



ANCHOR BRONZE & METALS

Established in 1987

QUALITY MANUAL

Section 1

Scope of Manual

- 1.1 The purpose of this manual is to demonstrate and document the ability of Anchor Bronze & Metals to provide a consistently high quality of work in accordance with the requirements and expectations of our customers.
- 1.2 The quality control practices and standard operating procedures described in the manual apply to all aspects of our work, specifically including: order processing, work order creation, distribution of drawings or technical information, preliminary inspection, ordering/issuing of materials, all aspects of the manufacturing process, final inspection, packaging, shipping, and billing.
- 1.3 Equipment calibration is fundamental to ensuring a high quality product. The methods of obtaining and maintaining calibrated equipment are documented herein.
- 1.4 Anchor Bronze & Metals values a culture of continuous improvement. Any quality issues, whether internal or external, are indicative of an opportunity for improvement. The process for corrective actions described in this manual ensures that any issues are systematically evaluated and the relevant processes are reviewed.
- 1.5 The internal audit system described herein, proactively verifies that all standard operating procedures are being followed on a routine basis.
- 1.6 All relevant documents to be included in line with their associated sections.

Section 2

QC Management Responsibility

- 2.1 The Vice President of Manufacturing and Shift Supervisors report to the President and serves as the management responsible for oversight and direction in regards to quality control.
- 2.2 The Vice President of Manufacturing responsibilities in terms of managing quality consist of the following:
 - a. Communication of all expectations related to quality control.
 - b. Investigate any quality exceptions to determine the root cause.
 - c. Identify and implement corrective actions necessary to resolve a quality exception.
 - d. Responds to any customer inquiries regarding our quality control methods and procedures.
 - e. Coordinates any customer-initiated audits of our quality systems.
 - f. Oversees maintenance of calibration records for measuring equipment.
 - g. Generation of customer specific incoming/outgoing inspection reports as needed, to be filled out by shop personnel.
 - h. Ensure work order instructions are consistent with customer expectations.
 - i. Ensure all appropriate drawings and technical information is clearly conveyed to shop personnel.
 - j. Ensure appropriate materials are specified and used in adherence with customer requirements.
- 2.3 The Human Resources reports to the President and bears the responsibility for training in this manual and conducting internal audits for compliance, or his designee.
- 2.4 All managers, supervisors, and employees are required to comply with all Provisions of this Quality Manual as it relates to their specific operational responsibilities.

Section 3

Order Processing

- 3.1 All jobs, both quoted and time and material, require customer to furnish a purchase order or written authorization from a qualified customer representative before work can begin. "Written authorization" includes a signed Work Order Form or an email.
- 3.2 Any purchase orders received via fax or email is to be forwarded to administrative support for processing.
- 3.3 All customer purchase orders or written authorizations are scanned to our job software for archival purposes.
- 3.4 Upon release of purchase order the customer is to provide Anchor Bronze & Metals with any necessary documents required to complete the work such as drawings, customer specifications or requirements.
- 3.5 A work order is generated by Administrative Support, using either a Work Order Form or a quote as the template from which the work order information is taken. The work order is to be reviewed for accuracy versus the purchase order by shop personnel and shop supervisors. The customer will be notified in the event of any discrepancies.
- 3.6 Once the work order is generated, an order acknowledgement is sent to the customer for review, confirming the scope of the work to be done, expected completion dates, and price if applicable.
- 3.7 The work order is then distributed to the shop floor along with any other supplementary (documents (such as drawings or inspection sheets) and serves as the governing document regarding the job.
- 3.8 Changes to the scope of work of a job must be confirmed by the customer with a formal change order, or with written authorization from a qualified customer representative.
- 3.9 If any changes to the scope of work of a job require a Change Order Form to be Completed, it is. The changes are then documented via a revision to the work order, traveler, and drawing if applicable. All existing work orders, travelers, and drawings are to be pulled from production and replaced with the revised documents. The revision is confirmed to the customer by sending a new order Acknowledgement; internal confirmation is achieved via an email to relevant parties.
- 3.10 Any job transferred from one physical plant location to another requires that a job

transfer sheet be completed, to formalize the transition between branches. All other relevant documents are to be forwarded along with the transfer sheet.



ANCHOR BRONZE & METALS, INC.

Date: _____ **P.O.#** _____

Contact: _____ **New Customer? Yes / No**

Company: _____ **How Did They Find SMI?**

Address: _____ **Payment Method:**

_____ C.O.D. Visa

_____ Cash Master Card

_____ Check American Express

NAME ON CREDIT CARD:

Phone: _____ **CREDIT CARD NUMBER:**

Fax: _____

Expires: _____ **CVC#**

Certification Required:

C of C: Chemical: Physical:

Sizes & Quantity Requested:

COMPANY NAME:



ANCHOR BRONZE & METALS, INC.

Inspection Report

Part Number
P.O.

Quantity

Customer
Inspected By _____ Date

Dimension	Tolerance	Part #	Part #	Part #	Part #	Part #	Part #	Part #

Dimension	Tolerance	Part #	Part #	Part #	Part #	Part #	Part #	Part #

Dimension	Tolerance	Part #	Part #	Part #	Part #	Part #	Part #	Part #

Section 4

Engineering Drawings

- 4.1 All engineering drawings are kept in our drawing files. These drawing files are managed and maintained by Expediting and CAD.
- 4.2 A copy of the drawing used on each job is scanned to the relevant job file, for purposes of reference and history.
- 4.3 Any CAD drawing or sketch produced by Anchor Bronze & Metals is assigned a drawing number and stored in the customer drawing files.
- 4.4 Copies of drawings are distributed to the floor by expediting and are collected at the completion of each job.
- 4.5 In the event that drawings for a job are unavailable, work should be performed in accordance with the specifications documented on the work order, from working sketches, and per customer instructions.

Section 5

Incoming Inspection

- 5.1 All customer equipment received with intent to repair is to be cleaned and inspected as needed to properly evaluate the condition of the part or system.
- 5.2 Customer-supplied incoming inspection sheets and processes will be completed as requested, provided the request is made prior to quoting the job. In the event that no inspection sheet is supplied by the customer, the standard Anchor Bronze & Metals Inspection sheet shall be used.
- 5.3 Customized incoming inspection processes can be developed by Anchor Bronze & Metals, Inc. as requested by the customer.
- 5.4 Initial inspection on field work is to be documented on the field service report.

Section 6

Inventory Control

- 6.1 Material handlers verify all incoming stock materials for correct dimensional accuracy alloy and verify that they match PO descriptions.
- 6.2 Once verified, all materials are to be received into inventory, and stored in their designated locations.
- 6.3 The types and quantities of materials to be stocked are determined by the purchasing department.
- 6.4 All incoming materials ordered for specific jobs are to be identified with a description, a job number and are to be placed in the staging area, away from standard stock.
- 6.5 Raw material certifications will be provided to the customer only on an as-requested basis. Requests for certifications must be made prior to the pricing of the job.
- 6.6 All materials must be ordered via a purchase order placed through Purchasing. A PO request form or email must be used to request any material purchases.
- 6.7 Materials used on a job are to be designated as such by tying the PO to the job or by issuing materials from stock to the job.
- 6.8 Material inventory is audited at least annually for correctness of type and quantity versus system records.

Section 7

Final Inspection

- 7.1 All work is to be performed in accordance with customer specifications.
- 7.2 In the event that no customer drawing is available, work is to be performed in accordance with the specifications documented on the work order, from working sketches, and per customer instructions.
- 7.3 Upon completion, all work must be final inspected by the employee performing the work. Measurements must be verified correct by a supervisor or peer, and noted as such on the associated inspection sheet. Customer-supplied final inspection sheets will be used provided the request is made prior to quoting the job. In the event that no inspection sheet is supplied by the customer, the standard Anchor Bronze & Metals final inspection sheet will be used. The scope of the standard final inspection is to include only dimensions affected by the work performed at Anchor Bronze & Metals, Inc.
- 7.4 All field work requires a completed field service report.
- 7.5 Customized inspection programs for equipment or projects will be developed as requested by the customer. Such requests must be made prior to pricing the job.
- 7.6 In-process inspection will be performed after each manufacturing process. Job-specific expectations for any in- process inspection will be supplied by Engineering or Shop Management.
- 7.7 Each job that consisting of welding is to have a Weld Shop Inspection Report completed and kept on file.
- 7.8 At the completion of each job the assigned supervisor is to review the work to verify that it has been carried out as instructed on the work order.

Section 8

Identification, Packaging, and Shipping

- 8.1 All work is to be clearly marked with the customer name and a job number immediately on arrival.
- 8.2 A work order and traveler are to be generated in a timely manner, once the scope of work is determined.
- 8.3 The traveler is to be sleeved and attached to the job on the floor. It is to stay with the work throughout the manufacturing process. In the event that a job is divided among work centers, multiple copies of the traveler are to be distributed so that each person working on the job has an available copy.
- 8.4 On completion, all work to be packaged in accordance with purchase order instructions. In the event that no specific packaging instructions are specified on the PO, Anchor Bronze & Metals will package the equipment using industry standard methods such as by pallet.
- 8.5 A rust preventative compound will be applied to all machined or ground surfaces as a standard practice, unless requested otherwise by the customer.
- 8.6 Work received in a customer-supplied container will be returned in the same container.
- 8.7 The planned method of shipping jobs is outlined on the Order Acknowledgement, which is sent to each customer at the onset of a job. On quoted jobs the shipping method is defined on the quote. Additional shipping charges may apply for jobs outside of our standard delivery region or for jobs that require transport on a semitrailer.
- 8.8 When a job is delivered to a customer, they are given a copy of a pack list documenting the parts shipped to them. A signed copy of the pack list is kept in the job files at Anchor Bronze & Metals to document the delivery of the job to the customer.

Section 9

Billing

- 9.1 Our job is not finished until the invoice is sent, and our goal is that all invoices will be sent promptly and accurately to the appropriate contact.
- 9.2 Each bill is expected to have a clear description of the services rendered and accurate pricing for these services.
- 9.3 On Time and Material jobs, a price update is available at any time upon customer request.
- 9.4 Appropriate customer documents, such as purchase order number, requisition Number or equipment serial number shall be referenced on the final invoice.

Section 10

Equipment Calibration

- 10.1 A Tool Room is maintained for the control of all company tooling and Gages. A system is in place to control the issue and return of all equipment released from this area.
- 10.2 All standards are certified once a year. Certification documents are kept on file in the Tool Room and are available for customer review upon request.
- 10.3 All micrometers, both personally and company owned, are set to standards annually. These records are maintained and stored in the Tool Room.
- 10.4 The foreman ensures that micrometers are properly set to a standard each time a micrometer is checked out of the Tool Room.
- 10.5 Annual training is done to ensure that all necessary personnel know how to properly set micrometers to standards.
- 10.6 Quality checks such as vibration analysis and leveling are performed as part of a preventative maintenance program at least annually on each machine, or as symptoms are observed. Any problems found are recorded in the PM files.
- 10.7 Reference the Master Equipment Calibration List to see a full list of all calibrated equipment.

Section 11

General Workmanship Standards

- 11.1 Unless otherwise indicated on engineering drawings, all Shop work is to conform to the general workmanship standards.
- 11.2 Machining:
 - a. All machined surfaces are to be free of nicks, scratches, and are to have a 125 micro-inch Ra finish or better.
 - b. All sharp edges to be broken and de-burred.
- 11.3 Welding: (Future)
- 11.4 Grinding:
 - a. All ground surfaces are to have a 32 Ra finish or better, unless otherwise specified.
 - b. All ground surfaces are to be free of traverse lines and chatter marks.
 - c. All sharp edges to be broken and deburred.
- 11.5 Thermal Spray:
 - a. All thermal spray coatings are to be uniform and consistent.
 - b. Coating roughness should be in accordance with material and process specifications.
 - c. Coatings should be free of coarse grains indicative of improper application.
- 11.6 Disassembly/Reassembly:
 - a. All components to be dimensionally checked for proper fits prior to assembly.
 - b. When installing bearings and seals, all manufacturer-recommended standard practices are to be observed. This includes recommended bearing fits.
 - c. Service-removable thread locking compound is to be used on all fasteners as a standard practice. Other types of thread locking compounds may be used depending on customer requests and the application.
- 11.7 Heat Treat
 - a. All parts are to be checked for the proper hardness.

Section 12

Corrective Action Procedures

- 12.1 All possible precautions are taken to ensure that quality exceptions never occur. In the event that an exception does occur, the highest priority is given on getting an acceptable part to the customer as soon as possible.
- 12.2 As part of our continuous improvement philosophy, any quality exception is viewed as a potential to improve.
- 12.3 For any quality exception, whether discovered internally or by a customer, a rework analysis is performed. The purpose of this analysis is to understand the root cause of the issue and to identify measures that can be taken to prevent similar issues from occurring in the future.
- 12.4 The rework analysis is performed by completing the Rework Analysis Sheet. This sheet is to be completed by the supervisor in charge of the job.
- 12.5 All completed Rework Analysis Sheets are to be reviewed and signed by both the Vice President of Operations and the Director of Engineering. The sheets are then stored in a database, and in the job files.
- 12.6 Root causes, as identified on the Rework Analysis Sheet, are categorized and logged into a database for tracking.
- 12.7 All rework hours on jobs are to be flagged as such, for appropriate tracking.
- 12.8 All received rejected material is held in a separated area until determination as to disposition is made.



Quality Assurance Rework Analysis

Job: _____ Customer: _____

Brief Description: _____

Taken By: _____ {Received}

Date: _____

Hours of Rework _____ {Time}

Corrective Action

- {Rework Cause*}
- Incorrect Information from Engineering on Drawings, Material, etc.
 - Part Miss-Machined. (technician error)
 - Miscommunication Between Departments
 - Other

.Expatiation

[] Found before shipping

[] Rejected sent back by customer

Prevention

Section 13

Internal Audit System

- 13.1 An internal audit system is in place to verify that all policies and practices outlined in this manual are being carried out.
- 13.2 Human Resources bear the responsibility for conducting and reviewing internal audits.
- 13.3 Full audits are to be conducted at least twice yearly. Partial audits may be conducted if concerns of adherence to specific areas of the program arise.
- 13.4 Once complete, audits are reviewed by management. Any concerns identified during the audit will be addressed by the supervisor of the responsible department.
- 13.5 All completed audit paperwork will be kept on file in the office of the Human Resource.

Section 14

Training

- 14.1 All employees are to be trained on the contents of this manual when hired.
- 14.2 Each employee is to be given a copy of this manual for reference.
- 14.3 Follow-up training may be carried out in the event of revisions to the manual.
- 14.4 The training program is conducted by the Human Resources.

Section 16

Revisions

15.1 All Revisions to this manual are to be documented in the table below.

15.2 The revision number of the document is to be displayed in the footer of each page and is to be updated with each revision.

Revision #	Date	Section	Description
1	1/3/18	none	no changes <i>CLF 1/4/18</i>