QUALITY MANUAL QM0492 ISO/TS16949 SUPPLEMENT I REV B

Foreword

This document defines the quality management system requirements to be applied when processing automotive parts under the automotive standard ISO/TS/16949.

This document is supplemental to the Avnet Quality Manual and must be used in conjunction with that Manual when processing automotive parts in an ISO/TS16949 certified facility. When processing automotive parts all quality system requirements defined in the Quality Manual must be adhered to, as well as the additional requirements defined in this Supplement.

Table of Contents

Subject

7.0 Product Realization

- 7.1 Planning Of Realization Processes (Quality Manual 12.0)
  - 7.1.1 Planning of Product Realization - Supplemental
  - 7.1.2 Acceptance Criteria - Supplemental
  - 7.1.3 Confidentiality - Supplemental
  - 7.1.4 Change Control - Supplemental
- 7.2 Customer-Related Processes (Quality Manual 13.0)
  - 7.2.1 Determination Of Requirements Related to the Product
    - 7.2.1.1 Customer - Designated Special Characteristics - Supplemental
  - 7.2.2 Review Of Requirements Related to the Product
    - 7.2.2.1 Review of Requirements Related to the Product - Supplemental
    - 7.2.2.2 Organization Manufacturing Feasibility - Supplemental
  - 7.2.3 Customer Communication
    - 7.2.3.1 Communication - Supplemental
- 7.3 Designs and Development (Manufacturing Process Design Only)
  - 7.3.1 Design and Development Planning
    - 7.3.1.1 Multi-disciplinary Approach - Supplemental
  - 7.3.2 Design and Development Inputs
    - 7.3.2.2 Manufacturing Process Design Input - Supplemental
    - 7.3.2.3 Special Characteristics - Supplemental
  - 7.3.3 Design and Development Output
    - 7.3.3.2 Manufacturing Process Design Output - Supplemental
  - 7.3.4 Design and Development Review
    - 7.3.4.1 Monitoring - Supplemental
  - 7.3.5 Design and Development Verification
  - 7.3.6 Design and Development Validation
    - 7.3.6.1 Design and Development Validation - Supplemental
    - 7.3.6.2 Prototype Programme - Supplemental
    - 7.3.6.3 Product Approval Process - Supplemental
- 7.4 Purchasing (Quality Manual 17.0)
  - 7.4.1 Purchasing Process
    - 7.4.1.1 Regulatory Conformity - Supplemental
    - 7.4.1.2 Supplier Quality Management System Development - Supplemental
    - 7.4.1.3 Customer Approved Sources - Supplemental
  - 7.4.3 Verification of Purchased Product
    - 7.4.3.1 Incoming Product Quality - Supplemental
    - 7.4.3.2 Supplier Monitoring - Supplemental
- 7.5 Productions and Service Provision (Quality Manual 20.0)
  - 7.5.1 Control of Production and Service Provision
    - 7.5.1.1 Control Plan - Supplemental
    - 7.5.1.2 Work Instructions - Supplemental
    - 7.5.1.3 Verification of Job Set-ups - Supplemental
    - 7.5.1.4 Preventative and Predictive Maintenance - Supplemental
    - 7.5.1.5 Management of Production Tooling - Supplemental
    - 7.5.1.6 Production Scheduling - Supplemental
    - 7.5.1.7 Feedback of Information From Service - Supplemental
    - 7.5.1.8 Service Agreement With Customer - Supplemental
  - 7.5.2 Validation of Processes For Production and Service Provision
    - 7.5.2.1 Validation of Processes or Production - Supplemental
      All production processes are validated internally and as requested by customer.

7.5.3 Identification and Traceability (Quality Manual 21.0)
7.5.3.1 Identification and Traceability - Supplemental
7.5.4 Customer Property (Quality Manual 18.0)
7.5.4.1 Customer Owned Production Tooling - Supplemental
7.5.5 Preservation of Product (Quality Manual 25.0)
7.5.5.1 Storage and Inventory – Supplemental

7.6 Control of Measuring And Monitoring Devices (Quality Manual 22.0)
7.6.1 Measurement System Analysis - Supplemental
7.6.2 Calibration Verification Records - Supplemental
7.6.3 Laboratory Requirements - Supplemental
7.6.3.1 Internal Laboratory - Supplemental
7.6.3.2 External Laboratory – Supplemental

8.0 Measurements, Analysis, And Improvement

8.1 General (Quality Manual 27.0)
8.1.1 Identification of Statistical Tools - Supplemental
8.1.2 Knowledge of Basic Statistical Concepts - Supplemental

8.2 Monitoring and Measurement
8.2.1 Customer Satisfaction (Quality Manual 9.0)
8.2.1.1 Customer Satisfaction - Supplemental
8.2.2 Internal Audit (Quality Manual 26.0)
8.2.2.1 Quality Management System Audit - Supplemental
8.2.2.2 Manufacturing Process Audit - Supplemental
8.2.2.3 Product Audit - Supplemental
8.2.2.4 Internal Audit Plans - Supplemental
8.2.2.5 Internal Auditor Qualifications - Supplemental
8.2.3 Monitoring and Measurement of Processes
8.2.3.1 Monitoring and Measurement of Processes - Supplemental
8.2.4 Monitoring and Measurement of Product (Quality Manual 21.0)
8.2.4.1 Layout Inspection and Functional Testing - Supplemental
8.2.4.2 Appearance Items – Supplemental

8.3 Control of Nonconforming Product (Quality Manual 23.0)
8.3.1 Control of Nonconforming Product - Supplemental
8.3.2 Control of Reworked Product - Supplemental
8.3.3 Customer Information - Supplemental
8.3.4 Customer Waiver – Supplemental

8.4 Analysis of Data (Quality Manual 9.0)
8.4.1 Analysis and Use of Data – Supplemental

8.5 Improvement
8.5.1 Continual Improvement (Quality Manual 10.0 & 28.0)
8.5.1.1 Continual Improvement of the Organization - Supplemental
8.5.1.2 Manufacturing Process Improvement - Supplemental
8.5.2 Corrective Action (Quality Manual 24.0)
8.5.2.1 Problem Solving - Supplemental
8.5.2.2 Error-proofing - Supplemental
8.5.2.3 Corrective Action Impact - Supplemental
8.5.2.4 Rejected Product Test/Analysis – Supplemental

4.0 Quality Management System Requirements

4.1 General Requirements (Quality Manual Section 14.0)

4.1.1 General Requirements - Supplemental
When product is sent to subcontractors for additional processing, the subcontractors are audited and approved to ensure customers requirements are met, unless the customer specifies a specific subcontractor to be used.

4.2 Documentation Requirements (Quality Manual Section 15.0)

4.2.3 Control of Documents (Quality Manual Section 15.0)

4.2.3.1 Engineering Specifications - Supplemental
Customer drawings, specifications, and/or procedures are reviewed, distributed and implemented when received by the sales organization. This review does not exceed two working weeks and records maintained of the date the change is implemented into production.

4.2.4 Control of Quality Records (Quality Manual Section 16.0)

4.2.4.1 Records Retention - Supplemental
As a minimum, retention times satisfy regulatory and customer requirements.

5.0 Management Responsibility

5.1 Management Commitment (Quality Manual Section 5.0)

5.1.1 Process Efficiency - Supplemental
Top management reviews the value added processes and support processes to ensure their effectiveness and efficiency during the management review process.

5.4 Planning (Quality Manual Section 12.0)

5.4.1 Quality Objectives (Quality Manual Section 5.5)

5.4.1.1 Quality Objectives - Supplemental
Quality Objectives and measurements are defined by top management, included in the Strategic Business Plan and are used to deploy the Quality Policy. The Strategic Business Plan is considered to be a company proprietary document.

5.5 Responsibilities, Authority and Communication (Quality Manual Section 6.0)

5.5.1 Responsibility and Authority (Quality Manual Section 5.0)

5.5.1.1 Responsibility for Quality – Supplemental

a) The Facility Quality Assurance Manager/ Operations Manager is promptly informed of

Products or processes that do not conform to requirements.

b) All employees are responsible for quality and have been given the authority to stop production to correct quality problems.

c) The shift supervisors on each shift have been delegated the responsibility for ensuring product quality.

5.5.2 Management Representative (Quality Manual Section 7.0)

5.5.2.1 Customer Representative - Supplemental

a) Top Management has given Sales and Marketing Representatives (SMR's) the responsibility and authority to identify any customer requirements including customer special characteristics during the contract review process.

b) Top Management identifies quality objectives for the company, then, delegates the dissemination of the objectives and any related training to the lower tiers of management at each location.

c) Facility Quality Assurance Managers at each location have been given the responsibility to resolve corrective actions and ensure preventive actions are implemented.

5.6 Management Review (Quality Manual Section 8)

5.6.1 General

5.6.1.1 Quality Management System Performance - Supplemental
The management reviews include all elements of the quality management system, performance trends as part of continual improvement, monitoring of quality objectives and the reporting and evaluation of the cost of poor quality. The records of the management reviews are maintained by the Management Representative and include achievement of the business plan quality objectives and customer satisfaction with the product supplied.

5.6.2 Review Input

5.6.2.1 Review Input - Supplemental
If the customer has provided information on potential field failures, an analysis of the failure and its impact on quality, safety, or the environment is included in the management review.

6.0 Resource Management

6.2 Human Resources (Quality Manual Section 11)

6.2.2 Competence, awareness and Training

6.2.2.2 Training - Supplemental
A documented procedure has been established and is maintained for identifying training needs and achieving competence of all personnel performing activities affecting product quality. Personnel performing specific assigned tasks have been qualified on the basis of education, training, skills, and/or experience, as required. Training is provided, as appropriate, to satisfy customer specific requirements.

6.2.2.3 Training On-the-Job - Supplemental
On the job training is provided for all jobs affecting quality, this includes any temporary employees. All employees whose work affects quality are informed of the consequences to the customer when nonconformances to customer requirements occur.

6.2.2.4 Employee Motivation and Empowerment - Supplemental
Employees are motivated to achieve quality objectives, to make continual improvements and create an environment to promote innovation, through the use of the RESULTS, POP, and Circle of Excellence programs as a minimum. The process includes the promotion of quality and technological awareness throughout the whole organization through company meetings, training and awareness sessions. The extent to which employees are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives is measured through personnel reviews and quality audit results.

6.3 Infrastructure (Quality Manual Section 10)

6.3.1 Plant, Facility and Equipment Planning - Supplemental
A Multi-disciplinary approach is used for the planning of new plant, facilities, and equipment. Plant layouts optimize material travel, handling, and value-added use of floor space, and facilitate synchronous material flow. Existing operations are periodically evaluated and monitored for effectiveness.

6.3.2 Contingency Plans - Supplemental
Contingency plans are made to satisfy customer requirements in the even of an emergency such as utility interruptions, labor shortages, key equipment failure, and field returns. The contingency plan is available on the Avnet Intranet website.

6.4 Work Environment (Quality Manual Section 10)

6.4.1 Personnel Safety - Supplemental
Product safety and the means to minimize potential risks to employees are addressed in the process procedures, equipment operation procedures, safety instructions, and during the manufacturing process design and development.

6.4.2 Cleanliness of Premises – Supplemental
Premises are maintained in a state of order, cleanliness, and repair.

7.0 Product Realization

7.1 Planning of Product Realization (Quality Manual Section 12)

7.1.1 Planning of Product Realization - Supplemental
Customer requirements and references to their technical requirements are included in the product realization planning as a component of the production documents. When required by the customer, any requirements for advanced process planning such as failure mode effects and analysis (FMEA), control plan generation and production part approval (PPAP) are complied with. The output from the product realization planning is defined as documented control plans, process and operational procedures, work instructions, and forms as appropriate.

7.1.2 Acceptance Criteria - Supplemental
Acceptance criteria are defined in inspection and test procedures and are approved by the customer, if required. Any attribute data sampling uses an acceptance level of zero defects.

7.1.3 Confidentiality - Supplemental
The confidentiality of customer-contracted projects, projects under development and related product information is maintained under secure conditions and is not released to any unauthorized persons.

7.1.4 Change Control - Supplemental
Changes that impact product realization are controlled and reacted to, including those changes initiated by the customer. Production changes are assessed, verified, and validated by technical staff to ensure compliance to customer requirements. Changes are validated by the customer before implementation using the First Article Approval System, (AFA). When required by the customer, any additional customer specific verifications/ identification requirements are met.

7.2 Customer-related Processes (Quality Manual Section 13)

7.2.1 Determination of Requirements Related to the Product

7.2.1.1 Customer-Designated Special Characteristics - Supplemental
Any customer designated special characteristics conform to customer requirements for designation, documentation and control when specified by the customer.

7.2.2 Review of Requirements Related to the Product

7.2.2.1 Review of Requirements Related to the Product - Supplemental
Waiving of any requirements related to the product requires customer approval.

7.2.2.2 Organization Manufacturing Feasibility - Supplemental
Manufacturing feasibility of the proposed products is performed during the contract review process, including risk analysis and records maintained.

7.2.3 Customer Communication

7.2.3.1 Customer Communication - Supplemental
The ability to communicate necessary information, including data, in the customer specified language and format such as computer-aided design data, electronic data exchange, etc. is available when set-up with the customer and included in the customers contract.

7.3 Design and Development

NOTE: Product design is not performed. Design is the responsibility of the customer. The applicable requirement relating to design in this section relate to manufacturing process design only.

7.3.1 Design and Development Planning

7.3.1 1 Multi-disciplinary Approach - Supplemental
A Multi-disciplinary approach is used to prepare for production processes, including:

a) Development/finalization and monitoring of any special characteristics.
b) Development and review of FMEAs including action to reduce potential risks.
c) Development and review of Control plans.

7.3.2 Design and Development Inputs

7.3.2.2 Manufacturing Process Design Input - Supplemental
The manufacturing process design input includes reviewing, identifying, and documenting of any program data provided by the customer, targets for productivity, process capability, and cost, customer requirements for identification,

serialization and packaging and experience from previous developments.

7.3.2.3 Special Characteristics - Supplemental
If special characteristics are identified by the customer, they are included in the control plans, comply with customer specified definitions and symbols and are identified on applicable process control documents, FMEAs, and operator instructions. The customer's special characteristic symbols are use, if special characteristic symbols are specified.

7.3.3 Design and Development Outputs

7.3.3.2 Manufacturing Process Design Output - Supplemental
The manufacturing process design output is expressed in terms that can be verified and validated against manufacturing process design input requirements. The manufacturing process design outputs include:

a) Specification for the process.
b) Manufacturing process flow charts/layout.
c) Manufacturing process FMEAs.
d) Control plan.
e) Work instructions.
f) Process approval acceptance criteria.
g) Results of error-proofing activities, as appropriate.
h) Methods of rapid detection and feedback of production/manufacturing process nonconformities.

7.3.4 Design and Development Reviews

7.3.4.1 Monitoring - Supplemental Measurements made at specified stages of any new process design and development is defined, analyzed, and reported as an input to management review.

7.3.5 Design and Development Verification
Verification is performed to ensure that the process design and development outputs have met the process design and development input requirements. Records of the verifications and any actions are maintained.

7.3.6 Design and Development Validation
Validation is performed to ensure that the process is capable of meeting the requirements for the processing of the product in the intended application or use, if provided by the customer. Validation is performed prior to shipment, where practical. Records of the validation and any actions are maintained.

7.3.6.1 Design and Development Validation - Supplemental
The production process validation is performed in accordance with any customer requirements including program timing.

7.3.6.2 Prototype Programme - Supplemental
When required by the customer, a prototype program and control plan is developed. Wherever possible, the same tooling, manufacturing processes, and subcontractors, if used, are used for the prototype program as used in production. All performance testing activities are monitored for timely completion and for conformance to requirements. If any services are outsourced, full responsibility is taken by the company, including technical direction.

7.3.6.3 Product Approval Process - Supplemental
Product Approval Process (PPAP) has been implemented and conforms to the customer's product and process approval procedure, when requested. The product and manufacturing process approval procedure is applied to suppliers as requested by the customer.

7.4 Purchasing (Quality Manual Section 17)

7.4.1 Purchasing Process

7.4.1.1 Regulatory Conformity - Supplemental
All products and materials used in the process satisfy applicable regulatory requirements.

7.4.1.2 Supplier Quality Management System Development - Supplemental
Sub-contracted processes that affect quality are performed by sub-contractors that are registered to ISO 9001:2000 by an accredited third party certification body, unless otherwise specified by the customer.
Supplier quality management system development is performed with suppliers with the goal of supplier compliance to ISO/TS16949.

7.4.1.3 Customer Approved Sources - Supplemental
When specified by the contract, products, materials, and services are purchased from customer approved sources. The quality of the purchased products is ensured even though customer-designated sources are specified.

7.4.3 Verification of Purchased Product

7.4.3.1 Incoming Product Quality - Supplemental
In order to ensure the quality of purchased product, the incoming product is verified by one or more of the following methods:

a) Receipt of statistical data from the supplier
b) Receiving inspection and/or testing such as sampling based on performance
c) Second or third party assessments or audits of supplier sites, when coupled with records of acceptable quality performance
d) Evaluation by a designated laboratory
e) Another method agreed by the customer

7.4.3.2 Supplier Monitoring – Supplemental
Suppliers are encouraged to monitor their manufacturing processes. Supplier performance is monitored through the following indicators on product received from the supplier:

a) Delivered part quality performance
b) Customer disruptions including field returns
c) Delivery schedule performance, including incidents of premium freight
d) Special status customer notifications related to quality or delivery issues.

7.5 Production and Service Provision (Quality Manual Section 20)

7.5.1 Control of Production and Service Provision

7.5.1.1 Control Plans - Supplemental
Control plans for the programming and packaging processes that take into account the manufacturing process FMEA outputs have been developed. Control plans are reviewed and updated as necessary, when changes occur which affect product, manufacturing process, measurement, logistics, supply sources, and/or, FMEA. The control plans take into consideration the following:

a) Controls used for the processes
b) Methods for monitoring and control exercised over special characteristics, as applicable.
c) Any customer required information
d) Initiating the specified reaction plan when the process becomes unstable or not statistically capable.

7.5.1.2 Work Instructions - Supplemental
Work instructions have been documented and are available at the work station for all employees having responsibilities for the operation of processes. The work instructions are derived from sources such as the quality plan, control plan, and the production processes.

7.5.1.3 Verification of Job Set-ups – Supplemental
Job set-ups are verified such as the initial run of a job, material changeover, or job change. Work instructions are available for set-up personnel. Statistical methods of set-up verification are used, where applicable.

7.5.1.4 Preventive and Predictive Maintenance - Supplemental
Machine/equipment maintenance is provided for key process equipment through the use of a preventive maintenance system. Records of maintenance are maintained and evaluated for the purpose of improving maintenance objectives. Predictive maintenance methods are used to continually improve the effectiveness and efficiency of the process equipment. The preventive maintenance system includes the following:

a) Planned maintenance activities
b) Preservation of equipment, tooling, and gauging
c) Availability of replacement parts for key manufacturing equipment.

7.5.1.5 Management of Production Tooling – Supplemental
Resources have been identified for the design, fabrication, and verification of any necessary tooling; including the outsourcing of these activities. The production tooling management system includes:

a) Maintenance and repair facilities and personnel,
b) Tool storage and identification to define the status of tooling.

7.5.1.6 Production Scheduling – Supplemental
Production scheduling is customer order driven. A computerized information system provides access to production information at key stages in the process.

7.5.1.7 Feedback of Information from Service – Supplemental
Any notifications from the customer of non-conformances that occur externally are recorded and reviewed for any necessary corrective actions in the production process.

7.5.1.8 Servicing Agreement with Customer- Supplemental
Service agreements are not entered into with customers.

7.5.2 Validation of Processes for Production

7.5.2.1 Validation of Processes for Production - Supplemental
All production processes are validated internally and as requested by the customer.

7.5.3 Identification and Traceability (Quality Manual Section 21)

7.5.3.1 Identification and Traceability - Supplemental
The identification of parts is maintained throughout all stages of production by the use of related paperwork and/or marking on the part.

7.5.4 Customer Property (Quality Manual Section 18)

7.5.4.1 Customer-owned Production Tooling - Supplemental
Any customer-owned tools, manufacturing, test, inspection, tooling, and equipment is permanently marked so that ownership of each item is visible, and can be determined.

7.5.5 Preservation of Product (Quality Manual Section 25)

7.5.5.1 Storage and Inventory - Supplemental
The condition of stock is assessed at appropriate planned intervals to detect deterioration. A first-in-first-out (FIFO) system is used to assure stock rotation.

7.6 Control of Measuring and Monitoring Devices (Quality Manual Section 22)

7.6.1 Measurement System Analysis – Supplemental
Statistical studies are conducted to analyze the variation present in each type of measuring and test equipment system referenced in the control plan. The analytical methods and acceptance criteria used, conforms to customer requirements, e.g. reference manuals on measurement systems analysis.

7.6.2 Calibration/Verification Records – Supplemental
Records of calibration for all gauges, measuring and test equipment are maintained and includes any employee and customer owned gauges.

Calibration records include:

a) Equipment identification, including the measurement standard against which the equipment is calibrated;
b) Revisions following engineering changes to product specific gauging as applicable;
c) Any out-of-specification readings as received for calibration; d) An assessment of the impact of the out-of-specification condition;
e) A statement of conformance to specification after calibration;
f) The notification to the customer if suspect product has been shipped to the customer.

7.6.3 Laboratory Requirements - Supplemental

7.6.3.1 Internal Laboratory – Supplemental
The internal laboratory has a defined scope that includes its capability to perform the required inspection and testing. The laboratory controls include the following:

a) Laboratory procedures for inspection and test;
b) Suitable qualifications of the Technicians;
c) Capability to perform testing correctly, with traceable to the relevant process standard;
d) Reviews of the related quality records.

7.6.3.2 External Laboratory - Supplemental
External laboratories used for inspection/test or calibrations have a defined scope that includes the capability to perform the required service and are accredited to ISO/IEC 17025 or a national equivalent; or the laboratory is acceptable to the customer.

8.0 Measurements, Analysis and Improvement

8.1 General (Quality Manual 27.0)

8.1.1 Identification of Statistical Tools – Supplemental
Appropriate statistical tools are determined during advanced quality planning and included in the control plan.

8.1.2 Knowledge of Basic Statistical Concepts – Supplemental
A basic knowledge of statistical concepts such as variation, control, (stability), process capability and over adjustment are understood and utilized.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction (Quality Manual Section 9.0)

8.2.1.1 Customer Satisfaction - Supplemental
Customer satisfaction is monitored through continual evaluation of the performance of the value-add processes. The performance indicators include:

a) Delivered part quality performance
b) Customer disruptions, including field returns if notified by the customer,
c) Delivery schedule performance including incidences of premium freight
d) Customer notifications related to quality or delivery issues

8.2.2 Internal Audit (Quality Manual Section 26)

8.2.2.1 Quality Management System Audit - Supplemental
Audits of the quality management system are used to verify compliance to ISO/TS16949; as well as, any other quality management system requirements.

8.2.2.2 Manufacturing Process Audit - Supplemental
The manufacturing processes are audited to determine effectiveness of the processes.

8.2.2.3 Product Audit - Supplemental
Product audits are performed at appropriate stages of production and shipping to verify conformance to specified requirements, at a defined frequency.

8.2.2.4 Internal Audit Plans - Supplemental
Internal audits cover all quality management related processes, activities, and shifts. Audits are scheduled according to an annual plan. The frequency of audits will be increased if internal/external non-conformities or customer complaints occur.

8.2.2.5 Internal Auditor Qualification - Supplemental
Internal auditors are trained to audit to the requirements of ISO/TS16949.

8.2.3 Monitoring and Measurement of Processes

8.2.3.1 Monitoring and Measurement of Manufacturing Processes - Supplemental
The monitoring of the Quality System processes is achieved by internal audit results, non-conformance reports and management reviews. When areas of concern are identified, corrective action to ensure conformity of product is initiated. Process performance studies are conducted on all new manufacturing processes to verify process capability and to provide any additional input for process control. The results of the process studies are documented as appropriate in production instructions, measurement and test instructions, and maintenance instructions. These documents include objectives for manufacturing process capability, reliability of the process, and maintainability of the process, as appropriate. Manufacturing process capability, or performance, is maintained as specified by the customer part approval process requirements. The control plan and process flow diagram requirements are implemented, including:

a) Measurement techniques
b) Sampling plans
c) Acceptance criteria
d) Reaction plans when the acceptance criteria are not met. Significant events such as equipment repair are noted on the production control

documents. A reaction plan is initiated if product characteristics become either unstable or non-capable. The reaction plans include containment of product and 100% inspection as appropriate. Corrective action plans indicate specific timing and assigned responsibilities to assure the process becomes stable and capable. Reaction plans are reviewed with and approved by the customer, as required. Records are maintained of the effective dates of any process changes.

8.2.4 Monitoring and Measurement of Product (Quality Manual Section 21)

8.2.4.1 Layout Inspection and Functional Testing - Supplemental
Layout inspections and functional verifications are performed to applicable customer performance standards at sufficiently frequent intervals as specified in the control plan. The results are available for customer review.

8.2.4.2 Appearance Items - Supplemental
Not applicable to the products supplied.

8.3 Control of Nonconforming Product (Quality Manual Section 23)

8.3.1 Control of Nonconforming Product - Supplemental
Unidentified or suspect product is classified as nonconforming product.

8.3.2 Control of Reworked Product - Supplemental
Instructions for rework, including re-inspection are accessible to and utilized by the appropriate personnel.

8.3.3 Customer Information - Supplemental
Customers are promptly informed in the event that non-conforming or suspect product is shipped.

8.3.4 Customer Waiver - Supplemental
A waiver or deviation is obtained from the customer prior to further processing whenever the product or process is different from that currently approved. Records are maintained of the expiration date or quantity authorized. Compliance to the original, or superseding specifications are ensured when the authorization expires. Product shipped on a waiver or deviation is identified on each shipping container as required by the customer. The waiver authorization system applies equally to purchased product. Requests from suppliers for a waiver are agreed to before submission to the customer.

8.4 Analysis of Data (Quality Manual 9.0)

8.4.1 Analysis and Use of Data - Supplemental
Trends in quality and operational performance are compared with progress toward objectives and lead to action to support the following:

a) Development of priorities for prompt solutions to customer-related problems
b) Determination of key customer-related trends and correlation to support status review, decision-making, and longer term planning
c) An informations system for the timely reporting of product information arising from usage.

8.5 Improvement (Quality Manual Sections 10 & 28)

8.5.1 Continual Improvement

8.5.1.1 Continual Improvement of the Organization-Supplemental
A process for continual improvement has been defined.

8.5.1.2 Manufacturing Process Improvement - Supplemental
Continual improvement focuses on control and reduction of variation in the production process parameters.

8.5.2 Corrective Action (Quality Manual Section 24)

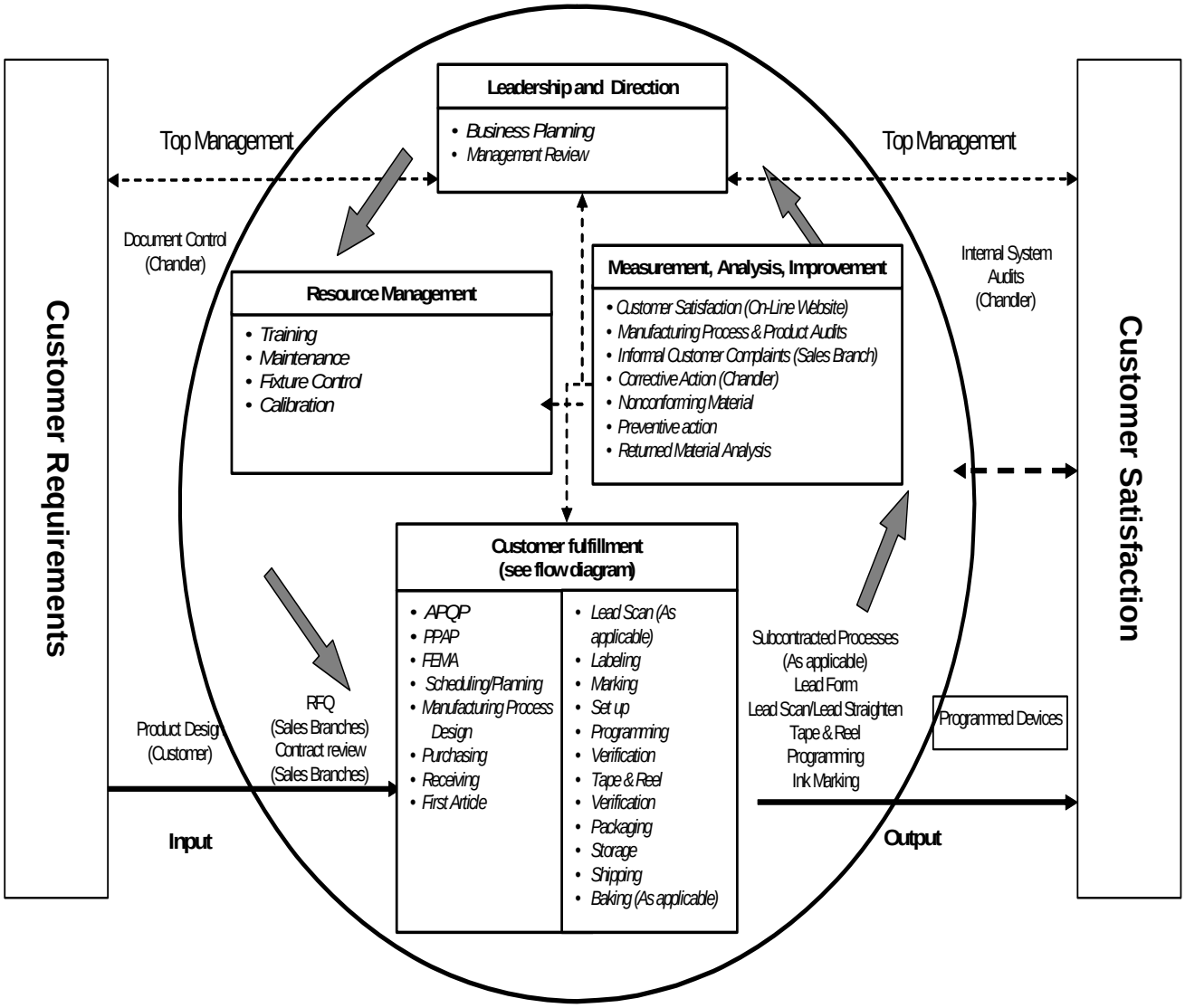
8.5.2.1 Problem Solving - Supplemental
A defined process for problem solving leading to root cause identification and elimination has been determined and documented. A customer-prescribed problem solving format is utilized when requested by the customer.

8.5.2.2 Error-Proofing - Supplemental
Error proofing methods are included in the corrective action process.

8.5.2.3 Corrective Action Impact - Supplemental
Corrective actions are applied to similar process and products to eliminate the cause of non-conformities.

8.5.2.4 Rejected Product Test/Analysis - Supplemental
Parts rejected by the customer are analyzed in a timely manner with the perspective of initiating corrective action to prevent recurrence. Records of the analysis are kept and made available to the customer upon request.

Programming Quality Management System Processes



Customer Fulfillment Process