

## INTRODUCTION

This document describes an inspection system broken down into four separate levels. When **Inspection Level IV** is invoked, this system meets the requirements of former MIL-I-45208A. The primary purpose of this manual is to establish a Quality Control System for controlling and assuring acceptable product quality on an economical basis consistent with the intent of former MIL-A-45208A, Selected procedures may be utilized to less than the stated procedure when former MIL-I-45208A is not contractually imposed. Quality Assurance and Company Management shall be responsible for implementing and maintaining this document.

Copies of this document shall be classified either as "Controlled" or "Uncontrolled", and shall be identified as such on the cover sheet.

This manual shall be reviewed annually and updated as necessary.

When this manual is revised, all internal copies shall be collected for simultaneous update. Revised sheets shall be sent to all holders of external controlled copies within one (1) week of the revision. It shall be the responsibility of the external manual holder to update their assigned manual. Uncontrolled copies will not be updated.

The Quality Assurance Manager and the Company President or General Manager, shall approve all revisions to this manual.

## **1.0 RESPONSIBILITIES**

1.1 The Quality Assurance Department and Manufacturing Supervision will provide and maintain an Inspection System which will ensure that all supplies and services delivered to the Companies end-users conform to contract requirements.

1.2 Inspectors will perform, or have performed, the inspections and test required to assure conformance to drawing and/or Contract specifications.

1.3 The Quality Assurance Department will document the Inspection System and make it available upon request to any concerned end-user representatives. Changes in the Inspection System shall be subject to disapproval if the changes could potentially result in non-conforming products.

1.4 The Quality Assurance Department will perform internal audits at various times, but at least once a year. The purpose of the audits will be to verify that Shareway Industries, Inc. Quality Manual requirements are being fulfilled. (See Fig 1.1)

1.5 The Quality Assurance Department will notify the required end-user representatives of changes in the Inspection System.

## **2.0 CORRECTIVE ACTION**

2.1 Prompt action will be taken to investigate and correct conditions which do not conform to Quality Assurance requirements, inspection, and/or test requirements of the contract, or any other inspections and/or tests required to assure product conformance.

2.2 Corrective action shall be authorized by the appropriate Government/Customer representative when that corrective action changes the work scope as defined by the governing contract.

2.3 Corrective action requests shall be answered in a maximum time span of 10 working days.

### **3.0 INSPECTION RECORD PROCEDURES**

- 3.1 The Quality Assurance Department will maintain records of all inspections performed and other data required by the governing contract.
- 3.2 All Inspection Records will be available for review by the contract specified representatives.
- 3.3 All Inspection Records shall be legible and recorded in a permanent manner. Erroneous entries will be corrected with a single line drawn through the entry, and will then be initialed.
- 3.4 Inspection acceptance will be noted on the records by means of a legible Inspection Stamp impression or Inspector's initials.
- 3.5 All Inspection Records will be retained for a period of 7 years, or as required by the governing contract.

#### **4.0 MATERIAL PURCHASING PROCEDURES**

4.1 Purchasing receives the work order from the Sales Department. From this document, Purchasing will produce all Purchase Orders.

4.2 Purchasing shall review the drawing to confirm size, diameter, length, material type, etc., to compare the planning callouts to drawing callouts. Any discrepancy must be cleared prior to ordering material.

4.3 All material and/or supplies will be ordered on Shareway Industries, Inc. Purchase Order forms (See Fig 1.2) reflecting details of material ordered as well as material certification requirements. In the event that certifications are an added cost to the purchase order, confirmation with the Sales Department of requirement is suggested. If there is no charge for the cert; the cert will be requested. All material/out plant processes should be priced out and compared to other vendor charges to assure the best possible pricing for our customers.

4.4 Purchase Orders shall reflect all quality requirements as specified on the Work Order. When **Level IV** is invoked on the Work Order, Quality Assurance will inspect the Purchase Order to insure compliance to the Work Order prior to the Purchase Order being issued to the supplier. The Shareway Inspector must sign off on all **Level IV** Purchase Orders.

4.5 A Qualified Products List shall be reviewed prior to the release of a Purchase Order to a supplier when a **Level IV** Work Order is involved. If the desired supplier is not currently on the list, Quality Assurance must evaluate the supplier, to assure that the required specifications can be met, before the order may be released.

4.6 A copy of the Purchase Order will be filed in the Job File. When **Level IV** is invoked, a copy of the Purchase Order must be in the permanent Job File.

4.7 A copy of the Purchase Order shall be faxed or emailed to the Supplier. Purchase of material may be done verbally, but is not recommended. Always follow up a verbal PO with a faxed/emailed copy.

4.8 Updating of the computer system will be accomplished on a daily basis. This update should include, but is not limited to, the name of the vendor and the date on which the material/parts are expected. It is recommended that follow-up reminders should also be set up to assure timely deliveries.

4.9 A rating system will be maintained by QA personnel to chart supplier quality and delivery progress. Periodically, as conditions exist, or at least annually, this report will be reviewed by management and action taken as required. (See Fig 1.3)

## **5.0 CONTRACT REVIEW PROCEDURE**

5.1 Each incoming Customer Purchase Contract and Request For Quote received by Shareway Industries will be evaluated to verify that all customer requirements are clearly understood and that the requirements are within our capabilities to fulfill.

5.2 Review of the contract will occur on all incoming documentation and contract information. The customer will be consulted to confirm any requirements that need clarification.

## **6.0 WORK ORDER PROCEDURE**

6.1 All Work Orders shall be generated by the Estimator who is required to assign an Inspection Level to the job. Quality Assurance reserves final authority as to which level is assigned to ensure a quality part. (See Fig 1.4)

6.2 An Inspection Level will be assigned to all Work Orders. The Quality Assurance Inspection Levels are defined within this document.

6.3 When **Level IV** is invoked, Quality Assurance will review the Work Order to verify compliance with the Customers Purchase Order and/or contract. Quality Assurance asserts the authority to add whatever requirements it deems reasonable to ensure satisfactory compliance.

6.4 First Inspection Operation

6.4a In all Quality Assurance Levels, work will proceed to the first Inspection Operation. If accepted, the Inspector shall stamp, initial, and date the appropriate inspection line on the Work Order and/or buy off the Inspection Record. Only after Quality Assurance has accepted the foregoing shall work proceed to the next operation.

6.4b If the parts are rejected, refer to Procedure found in **Section 12.0**.

6.5 When a revision is made to the Work Order, or when a change to the Customers Purchase Order occurs, both the Manufacturing and File copies of the Work Order will be revised.

6.6 All complete parts or assemblies shall be identified by stamping, etching, or labeling groups of parts found in boxes or on pallets as required by the customer contract.

6.7 If the parts satisfy acceptance criteria, the inspector shall stamp, initial, and date the Work Order in the specified inspection operation.

6.8 When the Work Order is completed through Final Inspection, it will be returned to the office.

6.9 All completed Work Orders will be filed in the Job File.

## **7.0 INSPECTION LEVELS**

7.1 Level 1: Visual inspection for completeness, workmanship and cosmetics only. Any machinist can sign and date the work order.

7.2 Level 2: Visual and dimensional inspection is required, and the Work Order must be signed and dated that the parts were checked. Any qualified inspector can sign and date the Work Order.

7.3 Level 2A: Visual and dimensional inspection recorded, as required, on an inspection report, dated and signed on the Work Order. Any qualified inspector can sign and date the inspection report and Work Order.

7.4 Level 3: Visual and dimensional inspection recorded on an Inspection Report or actual dimensions recorded on the drawing. Only a qualified inspector who has not been directly working on the specific job can inspect the parts. The inspector will sign and date the Work Order and Inspection Report. A qualified inspector will conduct final inspections for customers requiring a written report or dimensional recording on the drawing.

7.5 Level 4: This level of inspection requires full conformance with former Mil-I-45208A and former Mil-Std-45662. Only a Q.A. Inspector can inspect the parts, sign and date the Work Order and any Inspection Reports or other requirements as directed by the purchase order.

## **8.0 DRAWING AND SCOPE OF WORK CHANGES PROCEDURE**

8.1 Shareway Industries, Inc. fabricates, manufactures and rebuilds to customer furnished drawings and/or specifications. The drawings and/or specifications are given to the Estimating Department, who then initiates a Work Order. After the Work Order is written, the Manufacturing Department receives a copy from which the manufacturing process is performed. Manufacturing is responsible for controlling the drawing and Work Order specifications. If the Estimating Department receives drawing or scope of work changes, it bears the responsibility to immediately forward these changes to Manufacturing in writing. Manufacturing is responsible to update all Work Order copies with the appropriate changes, and to destroy all outdated material.

## **9.0 RECEIVING INSPECTION PROCEDURE**

9.1 All material purchased from a supplier will be inspected by a Receiving Inspector or shop foreman who will be responsible for the following:

9.1a All paperwork is given to the Purchasing Manager who will compare the packing slip to the purchase order to verify material type, quantity, and dimensional integrity. If all is in order, the Purchase Order will be noted as received and dated.

9.1b If the Purchase Order specifies special requirements, such as certifications, the Purchasing Manager will ensure that all requirements have been met and then hand the certifications to the Quality Assurance Department for verification and filing.

9.1c Material specification and receiving information is then logged onto the Work Order and the computer system is updated.

9.1d The work order is then handed off to the Receiving Inspector / Shop Foreman who will check the material for actual dimensions and / or processing specifications.

9.2 Material is Satisfactory: The receiving inspector / shop foreman will either tag or mark the material / parts with the Work Order number. This information will stay with the parts throughout the manufacturing process.

9.3 Material is Unsatisfactory: The inspector will tag it with a reject tag. (See Fig 1.5)

9.3a The inspector notifies Purchasing of the rejection.

9.3b Purchasing will rectify the problem with the supplier.

9.4 Materials will not be released to Manufacturing until it has been determined that all materials meet the requirements of the Purchase Order.

9.5 A Receiving Inspection Log (Fig 1.16) must be maintained for all **Level IV** Work Orders. It will be signed and dated. A copy of this report is to be filed in the Work Order file.

9.6 All material supplied by the customer shall be inspected by a receiving inspector or shop foreman to determine the accuracy of the material received (size, type, etc.). The same procedures as listed above will be in effect when material is determined to be acceptable or out of tolerance. The customer will be notified immediately of any discrepancies. Receiving Acknowledgment (Fig 1.17) is required if no paperwork is received from the customer.



9.7 All material, whether customer supplied or purchased, will be kept in such a manner as to sustain the integrity of the part to be manufactured.

## **10.0 MATERIAL FLOW PROCEDURE**

10.1 All product entering the work load system will have the Shareway Industries Work Order Number plainly marked on the item. In the event there are multiple parts, the group will be clearly marked with the work order number and the number of parts to be manufactured.

10.2 If there is an overage of material, the remnants will be marked with Shareway Industries Work Order Number and/or type of material (i.e. 4140, 8620, T1, etc.). These items will be stored on the rack just outside the shop or on the racks by the saw. Verification of material type can be documented by pulling the work order marked on the material and examining the certifications found in the permanent file.

10.3 In the event a customer requires lot traceability, QA will have the responsibility to ensure that each part or lot is marked with the information required by the customer contract. This information will stay with the parts until the job is complete and QA has released the order to the customer.

## **11.0 PROCESS AND SAMPLING CONTROL PROCEDURES**

Process Controls will be performed as described below on all **Level IV** work, or as required by the contract or as seen fit by Manufacturing and Quality Assurance.

11.1 **FIRST ARTICLE** inspection and testing shall be performed after each operation on the first part. Only after Quality Assurance has “bought off” the previous operation can the work continue to the next operation. An acceptance sheet will be provided by Quality Assurance for the Work Order / Traveler.

11.2 An Inspection Report shall have drawing sizes and tolerances along with actual sizes recorded on it. The Inspection Report will include:

- 1) Date
- 2) Work Order Number
- 3) Part Name
- 4) Part Number
- 5) Serial Number (if applicable)
- 6) Number of parts accepted
- 7) Number of parts rejected
- 8) Inspector’s Stamp/Signature
- 9) M & TE ID number or name of equipment actually used

11.3 If acceptable, the Inspector will “buy off” the operation on the Buy-off record found on the work order. M & TE ID numbers and types are required only for **Level IV** jobs.

11.4 If unacceptable, the Inspector shall generate a Nonconformance Record after recording the findings on the Buy off and/or Inspection Record (See Nonconformance Record Procedure, Section 12.0).

11.5 After First Article Acceptance, sampling inspection and testing shall be performed by Quality Assurance at adequate intervals, which are determined on an individual basis by Quality Assurance, and is subject to approval by the companies end users.

11.6 All inspection and buy off records shall be kept with the Work Order / Traveler.

11.7 Parts shall be identified by Work Order Numbers. A serial number may be used for identifying large orders.

11.8 Inspections and controls of all special processes (i.e. welding procedures, heat treating, NDT, etc.) shall be part of the Inspection System when such procedures are required by the contract. These procedures will be submitted in writing prior to the start of any work for end-user acceptance. (See Fig 1.7 through 1.12, Misc. QA Forms).

## **12.0 COMPLETE ITEM INSPECTION AND TESTING PROCEDURE**

All parts will be inspected according to the Inspection Level stated on the Work Order.

12.1 Completed Item Inspection and Testing will be performed by Quality Assurance per the Inspection Level stated on the Work Order. **Level IV** Work Order parts, if acceptable, will be tagged and the final inspection step on the Work Order bought off by the Inspector.

12.2 If unacceptable, the Inspector shall tag the parts and notify Manufacturing. Manufacturing will then proceed as defined in Section 14.0. (See Fig 1.5)

12.3 The Inspector shall also identify all required certifications, test reports, letters of compliance, etc., to be packed with the material in accordance with end-user requirements.

12.4 Accepted parts and/or materials are then moved to the shipping area.

### **13.0 SHIPPING AND PACKAGING DEPARTMENT PROCEDURES**

Personnel charged with Shipping and Packaging responsibilities will be responsible for accomplishing the following:

13.1 Review Work Order and Inspection Report (if any) to determine that the parts have been accepted by the Final Inspectors stamp and/or signature.

13.2 Review Work Order to determine specific customer requirements for preservation, packaging, packing, or marking.

13.2a If special requirements are necessary, proceed as instructed per the Work Order, obtaining any documentation requirements as needed.

13.2b Obtain Quality Assurance buy off.

13.3 Determine that all items have been packaged in a manner to prevent damage or deterioration.

## **14.0 NONCONFIRMING MATERIAL PROCEDURE**

14.1 When the Inspection reveals a part not in compliance with the drawing, the Inspector will tag or mark the part and inform Manufacturing of his findings. Manufacturing then proceeds as follows:

14.1a May resolve the problem without changing the scope of the Work Order.

14.1b Inform the Estimator, who will obtain from the customer either acceptance of the part(s) as manufactured or a Work Order scope change. It is the responsibility of the Estimator to document their conversation with the customer and to provide Manufacturing with a Change Order to the original Work Order. Manufacturing will then proceed with the Change Order, and when completed, call for inspection.

14.2 A copy of the rejection tag or Inspection Report will be filed in the Work Order file.

14.3 If the Estimator, Manufacturing, or Quality Assurance cannot solve the problem, then a Material Review Board (MRB) will be convened. The Material Review Board is composed of representatives from Estimating, Manufacturing, Quality Assurance, and Company Management, and when the requirements exist, a customer representative.

14.4 When the Material Review Board convenes, it will either resolve the problem by changing the work scope or by deciding the part is scrap. In either case, a written record will be put in the Work Order file (see Corrective Action Report sample).

14.5 Quality Assurance will establish, and maintain, a Withhold Area for rejected parts. No parts or materials shall be removed from the Withhold Area without the prior approval of Quality Assurance.

14.6 For "Scrap" dispositions, Quality Assurance is responsible to see that the rejected material is clearly and permanently identified as scrap.

14.7 Repair of non-conforming supplies shall be in accordance with the documented procedures acceptable to the end user.

14.8 When corrective actions have been taken, Quality Assurance will be notified for verification and acceptance of the corrected part(s), and will then sign off on the Corrective Action Report.

## **15.0 MEASURING AND TEST EQUIPMENT (M & TE) PROCEDURE**

When the Work Order specifies, or when former Mil-I-45208A or former Mil-Std-45662 are invoked, calibrated measuring devices will be used. The requirements will be passed on to all subcontractors of Quality Assurance **Level IV** work.

### 15.1 Identification

15.1a Each piece of Measuring and Test Equipment and Tooling must be identified by a serial number, with no two (2) M & TE sharing the same number.

15.1b A tag or sticker shall be affixed to each piece of calibrated M & TE and Tooling reflecting the following information:

- (1) Serial Number
- (2) Calibration/Recalibration Dates
- (3) Subcontractor performing calibration

15.1c A record of serial number assignments shall be kept in the M & TE storage area.

15.2 Only authorized Quality Assurance personnel shall make entries in or revisions to the M & TE records.

### 15.3 Storage and Handling

15.3a Dedicated areas will be established for the storage of all calibrated M&TE and Tooling.

15.3b The M & TE records will be kept in this area.

15.3c The M & TE – Tooling storage areas will be isolated from rapid or extreme variations in temperature and humidity, excessive vibration, and high levels of suspended particles in the atmosphere.

15.3d Only those storage and handling methods which preserve the condition and calibration of the equipment shall be used.

15.3e A record to control the issue and return of calibrated M&TE will be maintained. This record shall contain the following information: (See Fig 1.14)

- (1) Check Out Date
- (2) Person checked out to
- (3) Work Order Number
- (4) Date Returned
- (5) Person returned by
- (6) M & TE ID or item name

15.3f The person checking out the equipment shall be responsible for making the check out entry.

15.3g The calibrated M & TE shall be returned to its proper storage area when its use is completed.

#### 15.4 Calibration and Certification

15.4a All calibration of M & TE shall be accomplished by a qualified calibration lab in accordance with former Mil-Std-45662.

15.4b All calibrated M & TE will be calibrated using standards that have the capabilities for accuracy, stability, and range required for the intended use.

15.4c All calibrated M & TE shall be calibrated against reference standards having 4 to 10 times their accuracy. The reference standards have been established by the National Institute for Standards and Technology.

15.4d When applicable, compensating corrections shall be applied to calibrated M & TE. The appropriate piece of M & TE shall be labeled to show corrections.

15.4e The Quality Assurance Department is responsible to see that all M & TE and Tooling shall be calibrated at the intervals listed below:

Master Gage Blocks – 18 Months

Granite Tables – 18 Months

End Standards – 18 months

15.4f To assure continued accuracy, calibration intervals shall be established on the basis of stability, degree of usage, and historical calibration data. Intervals may be shortened or lengthened only when the results of previous calibrations provide definite indications that the accuracy of the system will not be adversely affected.

15.4g Calibration certification records shall be maintained for all calibrated M & TE and shall contain the following information:

- (1) Identifying Code Number
- (2) Calibration Date
- (3) Recalibration Date
- (4) Calibration Procedure
- (5) Calibration Equipment Identification Numbers
- (6) Personnel performing calibration

15.4h Periodic checks of M & TE shall be made using in shop standards to detect any damage or out of tolerance condition which cannot be anticipated by calibration intervals.

15.4i Quality Assurance shall be notified on all M & TE that has been dropped, shocked, or damaged in any way. Quality Assurance will be responsible for tagging the damaged M & TE as out of tolerance.

15.4j Timely and positive corrective action will be taken on all M & TE found not to be performing satisfactorily, or to be out of tolerance.

15.4k Quality Assurance will be responsible for determining which M & TE is needed to attain the required accuracy of the intended work.

#### 15.5 Out of tolerance M & TE

15.5a Whenever an article of M & TE has been calibrated and found to be out of tolerance, all affected Work Order (Work Order numbers can be found on the checkout sheet) will be reviewed for impact.

15.5b Rejection tags will be generated when out of tolerance conditions have been found to have an impact on product quality.

15.5c Out of tolerance M & TE will be withdrawn from use, and a checkout entry made.

15.5d Out of tolerance M & TE will be scrapped in the following manner:

- (1) Remove the identification/calibration sticker
- (2) Permanently identify the piece as scrap (Paint, steel stamp, etc)
- (3) Dispose of scrapped piece

15.5e Out of tolerance M & TE will be repaired and recalibrated upon completion of repairs. If the instrument cannot be restored to fully perform its original functions, a dated description of the functional limitation will be attached to the instrument.

15.6 Employee owned M & TE will not be used to perform **Level IV** work.



## **16.0 INSPECTION STAMPS**

16.1 One rubber stamp will be issued to each inspector. It will bear a unique number and will remain in his possession while employed by Shareway Industries, Inc. as an inspector. It is the responsibility of each inspector to keep his stamp in his possession and prevent its use by any other person.

16.2 Quality Assurance will maintain an "Inspection Stamp Assignment Log" showing all stamp numbers and corresponding inspectors, as well as the date each stamp was assigned to the inspector.

16.3 When a stamp is lost, a notation will be made on the Inspection Stamp Assignment Log. The lost stamp number will not be reissued for a period of not less than six (6) months.

16.4 When an Inspector leaves the Quality Assurance Department for a different position, or leaves the company, his stamp must be returned. The number will not be re-issued for a period of not less than six months.

## **17.0 QUALIFIED PRODUCTS**

17.1 A Qualified Products List will be maintained by Quality Assurance, and updated as necessary. This list may be maintained simply by a history of a previous qualified products supplied by a company, or an audit performed by Quality Assurance. An audit would be performed if the vendor has no previous history of supplying qualified products to Shareway Industries, Inc.

17.2 This list will be maintained only for companies supplying parts and or material for Quality Assurance **Level IV** work.

## **18.0 INSPECTION EQUIPMENT AND PROCEDURES**

18.1 Alternative inspection procedures and equipment will be used, when necessary, only if the minimum Quality Assurance required by the contract cannot be accomplished. Prior to using the alternative procedures and equipment, a written description of our proposal will be submitted to the concerned end user (and demonstrated, if necessary) for approval

18.2 In matters of disputes as to whether adequate Quality Assurance has been provided, the contractual documents will apply.