



Quality Assurance Manual

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1. STATEMENT OF POLICY

- 1.1 Lor-Van Manufacturing is a job shop manufacturer of precision electronic sheet metal parts, is responsible for timely delivery of all contracted sheet-metal parts, subassemblies, and/or assemblies as per drawings and specifications of customers.
- 1.2 Lor-Van Secondary operations or other services may be subcontracted as deemed necessary by (e.g., machining, painting, plating, silk-screening, etc.)
- 1.3 The Quality Assurance Manager shall administer the quality assurance system as set forth in this manual and is responsible for all quality assurance issues at Lor-Van. All personnel performing quality assurance functions report the Quality Assurance Manager and have authority to identify, evaluate, and recommend solutions for problems, also to initiate and verify implementation. The Quality Assurance Manager reports directly to the General Manager.
- 1.4 Lor-Van's Quality Assurance Manual is the authoritative document to describe procedures for controlling quality through all stages of manufacture. This is in accordance with the requirements set forth in MIL-I-45208A.
- 1.5 Procedure for changes made to this manual is described in Section 3.

2. PURPOSE OF QUALITY ASSURANCE MANUAL

- 2.1 This manual is a system of directives to assure that items manufactured at Lor-Van and products or services supplied by Lor-Van vendors, will conform to all specifications set forth in the customers contract.
- 2.2 This manual implements the requirements set forth in the following documents as is applicable to the manufacture and inspection of parts produced by Lor-Van:
- | | |
|--------------|-------------|
| MIL-I-45208A | Inspection |
| MIL-C-45662A | Calibration |
| MIL-D-105 | Sampling |
- 2.3 In case of conflict between Lor-Van's customer's contract and this manual, contract requirements shall take precedence.
- 2.4 Written inspection and test procedures are prepared to the extent as deemed necessary by Lor-Van and/or customer requirements.
- 2.5 This quality assurance system is designed to provide for early detection of discrepancies, with positive corrective action.

3. QUALITY ASSURANCE REVIEW AND REVISION PROCEDURES

- 3.1 The Quality Assurance Manager, or his designee, is responsible for the review and the revision of this manual at any time events necessitate a change (i. e., recurrent quality problem, new situation not anticipated in this manual, etc.)
- 3.2 Review of this manual will occur at least once per annum.
- 3.3 A record of reviews shall be kept on the quality assurance review page (pg. 7).
- 3.4 The quality assurance file in shop shall contain:
 - a. A dated list of all issued copies of this manual.
 - b. Copies of all revision sheets.
- 3.5 All names on issued list shall be notified when revisions are required.
 - a. Form RN-1 is used to notify holders of all issued copies.
 - b. Returned revision notification forms shall be filed in the quality assurance file.
- 3.6. It is the responsibility of manual holder to incorporate any revisions and return signed form indicating action taken.



RN-1 REVISION NOTICE

To:

Date:

Subject: Revision# _____ to Quality Assurance Manual

The enclosed material is for your information and the insertion into your copy of Lor-Van Quality Assurance Manual.

Please acknowledge receipt of this material covering Section # _____ and that obsolete copies have been destroyed.

PLEASE RETURN THIS BOTTOM SECTION

To: Lor-Van Manufacturing
Quality Assurance Manager
3289 Edward Ave.
Santa Clara, CA. 95054

Date:

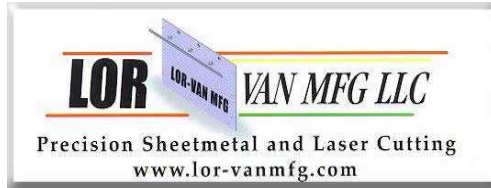
Subject: Revision# _____ to Quality Assurance Manual.

Receipt acknowledged and revision inserted into Quality Assurance Manual.

SIGNATURE: _____ COMPANY: _____

4. QUALITY ASSURANCE DEPARTMENT RESPONSIBILITY

- 4.1 Interpretation of conformance to customer's quality requirements
- 4.2 Review of customer drawings and/or specifications.
- 4.3 Determination of proper inspection points.
 - a. On all parts
 - b. Point of production
- 4.4 Documentation of necessary test and inspection instructions as required.
 - a. Any changes necessary during production and/or inspection shall be noted on Work Order Process Sheet for subsequent production runs.
- 4.5 Planning, developing, coordinating, and maintaining the most efficient procedures for optimum quality assurance.
- 4.6 Supervisor and maintenance of quality assurance records.
- 4.7 Preparation of the weekly quality report.
- 4.8 Implementation of quality assurance review and revision procedures.
- 4.9 Vendor quality assurance and corrective action follow-up.
- 4.10 Periodic inspection of all special and standard gauges, test equipment, and tooling used to manufacture and/or test parts.
- 4.11 Coordinate in-house corrective action on items rejected by customer, notify customer of action taken. Make written evaluation for quality assurance files as required.
- 4.12 Assure that all inspection personnel are capable of unbiased decisions to accept or reject material, parts, or inspection equipment.



QUALITY REPORT

Week of: _____

W.O.'s Insection _____
 W.O.'s Rejection _____
 Acceptance Rule _____
 Reject Rate _____
 Total W.O.'s Rejected _____

N/C 1st Article _____
 1st Article Rejected _____
 Acceptance Rate _____
 Reject Rate _____

Type of Internal Reject

Programming _____
 Punch _____
 Sand/Deburr _____
 2nd Op. _____
 Form _____
 Hardware _____
 Weld, Grind _____
 Paint _____

Vendor Reject Type

Plate _____
 Machine _____
 Other _____

Customer Returns

	Company	P.N.	Qty.	Reason
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____

5. DOCUMENT CHANGE CONTROL

- 5.1 This section establishes procedures for customers change of requirements.
- 5.2 Lor-Van manufactures parts and assemblies to customers drawings which are filed by company name and part number in Production Control/Process Engineering files.
- 5.3 Process Engineering/Production Control is responsible for controlling issuance of drawing specifications.
- 5.4 Engineering Change Orders (ECO's) and revision changes are addressed by Process Engineering when a new order is placed. The customer's file will be modified according to the documentation and/or instruction received. Any In-Process work requiring changes is addressed upon receipt of ECO.
- 5.5 It is Quality Assurance's responsibility to review the following areas for compliance to 5.4. This is initiated when the new work order package receives its first article inspection.
- a. Customer
 - b. Part numbers and rev. level on work order.
 - c. Part number and rev. level on print.
 - d. Any new part numbers or rev. level changes incorporated onto old documentation (due to unavailability of new documentation).
 - e. Any highlighted changes, notes, or reference data concerning specifications.
 - f. Process procedures.
 - g. Master template changes and related changes to logs.
- 5.6 It is Quality Assurance's responsibility to notify Process Engineering of any discrepant documentation found during the first article inspection process. This inspection is recorded in the Daily Inspection Log and appears as a statistic on the Weekly Quality Report.

6. DAILY INSPECTION LOG

6.1 Identifies job inspected at the Quality Control process step of the manufacturing cycle. Identifying information, what work was performed, if it is accepted or rejected, next process step and due date are entered.

6.2 All Inspection stages, Receiving, Source, Process and Final are recorded in the Daily Inspection Log.

6.3 Each operation is subjected to an In-Process inspection initiated by the operator (see Section 8).

6.3.1 The inspection is performed by Quality Control or a qualified designee and is noted on the work order process sheet only.

6.4 Additional Quality Control process inspections are performed at predetermined points during the manufacturing stage.

6.4.1 These inspections are performed by QA only and are recorded in the Daily Inspection Log as well as the work order process sheet.

6.4.2 Work orders not signed off (6.3.1 & 6.4) are not allowed to proceed to the next operation.

6.5 The Individual Inspector is responsible for the entries required for each operation.

6.6 Quality Control is solely responsible for accepting or rejecting parts or operations.

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6.4

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7. RECEIVING INSPECTION

- 7.1 All sub-contracted or vendor purchased parts are logged in, on the Daily Inspection Log.
 - 7.1.1 Each item on a purchase order is inspected separately.
 - 7.1.2 Those items with special inspection criteria such as UL requirements, certification specs, to those parts not reporting to a specific work order are checked against requirements contained in a job file maintained by Quality Assurance.
- 7.2 Material rejected has a non-conforming form issued against it and is segregated until returned to vendor.
- 7.3 Lor-Van Purchasing and the applicable vendor received copies of the non-conformance form.
 - 7.3.1 If deemed necessary by QA a supplier's corrective action will also be supplied to the vendor.
- 7.4 Sampling instructions for receiving shall conform to MIL-STD-105, customer requirements or those deemed necessary by the Quality Assurance Manager.

8. IN-PROCESS INSPECTION

- 8.1 In-Process, first piece inspections are initiated by the operator by the operator after machine set-up and prior to the second and subsequent parts in a production run.
- 8.2 Those jobs with multiple set-ups in process (such as forming) will have an inspection performed after each set-up.
- 8.3 Quality Control or a qualified designee will perform this inspection.
- 8.4 In-Process inspections are signed-off on the work order process sheet only.
- 8.5 All cellular manufacturing (Prototype, Standard Production and “JIT”) are subject to In-Process inspections.
- 8.6 Only a Quality Control Inspector performs Quality Control inspections as a process step.
 - 8.6.1 Covers all processes performed up to that point.
 - 8.6.2 Can include Written First Article Inspection (see Section 9). If required.
 - 8.6.3 Are recorded in the Daily Inspection Log as well as the Work Order Process sheet.

9. FIRST ARTICLE INSPECTION

9.1 First Article Inspections, are performed by the Quality Assurance department only.

9.2 First Article Inspection requests are generated by Production Control or Engineering and are noted at the beginning of the work order process sheet.

9.3 First Article Inspections are performed on all new parts, previous run parts with rev. changes and prototypes.

9.3.1 All parts must have complete “2D” drawings. A 100% “flat pattern” inspection is made on the first part produced by the N/C turret press or laser. This inspection guarantees feature location, size, and any other criteria to finish print specifications. A “master template” used to check flats on future production runs is generated at this point.

9.3.2 Customer requested written First Article Inspections. A 100% Inspection initiated at the first Quality control process point following those manufacturing steps necessary for the part to represent print views accurately. Final inspection will complete any areas not covered during initial inspection (such as hardware, finish, assembly, etc).



INSPECTION REPORT

PART #	REV:	DESC.			
INSPECTOR -		DATE:	P/O#		
ITEM #	LOCATION	SPECIFIED DIMENSION	(TOLERANCE)	ACTUAL DIMENSION	COMMENTS
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					

FIRST ARTICLE STATUS

DATE	SIGNATURE	PASS	FAIL	NOTES:

10. FINAL INSPECTION

- 10.1 Final Inspection is performed on a sample basis as per MIL-STD-105, or as required by complexity of part and/or customer requirements. Potential problem part or parts with specific applications that require high standards (cosmetics, for instance) can receive up to a 100% inspection.
 - 10.1.1 All parts are inspected to drawing specifications in accordance to Lor-Van quality control “Inspection Procedures” guidelines or any work order process sheet instructions.
 - 10.1.2 All assemblies are inspected as per Section 9.1.1.
- 10.2 Written inspection reports, when required, are completed at this time and forwarded to customer. Copies are maintained by Quality Assurance for reference.
- 10.3 Accepted work is moved to Shipping & Receiving for packaging, stock (split deliveries) or shipment.
- 10.4 Rejected work orders are processed using the “Non-Conformance Form”. All paperwork and parts are returned to the responsible supervisor for rework or replacement.
 - 10.4.1 Upon completion of rework, job is resubmitted for final inspection.
- 10.5 All work inspected at Final Inspection (including rejects) is recorded in the “Daily Inspection Log”.



FINAL INSPECTION PROCEDURES

- **INSPECT OVERALL SURFACE QUALITY OF A PART**
 - **GRAIN, PAINT IMPERFECTIONS, PAINTED PARTS MATCHED WITH PAINT CHIP**
 - **SURFACE QUALITY INCLUDING SCRATCHES & IMPERFECTIONS IN PLATING OR PAINT.**

- **INSPECTION OF HARDWARE**
 - **CHECK TO MAKE SURE HARDWARE HAS NO PAINT OR PLATING IN THREADS BY USING THREAD GAUGE.**

- **PAPERWORK INSPECTION**
 - **MATCH REV LEVEL'S ON PRINT TO PO'S PACKAGING LABELS, AND BAG LABELS.**
 - **CHECK THAT "C" OF "C" INFORMATION IS CORRECT REGARDING PART NUMBER, REV LEVEL, QTY'S & DATE.**



CERTIFICATE OF CONFORMANCE

Lor-Van Manufacturing

Certifies Part#: _____

P/O# : _____

Quantity of : _____

Conforms to all specifications of drawings: _____

Due Date: _____

Quality Assurance

Inspectors Signature: _____

11. SOURCE INSPECTION

- 11.1 Customer must notify Lor-Van at time of quote and on purchase order of requirement for Source Inspection.
- 11.2 Inspection will be print specifications or customers requirements.
- 11.3 Source Inspection is performed by Customer's Quality Assurance department unless prior arrangements establishes Lor-Van Quality Assurance as the responsible party.
- 11.4 Inspection data, certification and any other related information will be supplied to customer at time of shipment (if required).
 - 11.4.1 Data is available for review and maintained in a customer file in Quality Assurance.

12. SAMPLING INSPECTION

12.1

13. NON-CONFORMING MATERIAL

- 13.1 Non-conforming parts will be removed from the manufacturing flow and Isolated until addressed by appropriate supervisor.
 - 13.1.1 Non-conforming parts and the work order process sheet are accompanied by a Non-conformance Form filed out by QC during the inspection process.
- 13.2 Non-conforming material may be returned to normal manufacturing flow only after the rework process is completed and accepted by QA. Copies of the NCF are filed in QA.
- 13.3 Customer rejected material is dealt with as per the following system:
 - 13.3.1 Lor-Van QA contacted for RMA (Return Material Authorization)
 - 13.3.2 Material inspected to substantiate customers complaint.
 - 13.3.3 Rework is planned by Quality Assurance Manager. A work order process sheet is initiated for rework.
 - 13.3.4 After acceptance by Lor-Van QA, parts are returned to customer.

13.4 NON-CONFORMING PROCEDURE

- 13.4.1 All non-conforming materials are brought to inspection and placed on MRB rack.
- 13.4.2 A print is pulled from the file and the part is analyzed to find out if part can be repaired or modified to meet customer specifications.
- 13.4.3 A discrepant form is filled out describing the issue with the part or parts. Discrepancy form will be attached to parts with qty and date.
- 13.4.4 Any part that cannot be brought up to specifications will be destroyed.

14. CORRECTIVE ACTIONS

14.1 In House Corrective Actions

- 14.1.1 When a reject occurs in-process, a Non-Conformance Form stating the reason for rejection is filled out by QA.
- 14.1.2 Any corrective action required for future runs will be initiated at the same time the NCF problem is addressed. The supervisor of the area where the NCF was written has the responsibility to insure compliance.
- 14.1.3 All rework is performed must be accepted by QA and meet print specifications prior to resumption of the normal work order process.

14.2 Vendor Corrective Action

- 14.2.1 When material, parts or processes are rejected at Receiving Inspection, A Non-Conformance Form is filed out and goods are returned to the vendor for corrective action, after a return to Lor-Van and acceptance by QC (including written corrective actions) the work order is released to flow and Non-conformance form is filed.

14.3 Customer Corrective Action (if required)

- 14.3.1 After receipt and examination of parts to substantiate reject, a work Order process sheet will be initiated for necessary rework. Any necessary supplier actions will be complete at this time. It is the responsibility of the QA Manager to insure this corrected action is reviewed and implemented by the necessary parties and all work-in-process or finished goods are in compliance. If disposition of rejected parts or processes cannot be determined immediately; they will remain in the MRB area until acceptable corrective action is determined.



INTERNAL CORRECTIVE ACTION REQUEST

To:
From: Lor-Van MFG.

Date:
ICAR#

PART NUMBER	PART DESCRIPTION	REV	NCR REFERENCE NO.
DESCRIPTION OF DISCREPANCY			
CAUSE OF DISCREPANCY			

CORRECTIVE ACTION TAKEN TO ELIMINATE RECURRENCE OF DISCREPANCY
NOTES:



CUSTOMER CORRECTIVE ACTION REQUEST

To:

Date:

From: Lor-Van MFG.

CCA#

PART NUMBER	PART DESCRIPTION	REV	NCR REFERENCE NO.
DESCRIPTION OF CHANGE REQUEST			
CAUSE OF DISCREPANCY			
CORRECTIVE ACTION TAKEN TO ELIMINATE RECURRENCE OF DISCREPANCY			
QA MANAGER _____			

15. CALIBRATION REQUIREMENTS

- 15.1 All tools, gauges, measuring and testing equipment used for manufacturing and inspection of products at Lor-Van are calibrated to conform to the requirements of MIL-C-45662 A.
- 15.2 All precision measuring equipment is marked with an asset number, bar code and calibration cycle date sticker.
- 15.3 All gauges and measuring tools are checked to standards traceable to the National Bureau of Standards.
- 15.4 New or reworked equipment is checked prior to use.
- 15.5 A yearly schedule for calibration of measuring equipment is maintained by QA. Any out of cycle calibration requirement due to damage is processed immediately. Said equipment is removed from usage until new calibration is completed.
 - 15.5.1 Schedule shows instrument type, ID number, date of last calibration, date of next calibration and name of calibration facility.
 - 15.5.2 Calibration of employee's measuring equipment is recorded as a Asset.
- 15.6 Calibration is done outside and certified to national standards.
- 15.7 Equipment and machinery calibration is performed annually.

16. TRACE ABILITY

- 16.1 All material and hardware will be traced by purchase order number's
- 16.2 Hardware is purchased and inspected then labeled with job number on the bag or box.
- 16.3 Material is purchased and inspected upon arrival and labeled with Job number.

17. Lor-Van Employee Training

17.1 Every employee is required to have a Lor-Van certificate of training for each Critical task or operation performed. Training will include:

- Complete understanding of process
- Machine or equipment operation
- Machine or equipment maintenance
- Print reading as required
- Safety requirements

17.2 New employees will receive a certificate of training after he or she has Demonstrated that they are qualified for the task or operation.

17.3 All current employees will be grand fathered as to the tasks or operation already qualified to perform.



Certificate of Training

Name: _____

Equipment: _____

Date Completed Training: _____

This Certifies that the above employee has been trained to set-up and operate the above equipment in regards to the operation, maintenance and safety standards of said Equipment.

Authorized signature _____

18. LABELING OF FINISHED GOODS

- 18.1 All remaining finished goods are entered into the inventory computer as “Ready to Ship” these parts are labeled and packaged with C of C, part#, P.O. # and Quantity
- 18.2 Each finished good will also have a shelf location number when entered into the inventory computer. Example: (shelf 1A)
- 18.3 All stock is also labeled with part number and P.O.#, Qty and packaged accordingly and put on its assigned stock shelf.

19. Lor-Van Mfg. Maintenance Record Document

- 19.1 All machines and equipment as follows:
 - 19.1.1 Maintenance logs will be located at or near each machine.
 - 19.1.2 Log has schedule of maintenance or inspection as required.
- 19.2 Machines that are required additional repairs other than schedule maintenance will be brought to the attention of the shop manager for service repair.

