



Department: Purchasing / Supplier Quality	PSM001002
Affected Locations: All Former MPG Locations	Written by: Jay McCauley Approved by: ACN057618
Policy Name: <b>Supplier Development and Quality Requirements Manual</b>	

# American Axle and Manufacturing (formerly known as MPG) Supplier Development and Quality Requirements Manual

*Specific Supplementary requirements  
To ISO 9001 and IATF 16949*



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## 1 Scope

### 1.1 – General

This document represents the Supplier Quality Program Requirements of American Axle and Manufacturing (formerly known as MPG). This document shall be considered a supplement to, and is incorporated into, any existing or future supply agreements, purchase requirements, or contracts with the supplier. Acceptance of the purchase agreement (i.e. purchase order or contract) shall be considered as acceptance of the requirements of this document. All suppliers are required to complete the Supplier Acknowledgement at the end of this document and return electronically to Supplier Quality or Purchasing. American Axle and Manufacturing (formerly known as MPG) reserves the right to notify suppliers of any changes to this manual without prior notice. It is the responsibility of the supplier to ensure they have the most recent revision.

This document, along with the requirements as set forth in ISO 9001 and IATF 16949, establish the fundamental quality management system requirements that have been established for our suppliers. Additional requirements noted specifically on a contract, purchase order, drawing, or specification shall be complied with and will take precedence over the requirements stipulated by this document. **American Axle and Manufacturing (formerly known as MPG) will only waive these obligations with prior written authorization by authorized American Axle and Manufacturing (formerly known as MPG) personnel.**

This document has been developed as a supplement to the requirements of ISO 9001 and IATF 16949. A reference to the “supplier organization” is that any organization that through provision of processes, products, and services of components, sub-assembly, sequencing, sorting, rework and calibration services that effect on customer requirements met by American Axle and Manufacturing (formerly known as MPG). A clause, or sub clause, will not be referenced in this document. The objective is to provide customer specific requirements for American Axle and Manufacturing (formerly known as MPG), as well as guidance to the supplier in the application of the requirements within ISO 9001 and IATF 16949 to American Axle and Manufacturing (formerly known as MPG) as the customer. American Axle and Manufacturing (formerly known as MPG) specific requirements apply to all suppliers including sub-tiers within the supply chain, regardless of third party registration to ISO 9001 and /or IATF 16949.

All suppliers to American Axle and Manufacturing (formerly known as MPG) shall be required to be third party registered to ISO 9001:2015 with conformity to ISO 9001 and IATF 16949 as the fundamental quality system standard as well as all legal and regulatory requirements as applicable; including ISO 14001: 2004 Environmental Management System. If the supplier is not ISO 9001: 2015 or ISO9001 and IATF 16949, registered, they must meet the customer specific requirements for second party audits. However, American Axle and Manufacturing (formerly known as MPG) reserves the right to utilize a representative of American Axle and Manufacturing (formerly known as MPG) to verify compliance. In any case, formal corrective actions are required



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for any non-conformances found during an assessment. The MPG buyer may only waive third party registration in writing and a business case shall be developed providing action plans with the goal of third party registration. Sourcing preference will be based on suppliers who are ISO 9001 and IATF 16949 registered.

Suppliers will provide the American Axle and Manufacturing (formerly known as MPG) buyer with a copy of all registration certificates. The specific requirements for third party registration shall be communicated in writing to the supplier by the American Axle and Manufacturing (formerly known as MPG) Supply Chain Management organization. The supplier organization shall report any significant change in registration status (i.e. probation) to the appropriate American Axle and Manufacturing (formerly known as MPG) representative in writing within 5 business days.

Commercial / Independent laboratory facilities and services shall be approved by American Axle and Manufacturing (formerly known as MPG) prior to use. The acceptance criteria are based on the latest ISO/IEC 17025 and shall be documented. The 3<sup>rd</sup> party certification to ISO/IEC 17025 will be considered for acceptance but shall be under the ILAC MRA. Calibrations shall also designated as “accredited” as defined by ILAC MRA.

## 1.2 – Application

Applicable to production and service part supplier sites that are providing:

- Parts, materials, or outside processing used in the manufacturing of the finished product
- Heat treating, painting, plating, or other finishing service
- Die and tooling management and treatment of dies and tooling

Depending upon the quality, strategic, or financial impact of the part, material or service, the buyer may require other suppliers not listed in the above commodities to comply with this manual. In such situations, the individual purchase agreement or contract will specify this requirement.

## 1.3 – Responsibility

The relationship between American Axle and Manufacturing (formerly known as MPG) and the supply base is critical to our collective success. American Axle and Manufacturing (formerly known as MPG) requires those suppliers to American Axle and Manufacturing (formerly known as MPG) and its customers meet the requirements and expectations set forth in this manual. Non-compliance to requirements may result in loss of existing and/or future American Axle and Manufacturing (formerly known as MPG) business; additionally, American Axle and Manufacturing (formerly known as MPG) may seek reimbursement of quality related costs resulting from non-compliance.



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American Axle and Manufacturing (formerly known as MPG) suppliers shall ensure that their direct material suppliers and services including outside processing facilities, comply with the requirements of:

- ISO/TS 16949: 2008
- MPG Supplier Quality and Requirements Manual
- MPG Supplier PPAP Manual
- Customer specific requirements:
  - Ford Customer Specific Requirements for IATF 16949: 2016 – May 2017
  - GM – IATF16949 Customer Specific Requirements – January 2017
  - FCA US LLC - Customer-Specific Requirements for IATF 16949:2016 Publication – October 2106
  - PSA Group - “Customer-Specific Requirements for use with IATF 16949” – February 2017
  - FCA (EMEA/LATAM Regions) – Customer Specific Requirements for IATF 16949:2016 – April 2017
  - BWW – There is no customer specific requirement for IATF found on the IATF Website
  - Renault – There is no customer specific requirement for IATF found on the IATF Website
  - All other’s not identified or listed above.
- CQI certifications - these shall be submitted to the appropriate MPG Receiving Facility as required by the MPG location and/or certification/annual recertification as applicable (i.e., CQI-9 – Special Processes: Heat Treat System Assessment).

American Axle and Manufacturing (formerly known as MPG) strongly suggests that its supply base adopt a zero defect standard. Suppliers shall maintain 100% On-Time Delivery. Suppliers shall understand that any established PPM target is not an Acceptable Quality Level, but represents an intermediate continuous improvement step toward shipment of components / materials meeting a zero defect requirement.

## **2 Normative References**

The following are AIAG reference documents available at [www.aiag.org](http://www.aiag.org) that are to be used in conjunction with the requirements of this document and ISO9001: 2015 and IATF 16949:2016.

- Product and processes should be developed meeting the requirements of the Advanced Product Quality Planning and Control Plan (APQP) Manual.
- Measurement systems should be evaluated using the guidelines established in the Measurement Systems Analysis (MSA) Manual.



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- Statistical analysis should be conducted in accordance with the guidelines established in the Statistical Process Control (SPC) Manual.
- Sample approval and tooling payment can only be made if samples are submitted and documented in accordance with the requirements of the Production Part Approval Process (PPAP) Manual
- Failure Mode and Effect Analysis shall be conducted in accordance with the guidelines established in the Potential Failure Mode and Effect Analysis (FMEA) Manual.
- Automotive Certification Scheme for ISO9001: 2015 and IATF 16949:2016 Rules for achieving ISO and IATF recognition.
- All suppliers must comply with the AAM Supplier PPAP Manual for sample approval and tooling payment.

### **3 Objectives**

In this manual, quality is defined as “compliance to American Axle and Manufacturing (formerly known as MPG) requirements and expectations”. The objectives are:

1. Achieve a consistent flow of product that is defect free to Receiving Facilities and customers
2. Achieve flawless and follow safe launch requirements of new product to Receiving Facilities and customers
3. Continuous Improvement in quality, customer and sub-tier relationships
4. Increase value add of our products and services

### **4 Terms and Definitions**

The supplier organization is that organization that supplies goods and services to American Axle and Manufacturing (formerly known as MPG). There are no additional terms and definitions that are for specific application to American Axle and Manufacturing (formerly known as MPG). Please refer to the terms and definitions as given in and ISO9001: 2015 and IATF 16949:2016.

### **5 Environmental and Safety Strategy**

It is the expectation of American Axle and Manufacturing (formerly known as MPG) that the supplier organization shall understand and follow our company's environmental and safety policy and supplier standards. Upon entry into any American Axle and Manufacturing (formerly known as MPG) facility, all suppliers are required to sign in and out each time they visit a location and must fully comply with the local facility requirements for environmental compliance. The supplier organization shall remove all tools, supplies, and waste brought into an American Axle and Manufacturing (formerly known as MPG) location. Any supplier to American Axle and



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Manufacturing (formerly known as MPG) that is also a direct supplier to General Motors, Chrysler, or Ford Motor Company are expected to provide Metaldyne with evidence that they meet their requirements regarding registration to ISO 14001 upon request. In accordance with these customer requirements, it is the suppliers' responsibility to disclose in writing the environmental impact of their product and/or services. American Axle and Manufacturing (formerly known as MPG) encourages all other suppliers to seek compliance and registration to the ISO 14001 Environmental requirements.

## **6 Logistics and Materials**

American Axle and Manufacturing (formerly known as MPG) requires all domestic and international suppliers to provide complete, accurate, and timely **Customs Documents** when requested. This includes but is not limited to: North American Free Trade Agreement (NAFTA) certificates of origin, US-South Korea certificates, and manufacturer's affidavits, other origin certificates, American Automobile Labeling Act (AALA) content notices, and Generalized System of Preferences (Form A or statement on commercial invoice) support.

The following must be clearly and properly displayed on all commercial invoices:

1. An adequate description of the merchandise
2. Quantities of the merchandise
3. The commercial value of the merchandise
4. Currency of Funds/Price
5. Appropriate U.S. Classification, if available
6. Complete name and address of the exporter (typically the shipper or manufacturer of the goods); include the exporter's IRS number if available.
7. Complete name and address of the consignee
8. Consignee EIN or IRS number (Metaldyne numbers are available upon request).
9. Country of Origin of the merchandise
10. Shipping Terms (INCO terms) as listed on the purchase order, e.g. ExWorks (EXW), Delivered Duty Unpaid (DDU) or Cost, Insurance, Freight (CIF).
11. Purchase Order Number
12. Invoice Date
13. American Axle and Manufacturing (formerly known as MPG) part number(s)
14. "Notify Party" is MPG's Customs Broker (if MPG is responsible for U.S. Customs Clearance).
  - a) The notify party for all shipments to the United States, regardless of port or border, is:
    - i. CH Robinson International
    - ii. 26555 Evergreen Road, Suite 610
    - iii. Southfield, MI 48076
    - iv. Phone: (248) 948-9430



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- v. Fax: (248) 948-9490
- vi. Email: [Metaldyne-INTL@chrobinson.com](mailto:Metaldyne-INTL@chrobinson.com)
- b. For shipments imported into another other country, please contact the MPG plant for the appropriate customs broker.

The following must be included on all packing slips:

#### Supplier Information

1. Supplier name and address (ship point not billing office)
2. Supplier code number
3. Packing slip number
4. Date shipped

#### Shipping Information

1. Ship to: MPG location code address
2. Bill to: MPG PO Box (see appendix B ) Plymouth, MI 48170
3. Gross, tare, and net material weight (in pounds or kilograms)
4. Shipped via (routing as instructed by MPG Logistics)
5. Bill of Lading number
6. Freight terms (INCO Term)
7. Transportation mode
8. Packaging Information
9. Number of unit loads: pallets, containers or cartons
10. Pieces per unit load
11. Unit of measure – if other than pieces per unit load
12. Number of measure of Supplier Owned Returnable Containers
13. MPG Owned Returnable Containers identification number
14. Supplier Owned Returnable Containers identification number
15. MPG purchase order number
16. MPG release number
17. Engineering change letter
18. Quantity shipped
19. MPG part
20. MPG part name
21. Accumulative shipped, including this shipment

### 6.1 – Ocean Shipments

American Axle and Manufacturing (formerly known as MPG) requires all ocean shipments going to a MPG facility in the United States to use an “Express Bill of Lading”. This Express Bill of Lading (BOL) must apply to shipments whether American Axle and Manufacturing (formerly known as





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MPG) is paying for the freight or the supplier is paying for the freight. There are benefits for both parties in using an Express BOL over a traditional BOL including timing and charges.

## 6.2 – Customs-Trade Partnership Against Terrorism (C-TPAT)

C-TPAT is a voluntary government-business initiative to build cooperative relationships that strengthen and improve overall international supply chain and U.S. border security. C-TPAT recognizes that CBP (Customs and Border Protection) can provide the highest level of cargo security only through close cooperation with the owners of the international supply chain such as importers, shippers, customs brokers, carriers, and manufacturers. Through this initiative, CBP is asking businesses to ensure the integrity of their security practices and communicate and verify the security guidelines of their business partners within the supply chain.

For this reason, American Axle and Manufacturing (formerly known as MPG) is requiring all of its suppliers to meet the minimum C-TPAT requirements surrounding physical security, physical access controls, personnel security, security training and threat awareness, manifest control, container security, procedural security, and information technology security.

To learn more about the security criteria, visit the American Axle and Manufacturing (formerly known as MPG) supplier portal or the C-TPAT website

[http://www.cbp.gov/xp/cgov/import/commercial\\_enforcement/ctpat](http://www.cbp.gov/xp/cgov/import/commercial_enforcement/ctpat)

## 6.3 – Importer Security Filing (ISF)

Beginning on January 1, 2010 all ocean shipment imports into (or going through) the United States require the importer to file an Importer Security Filings (ISF). Each supplier will need to email MPG Corporate Logistics the completed ISF template 48 hours prior to loading of any ocean container. This template is available from your buyer or MPG logistics.

- If you are sending via LCL (less than container load) you need to send 48 hours prior to the consolidator loading the container. Your consolidator can send the ISF information on your behalf.
- If you are sending FCL (full container load), we will need the template 48 hours before you begin to load. Again, you can send or your forwarder as long as the information is accurate and timely.

Lastly, the penalties from US Customs & Border Protection for late filings or inaccurate ISF's are \$5,000 per violation. If American Axle and Manufacturing (formerly known as MPG) is responsible for the US import or the transportation & exportation through the United States, we expect a timely ISF template. Failure to file will result in a chargeback of any customs penalty to MPG.



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## **7 Quality Management Systems**

### **7.1 – General Requirements**

All requirements established by ISO/TS 16949:2009 and the requirements of this supplemental document must be maintained and documented throughout the supplier organization's quality management system. MPG maintains an approved supplier list and requires all sub-tiers to have ISO/TS 16949: 2009 Registration through a 3<sup>rd</sup> party registrar. Suppliers that do not have a Quality Management System Registration to ISO/TS 16949 will undergo a Quality Management System Assessment and Audit by MPG Personnel.

In order to be recognized as “registered” by American Axle and Manufacturing (formerly known as MPG), an accredited third party shall register the entire facility of any site that is contracted to supply materials to American Axle and Manufacturing (formerly known as MPG). The registration shall include any supporting functions on site or remote. See 2.3 of the Automotive Certification Scheme for ISO 9001:2015 and IATF 16949:2016 for additional details for supporting functions.

### **7.2 – Documented Information**

Production part approvals, tooling records, purchase orders and amendments shall be maintained for the length of time that the part (or family of parts) is active for production and service requirements, plus one calendar year unless otherwise specified. This includes MPG owned tooling.

Production inspection and test records (e.g. control charts, inspection and test results) shall be retained for one calendar year after the year in which they were created, unless otherwise specified. Records of inspection shall be maintained for each inspection or test performed. The actual test result (variable or attribute) shall be recorded.

All documented information shall be retained in accordance with American Axle and Manufacturing (formerly known as MPG) customer's specific requirements. These can be located on the IATF Global Oversight website.

These requirements do not supersede any statutory or regulatory requirements. All retention periods are minimums.

### **7.3 – Supplier Performance and Scorecards**

Supplier Performance is critical to the success of American Axle and Manufacturing (formerly known as MPG), its customers, and of the entire supply chain. Supplier performance is monitored and measured by every American Axle and Manufacturing (formerly known as MPG) facility. It is the responsibility of each American Axle and Manufacturing (formerly known as MPG) Receiving



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Plant to monitor and measure supplier performance as well as to inform suppliers of that performance on a monthly basis. The categories used to measure performance are controlled by each American Axle and Manufacturing (formerly known as MPG) facility. These scorecard metrics are used to assess our supply base, drive continuous improvement and guide our future sourcing decisions.

Suppliers currently on the Approved Supplier List remain in good standing by providing a high level of service in the areas of quality and delivery. MPG tracks quality and delivery performance of the supply base. Key metrics are employed to track this performance and are available through the American Axle and Manufacturing (formerly known as MPG) Receiving Plant supplied and may include but are not limited to the following elements:

- Delivery Performance
- Supplier Parts per Million (SPPM)
- ASN accuracy
- Number of Corrective Actions (SCAR)
- Corrective Action Response and effectiveness

In order to ensure supplier performance is effective, scorecards may or may not be tied into a defined communication and escalation process to drive continual improvement. However, in order to facilitate the effectiveness and compliance of the supplier performance metrics, the below is outlined as a guideline for American Axle and Manufacturing (formerly known as MPG) Receiving Plants to drive these efforts:

- If any category is **red for two consecutive months**, the specific MPG receiving plant may issue a corrective action and will initiate a conference call that includes MPG Purchasing and the Supplier to establish a specific action plan for resolution.
- If any category is **red for three consecutive months** and MPG is not satisfied with supplier responsiveness and/or corrective actions have not been successful, an on-site meeting at the MPG receiving plant will be scheduled with the expectation that the supplier present its action plan. MPG Purchasing will attend the meeting and the supplier will be required to have the Divisional General Manager attend the on-site meeting. **Note: Suppliers falling into this category will be placed on MPG's Focused Supplier List. Refer to Section 13 – Focused Supplier.**
- If any category is **red for four consecutive months** and MPG is not satisfied with supplier responsiveness and/or corrective actions have not been successful, a letter will be sent to the Supplier CEO/President to drive resolution at a senior level.



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- If any category is **red for five consecutive months** and MPG is not satisfied with supplier responsiveness and /or corrective actions are unsuccessful, MPG will no longer consider sourcing new business to this supplier location.

American Axle and Manufacturing (formerly known as MPG) requires that suppliers to review the scorecards monthly and provide action plans to drive continuous improvement where such measures are required. The American Axle and Manufacturing (formerly known as MPG) team will review progress with suppliers, drive supplier performance, and ultimately use the data to guide future sourcing decisions. We believe the escalation process outlined above provides the structure for a solid business relationship working together with our suppliers to grow our businesses and continually improve.

Ultimately, it is **supplier's responsibility to review their scorecard on a monthly basis** and address any problems. All suppliers should make every effort to contact the American Axle and Manufacturing (formerly known as MPG) Receiving Facility they ship to if they have not been provided their monthly supplier performance rating directly from the MPG facility.

## **8 Management Review**

### **8.1 – Customer Focus**

American Axle and Manufacturing (formerly known as MPG) conducts business on the basis of teamwork, and the supplier organization is expected to support all activities as necessary. This may involve travel and joint participation in meetings to conduct business, as appropriate. The organization is expected to provide for the various methods required to properly communicate with MPG in a format as determined in conjunction with the appropriate authority, in all aspects of conducting business.

### **8.2 – Process Monitoring**

Top management shall review the product realization processes and the support processes to assure their effectiveness and efficiency.

### **8.3 – Quality Objectives**

Top management shall define quality objectives and measurement in the production realization process and to deploy the quality policy. Action plans are necessary to support implementation of the organization's quality objectives. In addition, quality objectives and action plans need to address customer expectations and be achievable with a defined time period.



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## 8.4 - Responsibility, Authority, and Communication

### 8.4.1 – Responsibility for Quality

Managers with the responsibility and authority for corrective action shall be promptly informed of products or processes which do not conform to requirements. Personnel responsible for conformity to product requirements shall have the authority to stop production to correct quality problems. Production operations across all shifts shall be staffed with personnel in charge of, or delegated responsibility for, ensuring conformity to product requirements.

### 8.4.2 – Customer Representative

Top management shall designate personnel with responsibility and authority to ensure that customer requirements are addressed. This includes selection of special characteristics, setting quality objectives and related timing, corrective and preventive actions, product design and development.

### 8.4.3 – Communication

The supplier organization shall notify American Axle and Manufacturing (formerly known as MPG) within 30 days, through the appropriate Supply Chain Management contact, of any significant changes to the top management organization structure.

## 8.5 – Management Review

### 8.5.1 – Quality Management System Performance

Quality management system reviews shall include all requirements of the quality management system and its performance trends as an essential part of the continual improvement process. Part of the management review shall be the monitoring of quality objectives, including the costs associated with non-conforming product. These results shall be recorded to provide, as a minimum, evidence of the achievement of:

- Quality objectives specified
- Customer satisfaction with product supplied

### 8.5.2 – Review Input

The supplier organization shall review the status of any launch activities involving MPG. Action plans shall be reviewed as appropriate. Additionally, input to management review



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shall include an analysis of actual and potential field failures and their impact on quality, safety, and the environment.

## **9 Resource Management**

### **9.1 – Infrastructure**

The supplier organization shall have people, equipment and facilities to support all MPG prototypes, pre-launch and production requirements and shall ensure no interruption to our manufacturing processes. The organization shall have an emphasis on lean manufacturing principles and may be asked to participate in MPG sponsored lean activities.

#### **9.1.1 – Contingency Plans**

The supplier organization shall notify the appropriate MPG representative as soon as possible in the event of any occurrence that creates an unscheduled halt to production that prevents the organization from the required production volumes and schedules. The nature of the problem shall be communicated to MPG and immediate actions shall be taken to assure supply according to the requirements of the MPG receiving facility.

If the supplier organization has a unionized work force then the organization shall notify MPG annually, in writing, of the union affiliation and contract expiration date and the organization shall develop and implement contingency supply plans within 120 days of contract expiration.

### **9.2 – Work Environment**

MPG is committed to ensuring that the people that make our products and components or provide us with services are treated with dignity and respect. When the supplier organization performs work for MPG, it will not use forced labor, employ any person below the age of 15, (unless it is part of a Government approved job training apprenticeship) or engage in physically abusive disciplinary practices)

#### **9.2.1 – Personnel Safety to Achieve Conformity to Product Requirements**

Product safety and means to minimize potential risk to employees shall be addressed by the supplier organization, especially in the design and development process and in manufacturing process activities.



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## 9.2.2 – Cleanliness of Premises

The supplier organization shall maintain its premises in a state of order, cleanliness and repair consistent with its manufacturing process. This statement includes all dunnage used to transport product to MPG.

## 10 Product Realization:

### 10.1 – Process Approach and Application

The organization shall define its production realization system. Each process and sub-process shall be defined. Each defined process shall be implemented and controlled including the interactions and linkages between processes. The processes shall be monitored for effectiveness.

#### Note from ISO 9001:2008

The application of a system of processes within an organization, together with the identification and interactions of these processes, and their management to produce the desired outcome can be referred to as the “process approach”.

An advantage of the process approach is the ongoing control that it provides over the linkage between the individual processes within the system of processes, as well as over their combination and interaction.

When used within a quality management system, such as approach emphasizes the importance of:

- Understanding and meeting requirements
- The need to consider processes in terms of added value,
- Obtaining results of process performance and effectiveness
- Continual improvement of processes base on objective evidence

### 10.2 – Planning of Product Realization

The AIAG Advanced Product Quality Planning and Control Plan (APQP) reference manual and the MPG Production Readiness Review Manual (PSM001004) shall be used as guides for performing the APQP process. A valid extranet account with MPG is required to login to the site. This can be obtained by visiting: [www.mpgdriven.com](http://www.mpgdriven.com).

Supplier organizations shall participate in and meet APQP requirements for all new parts with the Production Readiness Review as the final step of the launch process, as applicable. Suppliers will receive specific instructions from MPG (Purchasing, Supplier Quality, and/or Plant Quality



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representatives) regarding the application of APQP appropriate to the commodity. New launch activities shall include completion of the Supplier Advanced Quality Planning workbook (FRM006368v1) which is used for tracking the health and status of these activities. Please contact MPG Supplier Quality for further guidance.

The supplier is required to submit change requests when such changes are not incorporated or recorded on the design record. Metaldyne has a format for submittal of such changes:

- Change requests – change requests are submitted on MPG Form FM004410.
- Change requests are to be submitted for any of the following:
  - Process
  - Material
  - Design
  - Tooling (Transfer, New, Refurbish)
- Sub-Tier / Supplier changes:
  - Process changes
  - Material changes
  - Sourcing changes
  - Tooling changes
  - Design Changes
- American Axle and Manufacturing (formerly known as MPG) Customer Engineering Approvals

Additionally, the following are some key requirements that may be applicable:

- Participate in Program Reviews
- Participate in Design Reviews
- Provide and maintain Timing Charts and Open Issues tracking lists
- Provide and maintain DFMEA
- Provide and maintain Process Flow, PFMEA and Process Control Plans
- Perform and provide Measurement System Analysis/Gage Review
- Provide an Early Production Containment and Pre Launch Control Plan
- Complete Production Readiness Review Signoff
- Complete Part Certification (PPAP) requirements prior to shipment of initial production. Follow the American Axle and Manufacturing (formerly known as MPG) Supplier PPAP Requirements Manual – Reference PSM001129
- Complete Safe Launch requirements

Note: It is the supplier's responsibility to notify the using American Axle and Manufacturing (formerly known as MPG) Plant (preferably the Quality Manager) that PPAP is being submitted and to coordinate requirements with that specific plant for shipping PPAP parts.





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### 10.2.1 – Confidentiality

The supplier organization shall keep all confidential and proprietary information of American Axle and Manufacturing (formerly known as MPG) in strictest confidence, and shall not disclose or permit disclosure to others, or use for other than the purpose of supply under the terms of the purchase order. Supplier shall protect American Axle and Manufacturing (formerly known as MPG)'s confidential and proprietary information using the same degree of care with which it protects its own confidential information. In no event, however, shall less than a reasonable degree of care be used. Depending on the nature of the program, the supplier organization may be asked to sign American Axle and Manufacturing (formerly known as MPG)'s form Nondisclosure and Confidentiality Agreement (FRM003580), at the direction of the American Axle and Manufacturing (formerly known as MPG) Supply Chain Management organization.

### 10.2.2 – Change Management

The supplier organization shall notify the appropriate American Axle and Manufacturing (formerly known as MPG) Plant Quality representative, purchasing and/or supplier quality representative of any planned changes to the design, process or manufacturing site, including sub-tier supplier locations. Examples of the types of changes requiring notification are indicated below:

- Use of optional construction or material than what was previously approved on any part, process, equipment, tool, or location
- Production from new or modified tools, dies, molds, and patterns including additional or replacement tooling
- Production upgrades that include new, movement, or reorganization of existing tooling and/or equipment that was previously approved
- Transferring of equipment or tooling from one site to another
- Change of supplier for parts, non-equivalent materials, or services (e.g. heat treat, plating, outside processors)
- Product required after inactivity of tooling for more than 12 months
- Product or process changes related to components that will affect fit, form, function, performance, durability, reliability or design
- Change in test / inspection method – new technique that will have no effect on acceptance criteria
- New source of raw material from an existing supplier – bulk material changes – that will have no effect on product performance
- New or modified packing, labeling, or transportation method



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The supplier organization shall complete the American Axle and Manufacturing (formerly known as MPG) Supplier Process Change Request Form (FRM004410) detailing the nature of any requested permanent change and submit the completed form to the MPG Plant Quality representative. Where a temporary deviation is required, the organization shall complete the American Axle and Manufacturing (formerly known as MPG) Supplier Process Deviation Request Form (FRM002053) detailing the nature of any requested temporary deviation and submit the completed form to the American Axle and Manufacturing (formerly known as MPG) Plant Quality representative. The appropriate American Axle and Manufacturing (formerly known as MPG) **plant** representative will communicate any verification or identification requirements. The supplier organization shall communicate potential variations that are anticipated, allowing every opportunity for American Axle and Manufacturing (formerly known as MPG) to fully consider the implications of proposed changes, and review the impact of changes and/or deviations with our customer(s). Once approved, it is the supplier's responsibility for notifying the American Axle and Manufacturing (formerly known as MPG) Plant Quality Representative for part submittal (PPAP) requirements. The supplier organization may not make any changes or deviations without first receiving MPG's formal approval. Upon notification and final approval of the proposed change by the authorized MPG representative, suppliers shall submit to the Metaldyne plant location representative, a PPAP for the proposed changes. Reference Metaldyne's Supplier PPAP Manual (PSM001129) for all PPAP submission requirements.

### 10.3 – Customer-related Processes

Suppliers must comply with customer specifics as defined by MPG's customer. MPG and its supply base are required to meet certain customer specific expectations. These customer specific requirements (PPAP, TS 16949, etc.) can be located at the International Automotive Task Force (IATF) website: <http://www.iatfglobaloversight.org/content.aspx?page=OEMCustomer-SpecificRequirements>

#### 10.3.1 – Determination of Requirements Related to the Product

The supplier organization shall comply with all End of Life Vehicle (ELV) requirements, as requested, by the MPG receiving plant quality control activity. This includes preparation of material data sheets necessary to comply with the International Material Data System (IMDS) and for submission with the PPAP tooling approval and payment. For more information related to IMDS please refer to [www.mdsystem.com/index.jsp](http://www.mdsystem.com/index.jsp).

The International Material Data System (IMDS) is used to track and monitor all of the materials used and provided by a supplier. A supplier must set up an account prior to submitting a PPAP and enter in all necessary data pertaining to all materials supplied to American Axle and Manufacturing (formerly known as MPG). If American Axle and Manufacturing (formerly known as MPG) permits a supplier to make a material change during production of a part supplied to American Axle and Manufacturing (formerly known as MPG),



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the supplier will be responsible for logging on to the IMDS website to update and record all changes made. The IMDS can be found through [www.mdsystem.com](http://www.mdsystem.com).

### 10.3.2 – Customer-designated Special Characteristics

The organization shall conform to all written requirements from American Axle and Manufacturing (formerly known as MPG) for the definition and requirements of critical dimensions, features and processes as designated on the American Axle and Manufacturing (formerly known as MPG) engineering drawing. Appendix D defines the system for the identification and documentation of Critical Dimensions, Features and Processes.

### 10.3.3 – Review of Requirements Related to the Product – Supplemental

Only the American Axle and Manufacturing (formerly known as MPG) buyer may waive the requirement in 7.2.2 for a formal product review.

### 10.3.4 – Organization Manufacturing Feasibility

During the quotation and the supplier selection process, the organization must complete the Supplier Manufacturing Feasibility Sign-off (FRM002013) that is provided with the Request for Quotation unless waived by the American Axle and Manufacturing (formerly known as MPG) buyer. This form defines manufacturing feasibility as the mutual agreement between all parties that a proposed design can be manufactured, assembled, packaged, and shipped at a level to conform to American Axle and Manufacturing (formerly known as MPG) and our customers' requirements.

Product volume changes of 20 percent or more from an American Axle and Manufacturing (formerly known as MPG) previously verified volume capacity shall require completion of a new Capacity Analysis Study using form FRM003611 (Note: Suppliers should contact the MPG quality representative for specifics regarding capacity analysis and run-at-rate). The Study shall include identification of the capacity constraints and evaluation of risk to American Axle and Manufacturing (formerly known as MPG) by the supplier. The results of this study shall be provided to the responsible American Axle and Manufacturing (formerly known as MPG) Buyer, MPG Supplier Quality Engineer or American Axle and Manufacturing (formerly known as MPG) Receiving Plant Quality Representative as directed during APQP and PPAP activities.

The capacity information provided with the quote should reflect the available capacity and operation plan (hours/day, days/week). The operation plan should meet Financial Planning Volume (FPV) weekly requirements assuming 240 calendar days, 48 weeks and 5 days per week. If production requirements increase to a Capacity Planning Volume (CPV) level of 120 percent of FPV, the supplier may increase its weekly operating hours or use a 6



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day/week operation plan. The buyer shall be notified and approve of any operation plan using more than 100 hours per week. Suppliers shall have capability to provide 20 percent above the FPV without additional investment from American Axle and Manufacturing (formerly known as MPG).

American Axle and Manufacturing (formerly known as MPG) may conduct a risk assessment (FRM002030) in consideration of awarding of a new program. It is conducted on a team basis and is summarized to determine the nature and extent that risk exists within a new project. This risk assessment may shape the nature of the relationship and the extent of the interaction between American Axle and Manufacturing (formerly known as MPG) and the organization awarded the new program during advanced quality planning and launch.

### 10.3.5 – Customer Communication

#### 10.3.5.1 – Customer Communication – Supplemental


The organization shall use the specific methodology and documentation in the request for quotation process as directed by the appropriate MPG buyer. The organization shall confirm during the quotation process the data exchange formats that are required by MPG at all points of contact.

### 10.4 – Design Development

It is the intention of American Axle and Manufacturing (formerly known as MPG) to involve suppliers in the Advanced Quality Planning process as early as possible to facilitate design and development that optimizes the consistency of the products and processes and to assure continual improvement to customer requirements and environmental compliance. Ease of manufacturing and mistake proofing of assemblies shall also be considered as an output of this design and development process.

During the Program Management process, American Axle and Manufacturing (formerly known as MPG) will initiate Advanced Product Quality Planning (APQP) utilizing the Supplier Advanced Quality Planning Workbook (FRM006368). The supplier organization will be responsible for organizing, tracking, communicating, and reporting in a formalized manner. Status and timing of program milestones must be maintained. The status of problem resolution activities must be reported as progress is made. Adequate personnel must be made available for proper support of program activities including program management, quality, manufacturing development, and commercial development.

American Axle and Manufacturing (formerly known as MPG) may require a process signoff during the assessment of launch readiness. This process involves a site visit by a American Axle and Manufacturing (formerly known as MPG) representative to review process documentation,

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dimensional capability, and actual cycle rate versus quoted cycle rates. Any deficiencies noted will require comprehensive action plans and closure prior to launch, unless a written waiver from Metaldyne is obtained.

#### 10.4.1 – Production Part Approval

The supplier organization is expected to follow the guidelines of the AIAG Production Part Approval Process (PPAP) manual as well as the American Axle and Manufacturing (formerly known as MPG) Supplier PPAP Manual (PSM001129) for the submission of product on a new program or after any process change. It is the supplier's responsibility to notify the using American Axle and Manufacturing (formerly known as MPG) Receiving Facility (preferably the Quality Manager) that PPAP is being submitted and to coordinate requirements with that specific plant for shipping PPAP parts. **All suppliers are required to submit PPAP submissions on any product shipped into the American Axle and Manufacturing (formerly known as MPG) Receiving Facilities regardless of volume or quantity. This requirement includes all “off the shelf” product if the component is used in an American Axle and Manufacturing (formerly known as MPG) finished goods.**

#### 10.4.2 – Prototype Program

The supplier organization may be required to submit prototype parts for functional, dimensional, and materials evaluation. Prototype parts, in quantity, may be required for manufacturing (machining) trials at American Axle and Manufacturing (formerly known as MPG) facilities to assess the impact on the entire manufacturing process. These prototype parts are considered to be an important feature of the overall process development and are expected to be representative of the ultimate production process. The organization shall have a prototype control plan developed and implemented for every prototype program requested.

### 10.5 – Purchasing

#### 10.5.1 – Statutory and Regulatory Conformity

Upon request from American Axle and Manufacturing (formerly known as MPG), the organization shall report to American Axle and Manufacturing (formerly known as MPG) on the conformance to all applicable regulatory requirements of all purchased products or materials used in the product delivered to Metaldyne.



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### 10.5.2 – Supplier Quality Management System Development

The supplier organization shall have a goal of supplier conformity to ISO 9001: 2015. Conformity with ISO 9001: 2015 is the first step in achieving this goal. If the supplier is not ISO 9001: 2015, the supplier must meet customer specific requirements for second party audits and will be subject for a Second Party Audit by American Axle and Manufacturing (formerly known as MPG).

Suppliers who are not certified to ISO-9001:2008 must complete an annual self assessment. Use FRM001112 to be submitted within each calendar year. The form can be found on the American Axle and Manufacturing (formerly known as MPG) Supplier Portal with a valid extranet account with Metaldyne is required to login to the site. If a supplier does not have access, the supplier can request access by visiting the following link and requesting a username and password from American Axle and Manufacturing (formerly known as MPG). Any items not meeting the ISO-9001:2015 specifications must have a plan to be compliant. The self assessment is to be submitted to your American Axle and Manufacturing (formerly known as MPG) Buyer or

Plant Quality representative for approval. Metaldyne will then determine alternative steps that may include an onsite assessment.

## 10.6 – Production and Service Provision

### 10.6.1 – Control Plan

Product and processes should be developed meeting the requirements of the Advanced Product Quality Planning and Control Plan (APQP) Manual and shall be used by the organization as the guidance for the development, implementation and maintenance of control plans.

### 10.6.2 – Work Instructions

The organization shall prepare documented work instructions for all employees having responsibilities for the operation of processes that impact conformity to product requirements. These instructions shall be accessible for use at the work station. The instructions shall be derived from sources such as the quality plan, the control plan, and the production realization process.

### 10.6.3 – Job Set-up Verification



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Job set-ups shall be verified whenever performed, such as an initial run of a job, material changeover, or job change. Work instructions shall be available for set-up personnel. Statistical methods shall be used by the organization for verification, where applicable. Note: Last-off-part comparisons are recommended. The organization shall identify the person having responsibility and authority for the activity, planning, and execution of job-setups.

#### **10.6.4 – Preventive Maintenance**

The organization shall identify key process equipment and provide resources for machine/equipment maintenance and develop an effective planned total preventive maintenance system. At a minimum, this system shall include the following:

- Planned maintenance activities
- Packaging and preservation of equipment, tooling and gaging
- Availability of replacement parts for key manufacturing equipment
- Documenting, evaluating and improving maintenance objectives

Note: It is recommended that predictive maintenance methods be considered and implemented within the total preventative maintenance system.

#### **10.6.5 – Production Scheduling**

American Axle and Manufacturing (formerly known as MPG) suppliers shall have the capability to electronically receive shipment authorizations, release schedules and forecasts. In addition, they shall have the capability to send functional acknowledgements (997) in response to received releases, Advanced Shipping Notices (ASN's) and compliant bar code labels at the time of shipment.

Suppliers who fail to provide valid, timely and accurate ASN's and barcode labels may be subject to a cost recovery by the American Axle and Manufacturing (formerly known as MPG) Receiving Facility. American Axle and Manufacturing (formerly known as MPG) expects that ASN's will be successfully submitted a maximum of 30 minutes after the shipment leaves the dock and if the transportation time is less than 30 minutes to the MPG Receiving Facility, the ASN must be successfully submitted prior to the arrival of the product to the American Axle and Manufacturing (formerly known as MPG) Receiving Facility. American Axle and Manufacturing (formerly known as MPG)'s EDI requirements can be found at the following website: [www.mpgdriven.com](http://www.mpgdriven.com).

American Axle and Manufacturing (formerly known as MPG) will establish the shipping frequency for each production part. The supplier shall be able to ship daily at a minimum. The Supplier shall ship to the exact quantities, dates and times specified on the release. No



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over, under, early or late shipments. All American Axle and Manufacturing (formerly known as MPG) schedules shall be in standard pack quantities in the smallest approved standard pack container. Suppliers shall have shipping capability that matches the American Axle and Manufacturing (formerly known as MPG) Receiving Facility's normal production schedule.

At the time of the pickup the supplier shall allow the authorized carrier's driver to check the shipping quantities against the scheduled quantities. Over-shipments will not be accepted. If an over-shipment occurs, it will be returned at the expense of the supplier.

If for any reason, the supplier is unable to meet the schedules communicated to it by American Axle and Manufacturing (formerly known as MPG), it is the responsibility of the supplier to notify proper American Axle and Manufacturing (formerly known as MPG) plant production control personnel immediately. Suppliers will make up all missed or under-shipments via supplier paid expedited premium transportation.

If American Axle and Manufacturing (formerly known as MPG) or its customer's production is interrupted by the failure of the supplier to deliver contracted goods within the terms of the contract, all costs that are incurred by American Axle and Manufacturing (formerly known as MPG) and/or its customer will be the sole responsibility of the supplier.

#### **10.6.6 - Customer Property**

MPG shall approve all product packaging and cleanliness requirements.

#### **10.6.7 – Customer-owned Production Tooling**

Tooling Guidelines for Suppliers of Direct Materials dated February 1, 2008 (available at [www.mpgdriven.com](http://www.mpgdriven.com)) shall apply to all tooling purchase orders.

Maintenance and refurbishment of American Axle and Manufacturing (formerly known as MPG) owned tooling is the responsibility of the supplier.

The supplier shall maintain a listing of American Axle and Manufacturing (formerly known as MPG) owned tooling in its possession and furnish such a listing to the American Axle and Manufacturing (formerly known as MPG) buyer upon request. Suppliers are also required to submit photographs of the tooling as evidence along with the proper identification of those tools.

The supplier will not destroy or otherwise dispose of American Axle and Manufacturing (formerly known as MPG) owned tooling without the written consent of the American Axle and Manufacturing (formerly known as MPG) buyer.





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## 10.6.8 – Preservation, Storage, and Identification

### 10.6.8.1 – Transportation

Routing instructions will be provided by American Axle and Manufacturing (formerly known as MPG) for all suppliers who ship under Metaldyne paid freight terms. If routing instructions have not been received in a timely manner, contact MPG Corporate Logistics (734) 582-6342.

All shipments shall be made by normal mode at the prescribed ship window time on the American Axle and Manufacturing (formerly known as MPG) authorized carrier unless otherwise specified by American Axle and Manufacturing (formerly known as MPG). The supplier will pay supplier caused premium transportation.

For North American domestic shipments, material ownership and freight terms for all material received by American Axle and Manufacturing (formerly known as MPG) are freight collect, unless otherwise agreed to by American Axle and Manufacturing (formerly known as MPG) Purchasing, and documented. American Axle and Manufacturing (formerly known as MPG) will assume the responsibility of insurance on the in-transit material when American Axle and Manufacturing (formerly known as MPG) specifies the carrier. In the event the carrier is supplier owned, the insurance liability is the responsibility of the supplier.

For international shipments, (i.e. Outside North America or intercontinental shipments to North America) material ownership and freight terms for all material received by MPG are: Delivery Duty Unpaid, Title Transfer Our Plant, (2010 INCOTERMS, DDU, TTOP) unless otherwise specified by American Axle and Manufacturing (formerly known as MPG) Purchasing, and documented. If required, offshore suppliers will be responsible for the transfer of parts to small lot containers prior to delivery to the American Axle and Manufacturing (formerly known as MPG) receiving plant. American Axle and Manufacturing (formerly known as MPG) will not carry any inventory cost associated with this process. International shipments must meet American Axle and Manufacturing (formerly known as MPG) and country specifications. The supplier shall generate advanced forwarder information and customs documentation on time and to specifications. Regarding invoices for international transportation, the commercial value of the merchandise must include any current surcharge pricing. This must match the price on P.O. for effective date and invoices sent with shipping/customs paperwork must be identical to those sent to American Axle and Manufacturing (formerly known as MPG) Accounts Payable.



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### 10.6.8.2 – Packaging

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) has issued a final rule effective September 16, 2005 that will affect all persons importing goods into the U.S. using regulated wood packaging material. The goal is to prevent the introduction and spread of a variety of pests. The packaging must meet one of the following two criteria or it will be subject to exportation or destroyed:

1. Fumigated in an enclosed area for at least 16 hours at certain dosages. The packaging must also be marked.
2. Heat treated – you must achieve a minimum wood core temperature of 56 degrees centigrade for a minimum of 30 minutes. Such treatments may employ kiln-drying, chemical pressure impregnation, or other treatments that achieve this specification through the use of steam, hot water or dry heat.

Reference the Guidelines for Regulating Wood Packaging Material (procedure ISPM15) that may be found on the American Axle and Manufacturing (formerly known as MPG) website.

### 10.6.9 – Storage and Inventory

The supplier organization shall use an inventory management system to optimize inventory turns and assure stock rotation such as the first in first out inventory method (FIFO) for inventory control for all MPG products.

### 10.6.10 – Identification and Traceability

The supplier organization shall identify product by suitable means throughout the production process. This includes identifying the product status with respect to monitoring and measurement requirements. Traceability is required for all components from the raw material source to the point of receipt by the American Axle and Manufacturing (formerly known as MPG) Receiving Facility and shall have a unique identification of the product (i.e., lot number) and the supplier shall maintain those records which should be readily available. All product shipped is required to have Advanced Shipping Notification (ASN) and meet all American Axle and Manufacturing (formerly known as MPG) requirements for delivery and quality.

## 11 Safe Launch Plan

MPG or its customer may deem it necessary for the supplier to follow the respective MPG Safe Launch requirements for each material as applicable. If a MPG Safe Launch document does not exist for a specific material supplied to MPG, the appropriate MPG Buyer or Plant Quality



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representative will provide an acceptable Safe Launch Document to follow as a guideline during the safe launch process.

## **12 Control of Monitoring and Measuring Equipment**

### **12.1 – Measurement System Analysis**

The Measurement Systems Analysis reference manual (AIAG) shall be used by the organization as the guidance for performing gage studies for all gages used to measure the identified special characteristics (Note: Follow the American Axle and Manufacturing (formerly known as MPG) Supplier PPAP Requirements Manual – Reference PSM001129). Action plans shall be developed and communicated to the American Axle and Manufacturing (formerly known as MPG) buyer or SQE in any case where a gage does not meet the expectations for a gage study. Action plans shall include the containment activities necessary to assure product quality.

### **12.2 – Laboratory Requirements**

#### **12.2.1 – External Laboratory**

External, commercial or independent laboratory facilities shall be registered to ISO/IEC 17025 or the organization shall obtain approval from the appropriate American Axle and Manufacturing (formerly known as MPG) buyer or SQE prior to use.

## **13 Measurement, Analysis and Improvement:**

### **13.1 – General**

#### **13.1.1 – Identification of Statistical Tools**

The supplier shall use the latest edition of the Statistical Process Control reference manual (AIAG) as guidance for the identification and application of statistical tools.

### **13.2 – Monitoring and Measurement**

#### **13.2.1 – Customer Satisfaction**

Customer satisfaction within the organization shall be monitored through continual evaluation of performance of the realization processes. Performance indicators shall be based on objective data and include, but not limited to:

- Delivered part quality performance
- Delivery schedule performance (including incidents of premium freight)



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- Customer complaints, including field / warranty returns

The organization shall monitor the performance of manufacturing processes to demonstrate compliance with customer requirements for product quality and efficiency of the process (i.e. OEE)

### 13.2.2 – Incoming Product Conformity

The organization shall have a process to assure the quality of purchase product utilizing one or more of the following methods:

- Receipt of, and evaluation of, statistical data by the organization
- Receiving inspection and/or testing, such as sampling based on performance
- Second- or Third party assessments or audits of supplier sites, when coupled with records of acceptable delivered product conformity to requirements
- Part evaluation by designated laboratory
- Other methods agreed upon with the customer and MPG

### 13.2.3 – Supplier / Sub-tier Performance and Monitoring

Supplier and sub-tier performance shall be monitored through the following indicators:

- Delivered product to conformity requirements
- Delivery schedule performance (including incidents of premium freight)
- Customer complaints, including field / warranty returns

The organization shall promote supplier monitoring of the performance of the sub-tier suppliers and processors manufacturing operations and processes including supplier self-assessments of its processes. It is also necessary to understand all customer specific requirements and communicate those requirements to the entire supply chain. Supplier should reference CQI-19: Sub-Tier Supplier Process Management Guideline published by AIAG. This guideline defines the minimum quality-related requirements for Sub-Tier suppliers and provides explicit guidance on effective identification and control of Pass Through Characteristics (PTC). It also defines the minimum content for use in an organization's supplier risk and quality system assessments, and lists qualifications for supplier development "coaches", resulting in higher quality and lower cost to all members of the



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### 13.2.4 – Manufacturing Process Audit

The organization shall audit its heat treat, plating, and coating processes. The applicability and effectiveness of these processes shall be determined utilizing CQI-9 Special Process: Heat Treat System Assessment (HTSA), CQI-11: The Special Process Plating Assessment and CQI-12: The Special Process Coating Assessment published by AIAG. The organization should submit their results to the Metaldyne Manufacturing Plant at the same time as they submit their annual layout.

American Axle and Manufacturing (formerly known as MPG) may choose to audit sub-tier organizations depending on the nature of the commodity. Manufacturing Site Assessments may be performed on suppliers and sub-tier suppliers. The purpose of these is to ensure sub-tier process monitoring and management and is a holistic approach to the reviewing the manufacturing, engineering and quality systems within and organization while meeting customer specific requirements of American Axle and Manufacturing (formerly known as MPG) customers. FRM006301 – Manufacturing Site Assessment will be used to conduct such reviews.

### 13.2.5 – Layout Inspection and Functional Testing

To ensure continuing performance to all Metaldyne requirements, a complete annual layout inspection, including all sub-components, shall be required for all parts and submitted to the MPG Receiving Plant. PPAP submission is not an expectation; however, may be requested if appropriate. Suppliers shall submit annual layouts using the following documentation:

- Dimensional Layout Form (FRM006282)
- Material Test Form (FRM006283)
- Performance Test Form (FRM006284)

**Note: Annual layout inspections are required for all suppliers, *without exception*, and shall be included in the supplier control plan. A method must exist to ensure that annual layouts are identified and tracked in the supplier’s quality system.**

Annual layouts shall be submitted to the American Axle and Manufacturing (formerly known as MPG) Receiving Plant for all production parts which will consist of the following elements:

- 6 piece complete dimensional layout of a part to the latest MPG drawing. If there are multiple cavities, dies, molds, or tools, then a dimensional layout shall be performed and submit for each cavity, die, mold, or tool.
- Capability for all key dimensions and shall reflect a Ppk = 1.67



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- Capacity information, if required by the American Axle and Manufacturing (formerly known as MPG) Receiving Plant
- Heat treat analysis (Microstructure, furnace maps, hardness related data)
- Raw material certifications (Suppliers may be required to submit parts to an accredited third party laboratory for chemical analysis)

### 13.3 – Control of Nonconforming Product

The supplier organization shall have a system to immediately control any nonconforming products or services discovered in satisfying the requirements of American Axle and Manufacturing (formerly known as MPG), whether within American Axle and Manufacturing (formerly known as MPG) facilities, the organization’s facility, or enroute. The organization shall replace the defective product as soon as possible, with no significant disruption to the American Axle and Manufacturing (formerly known as MPG) production process. Any cost of sorting, reworking, and expediting will be charged to the supplier. Metaldyne reserves the right to seek compensation from the supplier organization for any excessive or extraordinary costs incurred as a direct result of nonconforming products or services supplied. All reworked product shall have a detailed work instruction and personnel trained to perform such activity. Additionally, all rework activities shall be submitted to the American Axle and Manufacturing (formerly known as MPG) Receiving Facility for approval prior to the execution of rework activities.

In the event that circumstances dictate, American Axle and Manufacturing (formerly known as MPG) may initiate containment actions in its sole discretion as noted in 8.1.1. The following is a description of Quality Containment I, II, and Business Hold, that may be used to influence corrective actions:

**Quality Containment Level I** – The supplier organization is required to conduct a redundant inspection beyond the "normal" manufacturing process to assure containment of any defects within the supplier facility. American Axle and Manufacturing (formerly known as MPG) initiating facilities must agree upon the methodology of the inspection, duration and exit criteria for this action. This information will be communicated in writing to the organization (i.e. – email). This may be imposed when any of (but not limited to) the following conditions exist with the supplier’s product or service.

- Lengthy duration in the resolution of a known problem
- Inadequate containment of a quality problem
- A quality reject of sufficient magnitude occurs at a MPG facility that significantly disrupts American Axle and Manufacturing (formerly known as MPG)’s ability to provide its customers with product meeting all requirements
- Chronic receipt of materials or services at MPG site(s) that do not meet the contractually agreed upon requirements



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**Quality Containment Level II** – The supplier organization is required to conduct a redundant inspection, facilitated by a mutually agreed upon third party contractor, at the supplier’s expense. The American Axle and Manufacturing (formerly known as MPG) initiating facility must agree upon the methodology and location of the inspection. The duration and exit criteria for this action will be stipulated by a formal written communication (i.e. – FRM004406). Actions taken should be documented on an action plan (i.e. - FRM004407) to the supplier organization by the American Axle and Manufacturing (formerly known as MPG) SQE or the Metaldyne initiating facility. This may be imposed when any of (but not limited to) the following conditions exist with the supplier organization’s product or service:

- Lack of significant progress towards resolution of an issue that required Quality Containment Level I to be imposed
- Chronic or repeat issues of significant magnitude
- Issues resulting in field actions with American Axle and Manufacturing (formerly known as MPG)'s customers

In the unfortunate circumstance that issues degrade to a level that it is no longer possible to continue normal relations with the supplier organization (this may include issues dealing with environmental compliance), American Axle and Manufacturing (formerly known as MPG) will place the supplier on **Business Hold** status. The supplier organization will be formally notified in writing as to the conditions resulting in this action and the further steps that will be taken, which may include re-sourcing of current products or services. Any supplier organization in this status will not be included in future programs until such a time as American Axle and Manufacturing (formerly known as MPG) reviews and changes the status of the organization back to approved. American Axle and Manufacturing (formerly known as MPG) may detail planning and action steps with the supplier organization to once again achieve approved status. A recommendation may then be made to American Axle and Manufacturing (formerly known as MPG)'s Supply Chain Management and Quality to reinstate approved status. The supplier organization will be notified formally in writing in such an event. Based upon the organization’s performance, it may become necessary for MPG to pursue containment steps to ensure that the flow of production material to American Axle and Manufacturing (formerly known as MPG) meets all of our needs and expectations. In these cases, the organization shall be required to participate in Quality Containment Levels I and II. This requirement will be communicated in writing to the organization. See Appendix A for details.

American Axle and Manufacturing (formerly known as MPG) shall be notified promptly in the event that nonconforming product is shipped.



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### 13.3.1 Customer Waiver

The organization shall not ship any nonconforming material at any time, unless a deviation request is granted in writing by the appropriate Metaldyne buyer, product engineering, and the American Axle and Manufacturing (formerly known as MPG) receiving facility, prior to shipment. The organization shall use the American Axle and Manufacturing (formerly known as MPG) *Process Deviation Request* form (FRM002053), to detail the nature of any deviation that impacts the product realization process for materials or services provided to Metaldyne. American Axle and Manufacturing (formerly known as MPG) will use this form to communicate any deviation waiver that may be granted.

## 13.4 - Improvement

### 13.4.1 – Corrective Action

Suppliers shall have a defined process for problem solving leading to root cause analysis identification and elimination. Suppliers should utilize root-cause analysis tools to perform such analysis. American Axle and Manufacturing (formerly known as MPG) expects a zero defect approach by all of its suppliers and sub-tiers. Supplier systems are to embrace this approach throughout the organization. In the event of a quality, delivery, customer satisfaction or warranty problem occurrence; American Axle and Manufacturing (formerly known as MPG) may issue a formal complaint to the supplier via corrective action. The supplier is expected to perform in the following manner when a corrective action is issued:

- 24 hour response is required to acknowledge receipt
- Along with the 24 hour response is identification of containment activities and identification of certified product
- Interim corrective actions should be deployed as soon as possible
- Root cause analysis within 14 day of issuance
- Permanent corrective and preventive actions with 30 days
- Validation of corrective action effectiveness after implementation for a period of 30 at which time, if there are no further occurrences of the issue, the MPG Receiving Plant will close the corrective action.

**Note: The American Axle and Manufacturing (formerly known as MPG) Receiving Plant may deviate from this schedule at their discretion.**

Suppliers will be charged for any internal containment activities and where costs are incurred by American Axle and Manufacturing (formerly known as MPG).

Most American Axle and Manufacturing (formerly known as MPG) Receiving Facilities utilize PLEX as their choice for communication of supplier performance. If the MPG





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Receiving Facility utilizes PLEX, the supplier organization shall use the MPG prescribed Plex system for problem solving and corrective action reporting as directed by the appropriate MPG or MPG Receiving Facility. The Plex system can be accessed by following the link found at:

<https://www.plexus-online.com/modules/systemadministration/login/index.aspx>

If an American Axle and Manufacturing (formerly known as MPG) Receiving Facility does not have PLEX deployed, the supplier shall contact that individual facility for guidance.

Where applicable, all direct material suppliers should have access to the Plex Quality System. If you do not have access, please send a request immediately to your American Axle and Manufacturing (formerly known as MPG) ship-to facility. American Axle and Manufacturing (formerly known as MPG) provides one login and password to each supplier location that supports American Axle and Manufacturing (formerly known as MPG) even if you support more than one MPG location. If you support more than one location, you will have one point access. This only applies to those suppliers who directly ship to an American Axle and Manufacturing (formerly known as MPG) Receiving Facility that utilizes PLEX.

## **14 Focused Supplier**

American Axle and Manufacturing (formerly known as MPG) maintains monthly scorecards (Refer to Section 7.3) at all receiving plant locations. Supplier performance is derived from quality and delivery. If a supplier maintains performance at acceptable levels, those suppliers will not be placed on a Focused Supplier List. The Focus Supplier List is designed to maintain and improve supplier performance and communication with the American Axle and Manufacturing (formerly known as MPG) Receiving Plant. Suppliers are placed on the Focused Supplier List if they are RED in any performance metric for three consecutive months. At which time, they will be placed on the Focused Supplier List and must follow the protocol outlined in Section 7.3. In order for a supplier to be removed from the Focused Supplier List, the supplier must demonstrate:

- A positive trend in performance over a 90 day period
- No instituted American Axle and Manufacturing (formerly known as MPG) or third party containment activity over a 90 day period which includes American Axle and Manufacturing (formerly known as MPG) customer locations
- An on time response to all documented quality, delivery, engineering and commercial issues for 90 days
- A "GREEN" scorecard for 6 consecutive months
- All action items are closed to the satisfaction of American Axle and Manufacturing (formerly known as MPG) Receiving Plant location leadership
- No open issues for more than 45 days



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It is up to the discretion of the American Axle and Manufacturing (formerly known as MPG) Receiving Plant to determine and remove a supplier from the Focused Supplier List. American Axle and Manufacturing (formerly known as MPG) Receiving Plants may choose to maintain an open issues list with suppliers to track open issues ensuring they are addressed properly which will include responsible person(s) and target dates for those activities. Furthermore, on-site meetings may occur at the discretion of the American Axle and Manufacturing (formerly known as MPG) Receiving Facility either at the supplier location or the American Axle and Manufacturing (formerly known as MPG) Receiving Plant,

## **15 Internal Audit**

### **15.1 – Quality Management System Audit**

The supplier organization shall audit its quality management system to verify compliance with Automotive Quality Management System Requirements for Sub-tier Suppliers and any additional quality management system requirements

### **15.2 – Manufacturing Process Audits**

The supplier organization shall audit each manufacturing process audit to determine full compliance to the organizations control plan

### **15.3 – Product Audit**

The organization shall audit products at appropriate stages of production and delivery to very conformity to all specified requirements, such as product dimensions, functionality, packaging, and identification, at a defined frequency. Suppliers shall submit an annual product audit to the MPG Receiving Plant for their product.

### **15.4 – Internal Audit Plans**

Internal audits shall cover all quality management related processes, activities, and shifts, and shall be scheduled according to an annual plan. When internal/external nonconformities or customer complaints occur, the audit frequency shall be appropriately increased.

### **15.5 – Internal Auditor Qualifications**

The organization shall have internal auditors who are qualified to audit the requirements of ISO 9001:201 and/or IATF 16949:2016 and the Automotive Quality System Requirements for Sub-tier suppliers.



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## **16 Continuous Improvement**


American Axle and Manufacturing (formerly known as MPG) expects that the supplier organization will have quality systems in place that promote continuous improvement in all encounters with American Axle and Manufacturing (formerly known as MPG). American Axle and Manufacturing (formerly known as MPG) expects that the supplier organization will actively participate in team-based improvement or cost reduction at the request of the MPG buyer. In the pursuit of supplier development and partnership, American Axle and Manufacturing (formerly known as MPG) will offer the organization, where possible, an opportunity to attend training sessions given by American Axle and Manufacturing (formerly known as MPG) in various disciplines of continuous improvement (i.e. Six Sigma Green belt and Black belt, VE/VA, Kaizen, Lean Techniques, Problem Resolution, etc.).



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**Appendix A: American Axle and Manufacturing (formerly known as MPG)**  
**Accounts Payable PO Boxes For U.S. locations:**

<b>Plant Name</b>	<b>Payables Name</b>	<b>PO Box</b>	<b>City</b>	<b>State</b>	<b>Postal Code</b>
Fremont	Vibration Control Technologies	701995	Plymouth	MI	48170
Litchfield	Vibration Control Technologies	702788	Plymouth	MI	48170
Twinsburg	Transmission Technologies	700944	Plymouth	MI	48170
Bluffton	Transmission Technologies	702878	Plymouth	MI	48170
Warren	Punchcraft Machining and Tooling, LLC	701992	Plymouth	MI	48170
St. Marys	Sintered Technologies	702340	Plymouth	MI	48170
North Vernon	Sintered Technologies	702175	Plymouth	MI	48170
Ridgway	Sintered Technologies	702370	Plymouth	MI	48170

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## Appendix B: Pricing and Payment

### Pricing and Payment

Suppliers will be expected to be globally competitive, which will be benchmarked by MPG buyers.

- When requested by the American Axle and Manufacturing (formerly known as MPG) buyer, suppliers will complete the Cost Breakdown Form and the Tooling Cost Breakdown Form and submit with the supplier's response to the Request for Quotation.
- All quotations shall include an itemized price for expendable packaging.
- Suppliers are expected to have a continual cost reduction plan in place to manage their costs.
- Suppliers shipping product from a non US location may have the opportunity to negotiate a currency fluctuation agreement. During the quotation process before business award, the supplier may contact the buyer to discuss.
- Suppliers are expected to work with American Axle and Manufacturing (formerly known as MPG) buyers toward annual cost reductions. (long term contracts, annual negotiations, etc.)
- MPG will not accept quotations or issue contracts or purchase orders with minimum order quantities, unless approved by the American Axle and Manufacturing (formerly known as MPG) buyer.

### Payment Terms

Standard payment terms for production parts are "Net 60".

Standard payment terms for tooling are "Net 60 days after PPAP"

- Suppliers shall include a copy of the Production Sample Warrant (PSW) and digital pictures of the tooling with the invoice submission.








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### Appendix C

#### Process controls for Additional and Special Care

Additional and Special Care includes the system requirements outlined in this table. The objective of the matrix is to outline American Axle and Manufacturing (formerly known as MPG)s expectations for controlling Critical Characteristics and features. **Ppk** is the performance index. The process should meet or exceed the required values at all times during production.

All data associated with any of the characteristics listed below must be retained for 1 year after the record was created.

Term	Definition	Ppk Requirements	Gauging Requirements	SPC Charting	Mistake Proofing or 100% Auto Inspection
 (CTS):	<u>Critical To Safety</u> Any dimension, feature or process that if not controlled would result in a safety concern.	1.67	Variable	Xbar-R	Required
 (CTF):	<u>Critical To Function</u> Any dimension, feature or process that if not controlled would result in performance degradation.	1.67	Variable		Required
 (CTM):	<u>Critical To Manufacturing</u> Any dimension, feature or process that if not controlled would adversely affect a subsequent operation / process.	1.67	Variable		Team Decision
 (PTC):	<u>Pass Thru Characteristic</u> Any dimension, feature or process that is not created, measured or verified at any point in a subsequent process.	1.67	Variable		If Applicable, Required
 (CCP):	<u>Customer Contact Point</u> Any dimension or feature that is used by the customer in their subsequent manufacturing process.	1.67	Variable		Team Decision



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### REVISION HISTORY

Revision Number	Revision Date	Nature of Revision
01	04-APR-2005	New Release
02	01-MAR-2006	Update
03	02-APR-2007	Added C-TPAT, Tooling Guidelines, and Production Readiness Review Manual references
04	18-FEB-2008	Added annual process audit, annual layout inspection, PPAP notification, Quality Containment Level II process and pass thru characteristics management
05	17-MAR-2008	Clarified temporary and permanent process change procedure
06	05-AUG-2010	Updated to reflect "new" Metaldyne and TS-16949:2009
07	16-SEP-2010	Updated section 7.4.1.2 to reflect ISO-9001:2008 as minimum requirement
08	18-NOV-2011	Remove Supplier Extranet; Add Plex Supplier Scorecard for NA facilities.
09	15-SEPT-2014	Updated section 4.4 Supplier Scorecard referencing PLEX; Added supplier scorecard performance matrix – Appendix E; clarified scorecard measurables; Updated 7.5.5 Preservation of Product, Transportation- regarding international travel invoices.
10	21-SEPT-2015	<ol style="list-style-type: none"> <li>1. Updated Section 7.1 Product Realization for removing of wording regarding PPAP submission to Metaldyne Receiving Plants and added reference to Supplier PPAP Requirements Manual PSM001129.</li> <li>2. Updated Section 7.6.1 to remove: Suppliers should contact the plant quality representative to determine the appropriate measurement methodology for PPAP submission and added reference to PSM001129.</li> <li>3. Updated 7.3 to add Metaldyne Supplier PPAP Manual (PSM001129)</li> <li>4. Revised section 7.1.4. Renamed from Change Control to Change Management – adding requirements for notification of changes to Metaldyne</li> </ol>
11	31-MAR-2016	<ol style="list-style-type: none"> <li>1. Updated Metaldyne's Quality Policy – new CEO signature block</li> <li>2. Corrected 4.4 Supplier Performance error "Level IV – any category red for 5 consecutive months &amp; no or poor response = No new business". Also added new verbiage.</li> <li>3. Updated logo to Metaldyne MPG</li> <li>4. Added supplier acknowledgement signature page</li> <li>5. Added verbiage to section 7.1 for Change management and customer specific requirements. Also included reference to APQP workbook FRM006368</li> <li>6. Added verbiage to section 7.2 Customer Related Processes</li> </ol>
12	1-SEP-2016	<ol style="list-style-type: none"> <li>1. <b>Added new MPG logo</b></li> <li>2. <b>Corrected formatting issues</b></li> <li>3. <b>Migration of HHI and Grede requirements added</b></li> <li>4. <b>Removed all uses of "Metaldyne" and replaced with MPG</b></li> </ol>
13	15-Aug-2017	<b>Incorporated IATF changes and changed logo</b>



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**American Axle and Manufacturing (formerly known as MPG)  
Supplier Quality Requirements Manual – PSM001002  
Acknowledgement Receipt**

**PLEASE REVIEW, SIGN AND RETURN THIS PAGE ONLY TO METALDYNE SUPPLIER  
QUALITY**

Supplier acknowledges receipt of American Axle and Manufacturing (formerly known as MPG) Supplier Quality Requirements Manual. Signing this acknowledgement means only that the supplier organization acknowledges that it has received this manual at the revision level and revision date of this document. Suppliers should make every effort to follow the requirements and expectations outlined by this document.

SQRM Rev Date: 1 September 2016

SQRM Rev. Level: Revision: 12

Supplier Company Name: \_\_\_\_\_

Supplier Company Address: \_\_\_\_\_

Supplier Representative Name: \_\_\_\_\_

Supplier Representative Signature/Date: \_\_\_\_\_

**Exceptions:**

Please note any exceptions to this document that your organization may have. Please include the section and paragraph.

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**Feedback:**

We welcome your feedback. Please note your recommendations or inaccuracies. American Axle and Manufacturing (formerly known as MPG) will consider and incorporate this feedback into the next version of this manual.

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