



Supplier Quality Manual SQM

FORM0190-BTI

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SCOPE, GOAL, APPROACH

SCOPE

- § This manual defines the basic quality system requirements and expectations for suppliers of production parts and materials to Burlington Technologies Inc. (BTI) unless otherwise noted on the purchase order.
- § This manual is part of the purchase order issued by BTI and acceptance of the purchase order constitutes acceptance of this manual. A supplier must have written permission from BTI in order to modify or waive the obligations set forth by this manual.
- § BTI reserves the right to revise this manual at any time as needed without prior notice.
- § If quality requirements specified on engineering drawings conflict with this requirements manual, engineering drawings shall prevail.
- § The supplier's quality system is subject to BTI review. When instances occur which warrant the review of a supplier's process or control system, BTI will coordinate such reviews as required.

GOAL

- § The goal of the BTI Supplier Development process is to ensure that the materials entering our manufacturing systems are capable of satisfying the needs of our internal processes, meeting customer requirements relative to fit, function, cost, continual improvement and technology.
- § BTI management fully supports the activities of quality assurance and views the supplier development process as a vital link in our ongoing continual improvement efforts.
- § This manual provides the guidelines needed to ensure that BTI Supplier Quality System Requirements are set forth in this manual.
- § BTI requires that suppliers establish, document and implement effective quality systems based on the minimum requirements identified within this manual.

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APPROACH

- § The main foundation for this Supplier Quality Manual is to capture the ISO 9001:2000 and ISO/TS 16949:2002 Quality System Requirements documents which are available through the Automotive Industry Action Group (AIAG)

Note: - ISO 9001:2000 and ISO/TS 16949:2002 shall mean the latest revision as per AIAG.

BTI is committed to providing the highest quality aluminum castings in the automotive industry. To achieve this objective, BTI must develop manufacturing systems capable of producing defect free products.

- § BTI's Quality system focuses on Advanced Product Quality Planning and defect prevention rather than defect detection. Suppliers are expected to follow BTI's lead and employ effective APQP techniques and error proof their manufacturing processes so that zero defect objectives can be achieved.
- § Suppliers are selected after review/evaluation of their quality system. BTI reserves the right to audit the suppliers Quality System. Audits may also be requested and conducted by one of BTI's customers or a third party registrar when appropriate. Upon review/evaluation of the supplier the supplier may be added to the Approved Suppliers List.
- § BTI requires that suppliers not conforming to ISO 9001:2000 or ISO/TS 16949:2002 (where applicable) to prepare a gap analysis and submit an action plan for deploying the requirements of the required standard.
- § Ongoing supplier development is accomplished by monitoring the supplier's performance through the Monthly Supplier Performance Rating Summary Report and self audits upon request for submission to BTI.
- § Any suppliers failing to meet BTI requirements will be subject to a Corporate Management Review.
- § BTI will work closely with suppliers to help them meet BTI's quality system requirements identified within this manual.
- § This document supercedes all previous BTI supplier quality requirements. This manual shall be the governing document.

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DISTRIBUTION

BTI CORPORATE AND DIVISIONAL

All employees will have access to the BTI Supplier Quality Manual through Lotus Notes or burlnotes1.

SUPPLIER

New suppliers shall be issued a Supplier Manual as an extension of their Purchase Order requirements. Suppliers that are assigned a purchase order for the purposes of supplying material and or components used in the manufacturing and assembly of finished product will have access to BTI's Supplier Quality Manual updates readily.

Existing and new suppliers can view and download the Supplier Manual through BTI's web page www.burltech.com. Corporate Purchasing shall be responsible for ensuring all updates to this manual are posted on the company web page, www.burltech.com for supplier viewing. It is the responsibility of the Supplier to ensure that the most current revision is on site, including those documents listed on page 10 "Reference Documents." As a preventive measure, it is recommended that the supplier request the latest date in their Customer Satisfaction Survey Questionnaire.

Contact - BTI Corporate Purchasing Manager

2380 South Service Road W
Oakville, ON
L6L – 5M9

Tel: (905) 847-8112
Fax: (905) 847-3748

Approved By: President
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CHANGE CONTROL

Section #	Description	Revision No.	Revision Date	Request By	Approval By
1.1.1 - 1.1.18	Updated Scope, Goal and Approach	0.01	June 23 /98	Corp. QA Director	Corp. Purchasing Mgr
1.7	Added 1.7 Environmental Management	0.1	Aug. 1 /00	Corp HSE Mgr	Corp. Purchasing Mgr.
1.3	Table of Contents, added Pass through Characteristics	1	April 9 /02	Corp Purchasing Mgr	Corp. Purchasing Mgr.
	Quality Policy #3 remove process control	1	"	"	"
	Index for Reference Manuals – added GM	1	"	"	"
	Added Pass through to Glossary	1	"	"	"
2.14	New PPAP requirement where applicable	1	"	"	"
1.7	Add reference to IMDS (International Material Data System)	2	Feb 10 /03	Corp. Program Mgmt	Corp. Purchasing Mgr
2.1	Reference to ISO 9001 and TS 16949	3	July 11 /03	Corp QA Director	Corp. Purchasing Mgr.
	Reference Lotus Notes and Burlnotes1	3	"		
	Revised all to meet requirements from the BTI QM (ie: mission, vision statement)	3	"		
	Change continuous to continual	3	"		
	Change mistake to error proofing	3	"		
	Added EDI and re- formatted to be easier to edit	4	Jul 26 /04	Corp. Purchasing Mgr	Corp. Purchasing Mgr
2.11	Supplier Performance Rating (Cent Div.) (FORM0073)	5	Nov 8/04	Corp. QA	Corp. Purchasing Mgr
2.11	Supplier Performance Rating (Cent Div.) (WI0027)	5	"	"	"
All Appl.	Removed all references to QS9000	6	Nov. 24/06	Corp QA	Corp. Purch. Mgr
1.8	Revised statement regarding "Electronic Data Interchange"	6	"	"	"
2.1	Changed "APQP and Control Plan" to Core Tools	6	"	"	"
2.10	Removed "be once every 3 years unless"	6	"	"	"
2.11	Removed "Refer to Exhibit WI-0603-1 and FORM0606-1"	6	"	"	"
2.11	Changed "2 calendar quarters" to "2 calendar months". Removed "The Supplier will be notified by the BTI Divisional Purchasing Manager or QA Manager of the Quality System Audit date."	6	"	"	"
2.16	Added Annual Layouts	6	"	"	"
Last Pg	Removed Exhibits	6	"	"	"

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INTRODUCTION TO MANUAL

Burlington Technologies Inc. shall be referred to as "BTI", Corporate Office shall be referred to as "CO", Alumetco Division shall be referred to as "AD", Burlington Division shall be referred to as "BD", Centennial Division shall be referred to as "CD" and Dexcam Division shall be referred to as "DD".

This supplier Quality Manual contains requirements from ISO 9001:2000 and the ISO/TS 16949:2002 standard as they apply to Burlington Technologies Inc. and may not follow the same order as contained in that standard.

COMPANY PROFILE

Burlington Technologies Inc. was started in 1965 by our founder Mr. Len Carpenter, with major contributions coming from Mr. Len Danniels (VP of Manufacturing) for the first 27 years of our history. BTI was known then as Burlington Die Casting, a producer of premium quality high pressure aluminum die castings.

Since 1990, BTI has operated under the second generation of the Carpenter Family, our President Mr. Ken Carpenter. BTI operates four divisions under a corporate umbrella called Burlington Technologies Inc.

Alumetco Division is located at 150 Garden Ave., Brantford, Ontario. At Alumetco, we have facilities to die cast, trim, roto tumble, blast, precision machine, assemble and final test aluminum die cast products to customer specifications.

Burlington Division (The Original Facility) is located at 3267 Mainway Drive, Burlington, Ontario. At Burlington, we have facilities to die cast, trim, roto tumble, blast, precision machine, assemble and final test assemble aluminum die cast products to customer specifications. This is a unionized facility with local 525 CAW. Burlington has been successful in utilizing a very proactive participant style of management focusing on employee involvement and empowerment.

Centennial Division is located at 920 Century Drive, Burlington, Ontario. At Centennial, we have facilities to design and manufacture Die Cast Dies, Trim Dies and Fixtures with extensive utilization of CAD CAM and High End CNC Technology, and for mould verification with on-site CMM layout and die cast die sampling capabilities.

Dexcam Division is located at 1670 Bishop Street, Cambridge, Ontario. At Dexcam, we have facilities to do precision machining, assemble and final test aluminum die cast products to customer specifications.

The Divisions are supported by **BTI's Corporate Office** located at 3267 Mainway Drive, Burlington, Ontario and 2380 south Service Rd., Oakville, Ontario. Corporate office (or head office) is responsible

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for sales and marketing, prototype, product development and Corporate administration, finance and Human Resources.

QUALITY POLICY STATEMENT

BTI shall achieve the highest quality standards that meet customer expectations, so that we can “delight our customer” by utilizing our Quality System to provide guidance in:

- 1) The never-ending pursuit of continual improvement for our products and processes.
- 2) Maintain customer PPM targets with a goal of zero defects.
- 3) 100% On-Time Delivery

MISSION STATEMENT

To be a successful, profitable growing enterprise through quality people, products and services.

VISION STATEMENT

To be a premier world class company distinctive and successful in everything we do, as measured by our stakeholders.

CORE VALUES

- | | |
|-------------------|---------------|
| Ø Accountability | Ø Performance |
| Ø Expectations | Ø Consistency |
| Ø Communication | Ø Commitment |
| Ø Self-Discipline | Ø Trust |
| Ø Respect | |
| Ø Integrity | |
| Ø Consequences | |

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DEFINITIONS

For clarification the following definitions shall apply to this manual:

Shall & Must – means the described action is mandatory.

Should – means the described action is mandatory with some flexibility allowed in compliance methodology

May – means the described action is permissible

Quality – is the totality of characteristics of a product that bear on its ability to satisfy stated and agreed upon needs.

Quality control – is the operational techniques and activities that are used to fulfill requirements for quality.

Quality System - is the organizational structure, responsibilities, procedures, process and resources needed to implement quality management.

Quality Assurance - is the planned and systematic activities implemented within the quality system and demonstrated as needed to provide adequate confidence that shall fulfill the requirements for quality.

Product - is the result of the activities of/ or processes at a manufacturing location.

ISO/TS 16949:2002 - is a Quality System standard patterned after the ISO 9001:2000 requirements that are tailored toward the automotive suppliers.

QOS - is a systematic disciplined approach which uses standardized tools and practices to manage the business and achieve ever-increasing levels of customer satisfaction.



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REFERENCE MANUALS / DOCUMENTS

- § AIAG ISO 9000:2000 or ISO/TS 16949:2002 Quality System Requirements
- § AIAG PPAP (Product Part Approval Process)
- § AIAG APQP (Advanced Product Quality Planning)
- § AIAG FMEA (Potential Failure Mode Effects Analysis)
- § AIAG Statistical Process Control (SPC)
- § AIAG Measurement Systems Analysis (MSA)
- § BTI Terms & Conditions
- § GM Customer Specific Requirements Manual. Available on GM Supply Power website (www.gmsupplypower.com)
- § FORD MOTOR COMPANY Quality Operating Systems (QOS) manual/assessment & rating procedure (Adisdra Corp. FORM 7610106, 101 Union, PO Box 100 Plymouth, MI 48170; Phone # 313-416-2600)
- § FORD Customer Specific Requirements manual – available on Ford website (www.portal.covisint.com)
- § Daimler Chrysler Customer Specific Requirements Manual – available on website (<http://daimlerchrysler.covisint.com>)
- § Visteon Customer Specific Requirements Manual – available on website (www.portal.covisint.com)
- § ACH Customer Specific Requirements Manual – available on website (www.portal.covisint.com)

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Burlington Technologies Inc. requires that all Suppliers conform to ISO/TS 16949:2002 and/or ISO 9001:2000 requirements. In addition, suppliers shall conform to specific requirements listed in this manual. Third party registration to ISO 9000:2000 and/or ISO/TS 16949:2002 is the expected method of assessing conformance. Third party registration will be accepted from those registrars meeting the criteria of the applicable standard. BTI has the right to schedule an assessment, which will be performed by a BTI representative.

GENERAL REQUIREMENTS

1.1 Product Quality

Suppliers are fully responsible for the quality of their products and for assuring that their product functions properly as part of a system or assembly. Suppliers are responsible for furnishing parts, assemblies, materials and services to the requirements of current engineering drawings and specifications as identified on the purchase order. No product shall be dispatched until all activities have been performed and approved to the criteria listed in the part number control plan. Suppliers are not to rely on Burlington Technologies receiving inspection or PPAP Approval to determine the quality of their products. Zero Defects are required from all suppliers.

1.2 Engineering Drawings

Suppliers are responsible for understanding and complying with the requirements documented on engineering drawings. Suppliers are also responsible for assuring the security and confidentiality of BTI drawings and specifications. If any questionable areas appear to exist prior to or after receipt of a purchase order, the supplier shall immediately contact BTI Purchasing for prompt clarification. It is expected that these issues will be resolved before production parts are made and in no case the engineering drawings and specifications superceded by any informal agreements. BTI will strive for expedient resolution of issues regarding engineering drawing.

1.3 Designation of Special Characteristics / Pass Through Characteristics

Suppliers shall comply with all customer requirements for designation, documentation and control of special characteristics / Pass through characteristics. Suppliers shall provide documentation showing compliance as specified by the customer.

1.4 Continual Improvement

Suppliers shall continually improve in quality, service and price. Reducing process variation, improving delivery performance, error proofing, reduction of non-value added activities are key items that should be routinely addressed in Action plans and reviewed by executive management.

1.5 Preventive Action

Suppliers are responsible to ensure that executive management review and document all relevant actions taken, prior to implementation and follow up to verify effectiveness.

1.6 Government Safety & Environmental Regulations

The Supplier shall have a process to ensure compliance with all applicable government safety and environmental regulations, including those concerning handling, recycling, eliminating or disposing of hazardous materials. Certificates and or letter of compliance are used to support this requirement.

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1.7 Environmental Management System

Suppliers are required to be aware of their responsibilities concerning environmental management applicable to their business relationship with BTI. A supplier will be approached by representatives of BTI with requests for information concerning environmental aspects of their product supplied to BTI, for input into IMDS (International Material Data System) or requests to participate in management programs established to improve BTI's environmental performance. The extent of participation may depend on the type of goods and / or services that supplier provides to BTI. Typically, such management programs may include assisting BTI with selecting alternative methods to reduce negative impacts on the environment. Rules and guidelines may be established to control the environmental aspects of supplier activity while onsite at BTI.

Benefits through participation and implementation of an Environmental Management System:

- Ø A greater awareness by management of environmental issues locally and globally
- Ø Maximizes compliance
- Ø Reduces costs and limits risk of environmental liability
- Ø Employees are better trained and more capable of dealing with accidents and errors
- Ø New technologies may be profitable
- Ø Favorable public and community perceptions
- Ø Improved resource management
- Ø Conservation of energy and material or improved in process efficiency
- Ø Reduced waste
- Ø Evidence of due diligence
- Ø Continual improvement

1.8 Electronic Data Interchange

Any electronic data exchange must be in a standard format and syntax.



SPECIFIC REQUIREMENTS

2.1 Quality Planning

The Supplier shall utilize at minimum the system requirements specified in ISO 9001:2000 and/or ISO/TS 16949:2002 Quality System Requirements and the **Core Tools reference manuals**, as directed by BTI's Corporate Purchasing Manager.

Suppliers shall investigate and confirm the manufacturing feasibility of proposed products prior to contracting to produce those products. Feasibility reviews shall be documented using the Team Feasibility Commitment in the APQP and Control Plan reference manual.

2.1.1 Confidentiality Agreement

All projects issued by Burlington Technologies Inc. are confidential. It is the responsibility of the supplier to have systems in place that ensure the confidentiality, protection and security of each project. The supplier shall communicate this requirement to their employees and sub-contractors. The control and distribution requirements of customer supplied engineering drawings and specifications are listed in the "General Requirements" of this manual.

Ø Minimization of insurance costs

2.1.2 Project Management

The Supplier shall identify a key contact that is responsible for managing the project. The Project Manager's responsibility and authority shall be defined in the Supplier Systems Manual and shall have the necessary authority to ensure successful completion of all projects. Cross functional teams shall be established and effectively utilized throughout the planning phase. The supplier shall identify and analyze critical path and risk areas. The Project Manager shall review progress reports to each project at the end of each planning phase, to ensure that all activities are on time and meet the requirements specified by BTI. The Project manager shall address these issues in an action plan.

2.1.3 Product Identification and Traceability

Product identification / revision level, inspection status and individual product batches shall be clearly identified and traceable at all stages of production and delivery. This shall be controlled at prototype, pre-launch and product stages.

2.1.4 Part Approval Process

Pre-Production Parts

Submission and document requirements should be specified on the Supplier Purchase Order for all samples produced on pre-production tooling. Samples and paper work shall be forwarded to the BTI Divisional QA Manager for review and approval.

Production Parts

Suppliers shall fully comply with all default requirements (level 3) set forth in the Production Part Approval Process (PPAP) manual. For further detail, reference the PPAP section in this manual.

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Further guidance – please contact the BTI Divisional Quality Assurance Manager.

2.2 Engineering and Process Changes

The Supplier shall have a system to control, manage and track engineering and process changes. All design changes including those proposed by the supplier, shall have written customer approval, or waiver of such approval, prior to production implementation. Process changes require customer approval prior to implementation. Contact your BTI Divisional Quality Assurance Manager.

2.3 Quality Operating System (QOS) Assessment

BTI encourages suppliers to utilize the QOS methodology. This systematic, disciplined approach uses standardized tools and practices to manage the business and achieve ever-increasing levels of customer satisfaction. Refer to the Index in this manual.

2.4 Ongoing Process and Product Monitoring

The Supplier shall have a system to address on-going process and product monitoring, in order to satisfy product control plan requirements and applicable engineering specifications.

2.5 Manufacturing Capabilities

2.5.1 Facilities & Process Planning

BTI encourages suppliers to optimize plant layout by developing methods to minimize material travel and handling, facilitate synchronous material flow and maximize value added use of floor space

2.5.2 Error Proofing

The supplier shall address Error Proofing methodology during process planning and problem resolution to prevent manufacture of nonconforming product.

2.5.3 Customer Owned Tooling

The Supplier shall have a system to track and identify all tools, gauges and equipment (dunnage as appropriate), owned and supplier by BTI. They shall be permanently marked so that the ownership of each item is visually apparent.

2.5.4 Tooling Management

The Supplier shall establish and implement a system for Tooling Management to address the following:

- Maintenance, repair facilities, personnel
- Storage and recovery
- Tool change programs for perishable tools



2.6 Corrective and Preventive Action

The Supplier shall have a system to effectively handle the resolution of subcontractor, internal and customer quality issues. Suppliers shall assign adequate resources that are trained in disciplined problem solving methods (such as the "8D" problem solving process).

2.7 Nonconforming and Reworked Material

The Supplier shall have a system in place to effectively control, disposition and document nonconforming material, to prevent its unintended use. Personnel who perform and verify work affecting quality shall have the authority to prevent further processing and delivery of nonconforming product until the condition has been corrected. A designated quarantine area shall be maintained for all product identified as, experimental, test samples, obsolete or nonconforming, that are waiting disposition instructions from the customer. Changes from the approved control plan must be documented, communicated and approved by BTI before implementation. The supplier shall identify, control and define inspection criteria for all reworked material on the product control plan and or an interim rework instruction. All documents require approval by the Supplier Quality Manager or designated authority. Inspection status must be clearly identified on all material. Repair and rework that is preformed beyond the approved production process shall require BTI's Divisional Quality Manager approval.

2.8 Supplier Charge Backs / Corrective Action Request

When quality dictates that an immediate action is required to support production at a BTI Division for their customer, the Supplier will be charged for all incurred costs. A documented Vendor Discrepancy Report (VDR) shall be issued by the BTI Division. All nonconforming material will be returned to the Supplier. The Supplier must provide a Return Material Authorization (RMA) number or approval for proposed containment action within 24 hours of notice. Failure to do so will authorize BTI to disposition material as deemed appropriate. A debit memo will be charged to the supplier for costs incurred. The supplier must submit a written "Corrective Action Report" (CAR) referencing the VDR number. Closure is required within 30 days unless otherwise specified and approved by the BTI Division QA Manager. All material shipped after notification must be certified until the CAR is closed. The BTI Divisional representative will instruct the supplier of any further requirements. Any disputes for supplier charges must be communicated in writing within 72 hours of notification. Failure to respond shall constitute acceptance of all charges.

2.9 Quality Records

The Supplier shall establish a system to maintain and store quality records in an environment that prevents damage, deterioration or loss. The procedure shall address an effective retrieval and disposal process for all types of media including hard copy and electronic media. Records must be clearly identified and made readily available to BTI upon request. The Supplier agrees to retain quality records for the period specified in the ISO/TS 16949:2002 / Core Tools manuals unless otherwise specified in the "Terms and Conditions" of the contract.

2.10 Supplier Self Assessment / Onsite Survey

All BTI Approved Suppliers may be subject to ongoing Supplier Self Assessment Surveys (SA) and or Supplier onsite Quality System Survey (SS), as appropriate, by the divisional Purchasing Manager and

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QA Manager. Audit frequency shall be based on poor quality or delivery performance warrants additional surveys as appropriate.

2.11 Supplier Performance Rating

All suppliers shall be monitored for Quality (includes PPM and response time), Delivery and Service Performance on a monthly basis. All approved suppliers shall be subject to Quality System Assessment by a BTI representative based on poor performance. Unfavorable trends in supplier performance ratings over 2 calendar months shall be cause to re-evaluate the supplier by performing a Quality System Survey.

2.12 Measurement Systems Analysis

The supplier shall have a Gauge Control System that conforms to the minimum requirements of ISO/TS 16949. Where the GR&R exceeds 10% error for a gauge used to measure special characteristics, the supplier must have written approval from a BTI Divisional QA Manager.

2.13 SPC Data / Certification

Suppliers shall maintain and review product and process capability data in accordance with a product control plan and/or engineering specification requirements. SPC information and certification shall be provided to BTI upon request, unless otherwise specified on the purchase order.

2.14 Production Part Approval Process (PPAP)

PPAP approval is always required prior to the first production shipment. All Suppliers are required to submit PPAP "Level 3" (sample submission with adequate identification /BTI Label) to the appropriate manufacturing division unless determined otherwise by the BTI Divisional QA Manager. Refer to Retention / Submission Requirements Table in the PPAP manual. Suppliers shall report measurement and test results on the appropriate documents included in the PPAP manual or a document generated facsimile that has been pre-approved by the divisional BTI QA Manager. Production submissions and supporting statistical data are to be taken from a production run of at least 300 pieces unless otherwise waived by BTI. Dimensional evaluation is required for each tool and die cavity, mold etc. Suppliers shall retain (2) "Master Samples" that are traceable to the PPAP submission record approved by the customer. For further detail on PPAP submissions, please contact the BTI Divisional QA Manager.

NOTE: IF the need arises to correct any dimensional, test and material discrepancies, an action plan must be created and submitted to BTI prior to PPAP. Upon compliance with all specifications, the Supplier shall enter the required information on the warrant. A separate Parts Submission Warrant is used for each assigned part number. The Parts Submission Warrant is signed by the Supplier Quality Manager or designated authority to certify that all measurement and test results conform to customer requirements. Where applicable, all PPAP documents must be no more than one year old at the time of initial PSW. All PPAP documentation must be forwarded to the BTI Divisional QA Manager for review and approval. A BTI approval signature is required on the Parts Submission Warrant to authorize the supplier to ship material.

2.15 Preliminary Process Capability

BTI requires all Suppliers to conform to the general requirements listed in the PPAP manual.

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2.16 Layout Inspection and Functional Testing

A layout inspection and functional verification (includes all dimensionals) shall be performed annually. All cavities shall have one sample each with layout data. As part of this process, the organization will update the PPAP document files including the PSW. The dimensions to be measured shall include all significant characteristics as a minimum and all key functional dimensions as agreed upon by the organization and BTI.

NOTE: If adequate data is taken during the normal production, this may be summarized and serve as the annual layout.

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GLOSSARY

Benchmarking is a systematic approach to identifying standards for comparison. It provides input to the establishment of measurable performance targets, as well as ideas for product design and process design. It can also provide ideas for improving business processes and work procedures. Product and process bench marking should include the identification of world class or best-in-class based on objective performance measures and research into how this performance was achieved. Benchmarking should provide a stepping stone for developing new designs and processes that exceed the capabilities of the benchmark companies.

Critical Path is a method that can be a Pert or Gantt chart that shows the chronological sequence of tasks that require the greatest expected time to accomplish. It can provide valuable information for inter-relationships, early forecast of problems, identification of responsibility and resource identification, allocation and leveling.

Error Proofing is the use of Product or Process design and development to prevent manufacture of nonconforming product.

Failure Mode Effects Analysis (FMEA) is a systemized group of activities intended to recognize and evaluate the potential failure of a product 1 process and its effects. Actions are identified which could eliminate or reduce the chance of the potential failure occurring. (Refer to AIAG Potential Failure Mode and Effects Analysis (FMEA) reference manual.)

Pass through Characteristics is a feature that passes through the customer assembly process without being checked for fit and/or function in the normal assembly process but could be used later by the vehicle assembly plant or final customer.

Preliminary Process Capability studies are short-term studies conducted to obtain early information on the performance of new or revised processes relative to internal or customer requirements. In many cases, preliminary studies should be conducted at several points in the evolution of the new processes. (eg.: at the equipment or many measurements as possible. When using X-Bar and R-charts at least 20 subgroups (usually 3 or 5 pc. Sample size) are required to obtain sufficient data for decision making. When this amount of data is not available, control charts should be started with whatever data is available. (refer to the AIAG SPC reference manual).

Quality Records may include PPAP records, tooling records, purchase orders, amendment records, control charts, inspection and test results, quality system audit and management review records.

Regular Production Tooling is the tooling which the manufacturer intends to use to produce production product.

Special Characteristic is a product or process characteristic that needs extra attention because excessive variation in them might affect a products safety compliance with government regulations, fit, function, appearance or quality of subsequent manufacturing operations.

Special Cause is the source of variation that is intermittent, often unpredictable, unstable and sometimes called "assignable cause". Points on a control chart that go beyond control limits, or run form non-random patterns are normally related to special causes of variation.

Warrant is an industry standard document required for all newly-tooled or revised products in which the supplier confirms that inspections and test on production parts show conformance to customer requirements.

Approved By: President
Approved By: Corporate Purchasing Manager
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