INTRODUCTION

This manual describes the Quality Control procedures in use by RTD Technologies Inc.

This manual will be reviewed and revised at periodic intervals and/or as necessary.

The Quality Control Structure is shown below:

President/Owner
Quality Control Manager
Machinist/Operator

Marc Therrien

President

Daniel Tittle

Quality Control Manager

Quality Manual

RTD Technologies Inc.
360 Route 108
Somersworth NH. 03878

Control #001 Rev C

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Mission Statement

Our Mission is to provide quality products and services in a timely manner and at competitive prices. We will continuously strive to improve our processes to better achieve that mission.

Quality Statement

All products and service provided shall conform to the requirements specified by our customers. It shall be the policy of RTD Technologies to ensure a uniform and consistently high level of quality and timeliness throughout all aspects of manufacture, design, and service. We will work closely with our customers to provide a superior product. We will achieve this level of product through continuous improvement to our processes, equipment, and inspection.

Foreign Object Damage Statement

RTD Technologies is committed to preventing Foreign Object Damage in the manufacturing process. We will prevent FOD through a comprehensive approach including training our employees on proper FOD prevention, Inspection for FOD and regular reviews of the facility and workstations.

REVISION STATUS SHEET

Detailed Revision log located in Appendix

Date	Revision	Author
7/10/2013	Original Issue Revision A	Johnathan Dow, Quality Manager
9/1/2016	Updated Manual to Revision B	Daniel Tittle, Quality Manager
8/23/2017	Updated Manual to Revision C	Daniel Tittle, Quality Manager

QUALITY CONTROL, ORGANIZATION & FUNCTIONS

1.1 The purpose of this procedure is to briefly outline the functional responsibilities of the quality control, engineering and manufacturing organization as a vital part of the company structure.

1.2 Quality Control includes two sub-functions*, Quality Plans and Procedures*, and *Inspection*. Both functions are the responsibility of the Quality Manager. The Quality Manager is directly responsible to the President of the Company. She/he is in charge of all conformance, blue print, and contract requirements. This includes the responsibility to audit products as the *need is determined*, until the product is shipped. Inherent in this responsibility is the authority to hold shipments for specific defects which do not comply with customer specifications.

1.2a Quality *Plans and Procedures:* This sub-function covers customer specifications, contracts, and other information to determine quality requirements. The Quality Manager develops, and writes step-by-step inspection plans and processing procedures that are easily understood at the user level. The Quality Manager will develop inspection instructions, check-lists and inspection methods. He will also assist other departments in writing procedures/instructions which will enhance quality.

1.2b The *Inspection Department* is responsible for inspection of the product, tooling, and materials. Responsibilities include incoming inspection, in process inspection, final inspection, and equipment calibration. The four (4) major functions of the Inspection Department are as follows:

- ***Incoming Inspection*** is responsible for the verification and compliance to customer specifications and properly identifying materials received from outside vendors.

- ***In-process Inspection*** is responsible for performing inspections during all stages of manufacturing as instructed by the Quality Manager.

- ***Final Inspection*** is responsible for inspecting the completed product, including first article inspections and all documentation relating to that specific product. Final Inspection is also responsible to oversee the proper identification and packaging of the product prior to shipment.

- ***The Calibration and Test function*** is necessary to perform established inspections on tooling, equipment, and measuring devices. These also require timely calibration, with records accurately maintained.

ORDER AND RAW MATERIAL CONTROL

2.1 The President and the Quality Manager will insure that the materials and services provided by RTD meet the requirements of the customer's purchase orders, drawing specifications, and contractual agreements.

2.1a When required, exact specifications and revision level for material or processes and services called for on customer drawing or contract will be specified on the RTD purchase order.

2.1b RTD will state in writing on its purchase order that it will not accept any material or service unless accompanied by the certificate of compliance and/or certificate of analysis whenever required by a customer purchase order. All non-conforming material must be reported to the Quality Manager for proper disposition.

2.1c All required raw material ordered by RTD will be purchased to a specific job and identified with the job number, and RTD purchase order number. All material suppliers will segregate separate heat lots of the same material type and clearly identify such lots. These lots shall be traceable through the job number and purchase order, and a redundant hard copy backup of the supplied material certification shall be kept.

2.1d Jobs requiring more than one lot will be kept segregated and clearly marked throughout the entire job process including inspection and shipping. All stored jobs will have the part number clearly marked on the package and will have parts segregated by Job Number.

RECEIVING INSPECTION

3.1 The Quality Manager or Shop Foreman will receive all new materials. The receiving inspection will check to verify that all the required tests have been properly certified.

3.1a If customer requires documented evidence of this review, including checking off each element, signed and dated, then such a document will be maintained. All receipts will be initialed, stamped and dated by the Quality Manager or Shop Foreman.

3.1b The Quality Manager will determine if the material is conforming or non-conforming. Non-conforming material will be identified and placed in a segregated area until the appropriate action is determined. Appropriate action may include returning material to the supplier, or obtaining a waiver to use the material.

3.2 Copies of all certifications will travel with the job router, and kept with the purchase order, and are available for review at the customer's request. These files will be monitored for compliance by the Quality Manager.

3.2a All certifications will be identifiable to the applicable purchase order, and date of receipt of the material, and initialed by the Quality Manager.

3.2b Verification of suppliers' certifications are accomplished by independent testing laboratories when deemed necessary by the Quality Manager, or by RTD customer purchase order requirements.

DRAWING AND SPECIFICATIONS CHANGE AND CONTROL

4.1 RTD fabricates and manufactures to customer drawings and/or specifications that are controlled by the Quality Manager. A copy of the print will accompany the job packet for all jobs.

4.4 The sales department receives engineering changes, drawings, and specification changes from RTD customers and is responsible to immediately forward customer changes to the Quality Manager.

4.5 The Quality Manager is responsible for issuing the latest engineering changes, drawings, and specifications to the relevant departments.

4.6 The only authorized mark-ups and changes to control documents such as customer prints, manufacturing operation sheets, and inspection records, will be signed and dated by the President or the Quality Manager. All other changes are invalid and will not affect a procedure change, but will in fact cause a work stoppage until validation is made. Changes to drawings, Purchase Orders or operation sheets will be dated and initialed by either the President or Quality Manager.

RECORD RETENTION

5.1 Upon completion of all requirements specified in a customer's purchase order, the customer's drawing will be filed in the central file. All certificates of compliance, certificates of analysis, special and test reports, inspection reports and engineering changes will be stored in the part history file.

5.2 These records will be maintained for a period of seven years (or specific customer requirement up to 20 years) from the date the order was completed.

5.3 When requested, these records will be made available for delivery within three working days.

IN PROCESS INSPECTION

6.1 All incoming, in-process and final inspection will be by lot sampling using customer requirements, with no accepted reject rate. If the customer does not supply requirements, the inspection will be sampled according to ISO 2859 requirements, or a sampling plan may be determined by the Quality Manager.

6.1a A first article is required for all new jobs and will be conducted by the Quality Manager after each step in the manufacturing process. Production will not proceed until a complete first article inspection has been completed.

6.1b A first piece inspection is performed by the Quality Manager after each set-up is completed and a part has been deemed acceptable by the machinist.

6.1c No production runs are made until a first piece inspection is completed and found acceptable.

6.1d If customer requires, the first piece/first article will be tagged and segregated throughout the manufacturing process, and shipped as “first piece/first article” with any required documents.

6.1e After first piece/article inspection acceptance, in-process inspections will be performed by the machinist and monitored by the Quality Manager at adequate intervals to provide early detection of processes producing non-conforming parts. Manufacturing personnel will maintain in-process inspection sheets.

6.1f Records of all first piece and in-process inspections will be maintained by the Quality Manager.

6.1g If a piece or lot fails at any point, the entire lot is screened 100% for the feature. Any related feature will also be inspected at 100%. The non-conforming material is segregated, suitably identified, and held for disposition by the Quality Manager.

6.1h Inspection records will include the following:

- Number of pieces accepted/rejected
- Nature of defects and basic cause of rejection
- Date of inspection
- All dimensional characteristics
- All notes related to processing or outside processes
- Positive identification of inspector
- Positive identification of the machinist for each operation

FINAL INSPECTION

7.1 Final inspection and testing of all characteristics are performed 100% or on sample basis as required with no allowed reject rate, as applicable to complexity of the items produced and/or customer requirements.

- Inspection will be in accordance with the customers' procedure forms , when supplied.
- Inspection will also be in accordance with the customers' specified inspection as called out in the Purchase Order.

7.2 No product will be shipped to any customer until it has been approved for shipment by the Quality Manager.

7.3 After final approval, all inspection reports are maintained in central job files. Closed job files are kept for a period of seven years (or specific customer requirements up to 20 years) from the date the order was completed.

7.4 All non-conforming material is identified and segregated from the normal flow of finished material and submitted to the Quality Manager for disposition.

7.4a Non-conforming material is not released for shipment to the customer without specific Customer instructions to submit non-conforming material.

7.4b Rejected material which is subjected to any repair or sorting is resubmitted to the Quality Manager for verification of the adequacy of the rework. 100% inspection is performed on discrepant characteristics.

7.4c Corrective action, and performing follow-up action to prevent recurrence of discrepant parts is the responsibility of the Quality Manager.

7.5 Inspection records will include the following:

- Number of pieces accepted/rejected
- Nature of defects and basic cause of rejection
- Date of rejection
- Date of inspection
- All dimensional characteristics
- All notes related to processing or outside processes
- The Quality Manager's initials

IDENTIFICATION

8.1 All materials and articles are identified by a Purchase Order number and Part number. The President will generate a job traveler after receiving the purchase order, or other verification of order placement with RTD. The job traveler will include the Purchase order number and the part number. The job traveler will accompany the materials and parts until completion of the job.

SPECIAL PROCESSING AND SERVICES

9.1 All special processing (welding, brazing, heat treating, plating, etc.) performed by outside Vendors, is controlled through the RTD special process and services purchase order.

9.2 All requirements pertaining to special processing and/or service are fully specified on the Purchase Order by the President.

9.3 When required, only customer-approved sources are utilized, and are so noted on the RTD job traveler.

9.4 When required by customer, verification of processor capability to perform processing and/or certification of personnel and equipment as required by specifications, will be requested from the vendor and will be maintained in the quality control files.

9.5 If customer does not specify an approved source, only sources approved by RTD will be utilized. A list of RTD approved sources shall be kept on file and will be available to customer representatives.

INSPECTION OF SPECIAL PROCESSING AND SERVICES

10.1 Production control routes all articles received from special processing or service vendors to the Quality Manager or President as directed by shop traveler.

10.1a The Quality Manager or President will not accept parts without the proper certification.

10.1b The Quality Manager or President will verify that the services have been performed in accordance with specifications, and all certifications are valid.

10.1c Parts will be physically inspected to assure that no deviations from print have occurred during processing.

10.1d Accepted parts are identified and released to shipping or next manufacturing operation.

10.1e Rejected parts are identified and held in a segregated area until disposition is determined by the President.

NON-CONFORMING MATERIAL

11.1 All non-conforming supplies, parts and/or material waiting for disposition are placed in a segregated area. The items will be clearly identified to Job Number, Part Number, Lot Size, discrepant Characteristics, Inspector's Name, and/or other identification as required.

11.1a Non-conforming parts shall be marked with red marker or tag if non-conforming and non-repairable.
Parts shall be marked with blue marker or tag if non-conforming and repairable.

11.1b Non-conforming parts may be used as "set up" parts for subsequent operations. In this case, the parts shall be clearly marked in red "Setup Only" and will be destroyed at the end of all operations.

11.1c Non-conforming and repairable parts will be clearly marked with the discrepant characteristics and segregated until the end of the operation. Repairable parts will then be repaired and inspected 100% on the affected characteristics. If the repairs are effective, then the parts will be considered good and will be placed with the good parts and will not be marked. If the repairs are not effective then the parts will be marked in red pursuant to the guidelines laid out in procedure 11.1.

11.2 The non-conforming characteristic(s) are clearly indicated on a rejection tag and attached to each part or container, or the part itself may be marked in red.

11.3 No one is authorized to remove non-conforming items from the segregated area until a review is completed by the Quality Manager and/or President.

11.4 Non-conforming parts will not be shipped unless concurrence from the customer is received.

11.4a All non-conforming parts that are shipped to the customer will have the discrepancy indicated.

11.4b All non-conforming parts that are not shipped to customer, will be destroyed.

11.5 Unidentified material is segregated from the normal flow of production material until, through 100% inspection, conformance to all specification is established.

11.6 Reworked material is segregated from other material until conformance of material, to all specifications, is established through 100% inspection of all affected characteristics.

11.7 Internal Corrective Action:

11.7a When a nonconformance is generated internally, the Quality Manager will attach a Corrective Action Report to the shop traveler. The cause & corrective action portion is completed, signed, and dated by the machinist who was responsible for the error and returned for review by the Quality Manager, as required.

11.7b When the nonconformance is reviewed by the Quality Manager, the cause and corrective action is reviewed concurrently to insure that the stated corrective action is positive and that recurrence of the nonconformance can never be attributed to the same cause.

11.7c Internal Corrective Action reports will be kept by the Quality Manager for a period of not less than 7 years.

11.8 Customer Corrective Action

11.8a When non-conformances are reported to RTD by the customer, immediate action will be taken by the Quality Control Manager.
The first action is to ensure that any material in house does not exhibit the same nonconformance as what is reported.
The inspection records for the nonconforming part or parts are then reviewed to determine if the reported problem is legitimate. If the problem is considered legitimate, the following steps will be taken.

- Identify and determine cause and contributing factors.
- Initiate corrective action plans.
- Determine quantity of affected parts.
- Initiate corrective action.

Complete the customer C.A.R. within the allotted time frame.

11.8b If the problem cannot be substantiated, the appropriate manufacturing operation will be monitored by Quality Control, and the affected characteristics will be inspected 100% at the work station and at final inspection. The customer C.A.R. will not be completed until the material is returned to RTD for verification. If verified, the manufacturing and quality planning will be reviewed and updated as necessary.

11.8c Corrective Action reports will be kept by the Quality Manager for a period of not less than 7 years.

11.9 Preventative Action:

11.9a All customer and internal Corrective Action Reports will be reviewed to see if the results can be applied to other areas of RTD Technologies to prevent non-conformances.

11.9b. Any changes to the organizational structure of RTD Technologies will be reviewed for potential negative impacts to products, processes, and customers.

11.9c Preventative Action reports will be kept by the Quality Manager for a period of not less than 7years.

11.9d Preventative Action reports will be reviewed yearly as part of the Quality Manual review to determine effectiveness and changes will be implemented if the actions are determined to be lacking.

TOOL AND GAGE CONTROL

12.1 All gages, measuring and test equipment are checked to standards which are traceable to NIST.

12.3 All gages, measuring & test equipment standards shall be calibrated and utilized to the extent necessary to assure continued measurements of required accuracy.

12.2 Each new or reworked tool, jig, fixture, gage, or item of measuring equipment is inspected prior to issue for use. First piece inspection will be proof of tools, jigs, and fixtures.

12.4 A written schedule of frequencies for calibrating gages, measuring and test equipment is maintained and is strictly adhered to. The schedule is based on type, purpose, severity of usage, and frequency of need for re-calibration.

12.5 RTD calibration records will show the date of calibration, remarks, the next date of calibration, and the initials of the person or company performing the calibration.

12.6 All calibration records will be retained by the Quality Control Department for a period of Not less than 7 years, and will be made available to any customer upon request.

12.7 Decals or stickers are applied to tools and gages or their storage containers. The decals or stickers show the due date for the next calibration, date calibration was performed and initials of technician who performed calibration.

12.8 Personal employee tools shall be checked to standards traceable to NIST. The schedule is based on type, purpose, severity of usage, and frequency of need for re-calibration.

12.9 CMM Calibration will be conducted yearly by an outside technician. All CMM records will be kept On the CMM Computer with a hard copy backup kept by the President.

12.10 A master Pin set will be kept and Maintained by the Quality Manager for the Purposes of inspection And Calibration. Access will be restricted to the President and Quality Manager.

12.11 A master Thread Gage set will be kept and Maintained by the Quality Manager for the Purposes of inspection and Calibration. Access will be restricted to the President and Quality Manager.

OVERRUN PARTS AND STOCK CONTROL

13.1 The President will have the responsibilities of control of any overrun parts and unused material.

13.2 The President or Quality Manager will assure that overrun parts presented for stock are properly identified as to inspection status (acceptance), date of inspection acceptance, revision level, job number, quantity of parts, and that the parts are adequately packaged to prevent deterioration or damage.

13.3 No overrun parts shall be shipped to a customer until a visual re-inspection is accomplished to assure that they are in acceptable condition.

13.4 The Quality Manager will assure that any and all overrun stock is returned to storage, accompanied by identification for traceability. The Purchase order will be marked and/or tagged on to materials as to be traceable to Certificate of Compliance.

PACKAGING AND SHIPPING

14.1 No order will be shipped to a customer until all parts are released from final inspection.

14.2 No material will be shipped until all required certifications, test reports, special samples, etc., have been packed with the material in accordance to RTD customer requirements.

14.3 All items will be packaged in a manner that prevents damage, deterioration, or substitution.

14.4 Adequate marking will appear on the packaging, parts, and as otherwise necessary to provide positive identification to the applicable RTD customer.

14.5 Special packaging requirements are reviewed by the President and routed to shipping.

14.6 All shipping, receiving and material dispensing departments will be under the direct authority of the Quality Manager or President.

CONFORMANCE AUDIT

15.1 Internal Audits

15.1a The Quality Manager and/or the President are responsible for auditing the systems and procedures used by RTD.

15.1b The internal audit procedure will be conducted on a random basis no less than once every year.

15.1c The audit procedure will be carried out by using the RTD conformance audit form.

15.1d Conformance Audit Results will be kept by the Quality Manager for a period of not less than 7 years.

15.2 External (of suppliers) Audit

15.2a The President and Quality Manager will determine which vendors are subject to audit.

15.2b The President or Quality Manager will audit these vendors annually if necessary.

15.2c Any vendor not conforming to RTD conformance audit will be notified in writing and corrective action will be required before any purchase orders are awarded.

15.3 Audit Record

15.3a The result and records of all internal and vendor audits conducted by the Quality Manger will be retained on file by the Quality Control Manager for the customer's inspection.

QUALITY MANUAL REVIEW

16.1 The policies of this manual will be reviewed annually to incorporate organizational or policy changes as required.

16.1a Any Corrective Action or Preventative Action reports issued during the year will be reviewed to determine effectiveness and the impact on RTD Technologies.

16.2 Interim changes to the policies outlined in this manual will be handled by amendments to the affected section of the manual and incorporated as a revision at the time of the annual review.

16.3 Revision and/or amendments to the Quality Control Manual will be documented on the revision page in front of this manual. Revised manuals will have the signed approval of the Quality Manager.

APPENDIX

i. Revision Log Details

ii. Quality Control Calibration System

iii. Out of Tolerance Form

iv. RTD Conformance Audit Form

REVISION LOG DETAILS

Rev C Details 8/23/2017

Section	Revision
1.0	Added FOD Statement
2.1 d	Changed to Part Number only recorded on outside of package
3.1	Changed to include Shop Foreman
3.1a	Changed to include Shop Foreman
8.1	Updated Nomenclature
9.2	Changed Quality Manager to President
10.1	Added President
10.1a	Added President
10.1b	Added President
10.1e	Changed Quality Manager to President
11.1	Added “waiting for disposition”
11.1a	Added “or Tag”
11.2	Added details
11.3	Added President
11.6	Added “of affected characteristics”
11.7c	Added section Internal CAR Results
11.8	Edited for clarity
11.8a	Edited for Clarity
11.8c	Added section Customer CAR Results
11.9	Added Section 11.9 and subsections on Preventative Action
12.5	Added “or company”
12.7	Added “for a period of not less than 7 years”

REVISION LOG DETAILS

12.9	Added Section 12.9 CMM Calibration
12.10	Added Section 12.10 Master Pin Set
12.11	Added Section 12.11 Thread gage set
13.1	Changed to President
13.2	Added President
14.5	Changed to President
15.1d	Added section 15.1d Conformance Audit Results
16.1a	Added Section 16.1a Review of PAR and CAR
Appendix2	Added Master Pin Gages, Master Thread Gages and Micro-hite

REVISION LOG DETAILS

INTERVAL OF CALIBRATION

Micrometers	Annually
Calipers	Annually
Depth Micrometers	Annually
Thread Gages	Annually
Height Gage (Transfer Gage)	Annually
Dial Bore Gages	Each use
Gage Blocks	Annually
Plug Gages	When used, checked with calibrated tool.
Dial Indicators	Annually
Optical Comparator	Annually
CMM	Annually
Master Gage Block Traceable to N.I.S.T. used as in-house Master	Annually
Master Pin Gages used as in-house master	Annually
Micro-Hite	Each Use
Micro- Hite Setting Gage	Annually

OUT OF TOLERANCE

An out of Tolerance Condition has been detected on our

Test Equipment Type _____ Test Equipment # _____

This equipment was used in the testing of your P/N _____

On your P.O. # _____. The material was shipped on our

Packing Slip # _____, Dated ____/____/____

Prescribed Reading _____

Actual Reading _____

Quality Manager

CONFORMANCE AUDIT

Date: ____/____/____

Organization: _____

Initial _____ Annual _____

N/A _____ Satisfactory _____ Unsatisfactory _____ (See Remarks)

Quality Control Manual

*Inspection*_____

Receiving
In-Process
Final

_____

Tool and Gage Control
Calibration Methods
Calibration Frequency

_____

Drawing and Spec. Control
Incoming
In-Process
Completion

_____

Purchasing

_____

Manufacturing Procedures

_____

Production Control
Overrun Parts and Stock Control

_____

Non-Conforming Material

Incoming
In-Process
Final

_____

Packaging and Shipping