SUPPLIER QUALITY MANUAL

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TABLE OF CONTENTS

REFERENCES

AIAG MANUALS

ADVANCED PRODUCT QUALITY PLANNING AND CONTROL PLAN

POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS

PRODUCTION PART APPROVAL PROCESS

MEASUREMENT SYSTEM ANALYSIS

STATISTICAL PROCESS CONTROL

AIAG CQI ASSESSMENTS

CQI-9, SPECIAL PROCESS: HEAT TREAT SYSTEM ASSESSMENT

CQI-12, SPECIAL PROCESS: COATING SYSTEM ASSESSMENT

CQI-11, SPECIAL PROCESS: PLATING SYSTEM ASSESSMENT

1.0 INTRODUCTION

1.1 PMF Policy

Progressive Metal Forming's (pmf) Quality Policy is "pmf will strive to always provide the best levels of customer satisfaction in quality, cost and delivery".

1.2 PMF Supplier Quality Manual Scope

This Manual applies to all QMS approved and pending QMS approved suppliers of Progressive Metal Forming. Compliance to the requirements within this manual, as well as Purchase Order general terms and conditions is mandatory for all external suppliers. It is the supplier's responsibility to check for updates to the Supplier Quality Manual annually. This can be accomplished by reviewing our website www.pmfdraw.com under the About Us Tab.

2.0 SUPPLIER QUALITY GUIDELINES

2.1 Purpose

The purpose of this Manual is to outline the expectations for all parts and services supplied to PMF. These requirements should be considered as minimum only. It is the intent that all supplier parts and services will perform as intended in the customer applications with complete customer satisfaction for performance and durability.

2.2 Quality Management System Certification

In order to stay competitive in today's global environment, PMF requires all product related suppliers to be certified to ISO9001: 2015 as a minimum. Gage calibration services must be ISO 17025 Accredited. Prospective suppliers are required to use only materials in their manufacturing process that satisfy current governmental and safety constraints on restricted, toxic and hazardous materials; as well as environmental, electrical and electromagnetic considerations applicable to the country of manufacture and sale.

Although it is not mandatory that suppliers are certified to IATF 16949, the goal is conformance to IATF16949. It is the responsibility of the supplier to notify the Production Control/Purchasing Manager of PMF on any changes to their current certifications. All certification updates should be sent to rhuey@pmfdraw.com Potential new suppliers may be audited by PMF and/or required to submit a

sample order for evaluation prior to being added to the QMS approved suppliers list.

PMF will recognize and accept only ISO 9001 Certificates issued by certification bodies which are accredited by members of the IAF (International Accreditation Forum) according the Multilateral Recognition Arrangement (MLA). All members are listed in www.iaf.nu

PMF will recognize and accept only IATF 16949 Certificates issued by certification bodies which are recognized by the IATF (International Automotive Task Force). All recognized certification bodies are listed at www.iatfglobaloversight.org/certBodies.aspx

PMF will recognize and accept only ISO/IEC 17025 Certificates issued by bodies which are accredited by members of the ILAC (International Laboratory Accreditation Cooperation) according the Multilateral Recognition Arrangement (MLA). All members are listed in www.ilac.org

2.3 General Motors BIQS.

PMF also requires Suppliers of Raw Material & Production Services to be compliant with GM BIQS items 1-13.

BIQS 1. Nonconforming Material / Material Identification

Team members have standardized work and understand what to do with non-conforming / suspect material.
Conforming material is handled, stored and identified appropriately.
Non-conforming / suspect material is clearly identified and/or segregated for review/disposition (i.e. appropriate color coding for foot printing – red, yellow, green).
A containment method is in place to ensure that an effective breakpoint has been established. Containment activities and results are documented.
Traceability is applied according to the traceability methods of the finished product, and reworked parts when needed.

BIQS 2. Layered Audit

Layered audits are in place to assess compliance to standardized processes, identify opportunities for continuous improvement, and provides coaching opportunities.
Layered audit process is owned by Management. Audit plan shall include multiple levels of Management. Audits are tracked and their results recorded. Follow up to address non-compliance is in place.

BIQS 3. PFMEAs

All operations have been analyzed for risk using a PFMEA.
PFMEA workshops must be done by cross functional teams, including manufacturing team member input. Risk Priority Number (RPN) values must be consistently applied using Severity, Occurrence and Detection ranking tables. Failure modes are comprehended in the PFMEA (i.e. wrong parts, mixed parts, containment control, etc.). PFMEA has correct structure .

BIQS 4. PFMEAs - Risk Reduction & Annual Review

Quarterly RPN risk reduction reviews by product focused on preventing defects from leaving the work station are held to drive continuous improvement. Action plans for top issues must include: 1. Recommended actions, 2. Responsibility, 3. Timing.
Reverse PFMEA process is in place to identify new potential failure mode in the shop floor

BIQS 5. Bypass / Deviation Management

The plant shall identify manufacturing processes and error proofing devices which can be bypassed or placed in deviation. Risk Priority Number (RPN) for all approved Bypass / deviation processes are evaluated and risks are reviewed. Standard work instructions are available for each Bypass / deviation process. Implemented Bypass is reviewed regularly and goal is reduce or eliminate bypass.

BIQS 6. Error proofing /Detection Verification

All Error Proofing Devices are checked for function (failure or simulated failure) at the beginning of the shift. Otherwise according to the process control plan.
Error Proofing Masters/Challenge parts (when used) are clearly identified.
Records of verification are available. Reaction plan is standardized and understood in case of error proofing devices malfunction.
When applicable the challenge parts are calibrated.

BIQS 7. Gage Calibration / Measurement System Analysis

Gage capability (e.g. gage R&R, bias, linearity, stability, etc.) of monitoring and measuring equipment is determined and the equipment is certified/calibrated at a scheduled frequency.

BIQS 8. Fast Response Process

Minimum criteria for initiating Fast Response is met. The Plant Manager ensures the applicability and the timely completion of the items being tracked. Plant Staff level personnel actively participate in daily meeting. Required documents are reviewed (Fast Response Tracking Sheet, Problem Solving Document, PFMEA, Process control plan, standardized work, Layered audits etc.).
Exit criteria with appropriate timing are defined for closing issues.
There is read across of corrective actions to like operations.

BIQS 9. Team Problem Solving Process

A well developed, standardized problem solving process exists at all levels of the organization.
Formal problem solving activities are initiated according to a specified criteria.
Issues are identified, root causes analyzed and robust actions completed in a timely manner.
Problem solving is driven at the Team level and all Teams are involved. Leaders are actively involved coaching and guiding the process.

BIQS 10. Quality Focused Checks

High risk items from Critical (Delta) operations have a Quality Focused check performed each shift.

High risk quality focused items from customer feedback and problem solving are included in the Quality Focused audit, or other suitable checklist, and checked each shift.

BIQS 11. Standardized Work

All work is documented using a standard format and meets all safety, quality and element time requirements. Work Place organization is implemented such as 5S. Standardized Work has to be detailed enough to ensure that operation is performed on standardized way on each cycle.

BIQS 12. Process Change Control

Plant processes are validated relative to changes in Design, Man, Machine, Material, Method and Environment. The plant follows a documented change control process for customers and internal changes. The PFMEA is updated to reflect any change, as required. The plant has regular meetings, including all departments, to discuss upcoming changes (product engineering changes, plant process changes, supplier process changes) and coordinate PTR

BIQS 13. Inspection Gates (Verification station /Final Inspection/CARE/GP12)

Final Inspection / GP12 must be conducted on all finished product prior to shipping. It Could be 100% inspection, sampling or audit based on risk. All items checked in the Verification Station (Final Inspection /CARE / GP12) must be included in a check at an upstream station. Quality checks are included in standardized work. Point, touch, listen and count inspection methods are incorporated. Successive Production/Quality checks are increased in case of high risks such as model launch, pass through components and characteristics pass through, major changes, shut down or customer feedback.

2.4 Right of Access

PMF and/or its Customers reserve the right to inspect supplier product and processes at the supplier’s facility as required.

2.5 Special Processes

2.5.1 Heat Treat System Assessment – AIAG CQI-9

PMF requires annual AIAG CQI-9 Heat Treat System Assessments for all heat treat suppliers. Each assessment shall include a review of the organization's systems using the Heat Treat System Assessment.

Completed Heat Treat System assessments should be available upon request. Compliance to the CQI-9 requirements will be considered when evaluating supplier performance.

2.5.2 Coating System Assessment – AIAG CQI-12

PMF requires annual AIAG CQI-12 Coating System Assessments for all coating suppliers. Each assessment shall include a review of the organization's systems using the Coating System Assessment.

Completed Coating System assessments should be available upon request. Compliance to the CQI-12 requirements will be considered when evaluating supplier performance.

2.5.3 Plating System Assessment – AIAG CQI-11

PMF requires annual AIAG CQI-11 Plating System Assessments for all plating suppliers. Each assessment shall include a review of the organization's systems using the Plating System Assessment.

Completed Plating System assessments should be available upon request. Compliance to the CQI-12 requirements will be considered when evaluating supplier performance.

2.6 Statutory and Regulatory Requirements

All suppliers must ensure that their products, processes and services conform to current applicable statutory and regulatory requirements in the country of receipt and the country of shipment.

3.0 PRE-PRODUCTION REQUIREMENTS

3.1 Advanced Product Quality Planning (APQP)

Information regarding the process can be reviewed in the AIAG Advanced Product Quality Planning and Control Plan manual.

Listed below are PMF's APQP requirements:

- PMF requires that the supplier establishes and implements an APQP process.
- The process should use the tools and techniques contained within the AIAG Advanced Product Quality Planning and Control Plan manual.
- APQP Status must be periodically updated by the supplier and forwarded to PMF. The frequency of updates depends on the complexity of the product and/or the timing associated with it.
- All product features identified on the part print as Special Product Characteristics need to have a capability index of 1.67 and conform to the specific clauses in the purchase orders or have an approved plan to improve the capability of the feature.
- Special attention must be given to items designated as Special Product Characteristics detailed in Section 4.1 of this document.
- Detailed APQP documentation needs to be maintained at the supplier's location. PMF may request to review evidence of completed APQP documentation and this evidence should be readily available.
- Whenever possible, error-proofing techniques should be used to prevent potential nonconformance.

3.2 Run @ Rate

Run @ Rate should be performed by the supplier prior to production. This activity should be performed prior to launch and as early in the process as possible, provided the design is frozen or stable. On certain critical products, PMF personnel and it's Customers may witness the Run @ Rate performed at the supplier plant.

3.3 Production Part Approval Process (PPAP)

PPAP submissions must be performed and approved on all PMF production level components and services prior to the first shipment of production parts. The purpose of PPAP is to demonstrate that all requirements per AIAG-PPAP Manual are understood. Suppliers are **NOT** authorized to proceed with any changes to product(s) or processes unless authorized by PMF as indicated below:

- Supplier Change Request (SCR) has been submitted and approved. (See Appendix)
- The contract order has been modified to reflect a print change; if required.
- PPAP has been submitted and approved for all process changes.
- A PPAP run of at least 300 or an agreed quantity run of consecutive parts (unless otherwise specified in writing by PMF) needs to be produced from production level tools and process. All supplier locations that manufacture the part must receive individual PPAP approval.
- In order to obtain PPAP approval, the supplier is required to submit a PPAP part and documentation in accordance with the AIAG-PPAP guidelines. The default PPAP submission level is three (3) unless instructed otherwise by PMF.
- PPAP documentation with samples must be submitted for approval. The 300 that were run for the PPAP submission need to be maintained at the supplier location until the PPAP has been approved. Suppliers shall not ship production parts prior to PPAP approval unless there is written authorization by PMF Production Control/Purchasing Manager
- It is the responsibility of the supplier to submit the PPAP with sufficient time for PMF to process the PPAP submission through our appropriate channels prior to the supplier having to ship in production quantities.
- PPAP submission is not the time for suppliers to request print changes or tolerance relief. This should be accomplished during early stages of product/process development. Failure to comply with these requirements will result in PPAP rejections. This will have an impact on the supplier ratings and PMF preference for source selection on new business. Any specific PPAP related questions should be directed to the Production Control/Purchasing Manager at PMF.

4.0 SPECIAL PRODUCT CHARACTERISTICS

4.1 *Special Product Characteristics* are identified on PMF drawings to identify features that have a significant impact to product safety or customer satisfaction. Reasonably anticipated variation of a Special Product characteristic could significantly affect a product's compliance or is likely to significantly affect a product's fit/function or safety/ compliance. Suppliers must prioritize their Continuous Improvement activities and variation reduction efforts on Special Product Characteristics to positively impact customer satisfaction.

PMF Suppliers shall pass down all applicable legal requirements and special product and process characteristics to their suppliers and require the same of their suppliers, cascading down the supply chain to the point of manufacture.

There are two (3) types of Special Product Characteristics:

- Critical Characteristics – Characteristics related to Statutory and regulatory product safety requirements Specified as Critical on the PMF print are indicated with the customer's designated symbol, "CC", or appropriate symbol.
- Special characteristics that are related to parameters that affect customer satisfaction and for which quality planning actions must be addressed on a Control plan. They are also integrated into the FMEA and work instructions.
- Special characteristics that are related to parameters that severely affect the operation of the process or subsequent operations if they are outside of the specification tolerance. They are also integrated into the control plan, FMEA, and work instructions.

Some key aspects of Special Product Characteristics are summarized as follows:

- All Special Product Characteristics need to demonstrate a short-term capability (Ppk) of 1.67 and long-term (Cpk) of 1.33 or as outlined in the AIAG SPC Manuals, whichever is more stringent.
- Supplier needs to maintain SPC data on all Special Product Characteristics. This data shall be readily available upon PMF's request.

- Suppliers are expected to meet all component print characteristics irrespective of their designation. Evidence to support this may be requested at any time.

5.0 MATERIALS PLANNING

5.0 Material Releases

- For Raw Material Suppliers PMF issues Purchase Orders which include the delivery due date(s).
- For Outside Services (OSP) PMF require all OSP Suppliers to honor the EAV, Lot Size & Standard turnaround times as the OSP Suppliers Original Quote.
- Where a RM or OSP Supplier identifies that a specific PMF delivery date cannot be met, then the supplier will immediately contact the PMF Purchasing agent (Buyer) for resolution agreement.

6.0 SUPPLIER PROCESS CHANGE / DEVIATION REQUEST

6.0 Supplier Process Change Request (SPCR)

- A SPCR form needs to be submitted for changes to print or a PPAP approved process that are permanent in nature. The supplier needs to consult with the Production Control/Purchasing Manager at PMF on specific questions that arise when completing the form. The change must be approved by PMF prior to part shipment.

6.1 Supplier Deviation Request (SDR)

6.1.1 A **SDR** form needs to be submitted for changes to print or a PPAP approved process that are <u>temporary</u> in nature. The supplier needs to consult with Production Control/Purchasing Manager at PMF on specific questions that arise when completing the form.

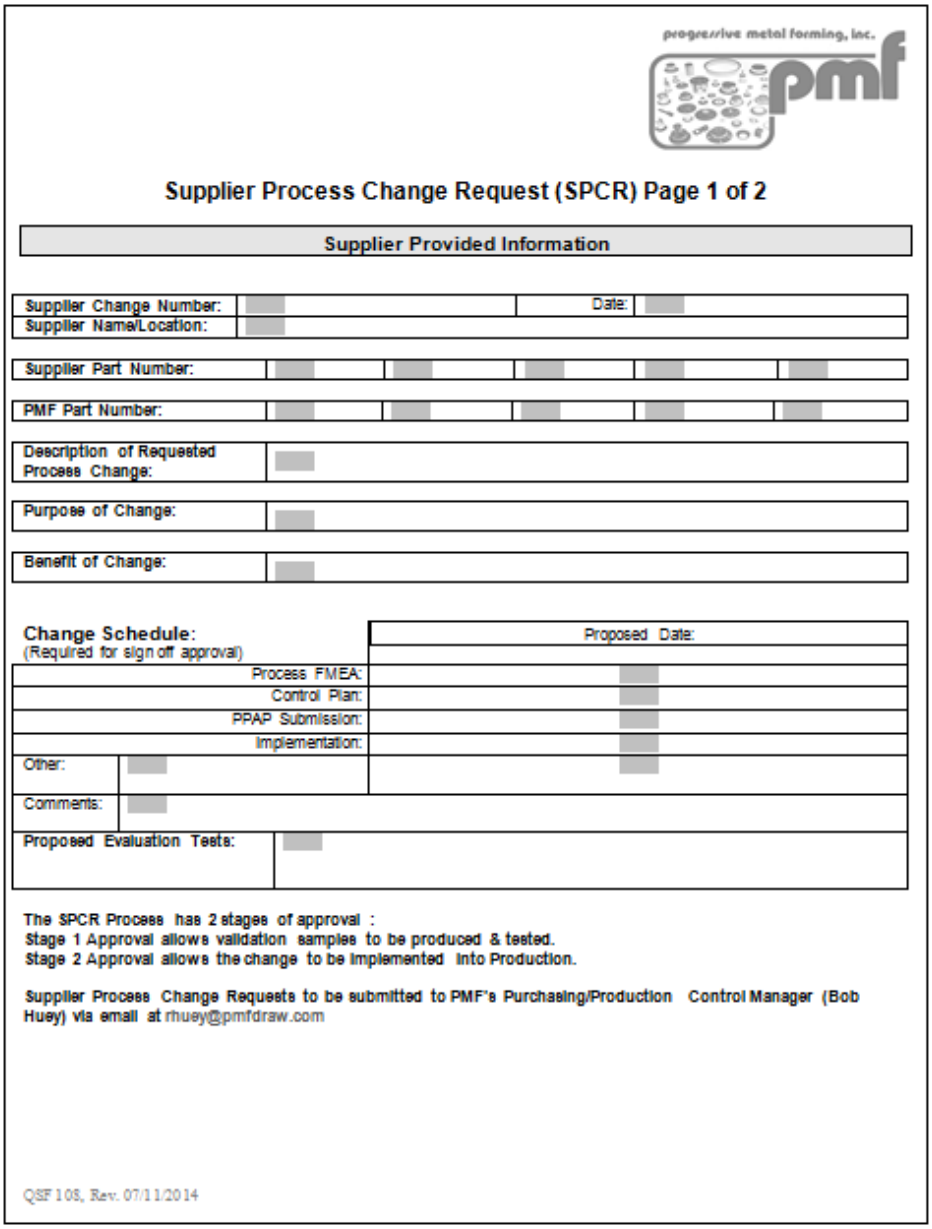
6.1.2 The SDR form needs to be accompanied by a corrective action report (CAR) that describes the deviation, root cause, permanent corrective action and prevention.

6.1.3 The deviation must be approved by PMF prior to part shipment.

APPENDIX

Supplier Process Change Request

Go to our website www.pmfdraw.com About Us Tab for the latest electronic revision.



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Supplier Process Change Request (SPCR) Page 1 of 2

Supplier Provided Information					
Supplier Change Number:				Date:	
Supplier Name/Location:					
Supplier Part Number:					
PMF Part Number:					
Description of Requested Process Change:					
Purpose of Change:					
Benefit of Change:					

Change Schedule: (Required for sign off approval)	Proposed Date:
Process FMEA:	
Control Plan:	
PPAP Submission:	
Implementation:	
Other:	
Comments:	
Proposed Evaluation Tests:	

The SPCR Process has 2 stages of approval :
Stage 1 Approval allows validation samples to be produced & tested.
Stage 2 Approval allows the change to be implemented into Production.

Supplier Process Change Requests to be submitted to PMF's Purchasing/Production Control Manager (Bob Huey) via email at rhuey@pmfdraw.com

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APPENDIX

Supplier Deviation Request

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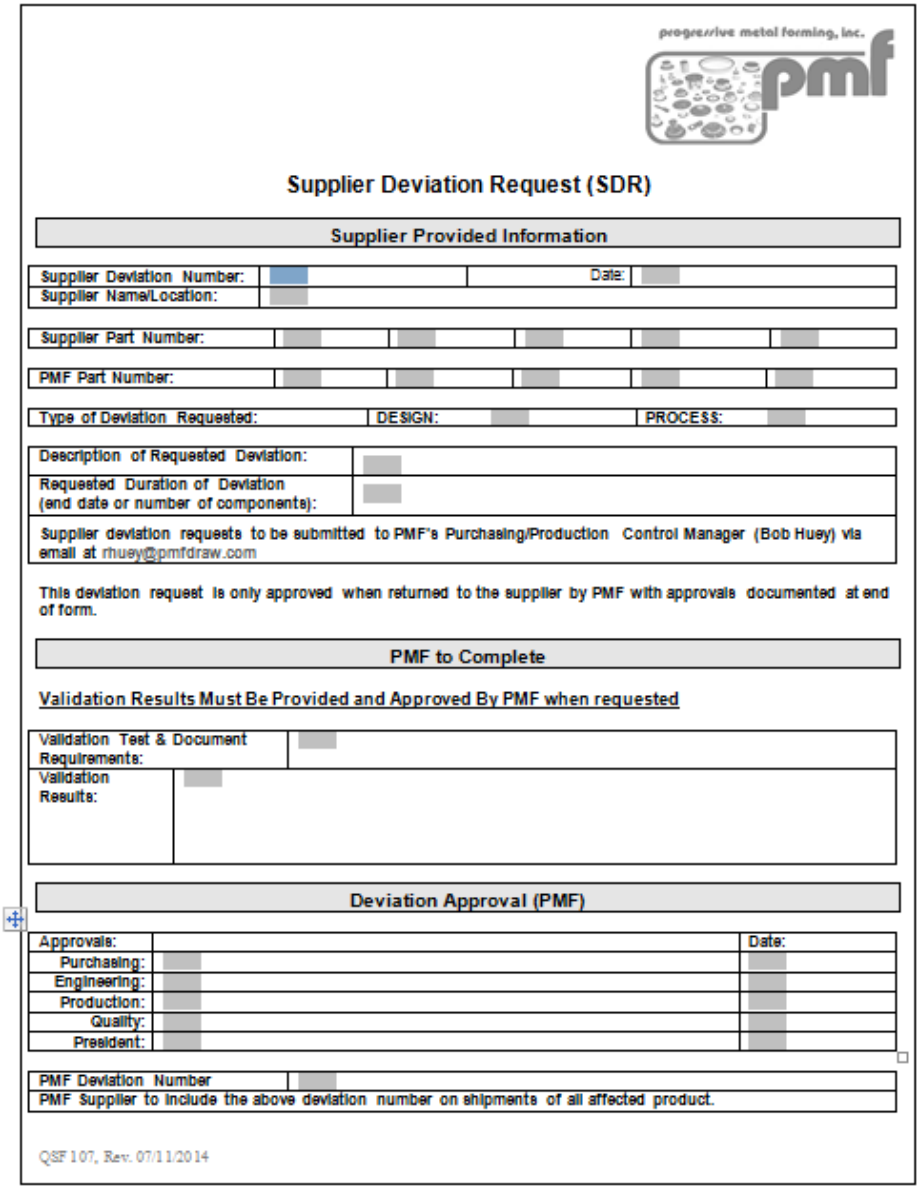

Supplier Deviation Request (SDR)

Supplier Provided Information			
Supplier Deviation Number:		Date:	
Supplier Name/Location:			
Supplier Part Number:			
PMF Part Number:			
Type of Deviation Requested:	DESIGN:	PROCESS:	
Description of Requested Deviation:			
Requested Duration of Deviation (end date or number of components):			

Supplier deviation requests to be submitted to PMF's Purchasing/Production Control Manager (Bob Huey) via email at rhuey@pmfdraw.com

This deviation request is only approved when returned to the supplier by PMF with approvals documented at end of form.

PMF to Complete

Validation Results Must Be Provided and Approved By PMF when requested

Validation Test & Document Requirements:	
Validation Results:	

Deviation Approval (PMF)

Approvals:		Date:
Purchasing:		
Engineering:		
Production:		
Quality:		
President:		

PMF Deviation Number	
PMF Supplier to include the above deviation number on shipments of all affected product.	

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