



P.A.T.
PRECISION ASSEMBLY TECHNOLOGIES

**Precision Assembly
Technologies, Inc.**
**AS9100 Quality Systems
Manual**

All printed or emailed copies of this manual are considered to be
"Uncontrolled"



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Introduction

Precision Assembly Technologies developed and implemented a Quality Management System in order to document the company's best business practices, better satisfy the requirements and expectations of its customers and improve the overall management of the company.

The Quality Management System of Precision Assembly Technologies meets the requirements of the international standard AS9001. This system addresses the production of the company's products.

The manual is divided into eight sections that correlate to the Quality Management System sections of ISO 9001:2000 and AS9100. Each section begins with a policy statement expressing Precision Assemblies Technologies' obligation to implement the basic requirements of the referenced Quality Management System section. Each policy statement is followed by specific information pertaining to the procedures that describe the methods used to implement the necessary requirements. An AS9100 Procedure Relationship Matrix (SF4.2.2-1) has been developed and is located on the server.

This manual describes the Quality Management System, delineates authorities, inter relationships and responsibilities of the personnel responsible for performing within the system. The manual also provides procedures or references for all activities comprising the Quality Management System to ensure compliance to the necessary requirements of the standard.

This manual is used internally to guide the company's employees through the various requirements of the AS9100 standard that must be met and maintained in order to ensure customer satisfaction, continuous improvement and provide the necessary instructions that create an empowered work force.

This manual is used externally to introduce our Quality Management System to our customers and other external organizations or individuals. The manual is used to familiarize them with the controls that have been implemented and to assure them that the integrity of the Quality Management System is maintained and focused on customer satisfaction and continuous improvement.



Section 1: Scope

1.1 General

Precision Assembly Technologies, Inc. (hereafter referred to as PAT) is an electronic contract manufacturing company, specializing in full turnkey, SMT electromechanical and wire harness assemblies.

Our quality manual outlines the policies, procedures and requirements of the Quality Management System. The system is structured to comply with the conditions set forth in the International Standard AS9100.

1.2 Quality Policy

Precision Assembly Technologies, Inc. is committed to the AS9100 Quality Management System and complies with its requirements and continually improves system effectiveness in meeting and exceeding customer expectations.

We believe customer satisfaction is directly related to satisfying all customer requirements, superior product quality, on-time delivery, documentation, and pricing. These items are measurable and data is used to improve the quality process.

Every employee understands that they are directly responsible for quality and customer satisfaction. Employees use the quality management system daily as they perform their assigned functions.

1.3 Application

- 1.3.1 The quality management system shall be relevant to the nature of our organization and products, and to customer and statutory and regulatory requirements. For this reason, those requirements of AS9100 that do not apply are excluded from the scope of our quality system.
- 1.3.2 An AS9100 requirement may be excluded only when the following three conditions are met:
- The requirement must be within AS9100 Clause 7, Product Realization;
 - The exclusion may not affect our ability, nor absolve us from the responsibility, to provide product that meets specified requirements; and
 - The exclusion may not affect our ability to carry out corrective action.
- 1.3.3 Processes which are applicable, but which are performed by outside contractors, do



not qualify for exclusion. They are accounted for in the quality system to ensure control over such outsourced processes.

- 1.3.4 The QA Manager is responsible for identifying those requirements of AS9100 that do not apply to our organization or products, and to propose to the top management that such requirements be excluded from the scope of the quality system.
- 1.3.5 Top management evaluates the proposed exclusions and determines whether they are appropriate. The evaluation and approval of exclusions are conducted within the framework of management reviews of the quality system (refer to QAP-5.6, Management Review).
- 1.3.6 Any exclusions taken are documented in this section of the quality manual. The excluded requirements are precisely identified with reference to specific clauses and/or statements in the standard. There is also a brief justification why the exclusion is taken and why it is appropriate.

CLAIMED EXCLUSIONS

- I. **Exclusion:** AS9100 Section 7.3, Design and Development, including all subsections
Justification: Precision Assembly Technologies does not design or develop products. All principal product characteristics are specified by the customers or their consultants. Our engineering activities are limited to developing methods and means of production and fabrication.
- II. **Exclusion:** AS9100 Section 7.5.1.5, Control of Service Operations.
Justification: Precision Assembly Technologies does not provide any installation or servicing of its products.



Section 2: Normative Reference

- Aerospace Standard, SAE AS9100B, Quality Management Systems, Aerospace, Requirements
- American National Standard ANSI/AS 9001/ASQ Q9000-2000, Quality Management Systems - Vocabulary.
- American National Standard ANSI/AS 9001/ASQ Q9001-2000, Quality Management Systems - Requirements
- ANSI/ASQ Z1.4-2003 - Sampling Procedures and Tables for Inspection by Attributes
- AS9102 - Aerospace First Article Inspection Requirement
- J-STD-001 - Requirements for Soldered Electrical and Electronic Assemblies
- IPC-A-610 - Acceptability Of Electronic Assemblies



Section 3: Definitions

3.0 Quality Management System Definitions

This section is for definitions unique to Precision Assembly Technologies.

- Top Management - The Company President/CEO and Director of Operations.
- Customer owned property - Any type of instrumentation, accessories, manuals, or shipping containers that belong to a customer.
- Customer supplied product - Any type of service or material supplied to be utilized in the manufacture, modification or repair of customer-owned property.
- Product - The end item result of meeting all contractual terms and conditions. (e.g., manufactured goods, merchandise, etc.)
- Quality Records - Documentation of those activities wherein records of said activities must be maintained will be specified in the procedure or work instruction level documents, as applicable
- Key Characteristics- The features of a material, process, or part whose variation has a significant influence on product fit, performance, service life, or manufacturability.
- Risk - An undesirable situation or circumstance that has both a likelihood of occurring and a potentially negative consequence.
- Special Requirements - Those requirements identified by the customer, or determined by Precision Assemblies Technologies, which have high risks to being achieved, thus requiring their inclusion in the risk management process. Factors used in the determination of special requirements include product or process complexity, past experience and product or process maturity.
- Critical items - Those items (e.g., functions, parts, software, characteristics, processes) having significant effect on the product realization and used of the product; including safety, performance, form, fit, function, producibility, service life, etc.; that require specific actions to ensure they are adequately managed.
- Statutory and Regulatory - Legal requirements.



Section 4

Quality Management System



4.1 General Requirements

Precision Assembly Technologies has established, documented and implemented a Quality Management System (QMS) in accordance with the requirements of AS9100. The system is maintained and continually improved through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive action and management review.

To design and implement the QMS Precision Assembly Technologies has:

- Identified the processes needed for the QMS and their application throughout the organization and documented them on the Process Flow Diagram at the end of this section of the Quality Manual
- Determined the sequence and interaction of these processes, and illustrated them on the Process Flow Diagram
- Determined criteria and methods needed to ensure that the operation and control of the processes are effective, and documented them in quality plans, and work instructions as applicable
- Ensured the continuing availability of resources and information necessary to achieve planned results and continual improvement of these processes
- Established systems to monitor, measure and analyze these processes, and
- Established processes to identify and implement actions necessary to achieve planned results and continual improvement of these processes

4.2 Documentation Requirements

4.2.1 General

The QMS documentation includes:

- A documented Quality Policy
- This Quality Manual
- Documented Procedures
- Documents identified as needed for the effective planning, operation and control of our processes, and
- Quality Records
- Records required by regulatory authorities.

Precision Assembly Technologies ensures that personnel have access to quality management system documentation and are aware of relevant procedures. We also provide customer or regulatory authorities access to quality management system documentation.



4.2.2 Quality Manual

This Quality Manual has been prepared to describe Precision Assembly Technologies QMS. The scope and permissible exclusions of the QMS are described in section one of this manual. Each section of the manual references documented QMS procedures relating to the requirements outlined in that section. The Process Flow Diagram at the end of section 4 provides a description of the interaction between the processes of the QMS system. The relationship between the AS9100 standard and documented procedure has been indicated by use of a numbering system that correlates to the AS9100 standard.

4.2.3 Control of Documents

Precision Assembly Technologies, Inc.'s QMS documents are controlled according to the Document Control Procedure (QAP-4.2.3). This procedure defines the process for:

- Approving documents for adequacy prior to issue
- Reviewing and updating as necessary and re-approving documents
- Ensuring that changes and current revision status of documents are identified
- Ensuring that relevant versions of applicable documents are available at points of use
- Ensuring that documents remain legible and readily identifiable
- Ensuring that documents of external origin are identified and their distribution controlled
- Preventing the unintended use of obsolete documents and to apply suitable identification to them if they are retained for any purpose and
- Obtaining customer / regulatory agency approvals when required by contract or regulatory requirements
- Coordinating document changes with customers or regulatory authorities in accordance with contract or regulatory requirements.

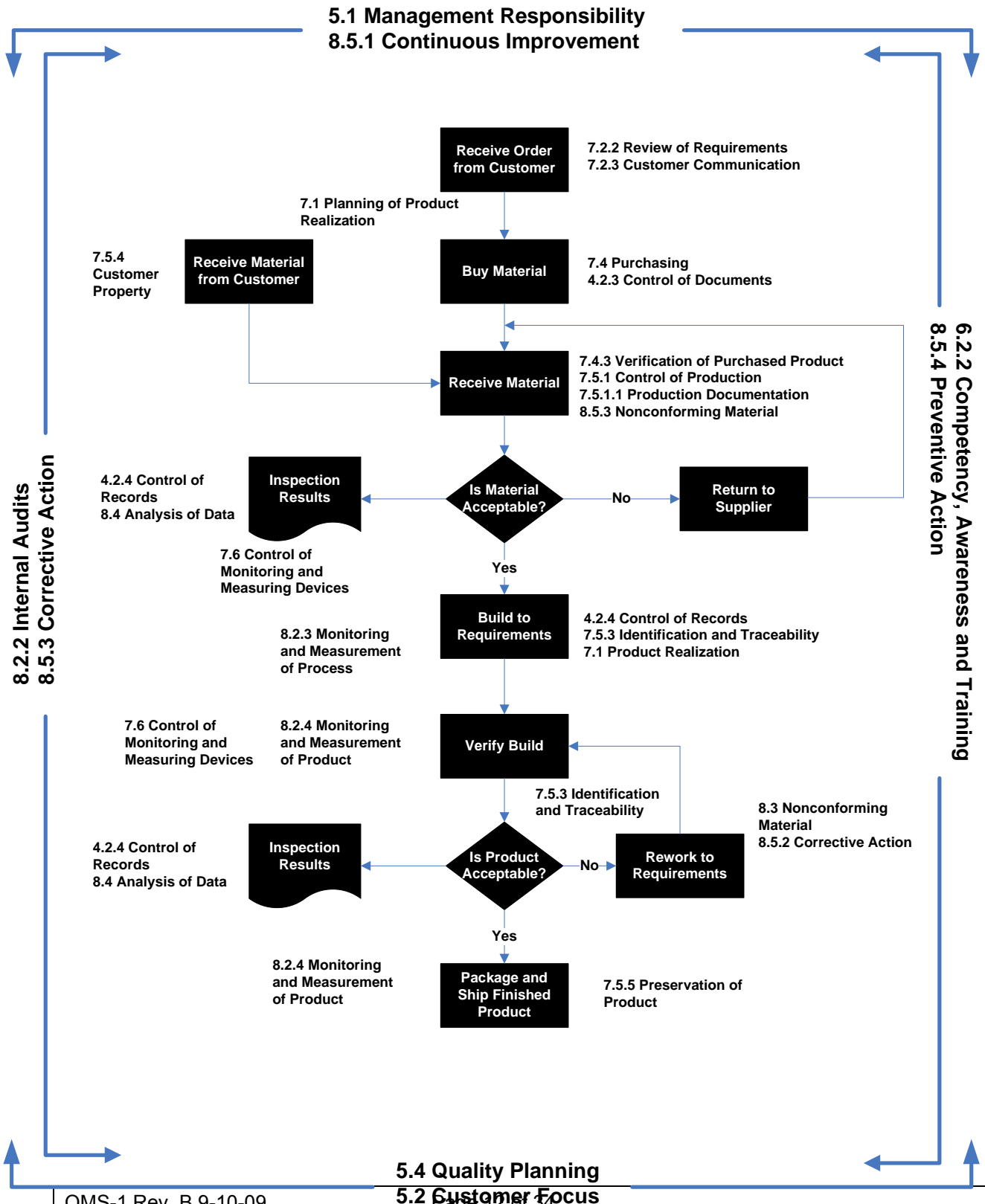
4.2.4 Control of Quality Records

Precision Assembly Technologies' quality records are maintained to provide evidence of conformity to requirements and of the effective operation of the QMS. The records, including those created by or maintained by suppliers, are maintained according to the Control of Quality Records Procedure (QAP-4.2.4). This procedure requires that quality records remain legible, readily identifiable and retrievable. Records are available for review by customers and regulatory authorities in accordance with contract or regulatory requirements. The procedure defines the controls needed for identification, storage, protection, retrieval, retention time and disposition of quality records. Records are made available to customers / regulatory agencies when required by contract or regulatory requirements.



4.3 Configuration Management:

Precision Assembly Technologies, Inc. has established, documented and maintains a configuration management process that is appropriate to the product.





Section 5

Management Responsibility



5.1 Management commitment

Precision Assembly Technologies, Inc.'s top management has been actively involved in implementing the Quality Management System (QMS). It has provided the vision and strategic direction for the growth of the QMS, and established quality objectives and the quality policy.

To continue to provide leadership and show commitment to the improvement of the QMS, management will do the following.

- Communicate the importance of meeting customer, statutory, and regulatory requirements.
- Establish quality objectives
- Establish the quality policy.
- Conduct management reviews once a year, at a minimum.
- Ensure the availability of resources.

5.2 Customer focus

Precision Assembly Technologies strives to identify current and future customer needs, to meet customer requirements and exceed customer expectations.

Top management ensures that customer requirements are understood and met. Customer requirements are determined, converted into internal requirements, and communicated to the appropriate people in our organization.

5.3 Quality policy

Top management ensures that the quality policy is communicated to all employees. It is included in new employee training and training on the QMS. It is posted in prominent places throughout the facility to maintain high standards within our organization.

Management reviews the quality policy at each management review meeting to determine the policy's continuing suitability for our organization.

5.4 Planning

5.4.1 Quality objectives

Quality objectives are established to support our organization's efforts in achieving our quality policy and reviewed annually for suitability. Quality objectives are measurable, and reviewed against performance goals at each management review meeting.



5.4.2 Quality management system planning

The quality system has been planned and implemented to meet our quality objectives and the requirements of 4.1 of the AS 9100 standard. Quality planning takes place as changes that affect the quality system are planned and implemented.

5.5 Responsibility, authority and communication

5.5.1 Responsibility and authority

An organizational chart has been established to show the interrelation of personnel in the organization. Job descriptions define the responsibilities and authorities of each of the positions on the organizational chart. Job descriptions and the organizational chart are reviewed and approved by top management for adequacy. These documents are available throughout the organization to help employees understand responsibilities and authorities. Precision Assembly Technologies' organizational chart is located at the end of this section.

5.5.2 Management representative

Precision Assembly Technologies' Quality Manager has been appointed by top management as Management Representative. As Management Representative, he shall have the following responsibility and authority:

- Ensure that processes needed for the quality management system are established and implemented.
- Report to top management on the performance of the quality management system, and note needed improvements.
- Promote awareness of customer requirements throughout the organization.
- Act as a liaison with external parties such as customers or auditors on matters relating to the QMS and
- Resolve matters pertaining to quality issues
- Organizational freedom to resolve matters pertaining to quality.

5.5.3 Internal communication

Processes are established for communication within the organization. Methods of communicating the effectiveness of the QMS include department and management meetings, management review, circulation of minutes of management review meetings, Internal Audit Closing meetings, and other routine business communication.



5.6 Management review

5.6.1 General

Precision Assembly Technologies' top management reviews the QMS annually at management review meetings. This review assesses the continuing QMS suitability, adequacy and effectiveness, identifying opportunities for improvement and needed changes. Records are maintained for each management review meeting.

5.6.2 Review input

Assessment of the QMS is based on a review of information inputs to management review. These inputs include the following:

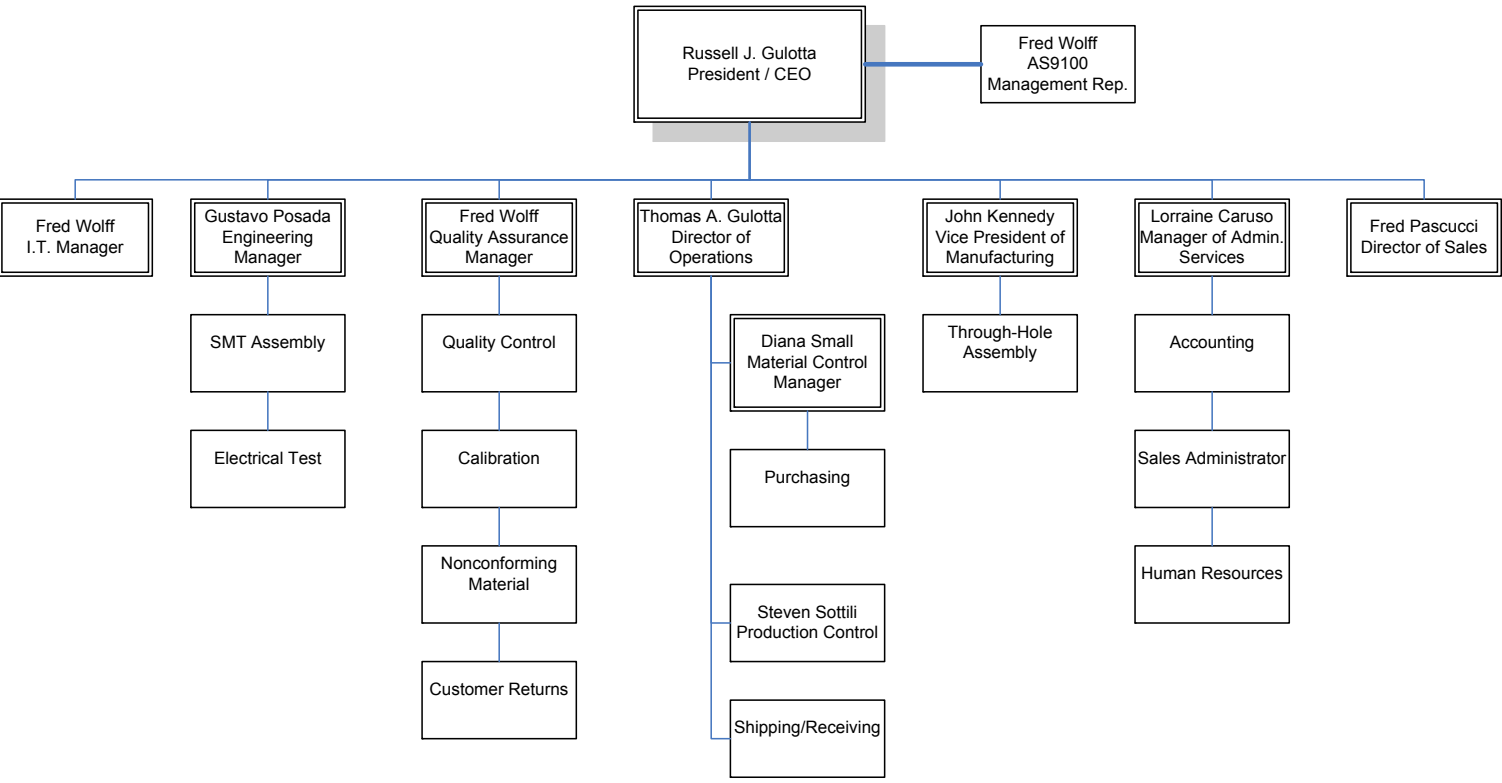
- Results of audits
- Customer feedback
- Process performance and product conformity
- Company level quality data
- Status of preventive and corrective actions
- Follow-up actions from previous management reviews
- Planned changes that could affect the quality management system
- Recommendations for improvement

5.6.3 Review output

During these review meetings, PAT's management will identify appropriate actions to be taken regarding the following issues:

- Improvement of the effectiveness of the quality management system and its processes
- Improvement of product related to customer requirements
- Resource needs

Responsibility for required actions is assigned to members of the management review team. Any decisions made during the meeting, assigned actions, and their due dates are recorded in the minutes of management review.





Section 6

Resource Management



6.1 Provision of resources

Precision Assembly Technologies has implemented a Quality Management System that complies with the AS9100 standard. This implementation was achieved with management commitment and with sufficient resources for the implementation. To effectively maintain and continually improve the system, management determines and provides necessary resources.

6.2 Human resources

6.2.1 General

To ensure competence of our personnel, job descriptions have been prepared identifying the qualifications required for each position that affects product quality. Qualifications include requirements for education, skills and experience. Appropriate qualifications, along with required training, provide the competence required for each position.

6.2.2 Competence, Awareness and Training

Qualifications are reviewed upon hire, when an employee changes positions, or the requirements for a position change. Human resources maintain records of employee qualifications. If any differences between the employee's qualifications and the requirements for the job are found, training or other action is taken to provide the employee with the necessary competence for the job.

All employees are trained on the relevance and importance of their activities and how they contribute to the achievement of the quality objectives.

6.3 Infrastructure

Precision Assembly Technologies has a modern 12,000 square foot facility and utilizes state of the art high-volume MyData Pick and Place Surface Mount Technology (SMT) machines, as well as automated optical inspection equipment and provisions for through-hole technology. In addition, we have recently added provisions for vibration testing and Environmental Stress Screening (ESS).

To meet quality objectives and product requirements Precision Assembly Technologies has determined the infrastructure needed. The infrastructure has been provided, and includes buildings, workspace, utilities, process equipment and supporting services. As new infrastructure requirements arise, they will be documented in quality plans. Existing infrastructure is maintained to ensure product conformity. Maintenance requirements are documented in:

- Preventive maintenance plan



6.4 Work Environment

Precision Assembly Technologies shall determine and manage the work environment necessary to achieve conformance to product requirements including, but not limited to:

- Temperature
- Humidity
- Lighting
- Cleanliness
- Electrostatic Discharge Control (ESD)

Data from the quality system is evaluated to determine if the work environment is sufficient for achieving product conformance, or if preventive or corrective action related to the work environment is required.



Section 7

Product Realization



7.1 Planning of Product Realization

Quality planning is required before new products or processes are implemented. During this planning, PAT's management, or assigned personnel, identify:

- The quality objectives and requirements for the product
- Processes, documentation and resources required
- Verification, validation, monitoring, inspection and test requirements, and
- Criteria for product acceptance
- Resources necessary to support operation and maintenance of the product

The output of quality planning includes documented quality plans, processes, and procedures.

7.2 Customer-Related Processes

7.2.1 Determination of Requirements Related To the Product

Precision Assembly Technologies determines customer requirements before acceptance of an order. Customer requirements include those:

- Requested by the customer
- Required for delivery and post-delivery activities
- Not stated by the customer but necessary for specified use or known and intended use
- Statutory and regulatory requirements related to the product
- Additional requirements determined by Precision Assembly Technologies

7.2.2 Review of Requirements Related to the Product

Precision Assembly Technologies has a process in place for the review of requirements related to the product. The review is conducted before the order is accepted. The process ensures that:

- Product requirements are defined
- Contract or order requirements differing from those previously expressed are resolved
- Precision Assembly Technologies has the ability to meet the defined requirements
- Records are maintained showing the results of the review and any actions arising from the review
- Where a customer does not provide a documented statement of requirement, the customer requirements are confirmed before acceptance



- When product requirements are changed, Precision Assembly Technologies communicates changes to relevant personnel and amends relevant documents
- Risks (e.g., new technology, short delivery time scale) have been evaluated.

7.2.3 Customer Communication

Precision Assembly Technologies has implemented an effective system for communicating with customers in relation to:

- Product Information
- Enquiries, contracts and order handling, including amendments
- Customer Feedback, including customer complaints

Customer Feedback Log is located in: \\patsrv\company\as9100

7.3 Design and Development

See Exclusions, Section 1.3 Application of this manual

7.4 Purchasing

7.4.1 Purchasing Process

A documented procedure (QAP-7.4) is followed to ensure that purchased product conforms to the specified purchase requirements. The procedure outlines the extent of control required for suppliers. Suppliers are evaluated and selected based on their ability to supply product in accordance with requirements as outlined in the procedure. Criteria for selection, evaluation and re-evaluation are documented in the procedure. Records of the evaluation and any necessary actions are maintained as quality records. The organization is responsible for the quality of all products purchased from suppliers, including customer-designated sources.

7.4.2 Purchasing Information

Purchasing information describes the product to be purchased, including where appropriate:

- Requirements for approval of product, processes and equipment
- Requirements for qualification of personnel
- Quality management system requirements outlined in the Purchasing Procedure (QAP-7.4)

The purchasing documents are reviewed to ensure the adequacy of requirements before orders are placed with the supplier.



7.4.3 Verification of Purchased Product

Purchased product is not used or processed until it has been verified as conforming to specified requirements unless it is released under positive recall procedure. If test reports are used to verify purchased product, the data must meet applicable specifications. Test reports for raw material are periodically validated.

When verification activities are delegated to the supplier the requirements are defined, and a register of delegations is maintained.

If Precision Assembly Technologies or the customer will perform verification at the supplier's premises, the verification arrangements and method of product release are documented in the purchasing information. Where specified in the contract, the customer or the customer's representative is given the right to verify at the suppliers premises and organization's premises that product conforms to specified requirements

7.5 Production and Service Provision

7.5.1 Control of Production

Precision Assembly Technologies plans and carries out production under controlled conditions. Planning considers, as applicable:

- the establishment of process controls and development of control plans where key characteristics have been identified,
- the identification of in-process verification points when adequate verification of conformance cannot be performed at a later stage of realization,
- the design, manufacture, and use of tooling so that variable measurements can be taken, particularly for key characteristics, and
- special processes (see 7.5.2).

Controlled conditions include, as applicable:

- the availability of information that describes the characteristics of the product
- the availability of work instructions
- the use of suitable equipment
- the availability and use of monitoring and measuring devices
- the implementation of monitoring and measurement
- the implementation of release, delivery and post-delivery activities



- accountability for all product during manufacture (e.g., parts quantities, split orders, nonconforming product), part accountability to ensure bad parts have been destroyed
- evidence that all manufacturing and inspection operations have been completed as planned, or as otherwise documented and authorized,
- provision for the prevention, detection, and removal of foreign objects,
- monitoring and control of utilities and supplies such as water, compressed air, electricity and chemical products to the extent they affect product quality, and criteria for workmanship, which shall be stipulated in the clearest practical manner (e.g., written standards, representative samples or illustrations).

7.5.1.1 Production Documentation

Production operations are carried out in accordance with approved data. This data contains as necessary:

- drawings, parts lists, process flow charts including inspection operations, production documents and inspection documents
- a list of specific or non-specific tools and numerical control (NC) machine programs required and specific instructions associated with their use.

7.5.1.2 Control of Production Process Changes:

Authorized people for approving changes to production processes are identified in the **Responsibility and Approval List**. Precision Assembly Technologies identifies and obtains acceptance of changes that require customer or regulatory authority approval in accordance with contract or regulatory requirements. Changes affecting processes, production equipment, tools and programs are documented and procedures are available to control the implementation of changes.

The results of changes to production processes are assessed to confirm that the desired effect has been achieved without adverse effects to product quality.

7.5.1.3 Control of Production Equipment, Tools and Numerical Control (N.C.) Machine Programs

Production equipment, tools and programs are validated prior to use and maintained and inspected periodically according to documented procedures. Validation prior to production use includes verification of the first article produced to the design data/specification. Storage requirements, including periodic preservation/condition checks, have been established for production equipment or tooling in storage.

7.5.1.4 Control of Work Transferred, on a Temporary Basis, Outside the



Organization's Facilities

When planning to temporarily transfer work to a location outside the organization's facilities, the organization defines the process to control and validate the quality of the work.

7.5.1.5 Control of Service Operations

See Exclusions, Section 1.3 Application of this manual

7.5.2 Validation of processes for production and service provision

Precision Assembly Technologies validates any processes for production where the resulting output cannot be verified by subsequent monitoring or measurement. This includes any processes where deficiencies become apparent only after the product is delivered and in use. Validation demonstrates the ability of these processes to achieve planned results.

Precision Assembly Technologies has documented the process for validation including:

- Defined criteria for review and approval of the processes, qualification and approval of special processes prior to use
- Approval of equipment and qualification of personnel
- Use of specific methods and procedures,
- Control of the significant operations and parameters of special processes in accordance with documented process specifications and changes thereto
- Requirements for records
- Revalidation

7.5.3 Identification and traceability

Precision Assembly Technologies identifies the product throughout product realization.

- Precision Assembly Technologies maintains the identification of the configuration of the product in order to identify any differences between the actual configuration and the agreed configuration.
- Product is identified with respect to monitoring and measurement requirements.
- When acceptance authority media such as stamps are used Precision Assembly Technologies establishes and documents controls for the media.
- According to the level of traceability required by contract, regulatory, or other established requirement, Precision Assembly Technologies system provides for:



- Identification to be maintained throughout the product life;
- All the products manufactured from the same batch of raw material or from the same manufacturing batch to be traced, as well as the destination (delivery, scrap) of all products of the same batch;
- For an assembly, the identity of its components and those of the next higher assembly to be traced;
- For a given product, a sequential record of its production (manufacture, assembly, inspection) to be retrieved.

Precision Assembly Technologies controls and records the unique identification of the product wherever traceability is a specified requirement

7.5.4 Customer property

Precision Assembly Technologies exercises care with customer property while it is under the organization's control or being used. If any customer property is lost, damaged or otherwise found to be unsuitable for use, this is reported to the customer and records maintained.

7.5.5 Preservation of product

Precision Assembly Technologies preserves the conformity of product during internal processing and delivery to the intended destination. This preservation includes identification, handling, packaging, storage and protection. Preservation also applies to the constituent parts of a product.

Preservation of product also includes, where applicable in accordance with product specifications and/or applicable regulations, provisions for:

- Cleaning;
- Prevention, detection and removal of foreign objects;
- Special handling for sensitive products;
- Marking and labeling including safety warnings;
- Shelf life control and stock rotation;
- Special handling for hazardous materials (see MSDS)

The organization ensures that documents required by the contract or order to accompany the product are present at delivery and are protected against loss and deterioration.



7.6 Control of Monitoring and Measuring Devices

Precision Assembly Technologies has determined the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements.

- Calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards.
- Adjusted or re-adjusted as necessary
- Identified to enable the calibration status to be determined
- Safeguarded from adjustments that would invalidate the measurement result
- Protected from damage and deterioration during handling, maintenance and storage
- Be recalled according to a defined method when requiring calibration

In addition, Quality Control assesses and records the validity of the previous measuring results when the equipment is found not to conform to requirements. Precision Assembly Technologies takes appropriate action on the equipment and any product affected. Records of the results of calibration and verification are maintained.

Precision Assembly Technologies maintains a register of these monitoring and measuring devices. The process used for their calibration is defined in procedures, work instructions and equipment manuals and includes details of equipment type, unique identification, location, frequency of checks, check method and acceptance criteria.

When used in the monitoring and measurement of specified requirements, the ability of computer software to satisfy the intended application is confirmed. This is undertaken prior to initial use and reconfirmed as necessary.

Precision Assembly Technologies ensures that environmental conditions are suitable for the calibrations, inspections, measurements and tests being carried out.



Section 8

Measurement, Analysis and Improvement



8.1 General

Precision Assembly Technologies plans and implements the monitoring, measurement, analysis and improvement processes as needed

- To demonstrate conformity of the product,
- To ensure conformity of the quality management system, and
- To continually improve the effectiveness of the quality management system.

These processes are identified in documented procedures and include determination of applicable methods, including statistical techniques, and the extent of their use.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

As one of the measurements of the performance of the quality management system, Precision Assembly Technologies monitors information relating to customer perception as to whether the organization has fulfilled customer requirements.

8.2.2 Internal Audit

Precision Assembly Technologies conducts internal audits at planned intervals to determine whether the quality management system

- Conforms to the planned arrangements (see 7.1), to the requirements of this International Standard and to the quality management system requirements established by the organization
- Is effectively implemented and maintained.

An audit program has been designed and implemented and identifies an audit schedule based on the importance of the areas to be audited, as well as the results of previous audits. The audit criteria, scope, frequency, methods, responsibilities and requirements for planning and conducting audits, and for reporting and maintaining results, are defined and documented in the Internal Audit procedure QAP-8.2.2.

The management responsible for the area being audited is responsible for ensuring that actions are taken without undue delay to eliminate detected nonconformities and their causes. Follow-up activities include the verification of the actions taken and the reporting of verification results.

Detailed tools and techniques such as check sheets, process flowcharts, or any similar method to support audit of the quality management system requirements are developed, maintained and used according to the Internal Audit Procedure (QAP-8.2.2). The acceptability of the selected tools is measured against the effectiveness of the internal audit process and overall organization performance.



Internal audits meet contract and/or regulatory requirements.

8.2.3 Monitoring and measurement of processes

Precision Assembly Technologies applies suitable methods for monitoring and, where applicable, measurement of the quality management system processes. These methods demonstrate the ability of the processes to achieve planned results. When planned results are not achieved, correction and corrective action is taken, as appropriate, to ensure conformity of the product. In the event of process nonconformity, the organization:

- Takes appropriate action to correct the nonconforming process,
- Evaluates whether the process nonconformity has resulted in product nonconformity, and
- Identifies and controls the nonconforming product in accordance with clause 8.3.

8.2.4 Monitoring and measurement of product

Precision Assembly Technologies monitors and measures the characteristics of the product to verify that product requirements are fulfilled. This is carried out at appropriate stages of the product realization process.

Evidence of conformity with the acceptance criteria is maintained. Records indicate the person authorizing release of product. Product release does not proceed until all the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority, and where applicable by the customer.

When key characteristics have been identified, they are monitored and controlled.

When the organization uses sampling inspection as a means of product acceptance, the plan is statistically valid and appropriate for use. The plan precludes the acceptance of lots whose samples have known nonconformities. When required, the plan is submitted for customer approval.

Product is not used until it has been inspected or otherwise verified as conforming to specified requirements, except when product is released under positive-recall procedures pending completion of all required measurement and monitoring activities.

8.2.4.1 Inspection Documentation

Measurement requirements for product or service acceptance are documented. This documentation is part of the production documentation, and includes:

- Criteria for acceptance and/or rejection,
- Where in the sequence measurement and testing operations are performed,



- A record of the measurement results, and
- Type of measurement instruments required and any specific instructions associated with their use.
- Test records shall show actual test results data when required by specification or acceptance test plan.
- Where required to demonstrate product qualification the organization shall ensure that records provide evidence that the product meets the defined requirements. (see forms/records list)

8.2.4.2 First Article Inspection

Precision Assembly Technologies' system shall provide a process for the inspection, verification, and documentation of a representative item from the first production run of a new part, or following any subsequent change that invalidates the previous first article inspection result.

8.3 Control of Nonconforming Product

Precision Assembly Technologies ensures that product which does not conform to product requirements is identified and controlled to prevent its unintended use or delivery. The controls and related responsibilities and authorities for dealing with nonconforming product are defined in the Control of Nonconforming Product procedure (QAP-8.3).

The term "nonconforming product" includes nonconforming product returned from a customer.

Responsibility for review and authority for the disposition of nonconforming product and the process for approving personnel making these decisions is defined in the procedure.

8.4 Analysis of Data

Precision Assembly Technologies determines, collects and analyses appropriate data to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the quality management system can be made. Appropriate data includes data generated as a result of monitoring and measurement and from other relevant sources.

The analysis of data provides information relating to:

- Customer satisfaction
- Conformance to product requirements



- Characteristics and trends of processes and products including opportunities for preventive action
- Suppliers

Precision Assembly Technologies does not use dispositions of use-as-is or repair, unless specifically authorized by the customer, if:

- the product is produced to customer design, or
- the nonconformity results in a departure from the contract requirements.

Product dispositioned for scrap is conspicuously and permanently marked, or positively controlled, until physically rendered unusable.

In addition to any contract or regulatory authority reporting requirements, Precision Assembly Technologies' system provides for timely reporting of delivered nonconforming product that may affect reliability or safety. Notification includes a clear description of the nonconformity, which includes as necessary parts affected, customer and/or organization part numbers, quantity, and date(s) delivered.

8.5 Improvement

8.5.1 Continual improvement

Precision Assembly Technologies continually improves the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review.

8.5.2 Corrective action

Precision Assembly Technologies takes action to eliminate the cause of nonconformities in order to prevent recurrence. Corrective actions are appropriate to the effects of the nonconformities encountered.

A documented procedure (QAP-8.5.2) defines requirements for

- Reviewing nonconformities (including customer complaints),
- Determining the causes of nonconformities,
- Evaluating the need for action to ensure that nonconformities do not recur,
- Determining and implementing action needed,
- Records of the results of action taken (see 4.2.4), and
- Reviewing corrective action taken.
- Flow down of the corrective action requirement to a supplier, when it is determined that the supplier is responsible for the root cause, and specific actions where timely and/or effective corrective actions are not achieved.



8.5.3 Preventive action

Precision Assembly Technologies determines action to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive actions are appropriate to the effects of the potential problems.

A documented procedure (QAP-8.5.3) defines requirements for:

- Determining potential nonconformities and their causes
- Evaluating the need for action to prevent occurrence of nonconformities
- Determining and implementing action needed
- Records of results of action taken
- Reviewing preventive action taken