

Eaton Global Supplier Excellence Manual

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Powering Business Worldwide

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1 Scope

This manual defines the minimum requirements, processes, and systems for doing business with Eaton, as well as align to Eaton’s Customer Specific Requirements. The manual outlines processes used to ensure that Eaton’s supply base is providing top level service while continually improving to prevent quality and delivery disruptions. It is the responsibility of the Supplier’s leadership to ensure compliance to this manual.

Section headings throughout this manual will be highlighted with the acronyms in Table 1 on the right hand side of section headings. Additional business specific requirements are referred to in Section 10. The Business Specific requirements shall be in addition to the requirements in the body of the document, unless otherwise specified.

Table 1

Aerospace	Electrical	Hydraulic	Vehicle (Auto)	Vehicle (Truck)
AER	ES	HYD	VGA	VGT

1.1 Business Communication

Suppliers shall:

- Communicate all documentation in English unless otherwise specified by the Eaton business.
- Communicate any significant changes in business climate including but not limited to acquisitions, divestitures, pending litigation, or any activity that may change financial viability in the Supplier’s organization.
- Register for the Eaton Supplier Portal at My.Eaton.com.
- Maintain a current Supplier Profile at My.Eaton.com.
- Log in to the Eaton Supplier Portal on a regular basis to stay current on business communications

The My.Eaton.com portal contains the framework of digital infrastructure in doing business with Eaton. The following documents, tools and more can be found on the Eaton Supplier Portal:

Documents

- Eaton’s Code of Ethics
- Supplier Code of Conduct
- Terms and Conditions
- Sustainability

Tools

- WISPER
- Supplier visualization
- Supplier invoicing
- EatonRoute

2 Reference Material

[AIAG](#) - Automotive Industry Action Group site where suppliers can find information on APQP, PPAP, PFMEA, MSA, and Special Processes.

[AS/EN/JISQ9100](#) - Internationally recognized aviation, space, and defense organizations Quality Management System (QMS)

[Dun & Bradstreet](#) - Largest Global Commercial Database where a supplier can obtain a D-U-N-S number

[EatonRoute](#) – Web based application for obtaining shipping instructions

[Eaton's Supplier APQP](#) - Standard Supplier APQP process developed by Eaton for purchased parts

[IATF16949](#) - Internationally recognized automotive Quality Management System (QMS)

[IDEAS](#) - Innovation Drives Excellence, Achievement, and Savings

[ISO17025](#) – General requirements for the competence of testing and calibration laboratories

[ISO9001](#) - Internationally recognized Quality Management System (QMS)

[NAS 412](#) – Defines general practices and standard terms for the prevention of Foreign Object Damage (FOD) to aerospace products and operating environments

[Purchase Order Terms](#) - Eaton's standard PO Terms and Conditions

[SD-013](#) – Eaton Aerospace Group Counterfeit Product Prevention Policy

[Supplier Code of Conduct](#) - Outlines Eaton's expectations for supplier's regarding workplace standards and business practices

3 Terms & Definitions

Term	Definition	Where used
AIAG	Automotive Industry Action Group is a not-for-profit association where professionals from a diverse group of stakeholders work collaboratively to streamline industry processes via global standards development and harmonized business practices.	2, 7, 7.3
APQP	Advanced Product Quality Planning (APQP) is a structured method of defining and establishing the steps necessary to assure that a product meets expectations, and that the Supplier's manufacturing processes have the capability to consistently meet these requirements.	2, 6.2, 7
Eaton Business	Eaton Business may refer to any subset of Eaton as a whole. Ex. (divisions, groups, plants)	All
Control Plan*	Written description of the system used to monitor and control the output of processes that produce products. The Control Plan should include controls for prevention of failures identified in the PFMEA	7, 7.3
DMR	A Defective Material Report (DMR) is a method by which all non-conforming conditions are reported to the supplier and corrective action is requested. This is synonymous with Supplier Corrective Action Requests (SCAR's), Quality Notification (QN), Q2	6.1, 7.5, 7.7, 8.1, 9.2
DPPM	Defective Parts per Million (DPPM) is Eaton's inbound quality metric	6.1, 8.1
EHS	Environmental Health and Safety	4.2, 8.5
FMEA*	Failure Modes & Effects Analysis (FMEA) is a structured analytical tool which identifies the potential failure modes in a design (DFMEA) or process (PFMEA), the likelihood of the failure to occur, and the potential impact of a failure on the component or system (i.e. Severity).	7.2, 7.3
IDEAS	Innovation Drives Excellence Achievement and Savings (IDEAS) is a program Eaton has for suppliers to submit ideas to improve and provide cost savings.	9.1
MSA*	Measurement System Analysis (MSA) is an experimental and mathematical method of determining variation within a measurement process.	7.3
Nadcap	A program governed by a conglomerate of aerospace manufacturers (Subscriber User Members) and is administered by the Performance Review Institute (PRI).	10.4
OTD	On time Delivery (OTD) based on a percentage of product received within the delivery window.	6.1, 8.1
Pass Through Characteristics	Component characteristics with potential fit or function issues that do not undergo inspection and where defects may not be detected within Eaton but could cause non-conformance to the end user or customer.	3
PPAP*	Production Part Approval Process (PPAP) defines requirements for production part approval including production and bulk materials.	2, 6.1, 6.3, 7.3, 7.7, 8.1, 9.2
Special Characteristics	Characteristics designated in the Design Record (drawings and specifications) that, with reasonable anticipated variation, could significantly affect a product's safety or compliance with applicable standards or regulations and/or are likely to significantly affect customer satisfaction with a product. Terms; 'key', 'critical', 'safety' 'significant' or 'pass through', designated by symbols in the Design Record are generally referred herein as 'Special'.	7.2, 7.3
Special Processes	A process that creates a characteristic that cannot be measured, monitored, or verified without destructive testing.	2, 4.1, 6.3, 7.3, 7.7
Supplier Site Assessment (SSA)	SSA is an Eaton designed tool to evaluate the business management systems of a supplier's manufacturing site and assess the supplier's compliance to Eaton system requirements.	9.3
Supplier Visualization	An Eaton tool used to communicate Inventory levels. Also known as Supplier Vis.	6.1
Tier-1/Sub-Tier Supplier	Tier-1 – A supplier that sells directly to Eaton. This is inclusive of all types of suppliers. Sub-Tier – A supplier providing products or services to an Eaton Tier-1 Supplier that impact the quality of the end item	4, 4.1, 4.2, 5.1, 7, 7.3, 7.4, 7.6, 7.7, 9.2
WISPER	Worldwide Interactive Supplier Performance Evaluation Resource (WISPER) is an online system that is Eaton's primary method for evaluating and managing direct material suppliers. WISPER only applies to suppliers that have been given access through Eaton Supply Chain or Supplier Quality.	1.1, 4.1, 6.1, 7.5, 9.2

* These documents are governed by the AIAG APQP manual which should be referenced by suppliers when preparing and maintaining such documents for their processes.

4 Expectations of the Supplier

Supplier's leadership shall:

- Review, understand and ensure compliance to this manual as a part of doing business with Eaton.
- Adhere to all requirements including all Purchase Order Terms and Conditions.
- Confirm agreement to conduct business ethically as outlined in Eaton's Supplier Code of Conduct.
- Ensure that Eaton requirements are adequately communicated to their Sub-Tier suppliers

4.1 Quality Management System Requirements

AER VGA

Suppliers shall be at a minimum certified by a 3rd party registrar to an internationally recognized quality management system, as specified by each Eaton business group:

- Aerospace – AS/EN/JISQ9100
- Electrical – ISO9001
- Hydraulics – ISO9001
- Vehicle – IATF16949

Based on business specific or customer requirements Eaton may require:

- Additional quality management system certifications.
- Special Process certifications.
- Sub-Tier suppliers certifications.

Suppliers whose 3rd party certification status changes shall notify the Purchasing and Quality manager at each of the affected Eaton business within 24 hours following communication from the accrediting agency.

Suppliers shall maintain evidence of certification status in WISPER unless otherwise stated by Eaton.

4.2 Eaton Assessment & Approval

VGT

Suppliers shall be capable of meeting Eaton's quality, delivery, cost, EHS, and continuous improvement requirements. Eaton will assess these requirements as a part of its supplier selection process through the supplier assessment and qualification activities. Suppliers shall be active and compliant in the supplier assessment and qualification process. The process will include but is not limited to the following:

- Registration to industry standards and certifications.
- Quality and delivery performance.
- Cost competitiveness.
- Current financial health.
- Assessment results and corrective actions.

4.3 Right of Access

Suppliers shall provide right of access to Eaton, its customers, and relevant government agencies to allow for the evaluating of quality system documentation and records, conducting audits, and verifying product conformance.

5 Planning

5.1 Business Continuity & Risk Management

VGA

Suppliers shall create functional Contingency Plans to address the following types of issues and risks:

- Event based risks
 - Fires, Chemical spills, Natural disasters, Terrorist threats, Medical emergencies, human resource issues (ex. Strikes)
- Sub-Tier suppliers potential disruptions and disasters
- Pandemic preparedness plan
- IT disaster recovery and IT security
- Disruptions due to financial and regulatory non-compliance
- Human Resource guidelines for security, drug screening, background checks

The required plans should include the following:

- Team organization
- Roles and responsibilities
- Communication plan
- Escalation procedures
- Recovery plan
- Steps to facilitate quick response
- Reaction and resumption of parts and services

Eaton suppliers are expected to develop, deploy and maintain these contingency plans.

5.2 Performance Expectations

Eaton will use Supplier Scorecards and Supplier Business Reviews (SBR) to assess and manage Supplier performance. Suppliers shall set goals for the measures as outlined in 8.1 Performance Measures. Eaton expects Suppliers to maintain a zero defects culture and zero delivery disruptions.

6 Support

6.1 Infrastructure

VGA

Suppliers shall:

- Obtain a D&B D-U-N-S number from www.dnb.com.
- Pay an annual software fee for ongoing support and maintenance of Business Systems.
 - Fees are assessed once per supplier per year to cover all supplier locations and are based on the amount of annual business with Eaton worldwide.

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6.1.1 WISPER

WISPER provides the Supplier and Eaton with the following:

- DPPM/OTD Performance Data
- Defective Material Reports (DMRs)
- PPAP / First Article Submission Tracking
- Ship to Stock Status
- Part Information
- Audit/ Assessment Information

Suppliers shall register in WISPER upon Eaton request and maintain the details of their “Supplier Profile” (See 4.1). WISPER specific training is available within the WISPER application under the communication/training link.

6.1.2 Supplier Visualization

Supplier Visualization (Supplier Vis) gives Eaton and suppliers shared visibility of forecasts, purchase orders, inventory, schedules, material receipts and the ability to create advanced shipping notices (ASN). An Eaton representative will contact the supplier when it is time to register for access to and become trained on using Supplier Vis. Please do not register until notified to do so.

6.2 Organization Knowledge & Competency

Suppliers shall designate key resources responsible for interacting with Eaton in order to conduct business effectively. At a minimum the following knowledge and demonstrated competencies shall exist within each Supplier’s organization:

- Formal problem-solving (8D, A3, Six Sigma)
- Quality Management
- Manufacturing Engineering
- APQP
- Supply Chain Management
- Materials Resource Planning

Suppliers shall be able to demonstrate their employees who are involved in processing of Eaton parts have the necessary competence, training, education, or experience.

There should be resource planning based around the aforementioned knowledge to address employee turnover.

6.3 Document Control & Retention

AER

Suppliers shall retain adequate quality system records, including records associated with:

- Management reviews
- Internal audits
- Calibration
- Change management
- Maintenance
- Root cause corrective action

Suppliers shall retain quality performance and planning documents; including but not limited to:

- Control Charts
- First Article Inspection
- PPAP
- Material and Special Process certifications
- Inspection/Test Results
- Gauge/Test Equipment Verification
- Calibration and Performance Test methods
- Product and Process Validation test results

The Supplier's quality system shall ensure that:

- Latest engineering drawings and specifications are available at the manufacturing, test and inspection locations.
- Review process is established in that system to confirm that applicable drawings and specifications are at the latest revision level with the issuing source.
- The applicable documentation is available for manufacturing, test and inspection in accordance with the part revision stated on the Eaton contract/PO.
- Quality records are maintained in sufficient detail with evidence of actual results of required tests and verifications.
- Where variable or quantitative data exists, it is maintained and available upon request.
- Quality records are stored in a location or media that prevents exposure to elements that would compromise the integrity of the information and will allow retrieval upon request by Eaton business.
- All non-electronic quality records are documented in ink or other permanent marking.
- Even after discontinuing supply to Eaton, Suppliers shall continue to maintain all foregoing records for the retention periods specified by Eaton and to provide such records to Eaton on request. This obligation to maintain records survives termination, expiration, or completion of any supply agreement or purchase order.

Retention time shall be agreed and communicated per each Eaton business.

7 Operation

AER

Suppliers shall implement service and production controls as necessary to meet quality, delivery and other performance measures that impact Eaton or Eaton's Customers.

Suppliers shall be responsible for documenting and executing processes for supplied products in order to ensure the product meets Eaton's expectations. Some of the key processes include:

- Contract Review
- Design & Development
- Product Realization
- Production and Service Provisions
- Control of Non-Conformance
- Sub-Tier Management
- Change Management

Eaton expects suppliers to utilize the AIAG's "Advanced Product Quality Planning and Control Plan" (APQP) document and can find further information on the Supplier Portal.

7.1 Contract Review

Suppliers shall have a defined review process to ensure that all technical, quality and purchase order requirements can be achieved before committing to supply products or services to Eaton.

- The review shall be coordinated with the applicable functions of the organization, including but not limited to Quality, Engineering, Manufacturing and Supply Chain
- The review shall include evaluation of the following at a minimum:
 - Engineering Drawings and all applicable specifications
 - Additional technical requirements within the PO
 - Quality system requirements
 - Commercial requirements
 - Forecast and delivery expectations

- If some Eaton requirements cannot be met or only partially be met, Suppliers shall notify Eaton prior to agreement.
- The results of Supplier's reviews shall be documented and retained.
- In the event where changes to contract requirements are made, the Supplier shall ensure the relevant functions are made aware of the changes and the impact of the change is re-assessed to ensure the requirements can still be achieved.

7.2 Design & Development

VGA VGT

Suppliers who are responsible for the design of products sold to Eaton shall establish and implement a process for design and development. The design and development process shall include:

- Planned stages with required tasks, resources, responsibilities, and design reviews defined for each stage.
- Approval from authorized persons in order to progress to the next stage, including Eaton approvals where applicable.
- Identification of characteristics that are essential to satisfy requirements through appropriate evaluation techniques such as DFMEA.
- Identification of any critical items, including special characteristics, and the specific actions to be taken for these items.
- Evidence of design and development reviews and its outputs, such as, technical reports, calculations, test results, etc., are documented such that they can demonstrate that the design for the product or service meets the specification requirements.

7.2.1 Testing & Validation

When testing is required to confirm the design requirements can be met, the tests shall be planned, controlled, and documented to ensure the following:

- Test plans or specifications identify the test item being tested and the resources being used, define test objectives and conditions, parameters to be recorded and relevant acceptance criteria.
- Test procedures describe the test methods to be used, how to perform the test, and how to record the results.
- The correct configuration of the test item is submitted for the test.
- The requirements of the test plan and the test procedures are observed.
- Monitoring and measuring devices used for testing shall be controlled.

7.2.2 Configuration and Data Management

Suppliers shall have a process to control changes made to the design of products supplied to Eaton. Suppliers shall implement a process to notify Eaton regarding any changes to the design prior to their implementation.

Changes that impact the Form, Fit, Function, Interchangeability and Interoperability of the current system configuration shall be submitted for approval to Eaton through an Engineering Change Proposal (ECP).

Design and development changes shall be controlled in accordance with the configuration management process requirements.

7.3 Product Realization

AER

Before a product is supplied to Eaton, Suppliers shall implement the following:

- PFMEA
- Control plan
- MSA
- Process capability
- Inspection
- Capacity analysis
- PPAP

Completion of the above processes for legacy parts will be determined by the Eaton business being supplied.

7.3.1 Process Failure Modes and Effects Analysis (PFMEA)

AER

PFMEA shall:

- Be completed for the production processes of each product.
- Show the risks associated with each process step of the product manufacturing.
- Show implemented controls for mitigating the highest risks.
- Identify special characteristics.

7.3.2 Control Plan

AER VGA

Control plans shall be:

- Documented.
- Followed for each supplied product.
- Used to control high risk processes identified in the PFMEA.
- Able to identify and control Special Characteristics to ensure conformance.
- Specific in context to process, machine, control methods and reaction plans.
- Basis for operator and Inspection work instructions.

7.3.3 Measurement System Analysis (MSA)

VGT

MSA shall be completed in accordance with the AIAG MSA document as follows:

- For all special characteristics
- Product or process characteristics that the supplier has identified as critical to control the process
- Gage R&R <10% is expected
- Gage R&R 10%-30% is acceptable with corrective action plan to reduce
- Gage R&R >30% is unacceptable

7.3.4 Process Capability

AER HYD VGA

Process capability study shall be completed for:

- All special characteristics.
- Product or process characteristics that the supplier has identified as critical to control the process.

Process Capability Study shall be completed under the following circumstances:

- New product launch
- Change to the product or process affects a Special Characteristic

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The process capability studies shall be summarized with the following indices:

- Cp – Process Capability
- CpK - Process Capability Index
- Pp – Process Performance
- PpK – Process Performance Index

Unless otherwise defined by Eaton, the minimum requirements for capability and stability indices are:

- CpK > 1.67
- PpK > 1.33

If acceptance criterion is not satisfied, Supplier shall contact Eaton with a corrective action plan and a modified Control Plan providing for 100% inspection and/or error-proofing mechanism. Variation reduction efforts shall continue until the acceptance criteria are met, or until approval is obtained from Eaton.

Note: 100% inspection methodologies are subject to review and concurrence by Eaton.

7.3.5 Inspection

AER HYD VGA

Inspection plans shall be established to ensure conformity of 100% of the characteristics defined in the engineering drawing. Suppliers shall have the ability to:

- Inspect all finished products produced for Eaton.
- Utilize appropriate measuring and monitoring infrastructure and resources.
- Provide Eaton with evidence of inspection data.

Suppliers shall only use reduced-frequency inspection plans when:

- Acceptable process capability can be demonstrated.
- Existing process controls are in place to maintain process capability.
- Historical records provide justification that 100% quality levels can be maintained.
- Sampling plans are in accordance with an industry accepted standard.

Sampling inspection will be suspended and replaced by 100% inspection under the following circumstances until historical records can indicate the feasibility of sampling inspection again:

- Defect or discrepancy is identified at Eaton or the Supplier
- Manufacturing process change is implemented
- Design change is implemented

7.3.6 Capacity Analysis

VGA

Suppliers shall complete a capacity analysis that:

- Demonstrates production can perform to Eaton's expectation of full volume ordering.
- Identifies and understands the capacity at all bottleneck operations.
- Incorporates the following factors
 - Quality performance/ yield.
 - Planned Maintenance
 - Unscheduled down times

7.3.7 PPAP

PPAP submissions shall be:

- Based on the latest edition of the AIAG PPAP Manual.
- Submitted at Level 3 unless otherwise specified.
- Produced using production tooling and processes.
- Produced at production line rate.
- Compliant to all Eaton Design Record and PO requirements.
- Submitted as instructed on PPAP request.
- Submitted with sample parts as instructed.

Suppliers may be required to perform re-validation PPAP as directed by the Eaton business.

Possible circumstances are:

- 12 months of inactivity.
- Revision change.
- Special business requirements.

PPAP Status (as determined by Eaton):

- Approved
 - Meets all Eaton requirements
 - Supplier is authorized to ship production quantities
- Interim Approval – 90 days maximum
 - One or more elements of PPAP is non-compliant, requiring corrective action
 - Containment measures taken
 - Authorizes supplier to ship for limited time and/or piece quantity
 - Approval expiration is determined by each business
 - Corrective actions implemented to be reflected in PPAP re-submission
- Rejection
 - Product or documentation doesn't meet Eaton's requirements
 - Supplier is not authorized to ship any product
 - Corrective actions implemented to be reflected in PPAP re-submission

7.4 Production & Service Provision

VGT

Suppliers shall implement production and service provision in accordance to the requirements outlined in the below sections in addition to their quality management system

7.4.1 Product Identification

Suppliers shall have a documented process for part identification including revision level throughout the facility. The identification process shall include the ability to differentiate product status in all areas including the following:

- Production
- Rework
- Repair
- Scrap
- Testing
- Laboratories
- Storage areas
- Office area

7.4.2 Product Traceability

VGA

Suppliers shall establish a lot traceability system that:

- Tracks components throughout the value stream, from raw material through shipment to Eaton.
- Includes all process steps including inspection and test procedures, rework and Sub-Tier supplier operations.

7.4.3 Product Preservation

Where the following restrictions apply, Suppliers shall ensure compliance to the subsequent processes:

- Shelf life
 - Materials shall be tracked and controlled to prevent expired material from being used in production.
- Handling
 - Processes shall be deployed to ensure appropriate handling throughout the manufacturing process and storage to prevent damage, corrosion, or other contamination.
 - For electronic components, this shall include appropriate steps to prevent Electrostatic Discharge (ESD)
- Packaging
 - Processes shall be deployed to ensure packing and preservation is sufficient to prevent damage or corrosion to the product during storage and shipping to Eaton.

7.4.4 Preventative Maintenance Plan

Suppliers shall have a preventative maintenance program that is:

- Documented with history of repairs.
- Utilized to increase uptime and predict failures of machines.
- Utilized to reduce quality defects and loss of time.
- Utilized to maintain acceptable levels of consumable indirect material and machine parts

7.5 Control of Non-Conformance

VGA

Suppliers shall utilize a process to:

- Clearly identify and segregate non-conforming or suspect material to prevent unintended use or delivery.
- Ensure containment of suspect material that has previously shipped to Eaton.
- Control material dispositioned as scrap until physically rendered unusable.
- Retain documented information regarding a non-conformance

Suppliers shall notify Eaton immediately upon suspicion of non-conforming product. Notification shall be provided via email to the purchasing and quality contacts at the affected Eaton business, and include a detailed description of the non-conformance, the products affected, and the initial containment actions taken.

Initial containment actions shall be completed within 24 hours of identification of non-conformance. Further containment and disposition of the non-conformance shall be agreed on with Eaton.

Suppliers are responsible for implementing containment actions mandated by Eaton as a result of non-conformance. For example: Controlled Shipping, Source Inspection, or Third Party Inspection.

When Eaton identifies a Supplier non-conformance, a Defective Material Report (DMR) shall be issued to the Supplier via WISPER or other system.

7.6 Sub-Tier Management

VGA

Suppliers shall maintain appropriate documentation of their Sub-Tier suppliers/contractors including:

- Qualification records on products purchased through these Sub-Tier suppliers.
- Quality and performance test data on products purchased through these Sub-Tier suppliers.

Suppliers shall have documented processes for the following with regard to Sub-Tier suppliers:

- Assessment and qualification process including steps for on-going approval.
- Communication of Eaton requirements including but not limited to:
 - Engineering drawings, specification, quality expectations and contractual requirements.
- Non-conformance corrective action.
- Change management control.
- Capacity planning
- Performance monitoring.

Eaton reserves the right to specify or approve Sub-Tier suppliers used by its Suppliers for work performed on Eaton material. This applies to all Suppliers including special processes (Non-Destructive Testing, Heat Treating, Welding, Chemical Processing, Plating and Coatings, etc.), material testing services, and distributors.

7.7 Change Management

All changes to product or process shall be:

- Submitted to Eaton receiving location in writing.
- Submitted through Eaton’s supplier change request form on the Supplier Portal.
- Aligned with PO terms on Interchangeability.
- Approved by Eaton before implementation.

Changes requiring approval at a minimum can be found in Table 2. If there is any question that a change approval is needed, the Supplier shall contact an Eaton representative for clarification.

Table 2:

Type of change	Examples
Product Design	<ul style="list-style-type: none"> • A change to the engineering drawing of the product or sub-assemblies; including dimensional, material, or specification changes
Manufacturing Process/ Inspection Sequence	<ul style="list-style-type: none"> • A change in the manufacturing process or method that may have an impact to the form, fit, or function of the product, including: • New or modified tooling, dies, and mold patterns, or reintroduction of inactive tools, dies, and mold patterns • Upgrade or rearrangement of existing tooling or equipment • Process change related to components of production products internally or externally • Change in testing or validation method
Material/ Material Source	<ul style="list-style-type: none"> • New source of the raw material
Sub-Supplier Source	<ul style="list-style-type: none"> • Change of Tier-1 Supplier manufacturing location • Change of Sub-Tier Supplier or change of existing Sub-Tier Supplier’s manufacturing location
Special Process	<ul style="list-style-type: none"> • Changes to heat treat, plating, welding, painting, or other process changes that cannot be verified without destructive testing

Eaton may elect to require formal PPAP submission and approval or other Product Realization process. In these cases, Suppliers shall not ship products to Eaton sites prior to approval.

Failure to contact Eaton and obtain written approval prior to implementing changes and shipment of product shall result in:

- Issuance of a DMR.
- Supplier compensating Eaton for all associated collateral costs and expenses.
- Possible New Business Hold.

8 Performance Evaluation

VGT

Eaton measures Suppliers on key performance indicators utilized to monitor the overall health of its supply chain and drive future business decisions.

8.1 Performance Measures

Eaton shall evaluate Suppliers against the following performance measure:

- Quality
 - $DPPM = (Defective\ Units\ Shipped) / (Total\ Units\ Shipped) * 1,000,000$
- Delivery
 - $OTD = (line - items\ delivered\ on\ time) / (total\ line - items\ shipped) \%$
- Payment Terms
- Purchase Price Variance
- Third Party Certifications
- DMR and Corrective Action response time
- PPAP/FAI on time

Eaton monitors supplier performance on a continuous basis utilizing a Supplier Scorecard to communicate performance measures that indicate overall health of the supplier relationship.

Suppliers shall monitor performance and take action when results do not meet Eaton's expectations.

8.2 Business Reviews

The Supplier Business Reviews facilitate the effective management of the supplier relationship. It follows a standard approach of annual planning, goal setting, and follow up. Eaton shall notify the Supplier if it has been selected for Supplier Business Review. Suppliers shall include relevant stake holders from its organization in this Business Review such as:

- Supply Chain
- Quality
- Manufacturing
- Business Leadership

Suppliers shall execute any action plans identified through the Supplier Business Review.

8.3 Audits & Assessments

Eaton may conduct audits or other assessments on a periodic basis to evaluate Suppliers in areas such as quality, cost, delivery processes and expectations. Audits and assessments may be scheduled due to risk, performance, or customer requirements.

8.4 Supplier Internal Audits

HYD

Suppliers shall conduct internal audits at planned intervals to evaluate the effectiveness of the quality management system.

The Internal audit program shall be planned and include the frequency, method and individuals responsible for conducting audits. The audit program shall include the following scope at a minimum:

- Compliance to documented business processes defined in the Quality Management System.
- Process audits that demonstrate compliance to the documented manufacturing process.
- Product audits that demonstrate conformity of the products or services provided to Eaton.

8.5 Supplier Management Review

Supplier's leadership shall conduct a management review at planned intervals. The following information pertaining to Eaton products and services shall be included in addition to the existing requirements for management review outlined by the Supplier's Quality Management System

- Eaton performance measures
- EHS metrics

8.6 Performance Recognition

Eaton recognizes Suppliers who achieve benchmark performance levels in the standard metrics of cost competitiveness, quality and delivery performance. The highest performing suppliers receiving our top award shall also display high value add contributions of value engineering, innovative technology, service and sustainability while embracing the highest standard of ethics and values in working in partnership with Eaton.

9 Improvement

Eaton requires all Suppliers to pursue continuous improvement. Suppliers shall be able to demonstrate documented plans for improvement in their goals and objectives. The plans shall include responsible people, resources needed, and timing for planned improvements.

9.1 IDEAS

Eaton requires supplier initiated cost reduction and improvement suggestions. Eaton wants open, forthright dialogue with Suppliers so that, in collaboration we can reduce waste and improve quality. Eaton seeks creativity, innovation and ingenuity in improving doing business together

Eaton's formal program for collaborative continuous improvement is the IDEAS program (Innovation Drives Excellence, Achievement and Savings). Suppliers can review the IDEAS program, and complete an IDEAS form by visiting the Supplier Portal. Before an IDEAS submission can be implemented it is important to continue to follow all change management processes.

9.2 Preventative & Corrective Action

VGA VGT

Suppliers shall implement actions to prevent non-conformances in their processes and products. Suppliers shall utilize disciplined problem solving methods to correct and prevent non-conformances in quality and delivery.

Should a supplier not conform to requirements as outlined in this manual or product quality standards, Eaton will work with the supplier to obtain corrective actions. As described above in 7.5 Control of Non-Conformance, a DMR will be written for each product non-conformance found within Eaton or its customers. The DMR in WISPER or other business system will serve as a Corrective Action Request (CAR).

Corrective action shall be executed in accordance with the following timeline from the Supplier's receipt of DMR:

- Containment – 24 hours
- Root Cause Analysis – 5 days
- Corrective Action Plan Defined – 10 days

Corrective action shall:

- Focus on system level improvements to prevent reoccurrence within the organization.
- Utilize a disciplined closed loop problem-solving method that works to encompass all possible outcomes.
 - Examples: 8D, A3, 3 Legged 5 Whys, Ishikawa Diagrams
- Be submitted to Eaton for review and approval.
- Avoid generalized root causes; such as "Operator Error" or "Training".
- Acknowledge that retraining is insufficient and further actions shall be taken to error proof.
- Ensure all quality system documents affected are updated to accurately reflect the changes.

A \$500 Administration Fee shall be charged to Suppliers for each DMR issued due to a non-conformance, regardless of the value of the rejected lot received or the quantity of parts being rejected.

Collateral costs incurred by Eaton as a result of Supplier failure to meet Eaton's quality requirements will be assessed separately from the DMR fee. Examples of such costs are as follows:

- Sorting
- Line disruption / speed reduction
- Premium freight
- Premium product cost paid to support production
- Overtime
- Outside processing & testing required
- Rework i.e. labor, tooling, and fixturing
- Scrap
- Reimbursement of all charges from customer
- Added inspection certification of product, etc.
- Warranty costs
- Onsite verification / Audits

DMR's may also be written for systemic repeating non-conformances; documented as "System Noncompliance" DMR. These will not have an administration fee attached to them but will be used to reflect supplier performance.

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Examples of systemic repeating issues include, but are not limited to:

- Failure to notify Eaton of changes
- Failure to communicate Eaton requirements to Sub-Tier suppliers
- Non-Compliance with regulatory/industry requirements
- Failure to respond to DMR in a timely manner
- Failure to respond with corrective action for quality system findings
- Failure to provide PPAPs as requested prior to first production shipments

9.3 Supplier Development

VGT

Each Eaton business may select Suppliers for development who present the greatest opportunity for improvement and the greatest potential impact to the organization. Supplier development engineers may work with the selected suppliers to ensure the improvement goals are met.

If Eaton sees continued performance measure misses it can mandate one or more of the following actions:

- Supplier Scorecard Corrective Action
- Focus Supplier Process
- Business Reviews
- On-Site Process Audits
- Business specific corrective actions
- Supplier Site Assessment

Suppliers selected for development projects shall demonstrate a willingness to change and improve, and show evidence of internal continuous improvement efforts.

Under certain circumstances a supplier may be selected for development as a result of a positive relationship. In these cases it will be explicitly noted to the supplier that they are not being selected due to failure to meet expectations.

10 Business Specific Requirements

Each Eaton business has certain specific requirements for its Suppliers that may or may not apply to another Eaton business. Suppliers should review the business specific requirements below for those Eaton businesses supplied.

10.1 Electrical Business Group

Any additional requirements will be communicated by the business group

10.2 Vehicle Group

10.2.1 Automotive

<http://www.eaton.com/Eaton/OurCompany/DoingBusiness/SellingtoUs/supplierexcellencemanual/automotive>

10.2.2 Truck

<http://www.eaton.com/Eaton/OurCompany/DoingBusiness/SellingtoUs/supplierexcellencemanual/truck>


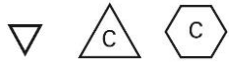


10.3 Hydraulics Group

In addition to the requirements noted on the body of supplier Excellence Manual, all Hydraulics Group suppliers shall meet the specific requirements outlined below:

7.3.4 Process Capability (HYD)

Special Characteristics Process Capability Requirements – PPAP and Production

Eaton Hydraulics has established control characteristics for certain characteristics of the product(s). The control characteristics are labeled with a symbol designating their importance as shown below for design critical and design significant features.

Classification	SYMBOLS applicable for new document being released	SYMBOLS applicable for existing documents being revised or legacy documents	Cpk Initial study at PPAP submission	Ppk on-going production
Design Critical			2.00	1.67
Design Significant		* 	1.67	1.33

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Supplier shall take the following actions and provide the following information to Eaton depending on the specific special characteristic:

- For design critical and design significant characteristics, supplier must ensure that the capability established at the time of PPAP submission/approval (see above table) are maintained throughout the products life.
- It is the supplier's responsibility to ensure the capability data is available for Eaton review upon request.
- If at any time the process capability shows a decaying trend, it must be shared with Eaton Hydraulics.
- Improvement actions must be taken when process capability is less than levels indicated in the above table. Whenever any of indexes above are not achieved, 100% inspection or alternate special control(s) shall be performed.
- Eaton Hydraulics must approve any actions taken by the supplier related to product shipments when capability is not met.
- In special cases Eaton Hydraulics may require initial capability data for non-designated special characteristics in order to determine the process feasibility. In these cases on-going data will not be required.
- When the process to measure special characteristics causes the part to be destroyed or the special characteristic is measured using an attribute measurement process, alternate special control(s) (see AIAG reference manuals) shall be performed to show on-going capability.

In regards to quality indices and initial/on-going process capability studies, supplier shall use AIAG PPAP manual latest edition, SPC and MSA manuals

7.3.5 Inspection (HYD)

Eaton Hydraulics has the right to request inspection data to be submitted with every shipment or lot.

7.3.7 PPAP (HYD)

PPAP and PPAP submission requirements

- Hydraulics business requires all sample submission (print changes, newly released P/N's, etc.) to meet AIAG PPAP standard.
- Supplier shall submit all PPAP documentations to Hydraulics PPAP Center of Excellence (COE) team at the following e-mail address: HydPPAPCOE@Eaton.com.
- Supplier shall submit PPAP sample part(s), dimensional layout results, and other supporting documents related to physical part (x-ray, magma flow) to the manufacturing plant.
- Supplier shall comply with PPAP COE requests for corrections / improvements of any documents not meeting AIAG standard and intended purpose.

8.4 Supplier Internal Audits (HYD)

Supplier shall audit heat treat, plating and coating processes (their own or subcontractors) utilizing the AIAG CQI-9, 11, and 12 Special Process surveys for existing business or prior to initial award. Supplier shall maintain records of the audit and process improvement subject to periodic review by Eaton Hydraulics. Once in production, an annual audit shall be done and be available for review at Eaton's request. The focus of the annual audit shall be the processes provided to Eaton.

10.4 Aerospace Group

All the requirements outlined below are in addition or provide clarification to the requirements in the previous sections of the document.

Detailed process instructions and forms specific to Aerospace suppliers can be found at the following location:

- <http://www.eaton.com/Eaton/OurCompany/DoingBusiness/SellingtoUs/supplierexcellencemanual/aerospace>

4.1 Quality Management System Requirements (AER)

All Tier 1 Suppliers and Sub Tier Special Process Suppliers shall obtain approval as a Eaton Aerospace supplier and be listed on the Aerospace Approved Supplier List in order to perform work on behalf of Eaton Aerospace.

Suppliers may request that a Sub-Tier supplier be added to the Aerospace Group's External ASL through their Supply Chain contact in the Eaton business. Such sources shall not be used prior to receipt of documented approval from Eaton Aerospace Group Quality.

The Quality Management System requirements for Suppliers of direct material, Sub-Tier special process suppliers and specific indirect services are defined below:

Product / Service Type	Minimum QMS Requirements
Manufacture of flight hardware	AS/EN/JISQ9100
Special Processes <ul style="list-style-type: none"> • Welding, Chemical Process, Heat Treat, Non-Conventional Machining, Surface Enhancement, Materials Testing, NDT 	NADCAP certification for the associated process and scope
Manufacture of non-flight hardware <ul style="list-style-type: none"> • (example: Ground Fuel) 	ISO9001 or TS16949
Raw Material	ISO9001 or as required by material specification
Distributors	AS/EN/JISQ9120
Calibration Services for inspection, test and applicable manufacturing equipment	ISO17025 or equivalent laboratory accreditation (example: A2LA)

Suppliers may maintain evidence of certification through the IAQG OASIS or NADCAP eaudit.net databases when applicable. All other Suppliers shall upload evidence of Quality Management certification in WISPER.

A Supplier not meeting the above quality system requirements may be audited at any time for reasons not limited to performance, and may be liable for the actual costs of such audits, at Eaton's option.

6.3 Document Control & Retention (AER)

In addition to Section 6.3, Suppliers shall:

- Retain manufacturing and quality records for a minimum of 10 years from the date of manufacture.
- Retain manufacturing quality records for flight safety and critical components for 40 years from the date of manufacture.

7 Operation (AER)

Counterfeit Parts Prevention

Suppliers shall implement processes appropriate for their organization for the prevention of counterfeit and suspect counterfeit part use, and comply with Eaton Aerospace Policy SD-013 found in the Reference Material section of this manual to prevent the infiltration of counterfeit or questionable pedigree components into Eaton products.

7.3 Product Realization (AER)

Suppliers shall implement production and service provision under controlled conditions and apply the requirements of section 7.3 via the following criteria:

Production Status	Applicability
New Product Introduction identified as critical or high risk, established in production after March 31 st , 2017.	All elements applicable
All other New Product Introduction established in production after March 31 st , 2017.	PPAP submission is not applicable
Aerospace components established in production with an approved FAI prior to March 31 st , 2017 identified as critical or high risk.	PFMEA & Control Plans applicable upon request by the Eaton business PPAP submission is not applicable
All other Aerospace components established in production and shipped with an approved FAI prior to March 31 st , 2017.	PFMEA, Control Plans & PPAP submission are not applicable

Following a non-conformance event, Suppliers shall implement any of the above as a part of corrective action as requested by Eaton.

7.3.1 Process Failure Modes and Effects Analysis (PFMEA) (AER)

In addition to Section 7.3.1, for Aerospace components, the PFMEA shall:

- Identify Special Characteristics.
- Identify failure modes with High RPNs, High Severity, Critical to Customer, Critical to Quality, Customer Interface Features, and Special processes.
- Be maintained as a live document and updated following changes to design or manufacturing processes, or in the event of a non-conformance requiring corrective action.

A single PFMEA may be applied to a group or family of components that are produced by the same manufacturing process.

7.3.2 Control Plan (AER)

In addition to Section 7.3.2, for Aerospace components, Control Plans shall:

- Identify the required controls for all High RPN, High Severity, Critical to Customer, Critical to Quality, Customer Interface Features, and Special processes.

A single Control Plan may apply to a group or family of components that are produced by the same manufacturing process.

7.3.4 Process Capability (AER)

In addition to Section 7.3.4, for Aerospace components, Suppliers shall:

- Implement a process conforming to AS9103 Variation Management for Key Characteristics.
- Implement Statistical Process Control (SPC) for Key Characteristics.
- Maintain records of SPC data including ongoing Cp and Cpk analyses for key characteristics.
- Provide SPC data with each shipment upon request from the Eaton business.

7.3.5 Inspection (AER)

Source Inspection

When requested by Eaton Aerospace, Suppliers shall support Source Inspection activities by Eaton, its Customers, or Government representatives. Suppliers shall contact the appropriate party for source inspection upon completion of the product in such cases. Product shall not be shipped until source inspection has been completed including appropriate documentation.

7.3.7 PPAP (AER)

First Article Inspection

First Article Inspection (FAI) is required upon initial shipment of production components, and any time a change occurs that invalidates the original results; see 7.7 Change Management.

Suppliers shall:

- Perform FAIs in accordance with AS/EN/JISQ9102.
- Account for all design characteristics with the FAI, including part marking, and interface characteristics that may be defined by industry standards.
- Upload all applicable FAI documentation to WISPER prior shipment.
- Obtain FAI approval from the receiving Eaton business prior to shipment of subsequent production components.
- Ensure records of approval from Eaton are maintained and logged such that FAI status can be verified prior to shipment.

Where PPAP is required for Aerospace components, Suppliers shall submit the required documentation in addition to the FAI. The Eaton business or supporting Supplier Development Engineer will provide direction on the PPAP documentation requirements.

Additional Requirements (AER)

Foreign Object Debris/Damage (FOD) Prevention Program

Suppliers shall implement a FOD Prevention program necessary to reduce the occurrence of Foreign Objects, and the risk of Foreign Object Damage to Eaton products. The program shall be compliant with the requirements of National Aviation Standard, NAS 412, and meet the following pre-requisites:

- FOD prevention must be implemented in all areas identified to have the potential to introduce FOD to the product of manufacturing process.

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- If critical FOD areas are identified, visual Physical Entry Controls shall be established with entry requirements posted outside of each area.
- FOD and material handling training must be provided to all individuals involved in the production, inspection, test, packaging and material handling of Eaton products.
- Records must be maintained to document the training, and may be assessed by Eaton upon request.
- Parts must be protected from handling damage in all areas; and standards for handling and storage documented accordingly.
- Supplier shall document all FOD incidents and perform root cause analysis. Metrics for FOD occurrence shall be recorded and subject of management review.
- Auditing of FOD prevention controls within all FOD critical areas shall be incorporated into the organization's Internal Audit plan.

Certification of Conformance (C of C)

Suppliers shall provide a certificate of conformance with each delivery to Eaton confirming that all Purchase Order terms and technical requirements have been met. Where functional testing is used to confirm part conformity, evidence of testing shall be included with the certificate of conformance.

Certificates of Conformance shall include:

- The name, address and contact information for the Supplier manufacturing location shipping the component
- Date of shipment
- Eaton delivery address
- Eaton Purchase Order number
- Unique reference number (example: shipping reference number)
- Part number and revision number
- Description of the product
- Quantity of the product
- Traceability information including, serial numbers, lot numbers, heat lots where applicable
- Deviation, production permit, or concession reference where applicable
- Statement confirming compliance with Purchase Order and Technical requirements
- Signature from Supplier's authorized personnel to release shipment to Eaton

For Age-Sensitive or shelf life the Certificate of Conformance shall also include:

- Traceability information including material batch numbers
- Cure date
- Shelf life or expiration date
- Source construction number (hose/sleeve only)

Note: Separate packages and C of C documents shall be submitted when components from multiple heats or batches are shipped at the same time.

Raw Material (Mill) Certificates shall be provided along with the Certificate of Conformance and include the following:

- Chemical composition including base elements and percentages
- Traceability information including batch, heat or cast numbers as applicable
- Results of applicable mechanical testing and physical analysis in accordance with technical requirements
- Signature from Material Supplier's authorized personnel

When applicable, Special Process Certificates shall be provided along with the Certificate of Conformance and include:

- The special process supplier's name, address and contact information
- Part number and revision level
- Purchase order number
- The process(s) performed including all controlling specifications and revision levels
- The special process supplier's NADCAP cert. #
- Applicable test results
- Traceability information including, serial numbers, lot numbers, heat lots as applicable
- Signature from Supplier's authorized personnel

Where available, Certificates of Conformance and associated documentation may be submitted electronically, as directed by the Eaton business.

In addition to the above, when required by contract, components procured from a supplier holding an Airworthiness Approval, are to be supplied with the applicable Airworthiness Tag/Certification (i.e., EASA Form1 or 8130 tag).

Date	Revision	Changed Sections
12/15/2014	11	1,1.4,2,3,4.5,5,6,7,8,9,10,11.1,12,13,14,15(new),16
6/09/2016	12	4.5,7
4/1/2017	13	Full re-write and realignment to ISO2015 QMS

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