RJR METALS QA MANUAL

RJR METALS 2110 King Hollow Rd. Sevierville TN 37876

RJR METALS

AEROSPACE METAL SPINNING

2110 King Hollow RD. SEVIERVILLE, TN 37876

PHONE: 865- 414-8305

RJRMETALS@GMAIL.COM

RJR Metals Quality Assurance Manual

The purpose of this manual is to implement and maintain a quality management system, and to continually improve its effectiveness.

1. **Quality manual:**

We will have a documented quality system that will help us be an industry leader in the Metal Spinning trade**.** This objective will be met with these policies:

1. We will continuously improve processes and quality whenever possible.
2. Quality objectives will be reviewed annually and inspection equipment will be calibrated regularly

3. The quality policy will be understood by employees and enforced by management.

4. It is a condition of employment to follow authorized, written procedures at all times.

5. No employee will knowingly pass defective or NC materials to the next operation.

6. The following are the Quality Objectives:

2. QUALITY:

The total scrap rate for NC parts and customer returns will be below the ceiling for each part number. Record scrap at the full sales price of the part, or the amount allowed by the customer.

Ceiling3% Goal 0%

3. DELIVERY:

The ratio of late orders to on time orders, judged per our promised delivery dates, will be below the ceiling of each part number. Deliveries will be 100% on time, evaluated against written promised delivery dates.

Ceiling1 out of 10 Goal 0 out of 10

2. Control of documents and records:

2.1 Authorization:

An authorized manager will approve controlled documents prior to implementation. A signature on the controlled document by the authorized manager shows approval.

2.2 Revision:

1. Anyone may ask for an change for any reason by notifying a manager and upon approval by proper authorities actions will be changed
2. Initiate document revisions by one of two methods.

A. Starting Corrective and Preventive Action upon and after manager approval.

B. Marking up of a copy of the document/print and submitting it to the approving manager**.**

2.3. Change a procedure after receiving a properly signed or an approved marked up copy of the procedure by:

A. recording the revision level of the document

B. Showing changed areas of the document by underlining or circling them in red ink

C. The manager responsible for implementing the change will determine the effective date of the revision and will ensure the practice changes on the effective date.

D. Supervisors are responsible for training their people to follow changes

2.4. Revision & Change status:

A. Identify changed areas of a document by underlining the changed areas or marking with red ink.

B. Do not use obsolete or expired documents.

2.5. Three types of document control systems exist in this plant and any of the three may be used as is appropriate:

A. CHECK BEFORE USE:

1 .Obsolete copies of documents are deemed removed from use as soon as permission is given to do so

2 . Mark copies of controlled documents in the document header.

3. Check the dates and master index to ensure you have the latest revision whenever:

a. Training new personnel

b. Auditing an inspection sheet

c. Using any controlled document

4 . The master copy of controlled documents is the signed copy.

5. Documents under this control system are:

a. Quality Management System Procedures

b. Manufacturing Procedures

c. External Specifications

B. EXPIRING DOCUMENTS:

1. Print the words “Expires After (Number of parts or Date or unique shop order number)” on documents under this document control system.

2. Do not change “Expiring” documents until they have expired.

3. Documents under the “Expiring” document control system are:

a. Production Schedules

b. Shop travelers (part number specific instructions)

c. Document Control

2.6 Military Style Documents:

1. Obsolete documents are deemed removed from use as soon as a new revision of the document is issued and the obsolete revision is removed from issue.

2. Military documents must track the individual copies of each document.

3. Stamp each copy “CONTROLLED” in red ink. Do not use unstamped copies of controlled documents.

4. Do not copy or otherwise duplicate military documents

5. Documents under the “Military System” document control system are:

a. Quality Management System Procedures

b. Manufacturing Procedures

c. External Specifications

2.7 Obsolete documents:

1. Documents that are not listed as the current revision in the index or External Document Index are for reference only. Do not use these documents to make production unless specifically requested by the customer.

2. If a copy is kept of an obsolete revision of a document, keep it in a file folder marked with the part number. Stamp it "OBSOLETE" in ink. Do not use documents stamped "OBSOLETE".

3. The QC Manager is responsible for removing & destroying obsolete documents and replacing them with the current revision. Replace revised documents within 2 working days.

1. Use of correct revisions:

   - Documents will have a revision letter or an expiration date on printed copies.

2. Legibility & identifiably:

   - Do not use documents that are unidentifiable or illegible.

3. Management reviews:

1. Examine the following in January and July. Review all sections of the quality system at this time.

A. Internal audit reports

B. Customer complaints & customer comments

C. Internal Scrap and NC reports

D. Planned changes to the quality management system

E. Suggestions for improvement from customers, employees, suppliers, and managers

2. Compare the last quarters' results with the Quality Objectives. If the ceilings have been violated, then the quality system is not effective.

3. If it is determined that the reports under #1 or the progress toward the goals under #2 are unsatisfactory, initiate Corrective and Preventive Actions.

4. **Quality Objectives**:

RJR Metals strives to be an industry leader in quality and on time delivery's. Our commitment to craftsmanship is what sets us apart. We have set our goals at a 0% scrap and NC Product rate. Our small size allows for personal attention to every detail of the job.

5. Human Resource Competencies:

5.1. Competence, Awareness & Training:

1. Temporary employees are not exempted from the training requirements. Train them to the same standards as regular employees for the tasks they perform.

2. Use the heading 'TRAINING REQUIREMENTS' to show training required to perform controlled work instructions

3. Proof of training to a new, changed or existing document is demonstrated by the signature of the employee, the date of training, and the initials of the supervisor who is certifying that the training took place, on a copy of the document. Employees are

not required to sign a document if they do not understand how to perform the instructions.

4. Management, a competent operator, or QC inspectors will evaluate parts or product made by operators in training before it is released to the next operation.

5. The manager will determine what levels of training are required. Training consists of one or more of the following:

Classroom instruction

Practical hands on training

Demonstrable experience

Direct management observation of satisfactory performance of the task

6. A member of management must verify competency.

7. Part of the training will be to explain the importance of the task and how it contributes to making a quality product.

5.2 Infrastructure & Work Environment:

1. Ensure that the buildings, workspaces, work environment, associated utilities, process equipment and supporting services such as transport or communication are appropriate to satisfy customer requirements by:

A. Touring the plant on a quarterly basis.

B. Evaluating the internal and external scrap rates against the Quality Goals during the (Management Responsibility) review meeting.

6. Contract review:

The following page will have the contract review form.

CONTRACT REVIEW FORM

NEW JOB - INITIAL ORDER:

First article inspection by: Customer _____ internal _____

Tooling rev. level matches drawing & P.O.?	Y N
Tooling is complete & in good repair?	Y N
Quoted material specification matches P.O. material specification?	Y N
Quoted drawing revision level matches P.O. revision level?	Y N
Quoted tooling matches actual tooling?	Y N
Quoted price matches P.O. price?	Y N
Quoted further processing matches P.O. further processing?	Y N
Quoted inspections match P.O. required inspections?	Y N

Review performed by: _____

EXISTING JOB:

P.O. material matches past history?	Y N
P.O. price matches past history?	Y N
P.O. delivery date is achievable?	Y N
P.O. drawing revision level matches past history?	Y N
P.O. specification revision level matches past history?	Y N

Review performed by: _____

7. **Design:**

Tooling will be designed in house (RJR Metals) to customer speck. The tooling will be designed to fit our standards and our processes of metal spinning. If there are any special request the vendor must be notified in writing.

8. **Purchasing:**

1 .Purchase orders for direct and indirect materials and services will detail the requirements for approval, qualification of personnel and QA system requirements.
2 Issue amendments to purchase orders updating them during tooling building when the customer changes the part or issues a new PO.
3. Approve purchase orders before release to the vendor.
4 .Give suppliers of direct items copies of revised SOPs when the next order is placed.
5 .If there is variation from the cited SOP, note them in writing on the purchase order.

9. **Supplier quality controls:**

A receiving inspection will be done to on all incoming orders as soon as they arrive or before the first article is completed.

10. **Receiving inspection:**

The following page will have the receiving inspection sheet.

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RECEIVING INSPECTION REPORT

PART NUMBER_____ DATE: _____

CUSTOMER_____INSPECTED BY_____

1. MATERIAL THICKNESS REQUESTED:_____

   RECEIVED: _____

2. A) DIAMETER REQUESTED:_____

   RECEIVED: _____

   B) HEIGHT REQUESTED: _____

   RECEIVED: _____

3. MATERIAL TYPE:_____
4. LOT NUMBER:_____
5. HEAT CODE:_____
6. MANUFACTURER:_____

SHIPPING SIZE

7. VISUAL INSPECTION: (DAMAGE, SCRATCHES, DENTS, BURRS, WELDS, ETC)

_____

_____

8. CONFIRM QUANITY_____ REC'D:_____

9. TEMPLATE REQ"D: YES OR NO (circle one) IN HOUSE : YES or NO (circle one)

11. Validation of production processes:

A first article of approval will be performed on the first part of each run. It will insure that the manufacturing process is in conformance with the part print and customer requirements. Management or QC inspectors will evaluate parts or product made by operators.

12. Tooling control and identification:

1. Tooling that is built in house will be marked upon completion, with vibra-peen ,stamps or attached metal tag
2. Markings will include customer name and part number and any other markings specified in P.O.
3. When in storage tooling will be coated in rust preventive and shrink wrapped for water protection.

13. Identification and traceability:

1. Part identification consists of the customer name and part number, unless otherwise specified on the customer P.O., instruction or drawing.
2. Follow and define the part requirements cited in customer drawings or other documentation.
3. If required by the customer, parts may be individually serialized.
4. Parts will not be put with or stored with other parts.

14. Preservation and controls:

1. Each part will have storage space and instructions so the absence of instructions does not result in the deterioration, loss, or damage of the material in storage.

2. Packing consists of the purchase of wooden crates or cardboard boxes. Protective coatings and special handling of tooling or parts will be made by request.

3. Tooling and parts made in this plant do not require protection during shipping beyond normal packaging. If the PO requires special protection, such conditions will be adhered to.

15. Customer Property Controls:

15.1. Handle customer supplied material with care. This includes customer owned tooling, gauging, and production machinery.

15.2. Upon receipt of customer supplied materials, perform the following:

A. Verify the count or amount of material received from the customer. Enter this into the receiving inspection

B. Visually inspect the material for obvious damage. If material is suspect, segregate, notify QC, and do not release to inventory or production.

C. Store customer supplied materials in an area that is reasonably secure and protected from damage.

D. Perform an annual inventory of customer-supplied materials and tooling and compare against the count in the database.

E. Make a written report to the customer whenever material is discovered to have been lost, damaged, or is otherwise unfit for use.

15.3 Tooling:

Handle tooling in the following fashion:

1. Log them in upon receipt. If required by the PO, it will be dimensionally inspected.
2. Store them in an orderly fashion.
3. Take reasonable care to protect patterns from damage.
4. If a tooling is damaged or if it is lost, make a written report to the customer.
5. If tooling are returned to the customer, make a written list of the tools that were sent.

16. Calibration:

16.1. Gages and measuring instruments shall be:

A. Calibrated at regular intervals. Establish the calibration interval for each gage based upon appropriate factors for that gage.

B. Kept in an environment suitable for the inspections being performed.

16.2. For each gage:

A. Assign listed location
B. Assign a calibration interval
C. Assign a specific check or calibration method. Calibration masters shall be traceable to N.I.S.T. or where traceable standards do not exist, document the basis used for calibration. List the calibration masters by serial number.
D. Assign a specific set of criteria to determine if the gage is properly calibrated.
E. Apply a calibration status tag.
F. If a gage is found to be out of calibration:
    1. Establish the time period it has been in error.
    2. Establish the amount of error present in the gage.
    3. Establish if the error present would have caused defective parts to be accepted as good parts
    4. If parts could have been incorrectly accepted, perform a record search for the indicated time period by inspecting the Production Logs to find which shipments might have been erroneously accepted and initiate a corrective action for each shipment.
    5. Remove the calibration sticker from the gage, remove it from the use area and notify the calibration authority.
G. Record a method for safeguarding the calibration settings, if possible.

16.3. Keep a record of all inaccuracy in the Calibration Database or Calibration records for each instrument.

16.4. Do not use a gage or inspection template to check part unless it has a current CALIBRATION DUE decal and are in good repair.

16.5. Instruments may be calibrated by an outside source. They must have standards directly traceable to N.I.S.T.

16.6. Check inspection templates on receipt and recheck them at prescribed intervals. Establish the extent and frequency of such checks and keep records of the checks. .

CALIBRATION & GAGE RECORD

Instrument Name _____ Serial Number _____

Measurement Type _____ Measurement Range _____

Accuracy Required _____ Calibration Interval _____

Gage Location _____

CALIBRATION METHOD

1. _____

2. _____

3. _____

4 _____

5. _____

Calibration Criteria: _____

_____

Type of Calibration Status Tag _____ Gage Working Environment _____

Gage Handling Method: _____ Gage Storage Conditions: _____

Calibration Settings Safeguards: _____

_____

17. Inspection before release:

A first article of approval will be performed on the first part of each run. It will insure that the manufacturing process is in conformance with the part print and customer requirements. Each part will also have an individual inspection on all details and will be recorded on the following example sheet.

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Inspection Sheet

Customer :	
Part number:	

Detail #	1	2	3	4	5	6	7	8	9	10
#1										

#2										
#3										
#4										
#5										
#6										
#7										
#8										
#9										
#10										
#11										
#12										
#13										
#14										
#15										

18. Audits:

18.1 Internal audits:

1. Audit areas having repeated PCFs more frequently than areas without repeated PCFs.
2. Audit areas of high importance or status more frequently than routine areas.
3. Audit the entire SOP after each revision.
4. Create an audit schedule to track and control audits. Update the SOP audit schedule monthly.
5. Use the following minimum frequencies for auditing:

A.	SOP‘s	2 years
B.	Operator	1 year
C.	QA system	6 months
D.	Part Number	Random

6. Increase audit frequency by 50% for each non-conformance found. If there are no nonconformance’s discovered for 2 consecutive audits, reduce the audit frequency by 50% until the minimum audit frequency is reached as detailed above.
7. Rotate audits to cover each operating shift.

The following Page has the form for internal audits

INTERNAL AUDIT FORM

SOP Audited _____ Rev. Level _____ Audit Number _____

Date ____/___/___. Auditors_____//_____

	TRAINING RECORD
	CALIBRATION STATUS OF GAGES OK
	DOCUMENT CONTROL
	NO ORPHAN/ UNIDENTIFIED MATERIALS
	AUDIT PART NUMBER INSTRUCTION IN USE

NON- CONFORMANCES WRITTEN:

1	
2	
3	
4	
5	

COMMENTS:

MANAGER COMMENTS:

PCF ISSUED? Y N _____ PCF# _____

18.2 Informal audits:

1. Any manager may schedule an informal audit at any time for any reason. Such audits require no notification. Follow the standard internal audit procedure. Informal audits are typically used to monitor problem or suspected problem areas.

19. Authorities and controls of NC Product:

1 .Reject parts when they do not conform to customer PO requirements or internal standards will be identified and segregated.
2 .Identify and Segregate nonconforming parts by putting them on or adjacent to the scrap table or bin.
3 .Evaluate nonconforming parts within 1 working day and decide:
A. Re-work - Repair and re-inspect the part to the original standards
B. Use-As Is - These parts are either:
1. Good parts improperly rejected.
2. Parts with a minor problem. When required by contract, the customer will be contacted & advised of the exact nature of the defect and asked for a concession. .
C. Scrap out - and handle parts per customer PO, or document scrap and place on the scrap table o in bin.

20. CORRECTIVE ACTIONS AND IMPROVEMENTS:

1. Review the following items within 1 working day of occurrence and issue a PCF for each valid occurrence:
A. Internal audit nonconformance
B. External audit nonconformance
C. Failure to meet Quality Objectives
D. Excessive scrap
F. Customer Concession Requests
G. Customer Complaints
2. Review the following items within 7 working days of occurrence and issue a PCF as is appropriate:
A. Repetitive Waiver Slips

B. Improvement suggestions
C. Defective incoming materials
D. Excessive maintenance cost or downtime
E. Indicators showing that a process is unstable or non-capable.
F. Late shipments
G. Potential problems

3. Investigate nonconforming parts or processes. Perform any of the below monthly to identify trends.
   A. Visual review of the scrap
   B. Review of the part number file
   C. Audits of SOPs
   D. Review of Customer Concession Requests & Customer Complaint Forms
   E. Review of the scrap history by defect
   F. Review of out of control SPC processes or failure of casting testing
4. Report identified trends to management and issue a PCF as appropriate.
5. Preventative and corrective actions are both included in the PCF and in this procedure. No differentiation is made between them, as they both require the same action once started.

21. OPERATION OF THE WRITTEN PCF:

1. Anyone may initiate a process change form for any reason, but the QA manager retains the primary responsibility to act.
2. Initiate the PCF by filling out the top section of the PCF form. Send the PCF to the QA manager.
3. The QA manager will give each PCF its' own number and enter it into the PCF log.
4. Determine if the PCF may have exposed a problem, which may be occurring in other areas. If it is, notify the affected operators by initiating PCFs for them.
5. Give each PCF a response due date. Assign dates based upon the risk involved and the complexity of the problem. This date will NOT be more than 30 days from the issue date of the PCF.
6. Assign each PCF to a member of management and forward it to them.
7. The individual assigned will:
   A. Determine the root cause of the problem.
   B. Select a method of process change, which has a reasonable chance of making an effective change to the problem.
   C. Assign resources to do the process change.
   D. If the manager does not have the authority to spend the funds required to make the change, they will notify the QA Manager as to who does have the authority and return the PCF to the QA Manager. The QA Manager will assign the PCF to that manager. *Do not permit managers to play tag with each other. In cases of disagreement, assign the PCF to the higher-ranking manager.*
   E. Assign an effective date for the PCF.

F. Return a copy of the PCF to the QA Manager.

G. Complete the actions on the PCF before the effective date.

H. Fill out the Action Taken section on the PCF and return the original PCF to the QA Manager.

8. Within 5 working days of the PCF Effective Date, perform an internal audit of the PCF to determine if it was completed if it was effective. When a PCF applies to a part number, the audit date will be the next time the job is run.
9. If PCF is effective, close PCF out.
10. If the PCF is not effective in eliminating the problem, close the original PCF, issue a new PCF, and reference the original PCF. Continue until the problem is resolved.
11. File the completed PCF in the part number file or under the SOP number. *Implemented PCFs normally require that a change be made to a part number special instruction or the revision level of a SOP be raised one level.*

PROCESS CHANGE FORM

Initiator _____ Date _____ PCF Number _____

Part Number or SOP affected _____

Current Practice

_____

Problem

_____

Assigned To: _____ Department _____ Response due Date _____

==========AREA MANAGER'S SOLUTION==========

Proposed Solution:

_____

_____

Date Solution can be completed: _____ Funds required: _____

==========MANAGEMENT APPROVAL==========

Approved [ ] Denied [ ] Denial Reason _____

Reason for Denial: (1) Problem is in normal ranges (2) previously studied
(3) Lack of funds (4) Duplicate PCF (5) Not Effective

Revisit Funds Start Effective

Proposed Solution _____ Allotted $ _____ Date _____ Date _____

==========ACTION TAKEN ==========

_____

_____

_____

==========VERIFICATION ==========

Audit Number _____ Audit Date _____ Effective? [ ]YES [ ]NO If no, New PCF #: _____

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Sequence and Interaction of
RJR Metal's Manufacturing Processes and Quality Management System

Order Entry

↓

Receiving Inspection

↓

Manufacture tooling

↓

Preform material (if needed)

↓

First Article Approval

↓

Production run

↓

Operator inspection and recording of measurements

↓

Final Inspection / Test

↓

Packaging

↓

Shipment