to facilitate addressal of quality and delivery issues between Motherson & Supplier. **These details shall be submitted to Motherson and amendment shall be communicated to Motherson as & when changed.**

2.4. Management Reviews by Supplier MD/CEO & Audits by QA Head

Reviews shall be conducted internally every month on performance rating at Motherson, in-house rejection trend, status of new product development, key equipment preventive status, breakdown trends, sub-supplier issues, response time, etc. against fixed targets.

Outcome of the management reviews shall be reviewed on regular frequencies.

2.5. Roles, Responsibility & Authority of Quality Head

- Approval of all quality documents submitted to Motherson
- Sub supplier quality upgradation
- New product development and quality establishment
- Management of quality issues and future benchmarks
- Confirmation of compliance to SoC (RoHS/ELV/REACH/POPs, etc.) and Conflict Minerals requirements
- Strategic road map for continual improvement of product, process & systems
- Revalidation of parts supplied to Motherson
- Monthly reviews on quality parameters
- Redressal of issues related to Quality Assurance emerging out of internal & external audits

2.6. Sustainability & Corporate Social Responsibility

Sustainable supply chains present significant competitive advantages to organizations due to which increased focused on sustainability has become the mantra. The growing need to integrate sustainable choices into supply-chain management is compelling companies to pay attention to environmental, social, and governance impacts on supply chain sustainability.

Motherson's objective is sustainable growth and is working on continuous improvements by considering the environmental aspects and requirements of customers, recognizing the effects of production on the environment, and trying to minimize the environmental hazard. We expect our suppliers to continuously work following these principles, uphold the human rights of workers, and treat them with dignity and respect as understood by the international community.

Motherson is committed to a Code of Conduct that describes our intention on how to behave when we do business and how we interact with our stakeholders. Motherson enjoys an invaluable reputation for corporate trustworthiness around the world, based on consistently conducting business with integrity and in compliance with the laws and regulations governing its activities. Therefore, we seek to ensure that all our suppliers operate in compliance with our requirements.

Motherson is aware of its social responsibility and stands by this. To ensure compliance with basic ethical principles and statutory provisions in the supply chain, the code of conduct has been developed for all suppliers of Motherson. The Corporate Social Responsibility Requirements for Suppliers (Code of Conduct) have been communicated to you from time-to-time.

All suppliers must ensure compliance to the Corporate Social Responsibility Requirements for Suppliers (Code of Conduct). It is mandatory to sign-off the same and submit whenever Motherson asks for the same; normally it is sent once every year.

Risk Assessment

Supplier shall define the risk assessment criteria for all processes & shall ensure that the review of identified risks is conducted at least once a year to reflect current circumstantial evidence and demonstrate to Motherson when requested.

Contingency Plan/Business Continuity Plan

Supplier shall establish and manage a contingency plan/business continuity plan of the following incidents and demonstrate to Motherson when requested:

- Key machine/equipment failure
- Interruption from external providers
- Recurring natural disasters
- Disruption caused by fire
- Utility disruptions

- Cyber-attacks on information technology systems
- Labour shortage
- Infrastructure disruptions
- Pandemic

Supplier shall review contingency/business continuity plan at least once a year to reflect current circumstantial evidence and demonstrate to Motherson when requested. Supplier shall inform the occurrence of an incident that effects parts quality and delivery immediately to Motherson.

2.7. Managing the Supply Chain as Per Demand Variation

Motherson is manufacturing a product that is sensitive to even a slight variation in customer's planning. Variation in one model at customer's end changes the entire schedule of other parts for the month. Since Motherson is committed to meet customer's expectation in every situation, it also expects you to meet delivery requirements always in time. Therefore, supplier shall have supply chain management in compliance with Motherson demand for which the points listed below would be necessary.

- Establish a supply chain network diagram starting from the source of significant raw material to finished parts.
- Complete Motherson's monthly schedule in maximum 50% of the number of working days to achieve 100% on-time delivery to Motherson.
- Determine production capacity (max. on quarterly basis), lead-time ordering and level of sufficient inventory stock (min. 15 Days) to meet Motherson demand.
- Always maintain a margin of 20% on production capacity and in case based on analysis if it is observed that capacity enhancement is inevitable, necessary improvement actions to be planned and executed.
- Assess the risks & manage them appropriately.

Supplier shall also:

- **Demonstrate the result of above when requested**
- **Submit the supply chain network diagram to Motherson when requested**
- **Inform Motherson immediately the occurrence of any incident that effects parts quality and delivery.**

2.8. Other Expectations from Supply Chain Partners

a) **Quality Expectation**: Supplier shall meet the quality targets of **PPM (parts per million defectives), number of quality problems and defects, response time**, etc., measured by Motherson & shared on monthly performance cards [i.e. Zero PPM, Zero Defects].

b) **Delivery/Purchasing Expectation**: Supplier shall ensure compliance to delivery targets of **'on-time delivery' of material as per specified quantity, frequency,** etc., measured by Motherson & shared on monthly performance cards [i.e. 100% Delivery Adherence].

Suppliers are expected to be responsive and flexible when responding to fluctuations in demand, and production changes. Suppliers must provide excellent and timely communication, service, and resolution of issues, as necessary.

c) **Environment & Safety**: Supplier shall ensure adherence to legal compliances; reduction and elimination of the use of hazardous material; and take self-initiative to get ISO14001 & ISO45001 certifications.

d) **New Development**: Supplier shall adhere to development deadlines by adopting APQP and enhance processes to improve quality & reduce cost.

e) **Document Control**: For the control of documented information, the supplier shall address the following activities:
- Distribution, access, retrieval, and use.
- Storage and preservation, including preservation of legibility.
- Control of changes (e.g., version control).
- Retention and disposition.

f) **Record Retention**: Supplier shall define, document, and implement a record retention policy. The control of records shall satisfy statutory, regulatory, organizational, and customer requirements. Production part approvals, tooling records (including maintenance and ownership), product and process design records, purchase orders (if applicable), annual revalidation records, traceability records, declarations of compliance to statutory and regulatory requirements, corrective action records, quality performance records and inspection & test results shall be retained for at least 20 years after the production has been terminated.

The above-mentioned time periods are considered “minimum". All retention times shall meet or exceed the above requirements and any governmental requirements.

g) **Declarable Substances**: Supplier shall guarantee and warrant that all products worldwide supplied to Motherson are following the substance and material restrictions specified in the "Global Automotive Declarable Substances List" (GADSL). The supplier is obliged to declare all substances listed as "declarable" or "prohibited" like specified within the GADSL. The complete composition of components and materials shall be declared in the "International Material Data System" (IMDS) and must be accepted by Motherson. In addition, Motherson may ask for compliance to chemicals or substances as & when required. Supplier shall establish a documented process for the collection and reporting of data related to the usage of Conflict Minerals in entire supply chain.

IMPORTANT NOTE

All Motherson suppliers need to ensure compliance with applicable country-specific statutory and regulatory requirements.

Motherson’s OEM customers’ special requirements are equally binding on all suppliers.

In case of a difference between standard Motherson requirements and OEM customer-specific requirements, the most stringent shall be binding. In all cases, specific requirements of General Terms and Conditions of Purchase Oder shall apply.

In case any supplier has any question regarding applicable special requirements, including, but not limited to, whether a special requirement is applicable for the product to be supplied, the supplier can contact Motherson’s local Supplier Quality Engineer.

In addition, all suppliers need to refer to the latest edition of Automotive Industry Action Group (AIAG) core tool requirements.

3. NEW PRODUCT DEVELOPMENT

3.1. Product & Process Development

The objective of this chapter is to explain the activities to be carried out by supplier during the Development Stage. New model development stage should be used as an opportunity, to build quality from the development stage itself. There should be a focus on identifying problems at initial stages of design and development to improve quality. It is expected that design and tooling are prepared on time and the process is made robust and kept ready before the Mass Production Stage.

Scope

This section is applicable in case of new child part development & ECN (Engineering Change Note).

Drawing/Standards Study

Drawing and relevant standards are issued to supplier by Motherson whenever a new development is initiated. First-level drawings, specifications, standards, samples are given to selected suppliers. Suppliers' team shall study the drawings based on problems observed in similar parts of earlier models, feasibility of manufacturing/inspection and any value engineering ideas. After study, comments on these drawings shall be discussed & submitted along with the drawing change request.

Project Team (CFT) Finalization

The supplier shall form a project or cross functional team. The team shall have members who are capable to understand the function of part (purpose, use conditions, relation with mating parts, performance), including the capability of doing process engineering, dies/jigs/fixture's design, development & calibration, gauge's design, PFMEA, sub-vendor development, etc. to align with Motherson requirements. This team shall have a Project leader who shall regularly interact with Motherson team regarding development progress.

Specification Meeting

A specification meeting or part development meeting should be held with supplier new product development. Motherson will decide and organize the Specification Meeting between Motherson and supplier after the issuance of the LOI. This meeting shall be held within 15 days of receipt of specification/concept/final drawing. Personnel from Vendor Development, QA, Engineering and Supplier end (as per requirement) will participate in this meeting.

Important points to be discussed in this meeting are:

• Drawing dimensions/CAD data & tolerances	• Identification marking (special tags/bar code/colour coding/cavity details, etc.) on trial parts
• Previous part development history and the countermeasure of the problems and improvements	• Packaging and handling requirement
• Part specification/testing requirement (List of all applicable standards)	• Sample quantity requirement
• Part finish, colour & marking	• Material test specimen requirement
• Raw material grade requirement & its testing	• Special quality characteristics for SPC
• Production rate requirement	• Process capability requirement (Ppk/Cpk)
• Manpower training	• Measuring instrument and inspection requirements
• Tooling requirement	• Lot control (Traceability) requirement

• List of Tier 2 Suppliers & tool maker	• Master sample requirement
• Jigs/Fixtures/Gauges/Poke-Yoke requirement	• PFD/PFMEA/PQCP requirement
• Any other point from Motherson and supplier	• IMDS/ELV/RoHS/SOC/REACH/GADSL/POPs requirement
• Customer-specific requirements	• Frequency for Part Development Plan review

Motherson records the observation and action points in the "**Check Sheet for Specification Meeting**". In case any deviation on quality characteristics, performance or functional test is mutually agreed for, it must be recorded in this meeting.

Advance Product Quality Planning (APQP)

Motherson applies the APQP (Advance Product Quality Planning) procedure set out by Automotive Industry Action Group (AIAG). Supplier must implement the APQP. Supplier Cross Functional Team (CFT) shall establish an APQP. It is therefore important to list down all the activities and make a comprehensive plan so that overall development is completed well in time.

Given below are the list of possible activities during product development. However, these activities can be changed or altered depending upon the nature of development.

• Receipt of order from Motherson	• Measuring instruments procurement	• Inspection of samples at Motherson/supplier's end
• Clarification of specifications	• PFD/PFMEA/CP preparation	• IMDS submission/declaration
• Application, other requirements from Motherson	• Raw material submission/approval	• Approval from Motherson for initial samples
• Design of tools (die/s and/or mould/s)	• Tool trial 1	• Receipt of MIS-P from Motherson
• Design of jigs, fixtures, and gauges	• Debugging (Rectification) of tool	• Process & Tool Audit (Mass Production Preparedness audit)
• Approval of tool design from Motherson	• Tool trial 2	• Pilot Lot submission along with Cp and Cpk studies
• Ordering of raw material	• Debugging of tool	• Approval of pilot lots at Motherson
• Tool (die/s and/or mould/s) manufacturing	• Final tool trial	• Start of initial supply control
• Jigs, fixtures, gauges manufacturing	• Performance/endurance testing	• Termination of ISC
• Poka-Yoke (fool proofing) implementation	• Operator training	• Start of mass production
	• Submission of samples, PPAP/ FAI, PSW, lot control & traceability control procedure	

Supplier must prepare an APQP plan to fill Document Approval Request along with the APQP. The frequency of progress review on APQP is decided based on the development timeline.

Supplier shall regularly share the progress (plan vs. actual) with Vendor Development as per the frequency decided or whenever requested by Motherson.

The management reviews are organized, prepared, and held by supplier. Motherson participation is not required, unless otherwise specified. Supplier shall evaluate the deliverables, prepare the APQP milestone. Motherson reserves the right to punctually review and audit.

- In case of delay from the APQP, supplier shall recover timeline and update the activity accordingly to meet customer requirements.
- In case of supplier proposing changes in the APQP, the supplier shall notify Motherson for acknowledgement before proceeding further.

Summary of documents/formats to be submitted by supplier in this section:

- Quality Assurance In-charge Nomination Form (for new supplier only).
- Signed-off APQP plan when requested by Motherson.
- Progress of APQP when requested by Motherson.

Summary of documents/formats to be issued by Motherson:

- Approved drawing/Engg. standards.

Manufacturing Process Flow Diagrams

Supplier shall establish a manufacturing process flow diagram (PFD) that describes the sequence, process name, process number, relation between each other manufacturing processes, starting from receiving material until deliver parts to Motherson.

Identification and Classification of Characteristics

Supplier shall establish a list of special characteristics (part & process) either designed by Motherson or proposed by supplier considered from fitment, function, and safety perspective (safety risk by user, third party or persons operating at every stage until operating the vehicle.) Supplier shall specify the symbols for special characteristics in PFD, PFMEA, Control plan & associated documents.

Identification of Safety Characteristics

Feature Identification

A safety critical characteristic is identified when non-compliance with the requirement has the potential to lead to a Safety Customer Effect.

Product Identification

The methods used for marking the lot tag on safety critical parts with the symbol Ⓢ must support identification, traceability, and failure investigation through all phases of the product's life. This would apply if the drawings were marked with an Ⓢ symbol.

Production Requirements

Regarding dimensional, material, test and functional requirements for product features identified as safety critical, the following requirements apply and supersede the general requirements:

a) If the process is under statistical control, then:
   i. Define appropriate checking frequency for the process
   ii. Display Run Chart for the ongoing process

b) If the process is NOT under statistical control or the capability is NOT achieved, then:
   i. Incorporate automated Poka-Yoke in the process
   ii. Verify the effectiveness at least once per shift

Safety critical characteristics must be clearly identified throughout the manufacturing process and in all associated documentation such as process FMEA, control plans and work instructions.

Process capability requirements for parts identified with Ⓢ characteristics is Cpk ≥ 1.67.

Data records resulting from SPC, automated checking, and inspection results must be maintained. The data must include identification of the production lot.

The supplier must also apply the following requirements on the shop floor:

- Identification of the operations that have a direct or indirect influence on safety features.
- Clear signs or placards defining the characteristics and potential effects of non-compliance.
- Training status and authorization for all operators working on safety feature related workstation.
- Rework of EE components is not allowed

During the APQP, Process Audits or PPAP/ FAI activity, Motherson will verify the evidence of completion and compliance to these requirements for concerned products.

Thorough documentation is necessary to:

- Demonstrate that critical components do not have any safety related defects, either from Motherson or supplier.
- Demonstrate that both Motherson and legal requirements are met.
- Limit the number of products subjected to field actions, if any.

***NOTE**: No deviations are allowed on safety-critical features*

Pass Through Requirements

"**Pass through Parts**" are defined as parts that are shipped to Motherson by a supplier who processes parts from their suppliers, without value added activity or modification to form, fit or function to the safety critical feature. Tier II suppliers assume all responsibility for the quality of "Pass through Parts" that are considered safety critical. This requirement applies to parts or features identified as Safety Critical by either Motherson criteria or the criteria identified by the supplier as having the potential to impact safety.

Motherson requires Tier II suppliers to have an active Safety Management Audit process for their suppliers. For suppliers that do not have an audit process of their Safety Critical suppliers, Motherson can offer assistance in developing a Safety Management Program. This assistance may include conducting a joint audit at a sub-supplier.

The Tier II supplier is responsible to continue the Safety Management Audit Program and follow up on all action items. Motherson does not assume responsibility for the Tier II supplier's Safety Management Audit Program, audit results, or follow-up activity. All responsibility for the Safety Management Audit Program and the quality of safety-related products remains the responsibility of the Tier II supplier.

***NOTE**: Motherson must be notified immediately in the event a non-conformance or potential customer risk is identified.*

Process Failure Mode & Effect Analysis (PFMEA)

Supplier Cross Functional Team (CFT) shall establish a PFMEA of all processes that are shown in the Manufacturing PFD.

The use of AIAG and VDA FMEA handbook is strongly recommended, and Motherson must be consulted in case of using any other standard. PTDB sheet & implemented action in similar processes should be considered during the preparation and review of PFMEA.

For identified special characteristics in part and process, supplier shall consider applying the following methods to controlling:

- **Error Proofing Equipment, Poka-Yoke**
- **Statistical Process Control (required Cpk ≥ 1.67)**
- **100% Check**

Control Plan
Supplier shall establish a Control Plan by using control method from the results of PFMEA. Supplier shall submit the final production Control Plan to Motherson.

Inspection Standard
Supplier shall establish an Inspection Standard that describes key parts characteristics with its tolerance, inspection tool, inspection stage and frequency.

3.2. Product & Process Approval

Scope
This section is applicable in case of new child part development in continuation to Product & Process development.

a) **Product (Sample) Approval:** Supplier must ensure the following points while making a sample lot:
   - Material used for the preparation of sample lot is to be procured from the source as discussed in the specification meeting.
   - Sample lot is to be made as per the flow defined in the Process Flow Diagram (PFD).

   Inspection of Sample Lot by the Supplier
   Sample lot is to be inspected for at least 5 pieces and 1piece/cavity for multiple cavities (for dimensions) and the following points are to be ensured in the inspection:
   - **Dimensions are as per the drawing/standards**
   - **Appearance inspection**
   - **Material grade and colour**
   - **Fit and function**
   - **Performance/endurance test as per the drawing/standards**
   - **Raw Material testing**
   - **Testing for banned/restricted substances (as directed by Motherson)**

If there is any other understanding as per the specification meeting, then the sample lot must be inspected according to specification meeting noting only. Supplier should submit all reports along with the samples and PPAP/ FAI documents.

Format for the Inspection Report
Suppliers shall submit the inspection report along with samples. Dimensions checked in inspection report should be marked in drawing and marked drawing is to be enclosed with inspection report showing correlation between inspection report and drawing.

Inspection report should contain the following information:

• Supplier name and address	• Standard for dimension/attribute as per Motherson drawing/standard

• Supplier code	• Checked parameters with observations
• Part name	• Lot or batch number
• Part number	• Bill or invoice number
• Drawing number/standard number & revision number	• Quantity
• MIS-P number	• Judgment
• Date of inspection	• Inspector and approval authority name & signature

Sample Quantity
Samples quantity is mutually agreed between Motherson and supplier or as specified in **OST/CQ/05**.

Process Approval
Supplier needs to ensure the following points for the approval of their manufacturing processes:

a) **Manufacturing Process Audit**
Supplier shall submit the **Self-Assess Quality Audit** that was audited by the Internal Auditor at mass production condition. Audit score shall meet the relevant passing criteria (Supplier or Motherson defined).

IMPORTANT NOTE

For special processes (such as Plating, Welding, Injection Molding, Extrusion, Heat treatment etc.) supplier shall conduct self-assessment by Certified Auditor with defined qualification criteria.

Relevant OEM CSRs of special processes need to be assessed using relevant AIAG CQI guidelines published from time-to-time.

Quality Systems Audit or Process Audit might be conducted at the discretion of SQA or CQA Manager after the sample lot is submitted at Motherson.

b) Capacity Assessment (Run @ Rate)
Supplier shall submit the result of capacity assessment (Run @ Rate) of all processes at mass production condition. Supplier shall ensure the sufficient capacity to meet Motherson demand & shall have spare capacity of 20% minimum. Compliance to this shall be reviewed on a quarterly basis minimum.

c) Measurement System Analysis (MSA)
Supplier shall submit the results of MSA of measuring tool/tools specified in control Plan and inspection standard.

d) Process Capability Studies
Process Capability is to be necessarily conducted for the SPC specified parameters mentioned in the drawing or as agreed in the specification meeting. The report for all pilot lots to be submitted on Pilot Lots Monitoring Sheet along with detailed Process Capability Study. The Cp and Cpk values should be **≥ 1.67** for all special parameters as described in the MIS-P. If Cpk is less than 1.67, conduct 100 % inspection for the possible non-conforming product lot before dispatching & take appropriate action to attain the same level of assurance.

Production Part Approval Process (PPAP/ FAI)

Whenever samples are submitted to Motherson by the supplier, PPAP/ FAI documents shall be submitted along with the sample lot. The part must receive PPAP/ FAI approval before shipments are received at Motherson. For all automotive components, the PPAP/ FAI Package must be submitted as per the latest PPAP/ FAI Guidelines.

Suppliers must be able to provide PPAP/ FAI in the various levels as stated in the latest PPAP/ FAI requirements. PPAP level-3 documents as listed in the table below should be submitted to Motherson. However, these documents can vary considering different OEM requirements.

• Design Record	• Records of Material/Performance Test Results
• Authorized Engineering Changes	• Initial Process Studies
• Customer Engineering Approval	• Qualified Laboratory Documentation
• Design FMEA	• Appearance Approval Report
• Process Flow Diagrams	• Sample Production Parts
• Process FMEA	• Master Sample
• Control Plan	• Checking Aids
• MSA Studies	• Customer Specific Requirements
• Dimensional Results	• Part Submission Warrant (PSW)

The PPAP/ FAI is required under the following circumstances:

- New part for Motherson
- Revision change (ECN, Part Number change to be added)
- Manufacturing facilities change, process change
- Raw material and source changed
- New/duplicate tooling
- If Motherson has not received material from a particular manufacturing location for more than 1 calendar year

***Note**: For catalogue supplied items, PPAP level-1/ FAI is accepted along with the IMDS and shelf life for aging parts.*

During development/approval, sample submission to Motherson & in regular supplies, supplier shall ensure that all parts always meet **RoHS/ELV/REACH/SOC** requirements as stipulated by Motherson through **ENG/RD/152** or as per other communications based on customer or legal requirements. Supplier shall submit the declaration on compliances whenever asked by Motherson.

Issue of Motherson Inspection Standard (MIS-P)

After the approval of PPAP/ FAI/samples, final MIS-P is issued to supplier through Motherson. MIS-P must be followed for final inspection of pilot lot and regular supplies. Supplier must ensure that all required facilities to inspect/check the parameters as mentioned in MIS-P are available and in working conditions at all times.

Post Sample Evaluation Meeting

After the inspection of sample lot by Motherson, Post Sample Evaluation meeting is held (as per requirement) between representatives from Motherson and Supplier.

a) **When the sample lot is rejected:** This meeting is held to discuss countermeasures to address the problem.

b) **When the sample lot is accepted:** The following points are to be discussed:
   - Pilot lot quantity

- Date of pilot lot production (for process audit, if required)
- Pilot lot submission date
- Preparation of limit samples for visual defects by the supplier and approval from Motherson

3.3. Pilot Lot Approval & Initial Supply Control (ISC)

a) Pilot Lot is the first lot in mass production after the approval of sample lot by Motherson.

b) Initial supply control means the controls of lots after part approval. The objective of implementing Initial Supply Control is to overcome the teething problems and to streamline the supplies in terms of Quality, Quantity and Delivery.

Pilot Lot Approval

Systems to be made before Pilot Lot Production: Supplier must ensure that following systems are in place before the pilot lot is made:

• Systems for training on product, process, quality systems	• System for identification of non-conforming material
• Organization structure with defined responsibilities	• System for control of non-conforming product
• System for identification and traceability. Display through tags/boards to identify the process stage the pilot lot is undergoing	• System to refer master and limit sample
• System for advance production planning	• Packing and handling system
• Receiving inspection and recording system	• First In First Out system in stores for raw material and finished product
• In-process inspection and recording system	• System to ensure that latest documents are running in the system
• Final inspection and recording system	• System for corrective and preventive actions
• QA audit and recording system	• Filing system
• System for identification and calibration of measuring instruments, gauges, and fixtures	• 5S

Supplier should provide enough evidence at the time of process audit to show the existence of these systems.

Advance Communication of Pilot Lot Production
If process audit is decided in the Post Sample Evaluation Meeting or otherwise, supplier must give advance information to Vendor Development for Pilot Lot production.

Any change in this plan is to be communicated well in advance by either party. This communication is important for conducting Process Audit smoothly, which is to be done during the production of the pilot lot (FPP), if not done at the time of sample submission.

Pilot Lot Quantity
As specified in the Post Sample Evaluation Meeting, or if the pilot lot quantity is not decided, then supplier is suggested to follow **OST/CQ/05** for the quantity to be dispatched in the pilot lot.

Inspection of Pilot Lot by the Supplier

a) Incoming Inspection

- Incoming material, which may affect the quality of the part supplied by the supplier, is to be inspected as per the Receipt Quality Standards for the incoming material.
- Record of inspection of incoming material is to be kept and preserved.

b) In-Process Inspection

- Process is to be inspected as per the control plan & process inspection standard. Supplier can make a separate operation standard.
- Record of inspection is to be kept and preserved.

c) Final Inspection

- Pilot lot is to be inspected as per MIS-P.
- Inspection report is to be sent with each lot.
- Record of final inspection is to be kept and preserved.

Packing of Pilot Lot

Supplier must ensure that packing is the same as per approved packaging standard, or as communicated by Vendor Development.

How to Submit the Pilot Lot to Motherson

Whenever the pilot lot is supplied to Motherson, it is to be supplied with '**Pilot Lot Submission Tag**' as mentioned below:

LOT TAG Supplier Name: Supplier Address: Supplier Code: Invoice/Challan No:			
Select Category:			
FPP ❑	**ISC ❑**	**REGULAR SUPPLY ❑**	
SPECIAL USE ❑	**COUNTERMEASURE PARTS ❑**		
Part Name		**Dispatch Date**	
Part No. (Motherson)		**Box Qty.**	
Box/Bin No.		**Lot No./Batch Code**	
Total no. of boxes/Bins		**Total Lot Qty.**	

***Note**: Supplier shall use the coloured Lot Tags shown above as per the scenarios mentioned.*

The following documents are to be submitted along with the pilot lot:

- Pilot lot submission tag (FPP tag)
- Inspection report as per MIS-P
- Process Capability Study reports (Cp/Cpk)
- Pilot Lots Monitoring Sheet

Supplier must monitor its processes and pilot lots very closely through inspection and recording of problems (including problems reported by Motherson) and eliminate the problems through root cause analysis. Supplier must record all such instances along with countermeasure reports. Supplier must provide the analysis reports in case the problem has been reported by Motherson. Necessary changes in systems/process controls to be done and informed to Motherson.

For the approval to start mass supplies, Motherson will monitor pilot lots till three consecutive lots are okay.

Inspection of Pilot Lot of Motherson

a) **If 3 consecutive pilot lots are accepted**: Supplier shall give regular supplies as per the regular supply submission process.

b) **If pilot lot is rejected**: Supplier should fill the Countermeasure Form as per QPR format and send it for Motherson approval before the submission of the next pilot supply.

c) Unit Part Inspection Team shall check maximum 5 pilot lots till three consecutive lots are found conforming to specification. In case this does not happen, then supplier shall submit the sample for re-approval.

Motherson will update the suppliers when the pilot lots get accepted or rejected.

Initial Flow Definition

Initial Flow Control or Initial Supply Control

This section covers the details of special controls that should be exercised during the initial phase of mass production when the following occurs

New Product/Engineering Change

- New part is manufactured
- Raw material change
- Design modification in parts
- Duplicate tooling

4M Condition

- Location Change
- Process Layout Change
- Installation or Change in Machineries/Equipment
- Sub-vendor Change
- Cavity Addition
- Start of Manufacturing After Long Lay-Off (≥ 1 Year)

Objective

Special control needs to be exercised during the initial phase of mass production when one of the above-mentioned items occur with the purpose of collecting sufficient data in order to judge whether the mass production can be continued using the existing process.

Supplier shall strictly control production processes for 3 months or 25 lots and evaluate the process stability.

After the production process is stable, supplier could change to normal control. Suppliers shall maintain the documents at their end and submit document of initial manufacturing process control and evaluation results (including ISC initiation & termination sheets) for reference when required by Motherson.

Establishment of Initial flow Control

Supplier must clearly determine the parameters to be controlled during the initial stage and the duration of such control. In this, Supplier should formulate clearly documented guidelines by enacting procedures and necessary standards to establish all the requirements of Initial Flow Control. The below-mentioned activities related to the part (for which initial flow control is being observed) shall be carried out during this period. Some of the requirements for Initial Flow Control are:

- Special inspection/process controls that are higher than normal controls. These could be either added inspection points or inspections at higher frequencies.

- Establishing lot control & traceability.
- Sub supplier audits (if the change happens to be from a sub-supplier).
- Process capability check (important points to be specified: check items, check method, check frequency should be decided along with Part Development section/QA and implemented).
- Systematic observation and recording of problem and taking countermeasures and improvement actions quickly without undue delay.
- Systematic confirmation of effects of countermeasures for the problems that were observed during the trial stages prior to mass production and during the production of the FPP Lot.
- Establishment & confirmation of proper inspection methods during the initial flow period.
- Receiving supplies with initial control tags from the supplier.

Initial Flow Period (Termination Conditions)
In principle, the initial flow period should be 3 months or 25 lots, whichever occurs later, for new or changed parts. However, it should be decided in the Specification Meeting. The initial flow control can be terminated, if at the end of the initial flow period the following conditions are satisfied:

- If it is confirmed that the Customer Rejection PPM is Zero.
- If it is confirmed that the Internal & Supplier Rejection PPM is as per project target & on a reducing trend.
- If it is confirmed that the capability of the process can fully satisfy the specified tolerance accuracy requirements Cpk ≥1.67 and it should be on an increasing trend.
- 100% closure of process audit findings & effectiveness.
- No countermeasures are open/pending.
- If the countermeasures taken against problems during initial flow period itself are found to be effective.

If any of the criteria listed above are not met, **Initial Flow Control Period shall be extended till the time all criteria are met**.

Declaration Authority
It is essential that the person who shall declare & authorize the start & termination of Initial Flow Control is clearly defined in the organization. In principle, it shall be QA In-charge of the organization. Also, there should be clear identification & display on the process in the shop floor that Initial Flow Control is being observed for the part in question along with the name of the customer, part name, duration of initial flow control, etc. This shall help the people on the shop floor to exercise the added controls on the part as required during Initial Flow Control.

Out of 4 types of 4M changes (Man, Machine, Material, and Method), Man-related changes are the one that are often taken most lightly leading to serious consequences later. Initial Control Flow must be observed even for this type of change. The added or extra controls for such type of changes could be:

- Thorough training of operator about the job, its quality & safety aspects.
- Skill assessment of the operator before putting him/her on the job.
- Special extra checks of the operation carried out by the new operator at some defined frequency in a day by his/her supervisor.

However, the period for which the Initial Flow Control is observed (especially the last control), in operator-related changes, could be of a shorter duration, say, a few days.

Data Recording
All records of Initial Flow Control shall be retained by the supplier. Termination of initial control to be communicated to the supplier.

4. MASS PRODUCTION MANAGEMENT

4.1. Purpose

To establish a system which ensures that large quantities of superior quality standardized products are produced on a continuous basis.

4.2. Inputs for Regular Supplies

Supplier must ensure regular supplies are made with trained manpower and as per the Process Flow Diagram and Process Quality Control Plan.

Inspection by the Supplier

a) Incoming Inspection

- Incoming material, which may affect the quality of the part supplied by the supplier, is to be inspected as per the Receipt Quality Standards for Incoming Material.
- Record of inspection of incoming material is to be kept and preserved.

b) In-Process Inspection

- Process is to be inspected as per the control plan & process inspection standard.
- Record of inspection is to be kept and preserved.

c) Final Inspection

- 100% visual inspection of the parts shall be carried out & records to be retained for further correspondence.
- Dimensional inspections can be carried out as per sampling plan as defined in the Control Plan approved by Motherson.
- Inspection Report/Certificate of Conformance shall be sent with each lot.
- Record of final inspection is to be kept and preserved.

Pre-Dispatch Inspection Report

Pre-Dispatch Inspection (PDI)/Certificate of Conformance (COC) report shall be submitted with each lot as per MIS-P. If the lot no./batch no. is the same in subsequent supplies, then copy of previous inspection report/COC can be enclosed.

Suppliers can use their own format for making the inspection report/COC; however, it should contain the following information:

- Supplier name and address
- Supplier code
- Part name
- Part number
- Drawing number/Standard number and revision number
- MIS-P number
- Date of inspection
- Standard for dimension/attribute as per Motherson drawing/standard
- Checked parameters with observations
- Lot/batch number
- Bill or Invoice number
- Quantity
- Shelf life
- Judgment

- Inspector and approval authority name and signature

In case supply contains more than one lot number, then all the lot numbers with respective quantities are to be mentioned. The Inspection Report should cover all the lots or separate inspection reports shall be submitted for each lot.

Packing of Supplies

Suppliers are expected to pack the components according to packing instructions that are agreed to and approved between Motherson and the supplier before shipment to Motherson. Supplier shall establish a Packing Standard that describes packing conditions with dimensions, quantity of parts per primary/secondary package (polybag, corrugated box, bin, etc.), weight, and location of delivery tag. In addition, parameters that describe the quality of the pack e.g., in case of corrugated boxes, the number of plies, GSM of paper, Bursting Strength, etc.; in case of polybags, the gauge of polybag, etc. must be defined.

Suppliers are required to provide appropriate storage and protection for Motherson packages while under their control. All packaging must also conform to appropriate health and safety, environmental and other legislative requirements.

Packing Label (Lot Tag)

Regular supplies are to be submitted along with the packing label. Suppliers can use their own packing label, but it should necessarily contain all the information as per the specimen provided below:

LOT TAG			
Supplier Name:			
Supplier Address:			
Supplier Code:			
Invoice/Challan No:			
Select Category:			
FPP ❑	ISC ❑	REGULAR SUPPLY ❑	
SPECIAL USE ❑	COUNTERMEASURE PARTS ❑		
Part Name		Dispatch Date	
Part No. (Motherson)		Box Qty.	
Box/Bin No.		Lot No./Batch Code	
Total no. of boxes/Bins		Total Lot Qty.	

The colour of the packing label should not be yellow or red. White colour is to be used preferably for packing slip (regular supplies) with black colour letters. All packing bins, corrugated boxes and/or polybags should be dust and contamination free.

Shelf Life

For age-controlled material, the remaining shelf life must be a minimum of 80% of the total shelf life at time of delivery unless otherwise specified. Supplier to ensure the same and check it at the time of dispatch. Such parts shall bear the legible expiry date on lot tag (on box/ packets).

Counterfeit* Product Prevention

Where appropriate, the supplier shall establish and maintain a counterfeit parts/material prevention and control plan to ensure that counterfeit product is not delivered. The purpose of this plan shall be to develop a robust process to prevent the delivery of counterfeit commodities and to control commodities identified as counterfeit.

*Counterfeit Product Definition

An unauthorized copy, imitation, substitute, or modified part (e.g., material, part, component), which is knowingly misrepresented as a specified genuine part of an original or authorized manufacturer.

***NOTE**: Examples of a counterfeit part can include, but are not limited to, the false identification of marking or labelling, grade, serial number, date code, documentation, or performance characteristics.*

Foreign Object

Foreign Object is any loose particle, burrs, contamination, excess material, or sharp edges that could result in a FOD event which has the potential to cause:

- Damage to the manufactured product
- Injury to employees, visitors, or passengers
- Production delays or safety violations
- Quality issues related to form, fit and function

Foreign Object Damage Control

Suppliers shall use best practices to prevent Foreign Object Debris/Damage (FOD). Any parts received with burrs, contamination, excess material, or sharp edges that could result in a FOD event are subject to rejection.

Hazardous Substances

Supplier shall ensure in regular supplies that all parts meet SoC requirements (RoHS/ELV/REACH/POPs, etc.) at all times as stipulated by Motherson through ENG/RD/152 or as per other communications based on customer or legal requirements. Supplier shall ensure annual verifications of RM/Compound covering all Motherson parts and will submit the Test Reports/Certificates.

Conflict Minerals Reporting

The Conflict Minerals Reporting Template (CMRT) is a standardized reporting template developed by the Responsible Minerals Initiative (RMI) that facilitates the transfer of information through the supply chain regarding mineral country of origin and the smelters and refiners being utilized. **Suppliers shall ensure that the product in entire supply chain are "DRC conflict-free".**

Suppliers shall ensure in the supply chain to use Responsible Minerals Assurance Process (RMAP) Conformant Smelters only or ask the smelters to participate in the RMAP Conformant program. The annual reporting of conflict mineral must have only RMAP Conformant Smelters.

Revalidation System

Revalidation is defined as a detailed verification of appearance, performance and inspection items mentioned in inspection standards/drawings, which comprise items for regular check. Supplier shall make a system to carry out revalidation of parts (for all Functional parts and General parts) and revalidation of raw material at least once a year or as per the end customer requirement. Minimum 5 parts shall be checked for revalidation. In case of multiple lines/molds/cavities, minimum 1 sample per line/mold/cavity should be taken for revalidation. A revalidation plan should be made each year, and revalidation should be done by the supplier. Based on revalidation, supplier shall plan countermeasures for improvement and submit the details to Motherson.

4.3. Lot Control & Traceability

A system shall be established by the supplier to control lots in mass production to meet traceability requirements. Traceability is the ability to locate defective or suspected defective products or to find out the history, location, or application of a defective product in all stages of product life cycle. Suppliers shall have an effective system of traceability that ensures delivered product can be traced from a finished product in the customer application back to specific lots (date/shift/operator/inspector), subcomponents, parts, blanks, and raw material.

It is classified into the following two categories:

a) Forward or Downstream Traceability: This means the ability to locate defective or suspected defective products in all stages of product life cycle after the stage in which the defect was discovered, with the aim to repair or replace such products.

b) Backward or Upstream Traceability: This means the ability to find out the history of a defective product in various stages of product life cycle before the stage of discovery of defect, with the aim to investigate the causes of occurrence and to take countermeasures to improve processes/systems.

Lot Traceability Requirements

The basic requirements for lot traceability are covered in the **Lot Control and Traceability** section.

The following requirements apply to safety critical parts, components or assemblies and are in addition to the basic traceability requirements. **Suppliers shall have 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**.

In addition to component/materials traceability, the system must be capable of providing the production history of a lot number. This history must include:

- Rework operations or activity
- Product and process special characteristics
- Test records
- Process parameters influencing conformance
- Machine settings influencing conformance
- Maintenance activity of machines, equipment, jigs, gages, and test equipment
- Operators and personnel qualification records for operators performing the work

If product is controlled in lots or batches, a 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.

The minimum requirement for storage of information related to safety critical parts is 10 years from the date of manufacturing. Any additional requirements related to storage related to applicable legal requirements must be maintained.

Product Liability (PL)

Product liability is the area of law in which manufacturers, distributors, suppliers, retailers, and others who make products available to the public are held responsible for the injuries those products cause, manufacturing defect in the product. Usually, compensations to be paid in such cases are very high.

However, the exact traceability requirement should be discussed with Motherson during the Specification Meeting. The above requirements have been decided based on the Product Liability (PL) laws applicable in the markets, where the end customer sells its automobiles, regulatory requirements, and anticipated usage of automobiles in the field by customers.

How to meet traceability requirements? Traceability requirements cannot be met without establishing lot control system and meticulously following it.

Definition of a Lot
A lot means the collection of parts, which have been produced with one setting of process condition. In other words, parts produced during one setting of process belong to a different lot from the parts produced during another setting of process.

In case of continuous production, one day/one week's production can be considered a lot depending upon the production volume.

Traceability of Manufacturing History
The batch coding system and the system of keeping records at Supplier's end shall be such that it should be possible to know the following from a batch code:

- Size of the lot (Quantity produced in the lot)
- Operating conditions (Process parameters, setting conditions)
- Inspection results
- Dates on which the lot was supplied to Motherson

For such parts, on which it is not possible to mark batch code, supplier must mention the batch code on the lot tag and control lots in such a way that it would be possible to trace manufacturing history and date of supply to Motherson through the records.

'First-In First-Out (FIFO)' Practice
FIFO basically means oldest part is consumed first and same order to be followed afterwards. To locate and recall defective/suspected parts from subsequent stages in case of discovery of critical defects, it is a must to follow the **First In First Out (or FIFO)** practice. For implementing FIFO, supplier must do the following:

a) Make sure that lots are not transferred in mixed up condition from your production floor to the main stores i.e., parts produced with one setting of process condition do not get mixed up with parts with different setting of process condition and are identified throughout the process through movement card.

b) In case of shifting in-process parts from one station to the next station, make sure that all operations to be done up to that station have been completed and that the parts are not shifted to a wrong station.

c) Rework parts must be repaired immediately without delay, so that they do not lag behind the lot and do not get mixed up in the subsequent lots.

Identification System
Supplier shall have a proper documented system of identifying parts and their inspection status (i.e., accepted, rejected, under inspection, under rework, etc.) in all stages right from raw material receipt up to finish parts dispatch.

a) Rejected/Rework Parts Identification
Rejected parts and rework parts shall be identified by putting proper identification mark or tag. It can be achieved by putting red and yellow magic ink mark or paint respectively or by putting rejection/rework tag, respectively.

b) Identification of Inspection Status
There shall be a clearly defined method of identifying under inspection lots, accepted lots, rejected lots and rework lots to prevent mix-up.

c) Identification of Parts
Part name, part number, production date and supply date, etc. must be marked on containers/cartons, to prevent mixing up of similar materials and parts.

Traceability of Changes: Supplier shall keep the records in case of the following changes:

a) Design change (including child parts)

b) 4M condition change:
- Extended shift working
- Extra shift working
- Contract manpower
- Skill level change (Regular)
- Organization structure change
- New joiners
- Raw material specification/grade change
- Raw material/BOP source change
- Change in regrind material %age or usage of regrind material
- Process Control Standard change (Process parameter change)
- Process change
- Process sequence change
- Change in Bins/Trays/any other container used for storage of WIP
- Packaging change
- Transportation mode change
- Batch code/Lot tag change
- Inspection method/Quantity/Frequency change
- Inspection marking change
- Die/Mould/Tooling change
- Tooling inactive for volume production for more than 12 months
- Critical Die parts change/Modification/Maintenance (no major dimensional change within tolerance)
- Machine change (e.g., Tonnage)
- Jigs/Fixtures/Gauges change or Modification
- Removal/Addition of poka-yoke
- Machine breakdown & maintenance
- New location or tooling/machine transfer to other location
- Workstation/layout change
- Sub-supplier: All critical changes (Material, Method, Machine + Mfg. Location)

c) Change in process parameters of functional items mentioned in MIS-P.

d) Critical characteristics mentioned in Process Control Standards/Control Plan.

Records shall include at least the following details, as per applicability:
- Lot number
- Reason for change
- Date of change
- Production shift/operator

- Any other record to trace back the history of changes

Common Requirements for Identification & Traceability:

- There shall be a proper documented system in place to address identification and traceability requirements.
- Identification & Traceability methods deployed shall be clearly defined in the Inspection & Process Control.
- Even if not specified by Motherson, it is recommended that Identification & Traceability methods be developed and informed to Motherson.
- Absence of or inadequate identification and traceability method shall be addressed as a failure mode in FMEA.
- It shall be ensured that all requirements for identification and traceability as laid out in this chapter are extended and applied to Tier 2 suppliers (Motherson sub suppliers as well).

4.4. Sub-Vendor Control

This chapter provides guidelines for Tier-2 suppliers, in controlling the quality of Motherson's Sub vendor (Tier-3) suppliers. The Tier-2 supplier has to guide & coordinate with Tier-3 supplier in all quality related activities. Tier-2 must ensure that the systems at Tier-3 are as per their quality requirements and all the requirements of Motherson as laid down in this manual are being met.

Responsibilities of Tier-2 Suppliers for Tier-3 Suppliers:

Tier-2 Suppliers:

- Shall have a documented system in place for selection and evaluation of tier-3 suppliers.
- Shall have a documented system in place to ensure the identification & traceability of parts supplied by tier-3 suppliers.
- Shall ensure that all Motherson's requirements, as per supplier quality assurance manual, & other product & process requirements have been communicated to Tier-3 Suppliers.
- Shall ensure that any design or process changes are not implemented at Tier-3 supplier without prior information & approval of Tier-2 supplier and same should be communicated to Motherson.
- Shall have a system to assess the quality systems & Process capabilities of Tier-3 suppliers.
- Shall ensure that all the items given in MIS-P required facilities are available with Tier-3 supplier to check those items.
- Shall ensure that all the countermeasures taken at Tier-3 end should be effective & sustainable.
- Shall involve their Tier-3 suppliers in planning/problem solving activities etc. and to make sure that quality levels of Tier-3 suppliers are of acceptable levels.
- Shall keep tracking of rejection & defect levels, delivery performance and process capability of suppliers.
- Shall be responsible for training & development of Tier-3 suppliers.
- Shall have a system to calculate supplier performance.
- Shall have defined system to take action against Tier-3 suppliers in case of repeated quality issues & consistently poor performance.
- Shall ensure that a system is in place to record the above-mentioned information. These records should be produced whenever asked by Motherson.
- Shall be completely responsible for Tier-3's sub-suppliers (e.g., Tier-4, Tier-5, etc.).

Tier-3 Supplier Audit Conducted by Tier- 2 Suppliers:

- Tier-2 suppliers shall make audit plans to conduct audits of their suppliers.

- Tier-2 suppliers must keep records of these audits & countermeasures for nonconformities observed.
- Tier-2 suppliers must ensure that required countermeasures have been implemented by Tier-3 suppliers.
- Tier-2 supplier shall have to monitor the effectiveness of countermeasures taken by Tier-3 suppliers.

Audit findings shall be communicated to Motherson, if asked. In addition, if required, Motherson's SQA can conduct Process Audit of Tier-3 suppliers.

5. POST-DELIVERY PERFORMANCE MANAGEMENT

5.1. Abnormality Handling

Deviation in Supplies

- If supplier is unable to meet the specified quality requirements, then the supplier can request Motherson for deviation on the '**Deviation Request**' along with countermeasure plan.
- Supplier should supply the deviated lot only after the approval of deviation request.

Action on Non-Conforming Product/Quality Problems/Delivery Problems

Supplier should meet Motherson expectations for Quality, Quantity, Delivery, Documentation and Response time. As Motherson is committed to fulfil all customer expectations, Motherson in turn expects its suppliers to always meet these expectations. Any non-conformity on these parameters must be resolved speedily and permanently.

- A **Quality Problem Report** is typically raised for any quality problem reported at material receipt, line, or customer end. Its reply can either be provided on the same format or the supplier can use their own format that must be based on structured problem-solving approach.
- In addition, Motherson sends the details of Receipt/Line/Customer end rejection to the suppliers. Suppliers are expected to respond immediately in terms of attending to the reported quality issue, take immediate containment actions, and provide analysis/countermeasure report.
- Motherson expects the immediate containment action to be communicated within 24 hours and analysis/permanent action plan within 5 days for functional failures, 8 days for problems which do not cause functional failure of the product & 10 days for aesthetic defects.
- Supplier shall focus upon poka-yoke (mistake proofing methods) to avoid re-occurrence of problems; non-conformities shall be resolved using proper problem-solving techniques, such as why-why analysis, cause & effect analysis, etc.
- For short quantity, Motherson shall debit the supplier at increasing rate at successive instances in a calendar year.
- For delivery issues like short quantity, damaged consignment, etc., a **Delivery Problem Report** will be raised. Its reply must be provided on the same format.
- For delivery-related problems, if countermeasures are requested, then the supplier must communicate the immediate containment action within 24 hours and analysis/countermeasure report within a maximum of 15 days.
- Motherson may conduct surprise audits to verify the actions as specified in the countermeasure report.
- The supplier might be required to accompany Motherson representative for quality issues that may occur at the customer end.

Motherson may stop procurement from that supplier-part combination, which has continuous problems of quality and delivery.

5.2. Penalty Clause & Negative Marking

Monetary penalty and negative marking might also be imposed on the supplier in case of product recall, dispatch suspension of harness, unapproved changes, serious quality issues, repeated defects, continuous non-performance, and productivity issues at Motherson.

5.3. Supplier Performance Monitoring

The purpose of the Supplier Performance Evaluation is to provide a means of objectively assessing the ability to meet customer expectations and to identify areas of risk and opportunities for improvement. Motherson evaluates Supplier Performance using a set of criteria-based Key Performance Indicators (KPIs). These KPIs are focused on quality performance, delivery performance and commercial competitiveness. Motherson employs the results as essential tools for decision making, risk mitigation and continuous improvement. A monthly supplier performance report, which assesses the overall performance according to the defined criteria, is available to all direct suppliers.

Suppliers will be evaluated monthly on Quality, Delivery & Commercial parameters as per the weightage percentage against them. The Final Score will be calculated by multiplying the total points of each parameter with their weightage percentage. Supplier must take analysis-based actions as per low-performing parameters.

5.4. Meetings with Low-Performing Suppliers

Each month, the top low-performing suppliers with respect to quality shall be called for a meeting. The supplier is expected to present the analysis and actions based on structured problem-solving approach in this meeting. Based on the minutes, supplier is expected to take required actions as per the target timelines.

5.5. Machinery/Equipment Maintenance

A documented system shall be implemented for proper control and maintenance of production machinery and inspection equipment.

Maintenance of Production machinery

A documented system should be implemented for proper control and maintenance of production equipment which shall include Work Start-up Checks, Periodic Checks, Periodic Accuracy Checks, Breakdown Maintenance, Preventive Maintenance and Predictive Maintenance.

Important points to be followed:

- Whenever any die/tool is repeated/duplicated or any major corrections are done in a die/mould/jig/fixture/tool/machine due to breakdown, such events should be reported to the customer by the sub-supplier.
- After every maintenance/die, mould duplication activity, 1st piece inspection should be done for 100% parameters as per drawing or specification provided by the customer. Records should be kept for the same.
- Whenever any corrections/countermeasures are being carried out in die/tool, drawing/CAD data of the die should also be updated without fail.
- Parts produced post-repair must be treated as a newly developed part and inspection of 100% parameters as per drawing should be carried out as per the approved drawing.

History Card

Measuring equipment & production equipment history cards shall be maintained, recording the events of calibration & maintenance activities, respectively, in a chronological fashion. Such history cards should also contain repairs or corrections done & countermeasures taken in the equipment from time to time.

Maintaining Critical Spare Parts

The supplier should identify the list of critical parts that have high lead time & are prone to damage, etc. Such parts shall always be available with the supplier.

Maintenance of Inspection/Test Equipment

A documented system shall be implemented for proper control and maintenance of inspection/test equipment.

Periodical Accuracy Inspection and Calibration

Simple daily or weekly periodical accuracy checks at defined frequencies shall be carried out to find out if any error in the measuring device has occurred in or during routine handling. Apart from periodical accuracy checks, methods should be adopted to carry out daily maintenance of measuring equipment & devices.

Annual Plan of Calibration

An annual calibration plan shall be made and adhered to.

Preparation of Inspection Standards

Standards, including inspection items, judgment criteria, daily maintenance & periodic accuracy methods, inspection frequency, etc. for each type of measuring instrument and for gauges and inspection machines shall be made.

Control of Inspection Instrument

A unique control number shall be assigned to all inspection instruments. A sticker on each inspection instrument denoting the next calibration due date shall be pasted.

5.6. System for Motherson Supplied Tooling

Supplier must lay down a system to ensure that tooling supplied by Motherson is properly identified, stored, and maintained. Availability of proper facilities for maintenance, repair & storage must be ensured. When not in use, the tools must be kept covered on proper racks and in proper ambient conditions. A proper record of the assets of all tools/dies of Motherson shall be maintained. Such tools shall be used exclusively to produce goods ordered by Motherson.

Motherson shall be entitled to verify and monitor the use, good maintenance and safe keeping of the said Dies/Tools at the premises of the supplier. In case of any break down or accident of Tools/Dies, the same should be informed to Motherson by the supplier. The supplier shall use the said Dies/Tools in its own premises and will not move the same out of its premises without the prior written permission of Motherson. As and when required, the tooling shall be returned to Motherson in good condition.

6. CONTINUAL IMPROVEMENT

6.1. Purpose

To establish a system for developing and sustaining a manufacturing process that continuously improves the product and related manufacturing processes throughout the product/part lifecycle.

6.2. Quality System Audits

Audits Conducted by Motherson on Its Suppliers

After regular supplies have started, Mothersn will conduct Quality System Audits at the supplier's premises at predefined intervals.

Supplier's Quality System will be rated based on score observed in the Quality System Audits. Supplier must take corrective actions on the findings of Quality System Audit and submit it to Motherson for closure within 21 working days along with implemented evidence that will be cross verified by Motherson.

Motherson will track the progress against the agreed action plan to establish positive progress.

6.3. Occasional Process Audits

Occasional audits can be performed as per the supplier's Control Plan or Motherson Process Audit Check Sheets (if related complete process is to be audited based on the assignable process area). These audits will be conducted if any of the following conditions exist:

- Chronic quality issues.
  NOTE: A chronic quality issue is an issue that gets repeated in three consecutive lots or that recurs within 5 lots after actions against a quality problem have been deployed at supplier end as per the submitted action plan.
- Serious quality problems (fit or functional failures, statutory & regulatory failures) at Motherson or Motherson's customer end.
- Suppliers at which new safety part has been developed or new/special process has been added.
- In case of design change in part or material or process change.
- After submission of sample parts and PPAP/ FAI (in case of new part development).
- Production of FPP lot of critical parts.
- In case of customer or management directive.

Effectiveness of the countermeasures submitted by the supplier will be verified by Motherson. If the countermeasures are effective; Motherson shall close the audit report. In case they are ineffective, supplier shall be asked to resubmit fresh countermeasures.

Safety Management Assessment During Audits

Suppliers of safety critical components or assemblies must have safety system requirements embedded in their quality management system. **Suppliers must be able to demonstrate that they have the organization, systems, processes, and competencies to manage Motherson requirements related to safety critical features.**

Motherson uses the Regular Audit System to evaluate Safety Management Systems of suppliers of safety related parts. This audit evaluates the presence of an adequate management system and the capabilities to effectively manage safety parts throughout the production process. A process audit/preliminary evaluation audit will be conducted during the sourcing process and potential suppliers are required to qualify prior to the award of business.

Suppliers who do not qualify the safety management assessment are required to submit action plan against audit observations/Non-conformances and take speedy actions. Motherson will conduct re-audits to verify the completion of effective actions.

6.4. Skill Enhancement

This section explains Motherson requirements related to the implementation of Education & Training on quality. The purpose of such education is maintenance and improvement of product quality by promoting Quality Assurance activities and concepts.

Supplier shall implement the following types of training & education programs:

a) Orientation program for new employees.
b) Training & education program for managers.
c) Training & education program for supervisors.
d) Training & education program for associates.

Special education & training program should be there for the following:

- Personnel designated as inspectors.
- Persons carrying out Quality Control & Quality Assurance activities.

Supplier shall employ suitable means & techniques to capture training needs of individuals at all levels. **A training plan for all manpower across all levels i.e., workers, engineers & managers, shall be made by the supplier.**

Contents of Education and Training Programs

Suppliers may include the following types of topics in their Education & Training Programs:

- Safety
- Relevant operations & inspection standards
- Legal regulations related to products
- Product awareness
- Functioning & handling of inspection equipment
- Work practices
- 5S
- Various tools & techniques used in quality improvement & cost reduction (SPC, MSA, FMEA, APQP, 8D, QC Tools, etc.)
- Customer/market feedback
- Quality systems implemented in various organizations

Guidelines for Education and Training Program

- Establish a section for the promotion of education on quality in the company.
- Make annual plans for education programs and implement them as per the plan.
- Standardize training contents and training methods.
- Maintain training records.
- Check the effectiveness of the training.

The contents of this manual must be used to devise Education & Training Programs by the suppliers as it is imperative that the requirements of Motherson as laid out in this manual are understood by everyone in the supplier's organization.

Skill Development

Operators & workers are the most important asset of any organization. It is very essential to nurture, develop & hone the skills of the workers. A **Skill Map** shows 'who can perform which job & at which level'. It serves as an important tool to allocate & distribute work in case of absentee-

ism. It also helps in identifying & managing the development & training programs of the operators to enhance their ability.

In this section, the methods to be adopted for identifying, evaluating & developing the skill sets of the operators are explained.

Skill Identification

The activities in the organization that require special skills of operators should be clearly identified. In principle, skill sets may broadly fall in one of the following categories:

- Skills that help in delivering a job (within the targeted cycle time, if any) that meets the specifications & requirements of the customer e.g., machining, welding, painting, etc. This includes maintenance, testing, inspection, calibration, auditing & repair & rework activities.
- Skills required to ensure a safe working environment involving the safety of the personnel, products & equipment in the job area.

It is advisable to adopt a CFT approach involving personnel from Production, Maintenance, Product & Process Engineering to identify the important operator skill requirements in the processes of the organization. Whenever a new product or part is under development with Motherson, a review of skill requirements should be carried out to identify if any extra skills need to be developed amongst operators.

Skill Level Evaluation & Mapping

Once the skill sets are identified, they should be subdivided into various levels based on the degree of perfection an operator has attained with respect to that particular skill. An objective evaluation & assessment should be devised to decide the current level of skill of an operator. The assessment should be done by the supervisor of the operator in a particular skill. The skill evaluation technique may include judgment by the supervisor based on:

- Observation of the skill activity performed by the operator/work output evaluation.
- Written tests &/or interviews.
- Results of performance indicators like rejection & rework rate, customer feedback & response, number of accidents, etc.

Skill Development & Upgradation

It is not essential to identify & map the skill levels of the operators but also to upgrade them to higher levels & develop them for newer skills. The need for developing an operator for a new skill should be assessed by his/her supervisor at the time of periodic evaluations. Once such a requirement is felt, the supervisor should make time bound action plan to get the operator developed for the new skill. Whether or not a need is felt for developing an operator for a new skill, the supervisor must have a time bound action plan to raise or upgrade the level of all the operators in the current skills they possess.

7. CHANGE MANAGEMENT/PRODUCT OBSOLESCENCE

7.1. Purpose

This chapter explains the guidelines for the requirements of Motherson to control all change points/obsolescence with respect to manufacturing process, manufacturing method, and parts being produced at supplier's end and the manner of requesting to Motherson about changes proposed by the supplier.
Changes can be planned or unplanned.

7.2. Planned Changes

Supplier shall define points to be controlled for the planned changes such as the points listed below.

• Manpower addition	• Sub supplier change
• New site/location	• Specification changes by supplier
• Material changes by supplier	• Change in operator standard work due to Takt time
• Die/mould, jig, or machine/tool changes	• Change or move of failsafe devices
• Tool transfer	• Obsolescence
• Duplicate tooling	• Construction or move of line
• Mould/die modification	• Inclusion/Exclusion of Poka-Yoke
• Process layout/flow change	• Impact of seasonal change
• Process control parameter change	• Cavity addition

7.3. Unplanned Changes

Supplier shall define points to be controlled for all changes caused by sudden or unplanned changes such as the points listed below.

• Line stops and restart	• Use of alternate source materials from unapproved sources
• Delay in operations	• Power failures
• Unexpected manpower changes	• Failure of failsafe devices, etc.
• Process/machine changes due to equipment breakdown	

7.4. Method of Informing Change

- For change instructions from Motherson, supplier shall submit the modified samples, inspection data, IPP tag and relevant documents, before starting the mass production and obtain approval from Motherson.

- In case of any of the expected (planned) changes initiated by the supplier, the supplier must inform Motherson about the changes **three months in advance** prior to mass production through the **Change Management Matrix** and must take approval from Motherson before the implementation of the change.

  Furthermore, in urgent cases wherein Motherson approval might be required, Motherson should be contacted first, and the instructions followed.

- In case of unexpected (unplanned) changes by the supplier in which formal Motherson approval is not required, the changes to be informed as per the **Change Management Matrix**.

- Requirements related to the type of change are mentioned in the Change Management Matrix.
- Listed below is the procedure to fill the Change Management Matrix:
  a) Write the name of your organization & address.
  b) Write the date on which process approval is requested from Motherson.
  c) Tick mark the nature of the change proposed.
  d) Write a brief description of the change along with details of parts affected, reason for the change.
  e) Sign the document

***NOTE**: This document needs to be signed by the concerned person from the supplier side. Approval person is preferably the quality in-charge.*

7.5. Control of Change

Supplier shall evaluate and record the following items as change points at minimum:

- Nature of the change
- Time and date of the change occurred
- Date of manufacture or release
- Inspection results
- Quality of parts before and after the change

***Note**: Change approval request will not be accepted in case it is raised during Phase-4 of the APQP process.*

7.6. Evaluation of Parts & Judgment by Motherson

- After receiving the change request from the supplier, Motherson will take the decision for approval after carrying out necessary evaluations and inform the supplier.

***Note**: Suppliers with design control over their products shall have their own documented processes to inform Motherson & related OEMs.*

ABBREVIATIONS

Term	Abbreviation
4M	Man, Machine, Material, Method
5S	Sort, Set in Order, Shine, Standardize, Sustain
8D	Eight Disciplines (Problem-Solving Approach)
AIAG	Automotive Industry Action Group
APQP	Advanced Product Quality Planning
CMRT	Conflict Minerals Reporting Template
COC	Certificate of Conformance
Cp	Process Capability
Cpk	Capability Index
ELV	End Life of Vehicles
GADSL	Globally Acceptable & Declarable Substances List
IFC	Initial Flow Control
IMDS	International Material Data System
MSA	Measurement Systems Analysis
PDIR	Pre-Dispatch Inspection Report
PFD	Process Flow Diagram
PFMEA	Process Failure Modes and Effects Analysis
PO	Purchase Order
POPs	Persistent Organic Pollutants
PPAP/ FAI	Production Part Approval Process/ First Article Inspection
PPM	Parts per Million
QPR	Quality Problem Report & Resolution
R@R	Run at Rate
REACH	Registration, Evaluation, Authorisation & Restriction of Chemicals
RFQ	Request for Quotation
ROHS	Restriction of Hazardous Substances
RPN	Risk Priority Number related to FMEA development
SOC	Substances of Concern
SPC	Statistical Process Control
Spec. Meeting	The first APQP supplier program review

APPLICABLE DOCUMENTS

Document	Control no.
Initial Audit Check Sheet	FRM/VD/01
Purchase Order Terms & Conditions	FRM/PD/02
Specification Meeting Check Sheet	FRM/VD/10
Development Plan	FRM/VD/20
Process Audit Check Sheet	FRM/CQ/59-60-61-63-64
Motherson Inspection Standard-Parts (MIS-P)	FRM/CQ/166
Sample Submission Inspection Report	FRM/CQ/43
Regular Supplies Inspection Report	FRM/CQ/28
Change Management Matrix	FRM/VD/25
Regular (System) Audit check Sheet	FRM/VD/09
Capacity Calculation	FRM/VD/07
Performance Report	FRM/VD/08
Quality Problem Report	FRM/VD/05
IMDS	Internet URL: www.mdsystem.com Motherson IMDS ID: 33677

REVISION HISTORY

Version	Date	Description	Approved By
1	15.11.2010	Creation of the document (initial issue)	Rajesh Verma
2	31.08.2017	Some requirements (IMDS, pilot supply and initial lot control requirements, change management) were added	Rajesh Verma
3	30.07.2019	Retention period updated w.r.t. customer requirements	Rajesh Verma
4	11.08.2020	Requirements added w.r.t. AS9100	Rajesh Verma
5	16.12.2021	Requirements added w.r.t. ISO/ TS 22163	Rajesh Verma
6	16.02.2022	Restructured all the quality system activities w.r.t. customer-specific requirements	Rajesh Verma
7	23.02.2023	Review done as per customer specific requirements (Timeline for countermeasure submission revised).	Rajesh Verma