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QUALITY CONTROL MANUAL

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1. Introduction

- 1.1. The purpose of this handbook is to provide Top Craft Tool personnel with a set of guidelines and procedures for quality control.
- 1.2. These guidelines and procedures will be adhered to at all times with respect to product design, material handling, machining, fabrication, assembly and certification of tooling and products. It is the responsibility of every employee of Top Craft Tool to ensure that all tooling and products shipped to our customers meet the standards and specifications of our customers.

2. Quality Control Department Charter and Organization

- 2.1. The Quality Control Department is an organization within Top Craft Tool that is chartered to do the following:
 - 2.1.1 Ensure and document that all tooling and products shipped to our customers meet the standards and specifications of our customers.
 - 2.1.2 Work to continually improve processes and products, along with guiding all of Top Craft Tool personnel towards the highest level of quality possible.
 - 2.1.3 Ensure that all machines, tools, and gages used throughout the company are properly inspected, calibrated and controlled.
- 2.2. The Quality Control Department reports to the Plant Manager.

3. Machine, Tool and Gage Inspection, Calibration and Control

- 3.1. Equipment will be calibrated and operated in an environment controlled to the extent necessary to ensure accuracy. All equipment shall be handled and transported in a manner that will not affect calibration.
- 3.2. Tools and gages on permanent assignment to the Quality Control Department shall be identified as MT & E. No MT & E tool or gage is to leave the Quality Control Department, nor shall Quality Controls Department personnel use any tools or gages for inspection that are not calibrated. All gages will be verified every (3) three months and labeled with a certification tag.



- 3.3. Each gage or tool used for acceptance will have a label and logged in the QC Manual to verify when gage has been calibrated. All gages will be checked in three different range of gage to verify gage is correct. The Master Gages & Surface Plate used for Verification/Calibration will be certified every two years that are traceable back to N.I.S.T standards and logged.
- 3.4. Inspection room aids such as thread gages, plug gages and pin gages, etc. will be inventoried for loss and damage once a year and will be replaced, repaired or recalibrated if needed.
- 3.5. Out of tolerance on any gage by (graduation of measurement) will be identified and tagged for recalibration.
- 3.6. All machines that have digital readouts will be calibrated & decaled once a year by an outside certified source and reported to the Quality Manager and logged in the Quality Manual.
- 3.7. Recall procedure is if a gage is found to be out of specification or missing it will be posted and the Quality Manager will notify the Plant Manager and contact the customer to verify the parts are within all specifications required.
- 3.8. Employee gages will be cleaned & checked every 90 days.
- 3.9. All Inspection Stamps will be inspected for loss or damage once a year.

4. Suppler quality Control Requirements

- 4.1. Suppliers to Top Craft Tool shall maintain an effective quality control system in accordance with Top Craft Tool's requirements and with the requirements of the supplier's industry. Upon request, suppliers shall provide documentation of their quality procedures and of specific certification reports for goods shipped to Top Craft Tool. It is the discretion of Top Craft Tool to accept or reject a supplier's goods.

5. Inspection and Control of Incoming and Stored Goods

- 5.1. All materials, parts and services received from outside sources (including suppliers and customers) will be inspected upon receipt for type, size, quantity, shipping damage and any other visual characteristics that are applicable before the shipment is initially accepted. Shipments that are deficient in visual or other readily identifiable characteristics will not be accepted. Notice of acceptance or rejection at receipt will be noted on the shipper.

6. Handling of Non-Conforming Suppliers and Parts

- 6.1. Materials, parts, and services, whether received from outside sources or internally from Top Craft Tool which does not strictly meet drawing or specification requirements, but which may be usable, must be cleared for use by the Plant Manager.
- 6.2. Non-conforming supplies and parts that are not cleared for use must be clearly labeled as "rejected" and set aside for return shipment or scrap.
- 6.3. Outside sources wishing for approval to vary from drawing or specification requirements must receive such approval from the Plant Manager.

7. Protection of Critical Surfaces, Threads, Fittings, Etc.

- 7.1. Protection of external splines, threads, and machined surfaces may be accomplished by wrapping, taping, individual packaging or by preservative coatings. When required, openings in hydraulic, electrical and air units must be capped, plugged or sealed to prevent entry of dirt or foreign material.
- 7.2. The Quality Control Department reserves the right to reject items if not properly packaged or protected.

8. In-Process Inspection

- 8.1. The Quality Control Department or Supervisor with approved inspection equipment will provide in-process inspection at regular intervals for jobs in process. The extent and frequency of in-process inspection for a given job will be jointly determined by the operators and Plant Manager.
- 8.2. The Quality Control Department may, "at any time" spot-check an in-process job at either the discretion of the Quality Control Department or at the request of the individual leading the particular job. The Quality Control Department shall encourage in-process inspection requests by job leaders as a means of ensuring a high overall quality before final inspection is begun.

9. Final Inspection, Testing and Shipping

- 9.1. The Quality Control Department will provide a final inspection report on all jobs before shipment. The final inspection is Top Craft Tool's assurance to the customer that all specifications and requirements are met.



- 9.2. Finished parts shall be placed in the Quality Control Room for final inspection. If part is too large for QC room the Quality Manager will tag part when inspected. All parts being inspected will require an inspection report with each job prior to shipping. Parts that are approved by the Quality Manager will be stamped and signed on the inspection report.

10. Statistical Sampling Inspection

- 10.1. Top Craft Tool Quality Control Department requires 100% inspection on all tooling.
- 10.2. If sampling inspection of production runs are allowed by customer contract and approved by the Plant Manager, then inspection less than 100% may be used provided that proper sampling inspection procedures are used per MIL STD 105 Specification unless instructed otherwise.

11. Corrective Action Process

- 11.1. All vendors supplying goods to Top Craft Tool Inc. will be inspected and approved by the Quality Manager. If the materials are not according to print or specification, there will be a Corrective Action Form completed and returned to vendor.

12. Document Control

- 12.1. All blueprints and documents are to be checked for current revisions, part # and purchase order #'s. If any discrepancies are found the customer is to be notified by telephone and fax so correction can be made prior to the release for manufacturing.

If you have any questions regarding this Quality Control Manual, please contact Gary Kimmen @ (586) 461-4600 Office or (586) 463-3873 Fax.

THANK YOU
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13. Revisions

1/27/03 added Document Control #12

1/3/05 added new Quality Supervisor

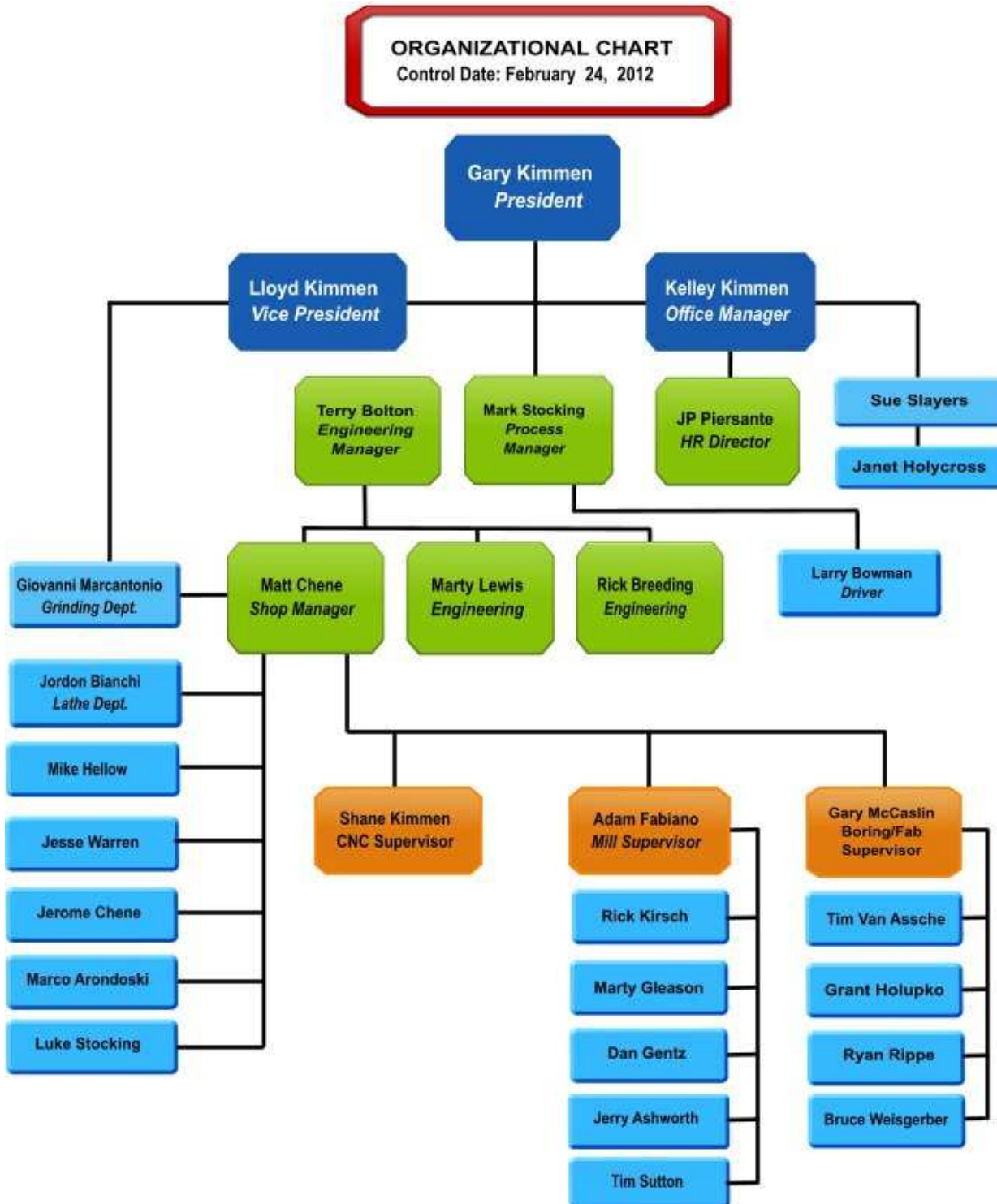
6/30/05 added cleaning and calibration methods

8/12/05 added General Dynamics web page for Spec's

9/17/05 added Thread Go/NO-Go Gage Certs

10/31/05 added Supplier Quality Assurance for General Dynamics

14. Organizational Chart



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