



**NORMAN FILTER
COMPANY, L.L.C.**

Norman Filter Company, L.L.C.

**Quality Management System
Policy Manual**

**Based on ISO 9001:2000 and
AS9100, Revision B
Quality System Standards**

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1 Introduction and Company Information

Norman Filter Company was established in 1978 as a manufacturer of hydraulic filters and filtration systems for the industrial and aerospace markets.

Our filters have passed the vigorous testing required for many U.S. Defense and Aerospace applications, which include: the U.S. Space Shuttle Program, the U.S. Space Station Program, the F15 Fighter, the EELV program and many more critical aerospace and industrial applications.

Our product line ranges from high to medium and low-pressure hydraulic filters, interchange elements and filtration systems. Norman Filter Company products are solely manufactured in the United States with our primary manufacturing located at our Bridgeview, IL facilities.



With our state of art CNC machinery we are capable of manufacturing custom hydraulic filters based on specific customer requirements at competitive pricing and minimal lead times.

To find out more about our company, products or distribution, please call us at 708-233-5521 or send email to Sales@NormanFilters.com.

Thank you for your interest in Norman Filter Company and we look forward to working with you.

2 Scope, Quality Policy, and Definitions

2.1 Scope

Our quality management system includes the following activities at our Bridgeview, Illinois headquarters:

- Design and manufacture of high pressure filter products.
- Design and assembly of filtration systems.

This quality management system is based on ISO 9001:2000 and AS9100, Revision B. AS9100, Rev. B, includes all of the requirements of ISO 9001:2000 with no exclusions, but is intended for application within the Aerospace industry. AS9100, Rev. B, also includes all elements of AS9003 (Inspection and Test Quality System)

Elements of the quality management system that support AS9100 specific requirements are identified in ***bold italic font*** throughout this quality manual. Some of these requirements may not be applied to contracts that are not intended for the Aerospace industry.

2.2 Norman Filter Company Quality Policy

Norman Filter Company is committed to meeting or exceeding customer requirements and achieving continual improvement in our operations.

2.3 Definitions

Norman Filter Company Quality System related definitions for ISO 9000:2000 and AS9100, Revision B, Quality Management Systems – fundamentals and vocabulary, apply within this quality management system. The following general terms are also defined below; for detailed terms, refer to the Definition Index (DQA01-01) found in our electronic automated file, QMS Documentation Index.

Configuration – The performance, functional, and physical attributes of an existing or planned product, or a combination of products, or one of a series of sequentially created variations of a product.

Configuration control – A systematic process which ensures that changes to released configuration documentation are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified.

Configuration management – A management process for establishing and maintaining consistency of a products’ performance, functional, and physical attributes with its requirements, design, and operational information throughout its life.

Filter Assembly – An assembled combination of a filter housing and filter element.

Filter Element - A rigid device (cartridge) that contains and includes filter media and is designed to fit into a specific filter housing.

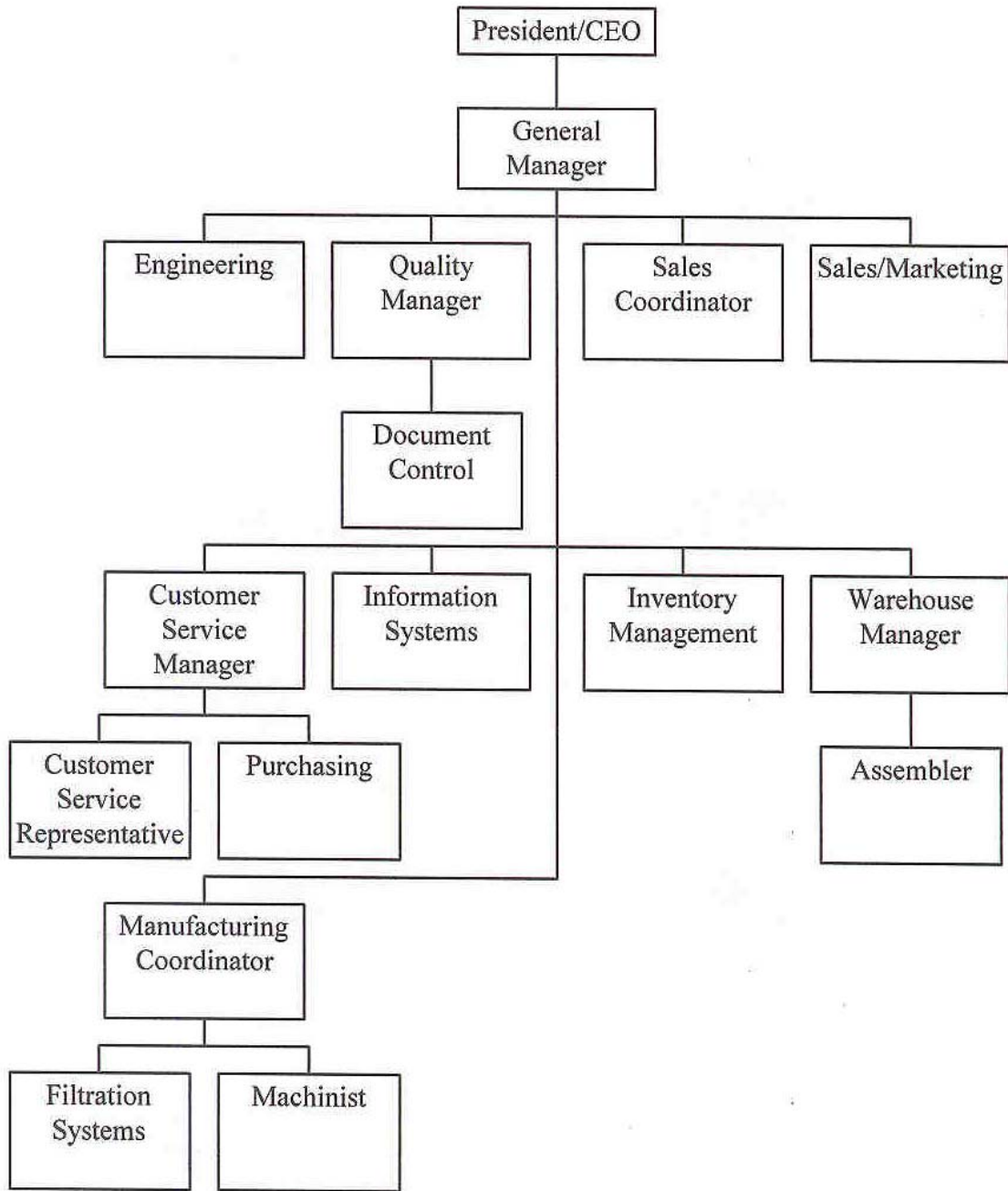
Filter Housing – An enclosure for the filter element that is designed to contain and withstand the pressure and material properties of the fluid stream and solids.

Filter Media - A permeable barrier (material) employed in the filtration process to separate the particles from the fluid stream.

Filtration System – An assembled combination of a filter assembly and peripheral tubing and gages that is designed for a particular range of applications.

Key Characteristics – *The features of a material, processes, or part whose variation has a significant influence on product fit, performance, service life, or manufacturability.*
Same as “Critical Characteristic.”

3 Organizational Chart



4 Quality Management System

4.1 General Requirements

Norman Filter Company establishes, documents, and maintains the ISO 9001:2000 and AS9100, Revision B, Quality System as a means of ensuring that product and related services conform to specified requirements.

Norman Filter Company has identified the processes needed for the quality management system. The sequence and interaction of these processes are shown in the diagram (appendix 1 & 2) at the end of this Quality Manual. The diagram also references specific Operating Procedures that provide more detail about those processes. Each of these processes is monitored for effectiveness by at least one metric. Management analyzes the results of these measurements to determine any necessary actions to achieve quality objectives and continual improvement.

4.2 Documentation Requirements

4.2.1 General

The quality management system documentation is written to a level that is appropriate for size of the organization, the complexity of the processes, and the competence of the personnel.

There are four levels of documentation: (1) This quality manual, which describes the interaction between the processes of the quality management system, (2) Operating procedures, (3) Product and equipment specific instructions, and (4) Forms, records, and other referenced material. Each level of documentation references the applicable documents in the level below it. This ensures that the quality system provides an adequate "road map" to provide procedures and methods that support the policies in this quality manual.

All personnel have access to this documentation and are aware of relevant procedures. Customers and/or regulatory authorities shall also have access.

The appendices to this quality manual show the links between the elements of AS9100 and the documented procedures.

Document designators:

Quality Manual: QM__-__
 Operating Procedures: OP__-__
 Process & Equipment Specs: PE__-__
 Product Specification: PS__-__
 Documents: D__-__
 Forms: F__-__

| | _____ A two digit reference number.
 _____ A two letter designator to identify responsible function:

DC - Document Control
 EN - Engineering
 HR - Human Resources
 IN - Inventory Management and Handling
 MF - Manufacturing/ Production
 PU - Purchasing
 QA - Quality Assurance and Quality Management
 SM - Sales/ Marketing

4.2.2 Control of Documents

Quality system related documents such as forms, reports, and procedures and related data are issued, controlled, maintained, by designated personnel. These documents are reviewed and approved for adequacy prior to issue. Engineering related documents are controlled through a separate ECR/ECO process.

An online master index of the documented quality management system is maintained with links to the current version of each document. This system is readily available to personnel and precludes the use of obsolete documents.

Where required by contract or law, document changes will be coordinated with customers and/or regulatory authorities.

Controls are established to ensure that:

- a) Appropriate documents are readily available and identifiable to all personnel in operations essential to the quality system.
- b) Obsolete or invalid documents are promptly removed or deleted from all points of issue or use.
- c) Quality system documentation may only be revised through the document coordinator.
- d) Changes and modifications to documents or data are reviewed and approved by the same function that originally approved and issued the document. Sufficient

information is provided to the personnel in order to base an effective review and approval.

- e) For operating procedures, work instructions, and quality policy manual elements, the nature of the change is identified in the document or an attachment.

4.2.3 Control of Records

Norman Filter Company maintains a documented procedure for the identification, collection, indexing, access, filing, storage, maintenance, and disposition of the quality records.

Quality records are maintained to demonstrate conformance to specified requirements and the effective operation of the quality system. *This also includes pertinent quality records created by and/or retained by suppliers.*

Quality records are legible and stored in such a way so that they are easily retrievable in designated areas that provide a suitable environment to minimize deterioration or damage and to prevent loss. Retention times of quality records are established and recorded.

Where agreed contractually or as required by law, quality records are made available for review by customers and regulatory authorities.

4.2.4 Configuration Management

A configuration management process appropriate to the product is established and documented within the design procedures.

5 Management Responsibility

5.1 Management Commitment

Management is committed to the development and improvement of the quality system, as demonstrated by:

- a) Ensuring the availability of necessary resources, including training and supervision for personnel performing quality activities.
- b) Establishing the quality policy and quality objectives.
- c) Communicating to the organization the importance of meeting requirements.
- d) Conducting management reviews to ensure the suitability and effectiveness of the quality management system.

5.2 Customer Focus

Customer needs and expectations are determined and documented by customer interfacing personnel in accordance with procedures for contract review and design. Accurately

identifying the needs and expectations and fulfilling them consistently can only achieve customer satisfaction.

5.3 Quality Policy

The quality policy identified in this Quality Manual is communicated to all levels of the organization so that all personnel understand the importance of meeting customer requirements.

The quality policy is supplemented by specific quality objectives that are set by management. They are measured on a regular basis (at management reviews) and used as means to determine system effectiveness.

5.4 Planning

5.4.1 Quality Objectives

Norman Filter Company establishes specific, measurable objectives at appropriate levels of the organization. These objectives support the quality policy, customer requirements, management direction, and product requirements. The processes in the organization will be monitored and/or measured. (Reference process matrix)

5.4.2 Quality Management System Planning

Quality plans are prepared and established to meet the requirements of the customer expectations (whether documented or implied), quality system requirements, and internal requirements. References to operating procedures that define resources and personnel required to perform, verify, or authorize defined quality activities are provided within the quality plans. Appropriate quality records are maintained to support the implementation of quality plans. If required, quality plans are updated or revised to ensure continuing stability.

5.5 Responsibility, Authority, and Communication

5.5.1 Responsibility and Authority

The interrelation of personnel who manage, perform, and verify work affecting quality is defined in the organization chart in this quality manual and appendix 2. The responsibility and authority of these personnel are defined within quality system procedures and work instructions.

5.5.2 Management Representative

Norman Filter Company's Quality Manager, irrespective of other responsibilities, has the authority and responsibility to ensure that the quality system requirements are established,

implemented and maintained, and to report on the performance of the quality management system and need for improvement to top management. The management representative also promotes awareness of customer requirements throughout the organization through management reviews, audits, and other activities, *and has the organizational freedom to resolve matters pertaining to quality.*

5.5.3 Internal Communication

Information regarding the quality management system is communicated throughout the organization through new employee orientation and circulation of relevant changes in quality management system documentation. Information regarding the system's effectiveness is communicated through postings and/or direct personnel meetings.

5.6 **Management Review**

Norman Filter Company's Quality Board reviews on a periodic basis Norman Filter Company's quality system to ensure its continuing suitability and effectiveness, and to identify areas that require improvement in satisfying the requirements of ISO 9001:2000; AS9100, Revision B; and the company quality policy. Fields of review include the evaluation of customer satisfaction, customer feedback, internal quality audit results, process performance, status of corrective and preventive actions, follow-up actions from previous management reviews, changes that could affect the quality system, and recommendations for improvement.

Records of management review are maintained and include any decisions and actions related to improvement of the quality management system, its processes, or product, and resource needs.

6 **Resource Management**

6.1 **Resources**

Norman Filter Company determines necessary resources at the management level to ensure that the quality management system fulfills the needs of Norman Filter Company to achieve and maintain customer satisfaction and continually improves the quality system. The management team has primary responsibility for identifying needed resources.

6.2 **Human Resources**

6.2.1 Assignment of Personnel

Personnel performing quality system related activities are qualified on the basis of appropriate education, training, and/or work experience.

6.2.2 Competence, Awareness and Training

Training is divided by initial, cross, and on-going training. Cross and on-going training is provided where operations are essential.

- a) Initial training: is provided for personnel in order for them to effectively carry out their specific job function and responsibilities.
- b) Cross training: is provided for positions where operations are essential. Personnel are trained to temporarily carry out a specific job function and responsibility when the primary personnel are not available.
- c) On-going training: is provided for positions where continuing technological knowledge is essential or where modifications to company operations have occurred.

Training records are maintained.

6.3 **Infrastructure**

Norman Filter Company management identifies and provides resources necessary to deliver quality product to the customer. Resources include Information Systems, Office Services, Facilities, and Accounting.

6.4 **Work Environment**

The work environment is maintained to achieve product conformity and customer satisfaction. Factors include respect for personnel, safety, and comfort.

7 **Product Realization**

7.1 **Planning of Product Realization**

Norman Filter Company plans the product realization through the identification of processes (inputs, outputs, controls, resources, and measures). Each process is further defined by documented procedures. Norman Filter Company maintains a process matrix to identify these processes and their primary interfaces.

The processes are revised as necessary to improve the quality management system, address new products or meet new customer needs. When the processes are revised, consideration is given to the adequacy of documentation, training, verification, and resources (***including support of operation and maintenance of the product***). Product specific plans are defined in a format to support production, e.g. drawings, travelers, etc.

Relevant management through documentation approval, reviews, revises or creates new processes. Internal audits review the effective implementation of those processes. Final

product test and inspection will also confirm the conformance of product produced through these processes.

7.2 Customer-Related Processes

7.2.1 Determination of Requirements

Requirements specified by the customer, including delivery and support requirements are identified through sales personnel.

Some requirements may not be specified by the customer, but are determined and considered by Norman Filter Company:

- a) Product specifications defined in corporate or product literature.
- b) Performance characteristics of previously delivered product.
- c) Any applicable industry, statutory, or regulatory requirements.
- d) Other expectations that may be identified through sales visits, field installation visits, customer audits, customer feedback, market research, or benchmarking.

7.2.2 Review of Product Requirements (Contract Review)

- 7.2.2.1 Authorized personnel review customer contracts, orders, and quotations relating to the sale of products and services to ensure that customer expectations of form, fit and function can be met. ***This includes a review of risks (e.g. new technology, short delivery time scale).*** Records of review are maintained.
- 7.2.2.2 Customer order requirements are defined, documented, and agreed to by Norman Filter Company personnel who have the knowledge, resources, and authority to make the decision to accept or reject an order. Verbal orders taken are documented and reviewed.
- 7.2.2.3 If Norman Filter Company cannot fully comply with all stated requirements of a contract or order, the customer is notified and differences are resolved.
- 7.2.2.4 Orders and contracts are reviewed against any quotations issued. Any differences are communicated and resolved.
- 7.2.2.5 When an amendment to a contract is required, Norman Filter Company ensures that these amendments are adequately defined, approved, and communicated to the appropriate personnel.

7.2.3 Customer Communications

Information is provided to customers and other interested parties through printed literature, web site information, and trained sales personnel.

Sales and Customer Service personnel provide the main communication links to customers. They are Norman Filter Company's liaison to the customer for inquiries related to products, delivery, technical issues, and complaints. They also communicate any feedback, including complaints, to the appropriate Norman Filter Company personnel. Quality assurance personnel log any complaints and initiate appropriate corrective action.

7.3 **Design and Development**

7.3.1 Design and Development Planning

Each design and development stage is planned, as well as the appropriate reviews, verification, and validation for these stages. The Engineer assigns responsibilities and updates the plan as the design evolves. Forms, reports and procedures are established for transmittal of necessary documented information among the different groups involved. All product design changes and new products are issued and finalized by Sales & Marketing.

The different design and development tasks to be carried out shall be defined according to specified safety or functional objectives of the product in accordance with customer and/or regulatory authority requirements.

7.3.2 Design and Development Inputs

Design input requirements are documented and reviewed for adequacy. Incomplete, ambiguous, or conflicting requirements are resolved. Inputs include functional and performance requirements, applicable statutory and regulatory requirements, applicable information derived from previous similar designs, and any other essential requirements.

7.3.3 Design and Development Outputs

The documented design outputs are expressed in terms of requirements that are verifiable against design input requirements. ***This includes all information needed to identify, manufacture, inspect, use, and maintain the resulting product.*** Design outputs:

- a) Meet design input requirements.
- b) Provide appropriate information for a BOM, production, application, and service.
- c) Contain or reference product acceptance criteria, if applicable.
- d) Specify the characteristics that are identified for safe and proper use and of the product.

- e) ***Identify key characteristics, when applicable, in accordance with design or contract requirements.***
- f) Are approved prior to moving to the next phase.

7.3.4 Design and Development Review

Coordinated, documented reviews of design are conducted at appropriate stages. Records of these reviews are maintained. The purpose of these reviews is:

- a) To evaluate the ability of the results of designs to meet requirements.
- b) To identify any problems and propose actions. These may include problems with the product design or design project issues.
- c) ***To authorize progression to the next stage.***

7.3.5 Design and Development Verification

Design outputs are verified for compliance with design input requirements and the results are recorded. Tests, calculations, or comparisons with similar proven designs may accomplish this verification. The customer, Sales & Marketing, and Engineering jointly agrees on the customer defined, and formatted verifications.

7.3.6 Design and Development Validation

Design validation, in accordance with customer product acceptance, is conducted to ensure that product is capable of meeting the requirements for the specified application or intended use, where known. Results of the validation and any necessary actions are maintained. The nature of Norman Filter Company's product often cannot be validated until it is installed and used. Validation may be a beta acceptance test coordinated with the customer, Sales & Marketing, and Engineering. User/ customer feedback is solicited. Response or lack of response from the customer provides the results of validation in these cases.

At the completion of design and development, Norman Filter Company ensures that reports, calculations, test results, etc., demonstrate that the product definition meets the specification requirements for all identified operational conditions.

To verify the design and/or validate the product by testing, these tests will be planned, controlled, reviewed, and documented to ensure and support the following:

- a) Test plans or specifications identify the product being tested and the resources being used, define test objectives and conditions, parameters to be recorded, and relevant acceptance criteria,
- b) Test procedures describe the method of testing, the performance of the test, and the recording of the results,

- c) The correct configuration of the product is submitted for the test,
- d) The requirements of the test plan and the test procedures are observed,
- e) The acceptance criteria are met.

7.3.7 Control of Design and Development Changes

Design changes and product modifications are identified, documented, and reviewed through the ECR/ECO process prior to production release. The customer, Sales & Marketing, and Engineering will determine if the design requires additional verification and/or validation activities.

Where required by contract or law, approval of changes by customers and/or regulatory authorities is included in this process.

7.4 **Purchasing**

7.4.1 Purchasing Control

Purchasing activities are described in documented procedures to ensure that requirements are effectively communicated to qualified suppliers.

A list of qualified suppliers is maintained that includes the scope of the approval.

Suppliers are qualified and then assessed at prescribed intervals to determine the degree of their ability to meet defined and implied contractual requirements. The assessment results are utilized to determine supplier effectiveness, the need for any corrective action, and are used as a basis for establishing the level of controls to be implemented. Procedures define the necessary actions to take when dealing with suppliers that do not meet requirements. Functions that approve suppliers also have the authority to disapprove those sources. The extent of control exercised over a supplier is also determined by the criticality of the product or service and its effect with respect to the reputation of Norman Filter Company. Records of assessments are maintained to demonstrate a history of the suppliers' ability to continually meet requirements.

Purchasing priority sequence: Unless a customer requests a specific supplier, purchasing is to be performed with a Norman Filter Company "qualified supplier." If the order cannot be fulfilled using a "qualified supplier" then a non-qualified supplier may be used under defined conditions.

Norman Filter Company is responsible for the quality of all products purchased from suppliers, including customer-designated sources.

7.4.2 Purchasing Information

Purchase order information is reviewed and approved for adequacy by authorized personnel prior to release. Purchase order information is maintained in order to evaluate the supplier's ability to meet requirements. Purchasing data is maintained or referenced in the Purchase Order system and clearly describes all relevant contractual information, including:

- a) Product description, part number, quantity, delivery requirements, and terms and conditions.
- b) Requirements for approval of product, procedures, processes and equipment
- c) Requirements for qualification of personnel
- d) Quality management system requirements
- e) *The name or other positive identification, and applicable issues of specifications, drawings, process requirements, inspection instructions and other relevant technical data,*
- f) *Requirements for design, test, examination, inspection and related instructions for acceptance by the organization,*
- g) *Requirements for test specimens (e.g., production method, number, storage conditions) for design approval, inspection, investigation or auditing,*
- h) *Requirements relative to supplier notification to Norman Filter Company of nonconforming product and arrangements for Norman Filter Company approval of supplier nonconforming material,*
- i) *Requirements for the supplier to notify the Norman Filter Company of changes in product and/or process definition and, where required, obtain approval,*
- j) *Right of access by the Norman Filter Company, its customer(s), and regulatory authorities to all facilities involved in the order and to all applicable records, and*
- k) *Requirements for the supplier to flow down to sub-tier suppliers the applicable requirements in the purchasing documents, including key characteristics where required.*

7.4.3 Verification of Purchased Product

All purchased products are currently verified at Norman Filter Company. If a need arises to verify purchased product at the supplier's premise, the verification arrangements and the method of product release will be identified in the purchase order.

Verification activities may include

- a) *Obtaining objective evidence of the quality of the product from suppliers (e.g., accompanying documentation, certificate of conformity, test reports, statistical records, process control),*
- b) *Inspection and audit at supplier's premises,*
- c) *Review of the required documentation,*
- d) *Inspection of products upon receipt, and*
- e) *Delegation of verification to the supplier, or supplier certification.*

Purchased product shall not be used or processed until it has been verified as conforming to specified requirements unless it is released under positive recall procedure.

Where Norman Filter Company utilizes test reports to verify purchased product, the data in those reports shall be acceptable per applicable specifications. The organization shall periodically validate test reports for raw material. Where Norman Filter Company delegates verification activities to the supplier, the requirements for delegation shall be defined and a register of delegations maintained.

Where specified in the contract, the customer or the customer's representative shall be afforded the right to verify at the supplier's premises and Norman Filter Company's premises that subcontracted products conform to specified requirements.

Verification by the customer is not used as evidence of effective control of quality by the supplier, nor shall it preclude subsequent rejection by the customer.

7.5 Production and Service Operations

7.5.1 Production Control

Quality related processes are maintained and controlled to ensure process consistency and suitability by the following means:

- 7.5.1.1 Documented procedures are maintained to describe the processes where the absence of such procedures could adversely affect quality and service delivery.
- 7.5.1.2 A suitable working environment through maintained process equipment. Equipment used in value adding and service delivery is maintained to ensure it is continuously suitable to perform its intended function.
- 7.5.1.3 Information related to product characteristics is available to personnel.
- 7.5.1.4 Process parameters and product characteristics are monitored, and the process is adjusted as needed.

- 7.5.1.5 The criteria for workmanship are established through documented work instructions, representative samples, or illustrations.
- 7.5.1.6 Manufacturing personnel are required to complete formal training related to their function and be qualified through peer or supervisor review.
- 7.5.1.7 Norman Filter Company provides technical support and warranty servicing to support applicable warranties that are included with a contract or order. Results of servicing are communicated to quality and/or design staff, as appropriate, to facilitate corrective and preventive action.
- 7.5.1.8 ***Accountability for all products during manufacture (e.g., parts quantities, split orders, nonconforming product) is tracked.***
- 7.5.1.9 ***Ensuring that all manufacturing and inspection operations have been completed as planned, or as otherwise documented and authorized.***
- 7.5.1.10 ***Ensuring the prevention, detection, and removal of foreign objects.***
- 7.5.1.11 Monitoring and control of utilities and supplies such as water, compressed air, electricity and chemical products to the extent they affect product quality.

7.5.2 Production Documentation

Traveler Package (work order, router, product inspection report and heat analysis) Data identified:

- ***Drawings***
- ***B.O.M.***
- ***Production and/or assembly sequence***
- ***Set-up inspection***
- ***Product inspection***
- ***Customer inspection***
- ***Schedule to ship***
- ***Machine program***
- ***Tool List***

7.5.3 Control of Production Process Changes

7.5.3.1 Persons authorized to approve changes to production processes are be identified.

7.5.3.2 *Norman Filter Company identifies and obtains acceptance of changes that require customer and/or regulatory authority approval in accordance with contract or regulatory requirements.*

7.5.3.3 *Changes affecting processes, production equipment, tools and programs are documented. Procedures are available to control their implementation.*

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

7.5.4 **Control of Production Equipment, Tools and Numerical Control (NC) Machine Programs**

7.5.4.1 *Production equipment, tools and program 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.*

7.5.4.2 *Storage requirements, including periodic preservation/condition checks, are established for production equipment or tooling in storage.*

7.5.5 **Control of Work Transferred, on a Temporary Basis, Outside the Organization's Facilities**

When planning to temporarily transfer work to a location outside Norman Filter Company's facilities, there is a process to control and validate the quality of the work.

7.5.6 **Control of Service Operations**

While Norman Filter Company does not currently provide "servicing" as a contractual requirement, the following will be addressed should this become a requirement for one or more customers: Service operation processes shall provide for

7.5.6.1 *A method of collecting and analyzing in-service data,*

7.5.6.2 *Actions to be taken where problems are identified after delivery, including investigation, reporting activities, and actions on service information consistent with contractual and/or regulatory requirement,*

7.5.6.3 *The control and updating of technical documentation,*

7.5.6.4 *The approval, control, and use of repair schemes, and*

7.5.6.5 *The controls required for off-site work (e.g., organization's work undertaken at the customer's facilities).*

7.5.7 Validation of Processes for Production and Service

Norman Filter Company validates any processes where the resulting output cannot be verified by subsequent monitoring or measurement. This includes any process where deficiencies become apparent only after the product is in use. This applies for the production of high-pressure filter housings. Where they are implemented, the following will be done:

- a) Define the criteria for review and approval of the process. ***Special processes are qualified and approved prior to use.***
- b) Approve the equipment and ensure the personnel involved are trained and qualified.
- c) Define specific methods and procedures, ***particularly for significant operations and parameters of special processes.***
- d) Revalidate the process when there is significant change.

7.5.8 Identification and Traceability

Norman Filter Company's part number, a supplier part number, or a material designation (e.g. color coded steel grades) identifies received products and materials.

An accompanying work order or other traveler identifies work in process and finished product with a job number and part numbers. Shelf labels, travelers, or product markings identify completed Norman Filter Company product.

Certain products are identified with material heat numbers and test references.

Location, stamps, documentation, or tags identify the inspection and test status of Norman Filter Company products. The method of identifying the inspection and test status is defined in the applicable procedure for the inspection or test.

Designated nonconforming staging locations are clearly identified to avoid confusion and inadvertent use. Product that is of questionable status is segregated until authorized personnel verify its conformity status.

Norman Filter Company maintains the identification of the configuration of the product in order to identify any differences between the actual configuration and the agreed configuration.

When acceptance authority media are used (e.g., stamps, electronic signatures, passwords), Norman Filter Company establishes and documents controls for the media.

According to the level of traceability required by contract, regulatory, or other established requirement, the Norman Filter Company's system shall provide for:

- a) Identification to be maintained throughout the product life.***
- b) 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.***
- c) For an assembly, the identity of its components and those of the next higher assembly to be traced.***
- d) For a given product, a sequential record of its production (manufacture, assembly, inspection) to be retrieved.***

7.5.9 Customer Property

This applies to customer owned products, materials, machinery, packaging supplies, tools, test equipment, and software.

Any customer owned product is received, verified, identified, protected, and maintained.

Any customer owned product that is lost, damaged, or is otherwise unsuitable for use shall be recorded and reported to the customer.

7.5.10 Preservation of Product

Handling: Methods and devices are provided to personnel for the effective handling of product in order to prevent damage or deterioration, including provisions to lift and transport product. ***Provisions are made to keep work areas clean and to prevent, detect, and remove foreign objects from product.***

Storage: Designated stock areas are provided and maintained to prevent damage or deterioration to product. The warehouse manager stipulates appropriate methods for authorizing receipt or dispatch to and from stock areas. During periodic cycle count inventory, an assessment is made of stored products to detect damage or deterioration. To ensure adequate product preservation, the First-In-First-Out priority system is established for all products. Stored products do not have a designated shelf life or any particular sensitivity requirements. ***Hazardous materials (e.g. paint) are stored in accordance with established safe practices.***

Packaging: Products are packaged to prevent damage or deterioration during handling and delivery. Product identification and labeling methods are established to provide for easy identification. When contractually required special packaging or labeling requirements are provided to personnel responsible for product packaging. ***Delivered product is marked and/or labeled along with any applicable safety warnings.***

7.6 Control of Measuring and Monitoring Devices

Inspection, measurement, and test equipment is selected which assures sufficient accuracy and precision to determine product compliance.

All equipment covered by the calibration program is calibrated or verified at defined intervals against standards that are traceable to a internationally recognized standard. Where no such standards exist, the basis used is documented.

A list of all monitoring and measuring equipment used for acceptance of product is maintained, and a process is defined for the calibration of this equipment. The following are defined for each piece of equipment:

- Equipment type and unique identification
- Location
- Calibration method
- Calibration frequency
- Acceptance criteria

Each device (or its storage unit) is individually labeled showing last date of calibration, next calibration due date, and the calibrator. Records are maintained for each such device and its history.

The calibration process defines action to be taken when results are unsatisfactory, including assessing and documenting the validity of previous inspection and test results.

Inspection, measurement, and test equipment storage, usage, and calibration is in a controlled in-door environment, where there is no exposure to adverse environmental conditions that would affect accuracy and fitness for use. Any location inside the Norman Filter Company, LLC facilities is considered an acceptable environment for equipment storage, use, or calibration.

A system is defined to recall equipment when required. Calibrations are rechecked if equipment is dropped, damaged, or otherwise suspected of no longer being within calibration.

8 Measurement, Analysis, and Improvement

8.1 General

Norman Filter Company plans the measurement, analysis, and improvement processes needed to

- a) Demonstrate conformity of the product.
- b) Ensure conformity of the quality management system.
- c) Continually improve the effectiveness of the quality management system.

Norman Filter Company identifies the need for statistical techniques required for establishing, controlling, and verifying process capability and product characteristics in relation to stated requirements.

8.2 *Measurement and Monitoring*

8.2.1 *Customer Satisfaction*

Norman Filter Company monitors information relating to customer perception as to whether Norman Filter Company has met customer requirements. These methods include:

- a) Assessment of customer satisfaction through visits and/or regular meetings with customers to identify and resolve issues.
- b) Feedback from field engineers who work directly with customers and product.
- c) Monitoring of customer complaints and trouble reports.

8.2.2 *Internal Audit*

Norman Filter Company maintains documented procedures for planning and implementing internal quality audits. ***Audit methods include defined tools to ensure effective audits and to meet any defined customer and/or regulatory requirements.*** These audits determine through the review of objective evidence whether the quality management system

- a) Conforms to the requirements of ISO 9001:2000; AS9100, Revision B; and Norman Filter Company's planned arrangements (processes, documentation, contracts, etc.).
- b) Is effectively implemented and maintained.

Internal quality audits are scheduled on the basis of status and importance of the activity to be audited and are carried out by personnel independent of those having direct responsibility for the activity being audited.

The results of the audit are recorded and brought to the attention of personnel having responsibility in the area being audited. Critical non-conformances or deficiencies are brought to the attention of the Quality Board. Responsible personnel respond and carry out timely corrective action on the non-conformances found during the audit as defined in the Internal Quality Auditing procedure.

Follow-up activities and audits record the implementation and effectiveness of the corrective action taken for noncompliance.

A full assessment of the Quality System elements is to be completed within one-year maximum intervals.

8.2.3 Measurement and Monitoring of Processes

Norman Filter Company monitors and/or measures its quality management system processes. This demonstrates the ability of the processes to achieve planned results. Norman Filter Company's process map identifies the means of process monitoring. 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, Norman Filter Company:

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

8.2.4 Measurement and Monitoring of Product

Receiving inspection procedures are maintained. All incoming product is inspected per this procedure prior to release to inventory or production. The amount and nature of receiving inspection required is related to the amount of control at the supplier's premises and evidence of conformance provided.

In process inspections are conducted as required by the quality plan and inspection procedures. Product is not released to subsequent processes until required inspections have been completed, except when required under a defined positive recall process.

Final inspection of product released to stock is conducted by production personnel to verify that all required inspections have been satisfactorily completed.

Final inspection of product released to customers is conducted by warehouse personnel on each shipment to verify that the order is correct and that there are no apparent flaws. No product is shipped until all required inspections and tests have been completed.

Inspection records are maintained to provide evidence that verification activities have been performed. Inspection and test records also define the personnel authorizing release of product.

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

When Norman Filter Company uses sampling inspection as a means of product acceptance; the plan is statistically valid and appropriate for use. A zero defect policy is maintained, meaning that any known nonconformance will result in a rejection of the lot and/or 100% inspection.

Inspection Documentation – *Measurement requirements for product are documented and includes:*

- *Criteria for acceptance and/or rejection*
- *Sequence/ timing of measurements and tests.*
- *Records of results, including data.*
- *Type of measurement instruments required along with any special instructions*

First Article Inspection – *Norman Filter Company has 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 Nonconformity

When product is found through inspection or other verification not to conform to requirements, the product is segregated to prevent unintended use. If the nonconformance is the result of a supplier error, documentation describing the nature of the nonconformance is communicated to the supplier and the Purchasing Department in order to take appropriate action.

If the nonconformance is the fault of Norman Filter Company, the situation is evaluated to determine the need for internal corrective action measures to prevent a reoccurrence. If the nonconforming product will result in a delay or non-fulfillment of an order, the customer is provided immediate notification.

A nonconforming material report is written for certain inspections by whoever found the nonconformance; it is reviewed by the Material Review Board to determine and document the product's disposition. This process is defined in a documented procedure, including the authority for the disposition of nonconforming product. Nonconforming product disposition options are:

- Return - send back to the supplier.
- Scrap - dispose of by Norman Filter Company. (*Scrap is conspicuously and permanently marked, or otherwise controlled, until physically rendered unusable.*)
- Rework to meet specified requirements.

- Accept with or without repair by concession with the customer (*customer approval required if product is customer designed or product deviates from contract requirements or any customer-specified product specifications*).
- Re-grade for a different application.

Other product nonconformance's, such as those found during product testing are handled as defined in the appropriate inspection and test procedure.

Records of product nonconformance and any subsequent action taken are maintained. These are used to monitor the supplier performance and also for internal continual improvement.

Any product that is reworked is also re-inspected in accordance with the quality plan and/or documented procedures.

In addition to any contract or regulatory authority reporting requirements, Norman Filter Company shall provide for timely reporting of delivered nonconforming product that may affect reliability or safety. Notification shall include a clear description of the nonconformity, which includes as necessary parts affected, customer and/or organization part numbers, quantity, and date(s) delivered.

8.4 Analysis of Data

Norman Filter Company collects and analyzes appropriate data to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the effectiveness of the quality management system can be made. These results are an input to management review. This includes data generated as a result of monitoring and measurement and from other relevant sources, including:

- a) Customer satisfaction.
- b) Conformity to product and customer requirements.
- c) Characteristics and trends of processes and products (opportunities for preventive action).
- d) Supplier performance.

8.5 Improvement

8.5.1 Planning for Continual Improvement

Norman Filter Company 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

A documented procedure is established and maintained for the implementation of corrective and preventive action. Records are maintained of corrective action taken.

The purpose of corrective action is to prevent a reoccurrence of nonconformity. Corrective actions and their prioritization are appropriate to the effects of the nonconformities encountered.

Any modifications to Norman Filter Company documented policies or procedures resulting from corrective action is recorded and reviewed by the management responsible for the operation.

Procedures relating to corrective action include the following:

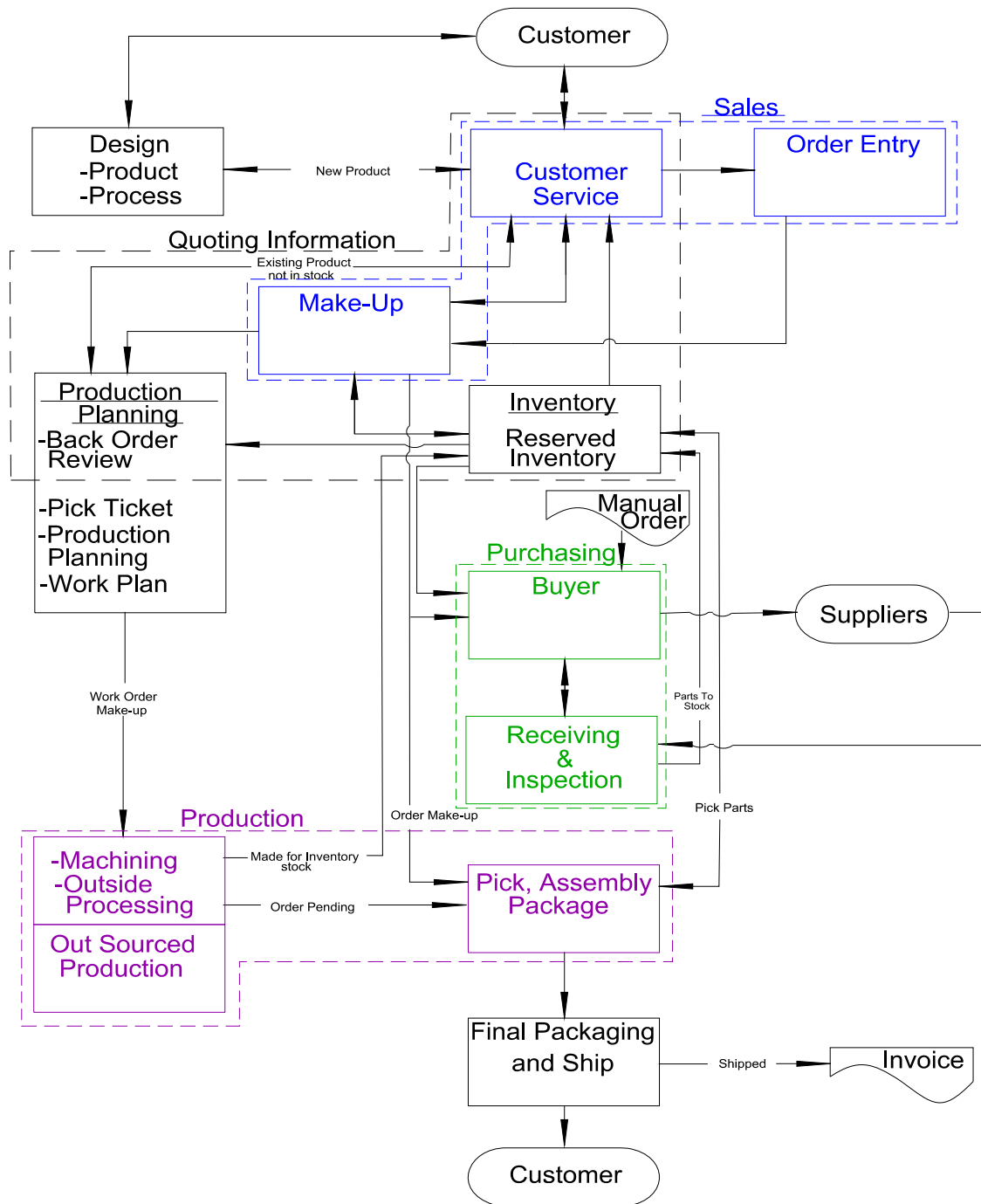
- a) The effective handling of customer complaints and reports of product nonconformities.
- b) The investigation of the cause(s) of nonconformities relating to product, process, and the quality system and recording the results of the investigation.
- c) Evaluating the need for action to ensure that nonconformities do not recur, ***including flow down of corrective actions to suppliers, where appropriate.***
- d) Determination of the corrective action required in eliminating the cause of the nonconformities.
- e) Reviewing corrective action taken.
- f) ***Specific actions where timely and/or effective corrective actions are not achieved.***

8.5.3 Preventive Action

The purpose of preventive action is to prevent a potential nonconformity from happening (proactive). Preventive action shall be appropriate to the effects of the potential problems. Records of preventive action taken are maintained. A documented procedure relating to preventive action includes the following:

- a) Determining potential nonconformities and their causes (see analysis of data).
- b) Evaluating the need for action to prevent occurrence of nonconformities.
- c) Determining and implementing action needed.
- d) Reviewing preventive action taken.

Appendix 1 – Process Flow



Appendix 2 – Process Matrix

Process	Inputs	Outputs	Controls	Monitoring*	Resources
Sales (Customer Service, Order Entry, and Makeup)	<ul style="list-style-type: none"> RFQ (customer) Purchase order (customer) Complaint (customer) Technical support (Design) Technical info (Design) Lead time (Prod Planning) Material and parts inventory levels (Sales) 	<ul style="list-style-type: none"> Quotation (customer) Acknowledgement (customer) Entered order / makeup info (Prod Planning, Purchasing, & Production) General Engineering Request – GER (Eng.) Purchase release for ECR (Eng.) 	<ul style="list-style-type: none"> AS-400 OMS OPSA-02 Quote forms Return auth. 	<ul style="list-style-type: none"> On time delivery Customer complaints Customer satisfaction 	<ul style="list-style-type: none"> Production Schedule Sales personnel
Design	<ul style="list-style-type: none"> General Engineering Request – GER (Sales) Purchase release for ECR (Sales) 	<ul style="list-style-type: none"> Technical support (Sales) Technical info (Prod Planning, Purchasing, Sales) 	<ul style="list-style-type: none"> Forms and Procedure Engineering standards 	<ul style="list-style-type: none"> On time delivery Customer complaints Non-conformance 	<ul style="list-style-type: none"> Engineering CAD Services
Production Planning	<ul style="list-style-type: none"> Technical info (Design) Entered order / makeup info (Sales) Material and parts inventory levels (Inventory) 	<ul style="list-style-type: none"> Lead time (Sales) Production Schedule (Production) Production package (Production) Reserved inventory (Inventory) 	<ul style="list-style-type: none"> Make-up entry in AS-400 Production meetings Work order and router databases Schedule board 	<ul style="list-style-type: none"> Complaints On time delivery Production Boards 	<ul style="list-style-type: none"> Production management Purchasing Engineering Sales and Marketing Software
Purchasing (includes Receiving)	<ul style="list-style-type: none"> Entered order / makeup info (Sales) Technical info (Design) Inventory Status/ reorder points (Inventory) Received materials and parts (suppliers) 	<ul style="list-style-type: none"> Purchase Orders (suppliers) Request for quotation (suppliers) Materials and parts (Inventory) 	<ul style="list-style-type: none"> AS-400 OMS NFC / Supplier Agreements Procedure 	<ul style="list-style-type: none"> Cost reductions Continuity of supply – supplier on time delivery and maintain inventory levels. Product Non-conformance Audits 	<ul style="list-style-type: none"> Buyers Purchasing Software Inspection Time Measurement Equipment

Process	Inputs	Outputs	Controls	Monitoring*	Resources
Inventory	<ul style="list-style-type: none"> Materials and parts (Purchasing) Reserved inventory (Prod planning) Base product (production) 	<ul style="list-style-type: none"> Material and parts inventory levels (Production planning, Sales) Inventory Status/ reorder points (Purchasing) Materials and Parts (Production) 	<ul style="list-style-type: none"> Procedures for protecting, placing, removing, and handling inventory 	<ul style="list-style-type: none"> Inventory Audits/ Cycle Counts 	<ul style="list-style-type: none"> Stockroom Clerk Bins/ Labels/ Signs
Production	<ul style="list-style-type: none"> Entered order / makeup info for assy. (Sales) Production Schedule (Prod Planning) Production package (Prod Planning) Materials and Parts (Inventory) 	<ul style="list-style-type: none"> Final product (Final pack/ship) Base product (Inventory) 	<ul style="list-style-type: none"> Machine setup information Machine programs Set up verifications Part inspections Procedures HR Skills Pick list check off sheet 	<ul style="list-style-type: none"> Non - conformance Throughput On time delivery Customer complaints 	<ul style="list-style-type: none"> Machines Tooling Operators Measurement instruments Outside services
Final Packaging and Ship	<ul style="list-style-type: none"> Final product (Production) 	<ul style="list-style-type: none"> Product (Customer) QA and shipping documents (Customer) 	<ul style="list-style-type: none"> Shipping Information 	<ul style="list-style-type: none"> On time shipment 	<ul style="list-style-type: none"> Norman Equipment

*Monitoring indicates typical characteristics that are measured to monitor the success of the process. These may vary from time to time. Responsible management maintains current records of process monitoring and have clear targets to determine effectiveness.

Appendix 3 – Organization Resources

Resource	Controls
Control of Inspection and Test Equipment & Software	<ul style="list-style-type: none"> • Procedure OPQA-07 • Measuring and Test Equipment • Calibration Standards • Calibration Suppliers
Corrective and Preventive Action	<ul style="list-style-type: none"> • CAR system • Procedure OPQA-05
Customer Satisfaction Assessment	<ul style="list-style-type: none"> • Satisfaction Surveys • Customer Recommendations • Report Cards
Document Control (Procedures/ Work Instructions/ Eng.)	<ul style="list-style-type: none"> • Procedure OPQA-01 • ECR/ECO Procedure OPEN-01 • Document Control Coordinator
Finance	<ul style="list-style-type: none"> • Accounts Payable • Invoicing and collections • Credit
Information Systems	<ul style="list-style-type: none"> • Network policies for system and data security • Data backup procedures • Telephone systems
Internal Audits (Process, Product)	<ul style="list-style-type: none"> • Procedure OPQA-04 • ISO 9001:2000 • AS 9100, Rev. B • CAR system
Qualification & Training of Personnel	<ul style="list-style-type: none"> • Human Resources – hiring, orientation and record keeping for personnel – Procedure OPHR-01

Appendix 4 –QMS Documentation Index

Engineering

Product Design

[OPEN-01 Engineering Change Request/Order \(ECR/ECO\) Process](#)

Product Design Process

[OPEN-02 Product Design Process](#)

[OPEN-03 Drawings](#)

Human Resources

[OPHR-01 Human Resources](#)

Inventory Management

[OPIN-01 Stocking](#)

[OPIN-02 Daily Cycle Count](#)

[OPIN-03 Inventory Removal](#)

Management

[OPQA-03 Management Review](#)

[OPQA-06 Nonconforming Product Control](#)

[OPQA-15 Configuration Management](#)

Production

Planning

[OPMF-01 Makeup and Production Scheduling](#)

[OPMF-02 Production Process](#)

[OPMF-07 Work Center Set-Up](#)

Machining

[OPMF-301-40-INDEX1 Workstation Set-up 40 Chuck Indexer](#)

Purchasing

[OPPU-01 Purchasing](#)

[OPPU-03 Guideline to Suppliers List](#)

[OPPU-04 Receiving and Incoming Inspection](#)

Quality Assurance

[OPQA-01 Document Control - Quality System](#)

[DQA01-01 Definition Index](#)

[OPQA-02 Controlled Document Routing](#)

[OPQA-04 Internal Audits](#)

[OPQA-05 Corrective and Preventative Action](#)

[OPQA-07 Calibration](#)

[OPQA-11 Creating Procedures](#)

[OPQA-14 Record Control](#)

[OPQA-15 Configuration Control](#)

Sales/Marketing

[OPSM-01 Quotations and Order Review](#)

[OPSM-02 Export Documents](#)

[OPSM-03 Complaint and Return Handling](#)

Service Manuals, Standards and Specifications

[PSM04-01Rev3 4500 Product Disassembly & Cleaning Manual](#)

[PSM04-02Rev2 14500, 34500, 54500 Product Disassembly & Cleaning Manual](#)

[PSM04-03Rev1 14100, 34100, 4100 Product Disassembly & Cleaning Manual](#)

[PSM04-04Rev1 4200 Product Disassembly & Cleaning Manual](#)

[PSM04-05Rev1 4300 & 4400 Product Disassembly & Cleaning Manual](#)

PSS04-01 Industry Standards

PSS04-02 Assembly Instructions

PSS04-03 Filtration System – Cart Procedures

PSS04-04 Filtration System – Panel Procedures

PSS04-05 Filtration System – Handheld Procedures

PSS04-06 Filtration System – HV Procedures

PSS04-07 Standard Product Specifications

PSS04-08 Make-up Assembly Instructions

PSS04-09 Filtration System Make-Up Assembly Instructions

PSS04-10 Element Manufacturing Standards

REVISION LOG

Rev.	Date	Nature of Change
6	07/25/06	Configuration management
5	11/29/05	Improvement to current practices & documents
4	10/27/05	Document audit requirements
3	10/07/05	Appendix 2 revised
2	08/04/05	Organizational chart revised
1	12/14/05	Document designator added
0	11/17/04	New document