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Mill-Max Mfg.Corp.

QUALITY ASSURANCE MANUAL

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1.0 Introduction

Mill-Max's Quality Assurance Manual is provided for an overview of the methods and practices by which the organization meets its objectives. This document will provide a top level understanding of Mill-Max's control of the processes that collectively achieve our company goals.

2.0 Scope

This Quality Assurance Manual applies to each department and employee of Mill-Max Mfg. Corp.

3.0 Distribution and revision

Mill-Max makes this Quality Assurance Manual available on its website. The revision level is controlled by the Quality Assurance department.

4.0 QOS (Quality Operating System)

4.1 Description

Mill-Max's QOS is based on ISO-9001:2008. Due to the fact that Mill-Max has QPL position for several Military approved connectors, our QOS also includes the requirements of MIL-STD-790. The Calibration System requirements adopted by Mill-Max are MIL-C-45208.



4.2 Documentation

The documentation for the Quality Management System is described in:

QA Manual.....	Tier I
Operating Procedures.....	Tier II
Drawings, Instructions, and Method Sheets.....	Tier III

4.2.1 Quality manual

The Quality Assurance Manual provides an overview of the policies and activities that are an integral part of Mill-Max's QOS. Additional supporting documents for the QA Manual are found in the operating procedures. Drawings, instructions, and method sheets are also developed to control products and manufacturing processes as necessary.

4.2.2 Control of documents

Configuration management of drawings is maintained by our Technical Services department. This includes storage, revision control, recording changes, approval and distribution.

Procedures are available in each department. Master copies and revision control are maintained by the Quality Assurance department. Most Operating Procedures are available for customer viewing on the premises only.

The Quality Assurance department makes Military and Industry specifications and standards available. These documents are used to understand the requirements described on customer prints and purchase orders. The latest revision of a specification is determined by contacting the document distributor and verifying the document revision level on hand.

Reference documents created by the customer; such as quality clauses, internal specifications, etc., are to be provided for review. The revision level is verified as applicable.



4.2.3 Control of records

Records required to verify the QOS are; inspection results, audit reports, corrective actions, calibration and training documents. Procedures for these processes describe the record retention. In general, quality inspection records are retained for a period of 7 years minimum.

5.0 Management responsibility

5.1 Management commitment

Mill-Max senior management is committed to the QOS described herein and continually improving its effectiveness as evidenced by:

- An established Quality Policy.
- The periodic review of Quality Objectives.
- Conducting personnel performance evaluations.
- Making resources available to support objectives.
- Maintaining an organizational structure to support the company goals.

5.2 Customer focus

Customer requirements are documented on drawing specifications and purchase orders. Mill-Max senior management monitors several processes to determine that requirements and customer satisfaction is met.

5.3 Quality policy

Mill-Max has become a leading supplier of interconnect components through continual development of techniques and state of the art equipment to manufacture higher quality competitive products. We are committed to providing products to meet our customer's needs with the highest quality, as we continue to pursue our company objectives.



5.4 Planning for quality objectives

The management at Mill-Max ensures that quality objectives, including those that are necessary to meet product specifications and requirements, are planned with;

- Clear objectives described for each department.
- Responsibility for the action.
- A schedule.
- A review of the results.

Planning is carried out with each department. In turn, every department contributes to processes that make up the company as a whole and allow it to achieve its goals.

5.5 Responsibility, authority, and communication

5.5.1 Organization overview

The CEO establishes an organization structure that includes a President, Vice President of Manufacturing, Vice President of Engineering and Sales, Director of Quality Assurance, Manager of Human Resources, department Managers and Assistant Managers. Each position is documented by a job description defining the responsibilities and requirements.

5.5.2 Management representatives

The Director of Quality Assurance reports to the President, independent of the manufacturing management structure. The Director of Quality Assurance is responsible for the quality policy and procedures of the company. The QA department works in conjunction with each manufacturing department, supplier, and customer to achieve mutual goals resulting in products and services that meet or exceed customer expectations.

QOS performance is monitored and documented by the Director of Quality Assurance. It is reported to senior management in periodic Quality Assurance reviews.

5.5.3 Internal communication

Senior Management ensures that communication is continuous within the organization regarding quality issues through the periodic review of correspondence, corrective actions, quality alerts, and other notifications or changes from the Quality Assurance department.



5.6 Management review

Senior Management reviews the effectiveness of the QOS through the detailed presentation of customer feedback and complaints, internal audit results, status of corrective actions, and recommendations for changes and improvements. This information is presented by the Director of Quality Assurance. Actions resulting from the review are also presented that include process changes, product improvements, and changes to resources.

6.0 Resource management

6.1 Resources provided

The entire organization collectively makes up the resources necessary to maintain and continually improve the QOS. Additional descriptions are provided below.

6.2 Human resources

6.2.1 General description

The personnel performing operations that affect the quality of Mill-Max products are managed with the tools described below.

6.2.2 Competence, training and awareness

Competence is documented in annual employee evaluations. Additional evaluations are provided for new employees or as required.

Training is an integral part of all processes at Mill-Max. Each person in the organization has a job description that includes a detailed list of responsibilities and required skills. Operating Procedures for the organization are established and segregated by department. A training plan is then developed for each employee with the respective procedures required for their function. Training is performed annually and when changes are made to procedures or personnel within the organization. Training records are verified by each department manager and maintained by the Quality Assurance department. Internal audits are then performed to verify the effectiveness of the procedure and training. Audit records are maintained by the QA department and also reviewed by senior management.



6.3 Infrastructure

Mill-Max's manufacturing plant is located in Oyster Bay, NY. The facility is 150K sq.ft. developed to support all of Mill-Max's manufacturing operations. The property provides for a self-sufficient, productive, safe and secure work environment. The plant support staff maintains security, facilities, and housekeeping, as well as completing capital improvement projects.

A manufacturing engineering and tool design group provides support to develop new equipment and processes. An extensive machine shop facility further supports manufacturing.

Developing and maintaining communication and information systems is the responsibility of our staff of MIS professionals that includes software engineers, developers, website administrators, and PC support.

6.4 Work environment

The infrastructure of the work environment is maintained and improved by the organizations described above. In addition, Mill-Max's Human Resources department establishes an Employee Handbook to communicate individual rights and company expectations for maintaining a work environment that is productive and supports our objectives.

7.0 Product realization

7.1 Product planning

Product planning and realization begins with the design phase and ends with delivery to the customer. All phases of planning and realization, including design objectives, prototyping, measurement, test, and production are completed by various departments. Internal meetings are held to develop new processes, equipment, and procedures. Records are kept in various forms such as drawings, meeting minutes, action items, and progress reports.

7.2 Customer related processes

7.2.1 Determination of requirements related to the product

Customer requirements are discussed during the design phase and documented with a part specification (drawing). Additional requirements are added to the request for quote and documented by Mill-Max in the response. Further requirements may be added by Mill-Max based on our product knowledge, experience, and the customer's application.



7.2.2 Review of requirements related to the product

Requests for Quotation and new Purchase Orders are subjected to a review by Technical Services, Quality Assurance, Production Control, and the Sales department. Each department reviews the order information with referenced drawings, revisions, clauses, and specifications for content that is applicable. Manufacturing requirements are defined by each department. Capacity and capability are also addressed. Extraordinary requirements are highlighted for special attention. Customers are contacted to clarify requirements or discuss improvements. Notes to the sales record are made for special instructions, certifications and other customer requirements.

All exceptions and clarifications are documented by the Sales department and provided to the customer. Records of contract reviews are also maintained.

7.2.3 Customer communication

Mill-Max Quality Assurance has the responsibility of notifying Customers of out of tolerance conditions, whenever it can affect the Customer. All other communications are provided by the Sales organization or Technical Services staff.

7.3 Design and development

Mill-Max has a design control process that ensures specified requirements are met. The design control process contains the following major elements; Planning, Interfaces, Input, Output, Review, Verification, Validation, and Changes. Responsibilities and authorities for approval are described in the applicable Operating Procedure. Mill-Max does not subcontract any design activity.

7.3.1 Planning

Product design and development begins with a design review. This is initiated by the lead Applications Engineer and includes manufacturing and quality assurance participation. Planning is performed for the product stages, the verification actions required for each stage, and the responsibilities for each. Design meeting results are recorded.

7.3.2 Inputs

Product requirements such as functional, performance, regulatory, historical, and other requirements essential to the application are all design inputs. The design inputs are documented on the applicable product specification or drawing.



7.3.3 Outputs

Design outputs include a plan for measurements and tests for product verification to determine if the requirements are satisfied. Outputs also include information for purchasing, production, and sales when applicable.

7.3.4 Review

After the initial design review, additional reviews are performed to discuss results, make changes, and document new expectations.

7.3.5 Verification

Product inspection confirms that design specifications are met. This is achieved by inspecting dimensional conformance, performance testing, and packaging as required. Inspection results are documented.

7.3.6 Validation

For the purposes of Design Validation, a First Article Inspection Report can be made available if it is discussed and documented at the quote stage. All expectations must be documented and it must be accepted by Mill-Max Quality Assurance department in advance of the order. First Article Inspections typically include a dimensional report, plating measurement, and raw material certification.

Mill-Max product must meet minimum batch sizes for most of its manufacturing processes. First Article Inspections and samples cannot be performed prior to manufacturing a production lot.

7.3.7 Control of changes

Mill-Max incorporates product changes to form fit or function through an ECN (Engineering Change Notice) process. Changes are described in full by the initiator with consideration to the impact on production methods, tooling, inventory on hand, and other areas. The ECN is then routed for department review and approval. Each department reviews the change feasibility and impact. A Manager's approval is required prior to implementing the change. Technical Services maintains a copy of all ECNs.

Changes that effect form, fit, or function to custom designed products are presented to the Customer for review and authorization to proceed.

In the interest of continuous improvement and other actions, Mill-Max reserves the right to change Commercial off the Shelf (COTS) products without notification.



7.4 Purchasing

7.4.1 Process overview

Mill-Max has developed procedures to ensure that product purchased for manufacturing meets all the specified requirements. Suppliers are evaluated based on their ability to supply product that meets the material specifications, packaging requirements, cost, and delivery. Additional details are described below.

7.4.2 Purchasing information

Purchasing documentation includes a requisition, with applicable specifications and drawings for the product and delivery requirements. Receiving paperwork completes the documentation package, including an applicable Material Safety Data Sheet (MSDS) when required.

7.4.3 Verification of purchased product

Receiving inspection procedures are developed to insure that product specifications and manufacturing requirements are met. Mechanical inspections, performance testing, and supplier certifications may be used to validate purchased material.

Acceptable material is identified in manufacturing. Rejected material is quarantined and described on a Reject Material Report (RMR). The RMR is then processed by the Quality Assurance department to obtain a return authorization and corrective action from the Supplier, as necessary.

7.4.4 Customer approved sources

Product received from a customer approved (or directed) source is subject to receiving inspection. No other source will be used without the explicit permission of the customer.

7.4.5 Approved suppliers

An approved Supplier list is maintained by Management Information Systems for reference when placing orders.

7.4.6 Supplier surveillance

Supplier surveillance is a two-step method. All supplier and subcontractor material is subject to receiving inspection to determine quality of workmanship and adherence to specification. In addition, some specific suppliers are periodically surveyed and audited at their facility, including a tour of their process.



7.5 Production provision

7.5.1 Control of production

Products manufactured by Mill-Max are produced entirely at our plant located in Oyster Bay, NY. Mill-Max manufacturing is made up of 6 major production departments; Screw Machine, Stamping, Injection Molding, Plating, Clip Assembly, Socket Assembly, and additional support processes; Cleaning and Deburring, Waste Treatment, Tooling, Environmental & Safety, Manufacturing Engineering, Purchasing, MIS, Plant support, etc.

Product specifications are described on drawings prints and datasheets. Operating procedures are established for all functions, which also describes the method for product control. Additional work instructions and workmanship standards are also used for manufacturing and quality control.

Manufacturing equipment is purchased, developed, produced, and maintained by a staff of engineers, toolmakers, and trained technicians. Measurement and Test Equipment is also provided to verify our products meet the required specification.

Each department has a set of metrics used by management for monitoring performance. Material Resource Planning is also employed to ensure product is delivered on time to our customers.

7.5.2 Validation of processes for production

Processes are typically validated through the inspection and test of the product that results from it. Some processes require additional validation to ensure capability. Mill-Max uses several methods to validate processes. Some examples of which are atomic absorption to monitor plating baths, dimensional pattern production and measurement to validate XY axis equipment, and destructive testing for special and unique processes such as heat treating, or swaging and forming. In addition, Mill-Max uses SPC analysis to verify process results.

7.5.3 Identification and traceability

Product is identified at each stage of manufacturing through travelers, identification labels, and lot numbers. Status is also available in MRP and QC programs. Inspection identification indicates the pass or fail status as well as the individual responsible for the inspection. Lot Traceability is maintained from raw material receiving through product delivery. All Mill-Max products are delivered with a lot number for customer reference and traceability.



7.5.4 Customer property

When customer supplied material is required for production; the handling, control, inspection, verification, and storage instructions are incorporated into the Receiving Inspection procedure for that material.

On occasion, material is purchased from suppliers that Mill-Max has been directed to use as a source. Directed suppliers are defined as those suppliers that were selected by the customer to supply product to Mill-Max for incorporation into a product for the customer. Mill-Max will create a Receiving Inspection procedure to verify the material and safeguard defective product from entry into the manufacturing process. It is the responsibility of the customer to survey and validate directed suppliers.

7.5.5 Preservation of product

Each department is responsible for safeguarding production material from being damaged or mixed during handling. Material handling procedures are described in the operating procedures as applicable. Customer specific packaging and delivery requirements are described to the Shipping department for all orders.

7.6 Calibration, control, and monitoring of measurement equipment

Mill-Max maintains a Calibration Procedure that is in compliance with Military Standard MIL-STD-45662A. This procedure is used to control the accuracy of measurements and tests. Calibration intervals are established to the extent necessary to ensure continued accuracy. Measurement and Test Equipment is stored and handled in a manner that does not adversely affect the calibration or the condition of the equipment. The Quality Assurance department maintains calibration records for all equipment.

7.6.1 Calibration standards traceability.

Standards used for the calibration of measurement tools are traceable to N.I.S.T. and are at least four times the accuracy of the intended use of the tool to be calibrated.

7.6.2 Calibrated equipment identification.

All tools are identified by a calibration cycle tag or an identification number. Identification shall correspond to a calibration record that describes the last date calibrated and schedule.



8.0 Measurement, analysis and improvement

8.1 General requirements for measurement analysis

Product requirements are documented in drawing specifications. Conformity to requirements is determined through inspection at various stages of production. Records are kept of all inspection results. Internal auditing of procedures is used to verify that operations conform to the QOS. Continuous improvement of the QOS is initiated by many different actions such as customer feedback, analysis of performance metrics, and new requirements.

8.1.1 Statistical Process Control (SPC)

SPC is used by Mill-Max Quality Assurance to verify both product conformance and process capability. This is performed on a sample basis. Product is selected for SPC at the earliest manufacturing stage. Data is collected and a capability study is then performed to determine the ability to hold tolerances and minimize defects.

8.2 Monitoring and measurement

8.2.1 Customer satisfaction

Mill-Max senior management utilizes several tools to measure customer satisfaction including;

- Quality reviews.
- On time delivery performance.
- Distributors and Customer surveys.
- Customer report cards.

8.2.2 Internal audit

Mill-Max has a self-audit program for all operating procedures. Audit results are presented to senior management and followed by corrective actions as required.

8.2.3 Monitoring and measurement of processes

The QOS is made up of processes controlled by various departments in the organization. Processes are monitored through many different formats. Reports are generated for senior management to review scrap, productivity, and delivery performance. There are additional methods used to monitor processes associated with waste management, energy consumption, and others not directly affecting product quality.



8.2.4 Monitoring and measurement of product

It is the goal of our quality control program to eliminate defects at the earliest stage of detection. Each production department maintains a staff of trained inspectors and quality control methods are described in the applicable operating procedures.

The procedures, tools, sample plans, methods, and training are provided by the Quality Assurance department.

Final inspection is performed at each stage of manufacturing. Additional inspections and tests can be provided with proper notification at the time of the quote.

8.3 Control of non-conforming product

Defective product is identified at each stage of production. Defective material is segregated in quarantine areas.

Mill-Max does not “re-grade” product in any way. Product must always meet the applicable customer or Mill-Max advertised specification prior to release.

8.3.1 Material review board

All defective material is subject to the Material Review Board (MRB) process. The purpose of the board is to review non-conforming material to determine the best possible disposition. Customer notification for non-conforming product is provided by the Quality Assurance department.

8.3.2 Scrap identification and segregation.

Scrap Material is marked as such and removed from the production area by placing it in quarantine. All scrapped material is segregated into specific scrap recovery containers in accordance with department procedures.

8.4 Analysis of data

Data collected as a result of measuring customer satisfaction is analyzed by senior management to determine if the QOS can be improved. In addition, product data is collected in the form of inspection records during manufacturing. This is also analyzed by department and senior managers for the same purpose.



8.5 Improvement

8.5.1 Continual improvement

Our commitment to continual improvement of the QOS is evident in both our thorough product quality methods and our continual measurement of customer satisfaction. Within the organization, performance indicators have been developed to track our ability to meet our objectives. Continuous feedback on customer satisfaction with both product and services is also collected and reviewed.

8.5.2 Corrective action

The Quality Assurance department documents internal and external complaints pertaining to product quality. Mill-Max Quality Assurance also maintains a Corrective Action program to document solutions implemented. Root cause analysis, corrective action, containment, verification plan, implementation date, and a list of team members is typically documented in the response.

8.5.3 Preventative action

Quality concerns are reported throughout the organization in the form of quality alerts. Quality alerts serve part of the process of preventative action. In addition, product containment, recall, and other interim corrective actions are used to prevent reoccurrence.

Product Failure Mode Effects and Analysis (PFMEA) is also used as a tool to determine potential nonconformities and causes. Process Mapping is also employed to collectively investigate, document, and change processes in the organization.



9.0 Other processes, policies, and requirements

9.1 International Traffic in Arms Regulations (ITAR)

Mill-Max maintains a registration with the State Department as a manufacturer. Additional details about Mill-Max's approval and ITAR process are available upon request to the Quality Assurance Director.

9.2 Government Industry Data Exchange Program (GIDEP)

Mill-Max participates in GIDEP alert process for Military products. Notification is also provided to the Military Qualifying activity as well.

9.3 Statement of ethical business practices

As an incorporated business, Mill-Max conducts all operations under the fair practices and guidelines of the United States Department of Labor, and New York State Department of Labor. Our policies are described in the Mill-Max Employee Handbook, which is distributed to each employee.

9.4 Right of entry

The Mill-Max Quality Assurance Department will respond to a customer request to visit the plant, its subcontractors, and suppliers, for the purpose of performing a survey, investigation, or process audit.

Requests for plant surveys, tours, audits, at Mill-Max and its subcontractor, or supplier must be provided in writing. A written agenda must accompany the request. The agenda must provide insight into what is to be discussed, expectations for access, and complete attendee identification. Mill-Max reserves the right to limit visits to maintain the environment required to meet our manufacturing commitments to all our customers. Mill-Max reserves the right to limit access to the facility where processes are in our opinion; proprietary. Mill-Max reserves the right to discontinue any visit, survey, or audit that is not in our opinion of a mutual benefit.



10.0 Change record

REVISION	DATE	DESCRIPTION OF CHANGE
C	July 30, 1998	General revisions and updates, all sections.
D	March 10, 1999	Added change page, revised information regarding maintaining Military Specification revision levels.
E	April 20, 2001	Changed the SPC program description.
F	August 29, 2002	General revisions and updates, Audit Program, and SPC program description.
G	July, 25, 2003	Customer Notification and GIDEP program. General revisions and updates, Reference to MIL-STD-790.
H	December 8, 2004	Reorganize into ISO/QS/AS format.
I	January 26, 2009	General revisions and updates.
J	October 6, 2011	Added Statement of Ethical Business Practices
K	May 4, 2012	General revisions and updates. Customer approved sources and processes improved description.
L	May 28, 2013	Revised to the ISO9001:2008 format, added ITAR program description.
M	February 15, 2017	Revised the QMS description and changed to QOS.