INTRODUCTION

MANAGEMENT RESPONSIBILITY

THE COMPANY:

B & N Sheet Metal, Inc. (henceforth known as B&N) is an established and modern, state-of-the-art manufacturing facility located minutes north of the Twin Cities, in Wyoming, Minnesota. Since 1976, B & N has manufactured a wide variety of precision crafted, high quality components to meet the most demanding customer requirements. Our professionally staffed and fully equipped operation provides customers a total production solution...from CNC shearing, laser cutting, punching and forming, to welding and product assembly. Computerized tracking and analysis help keep us in control of the entire process... from raw stock to the final, assembled component.

Our manufacturing experience ranges from parts as small as 1/4" square to fully assembled components as large as 55' in length. Computerized equipment throughout the operation provides precise accuracy and virtually eliminate manufacturing error and waste. Quick equipment changeovers and CAD/CAM capabilities minimize expensive set-up and tooling costs. B&N provides our customers consistent quality, repeatability and efficiency throughout any size run.

OUR QUALITY POLICY

Quality is the ability of the product or service to meet the customer's expectations regarding it.

Quality is not merely a feature connected with the product but a quality requirement that is set for the entire operations and springs from the customer's needs. The result of our quality operation is that we have satisfied customers.

The objective of all our areas of operation is to deliver our customers, products of flawless quality which are appropriate to their end use and fulfill the safety requirements that have been agreed upon in our contract with them.

The Quality Assurance Manual is supplemented by the company's permanent regulations, special directives, work instruction concerning various jobs as well as laws and regulatory requirements.

Our company's quality control manager oversees compliance with the quality assurance system and is responsible for ensuring that needed changes are noticed and improvement actions undertaken without delay. The quality control manager has the right to reject poor quality products and as necessary, interrupt work that produces defective quality. The quality control manager reports to either the Shop Supervisor or the Production Supervisor, who resolves the problems within their department.
People, speaking of our employees, are the answer to quality needs. Their attitude and actions towards quality is an absolute necessity. Each person is responsible for the quality of his or her work. Poor quality must not be allowed to reach the next work phase or our customer. Likewise, poor work cannot be accepted from the preceding phase. Quality is the responsibility of each and every employee regardless of their position.

It is the duty of the Shop Supervisor and Production Supervisor to see to it that quality-consciousness and quality training are maintained in their separate areas.

Quality is our by-word.

B & N Sheet Metal, Inc.

Wallace W. Nickila
President
1.0 VERIFICATION RESOURCES AND PERSONNEL

1.1 The following verification requirements and functions with their related personnel are described in the Quality Assurance Manual:

1.1.1 Design Control
   Process Control
   Inspection and testing
   Inspection, measuring and test equipment
   Internal quality audits
   Servicing

1.2 Management's representative, who is invested with authorization and responsibility for seeing to the implementation and maintenance of working towards the goal of the requirements of standard ISO 9001 and this Quality Assurance Manual in the Quality Control Manager.

1.3 In order to make sure that the quality system performs properly and answers its purpose, the Shop Supervisor or the Production Supervisor arranges a review of the quality system at least three times a year. The quality control manager prepares the review and serves as the secretary for the proceedings.

1.4 The review is convened by the shop supervisor or the production supervisor, who serves as the chairman of the meeting. The review may also be convened by other specified participants when there is a need to deal with matters connected with quality.

1.5 Participants to attend the review:
   - quality control manager
   - shop supervisor
   - production supervisor
   - design and engineering personnel
   - purchasing
   - general manager

1.6 In the review of the following matters are dealt with:
   - efficiency and timeliness of the quality system
   - customer complaints
   - internal problems
   - inspection reports
   - servicing reports

1.7 A record of the review is kept, whose safekeeping is the responsibility of the quality control manager.
2.0 QUALITY SYSTEM

2.1 The quality system of B & N is documented in this Quality Assurance Manual.

2.2 It is the duty of the shop supervisor and the production supervisor within the organization to apply the documented instructions efficiently.

2.3 The Quality Assurance Manual describes the quality policy and systems of B & N and sets forth asks which allow our personnel to supervise the different functions in the manner specified.

2.4 The quality control manager is responsible for updating this Quality Control Manual.

2.5 Internal distribution of the Quality Control Manual shall be the responsibility of the shop supervisor and the production supervisor. They shall instruct the employees under their supervision as to the importance of the document and the importance of the quality of every product produced.
Chapter 3

3.0 SCOPE

3.1 The Quality Control System encompasses receipt of blueprints, design and engineering, receipt of raw materials or premanufactured parts, identification, stocking and issue of parts and materials, the entire process from designing to the completed parts.

3.2 The system is designed to assure that supplies or services performed at B & N or at B & N's supplier facilities are subject to adequate control of quality to ensure customer satisfaction. This system is designed to provide for early detection of discrepancies and positive corrective action.

3.3 Written inspection and test procedures prepared to supplement applicable drawing and other specifications to the extent necessary.
4.0 Responsibilities of Quality Control

4.1 The Quality Control Manager reports directly to the Plant General Manager.

4.2 The Quality Control Manager is responsible to ensure the following:

4.2.1 Interpretation of conformance to customer quality requirements.

4.2.2 Review of customer drawings and specifications.

4.2.3 Determination of necessary inspection points.

4.2.4 Documentation of necessary inspection and test instructions.

4.2.4.1 Establishing a change control procedure for such documents.

4.2.5 Planning, developing, initiating, coordinating, implementing and maintaining the most effective and efficient procedures for optimum quality assurance.

4.2.6 Maintenance of adequate quality control records.

4.2.7 Review of quality control records and internal corrective action follow-up.

4.2.8 Conduct Vendor Quality Surveys and shall maintain a file on each subcontractor. Copies of all rejection memoranda pertinent to each subcontractor, shall be attached to the file and used for evaluation to accept or eliminate as an approved vendor. Advise Purchasing of any changes.

4.2.9 Original and continuing periodic inspection of all special and standard gauges, test equipment and tooling used to manufacture the parts or products.

4.2.10 Coordinate in-plant corrective action on items rejected by the customer, notify customer of the action taken and evaluate the action for effectiveness.

4.2.11 Assure that inspection personnel are capable of rendering an unbiased decision to accept or reject any material inspected.

4.2.12 Company-owned gauges, inspection devices and test equipment will be made available to the customer or Government Representative when there is a need to verify product conformance.
Chapter 5

5.0 PURCHASE ORDER CONTROL

5.1 All purchase orders to B & N suppliers require authorization by the Plant General Manager or his authorized representative.

5.2 Upon release of a purchase order, the buyer will furnish B & N's vendor with all required drawings, specifications and necessary customer requirements, such as material or process certification, physical and chemical analysis.

5.3 In the event of a drawing or specification change, the buyer will issue a purchase order change, incorporating the latest engineering changes and latest drawings or other specifications.

5.4 Copies of all the purchase orders are to be kept on file and be made available for review upon request by the customer or Government Representative, in the case of any government contracts.

5.5 Purchase orders shall be coordinated with the Quality Control Manager for verification to assure that the specifications and required inspection details are adequately covered in the written purchase order or package.

Quality Control Manual
B & N Sheet Metal, Inc.
Chapter 6

6.0 DRAWINGS AND SPECIFICATION CHANGE CONTROL

6.1 B & N fabricates sheet metal to customer drawings and/or specification, which are filed in the job folders.

6.2 Design and Engineering is responsible for the charging out and controlling issuance of drawings and specifications to the shop. Design and Engineering will issue shop travelers to route parts and materials and establish inspection and test points. The Quality Control Manager will review shop travelers prior to issue.

6.3 The Sales Department receives engineering changes, drawing changes and specification changes from B & N's customers and is responsible to immediately forward customer changes to Design and Engineering Department.

6.4 Design and Engineering is responsible for issuing the latest shop travelers, engineering changes, drawings and specifications to the cognizant departments and voiding outdated shop travelers, engineering changes, drawing specifications and maintaining job folders.
Chapter 7

7.0 RECEIVING INSPECTION

7.1 All parts and materials are received and logged in by the Receiving Department.

7.2 Receiving Inspection will not accept parts and/or materials until it has been determined that the proper certifications have been received, for physical and chemical test data, special processes, customer or Government Source Inspection.

7.3 The Receiving Inspector shall document the results of all inspections and/or tests.

7.4 Accepted parts are identified by Inspection and sent to stock or production station.

7.5 Rejected lots are identified and held segregated in Receiving Inspection until disposition is made by either the buyer or the customer which ever the case may be.

7.6 The Purchasing Department and applicable vendors will receive a copy of all Receiving Departments rejection reports.

7.7 Corrective action to prevent recurrence of discrepancies discovered by Receiving Inspection is the responsibility of the Purchasing Department.

7.8 Follow-up to ensure that corrective action taken by a vendor was effective is a Quality Department responsibility.

7.9 Receiving Inspection instructions are issued in written form, as applicable, with consideration given to complexity of the parts, material received and customer requirements.

7.10 Sampling plans utilized conform to MIL-STD-105 latest revision for military jobs.

7.11 A periodic review is made of Receiving Inspection records by the Quality Department to detect vendor process capability problems.

7.12 All inspection records will include the number inspected, number rejected, date of inspection and positive identification of the inspector.

7.13 Inspection records will include information as to the disposition of vendor supplied records and data.
Chapter 8

8.0 RAW MATERIAL CONTROL

8.1 Raw material, bar stock, and sheet stock are identified to the proper certification and are stored in an area apart from the normal flow of in-process material.

8.2 Copies of all certifications are filed in the job folders by job order number and are available for review at the customer's request.

8.3 Only Receiving Inspection accepted raw material is released for production.

8.4 Certified stock that is issued from the raw material storage is to comply with the job folder requirements.

8.5 Verification of suppliers' certifications are accomplished by independent testing laboratories when deemed necessary by the Quality Department or B & N's customer purchase order requirements.

8.6 All certificates will be identifiable to the applicable inspector who inspected the material.
9.0 CUSTOMER FURNISHED MATERIAL

9.1 This section applies to all customer furnished materials (Government or nongovernment) unless excluded from these requirements by contractual agreement.

9.2 Receiving Inspection is to examine all customer furnished materials, upon receipt for transit damage, completeness, proper type, verification of quantity and proper identification.

9.3 Functional testing will take place either prior to or during production, or both, as required by contract to determine satisfactory operation.

9.4 Periodic inspection and precautions to assure adequate storage conditions to prevent damage, will be conducted by the Quality Department.

9.5 All customer furnished material will be identified and kept segregated to prevent improper use or disposal.

9.6 All discrepancies shall be immediately reported to the proper customer or Government Representative in the case of defense contracts.
Chapter 10

10.0 IN-PROCESS INSPECTION (PIECE PARTS)

10.1 First piece inspection is performed by the Quality Department after set up is complete and okayed by Production.

10.2 No production runs are made until first piece inspection is completed and found acceptable.

10.3 After first piece inspection acceptance, in-process inspections are performed by Quality Department at adequate intervals to provide early detection of processes producing nonconforming material.

10.4 Records of all first piece and in-process inspections are maintained by the Quality Department.

10.5 Inspection records are stored in the job folder and are available for customer review.

10.6 Rejected items are clearly identified by tag or other applicable means and moved to an area apart from the normal flow of in-process materials.

10.7 Obtaining corrective action and performing follow-up action to prevent recurrence of discrepant material is the responsibility of the Quality Department.

10.8 Inspection records will include the number of pieces accepted, number rejected, nature of defects and basic causes of rejection, date of inspection, and positive identification of the inspector.
11.0 ASSEMBLY INSPECTION AND/OR FUNCTIONAL TESTING

11.1 Assembly inspection and any necessary functional testing is performed, as required, by Production personnel.

11.2 The Quality Department performs surveillance inspection of the functional tests in accordance with a specified sampling procedure.

11.3 Inspection records are maintained by Quality Department personnel.

11.4 Inspection records are filed in the job folder and will be available for customer review on request.

11.5 All nonconforming assemblies are identified and segregated to preclude any chance of accidentally being used.

11.6 Obtaining corrective action and performing follow-up action to prevent recurrence of discrepant material is the responsibility of the Quality Department.

11.7 Inspection records will include the number accepted, number rejected, date of inspection and positive identification of the inspector.

11.8 In the case of any government originated jobs, the Government Representative servicing this plant will be notified (5) days in advance of the time of assembly and functional testing. Inspection records will be submitted to this representative for designation of mandatory Government inspection characteristics.
12.0 FINAL INSPECTION AND TESTS

12.1 Final inspection and tests are performed 100 percent or on a sample basis, as applicable to complexity of the items produced and/or customer requirements.

12.2 Sampling inspection shall be in accordance with defense and government MIL-STD-105D, Table I Level II & Table II-A, Single Normal

12.3 AQL-1.5 Will be used with tolerances of .0005 or less
AQL-2.5 Will be used with tolerances of .00051 to .003
AQL-4.0 Will be used with tolerances of .0031
AQL-6.5 Will be used for hardware items.

12.4 When reduced or tightened inspections are used, Table II-B and Table II-C of MIL-STD-105D will prevail.

12.5 Final inspection and test are maintained by the Quality Department.

12.6 Inspection and test records are filed in the job folder and will be available for review upon the request of the customer.

12.7 Corrective action and performing follow-up action to prevent recurrence of discrepant material is the responsibility of the Quality Department.

12.8 All nonconforming material is identified and segregated apart from the normal flow of finished material.

12.9 Nonconforming material is not released for shipment to the customer without specific instruction from the customer to submit the nonconforming material.

12.10 Rejected material, which is subjected to any repair or sorting, is resubmitted to Final Inspection for verification of the adequacy of the rework.

12.11 Inspection records will include the number of pieces accepted, number rejected, date of inspection and positive identification of the inspector.
13.0  NONCONFORMING MATERIAL CONTROL

13.1 All nonconforming supplies, parts and/or materials are placed in a segregated area. The items will be clearly identified to job number, part number, lot size, quantity rejected, discrepant characteristic, inspector’s name and other identification, as required.

13.2 The nonconforming characteristics are clearly indicated on a rejection tag attached to each part or container.

13.3 No one is authorized to remove nonconformity items from the segregated area until a review is completed by a Material Review Board consisting of the Plant General Manager, the Production Supervisor and the Quality Control Manager. When there is a requirement for Government or Customer Source Inspection, the applicable representative must be part of the review committee when the discrepancy is likely to affect form, fit, function or safety.

13.4 Nonconforming material will not be shipped until concurrence from the customer is received.

13.5 All nonconforming material shipped to the customer shall have the discrepancy clearly indicated on the shipping documents.

13.6 The integrity of all lots submitted to acceptance inspection are maintained under the control of the Quality Department at all times and will be segregated from normal material flow.

13.7 During the processing of material, a system will be used to assure proper sequence and completion of production and inspection activities.

13.8 A system of inspection status will be used to identify the status of inspected material.

13.9 Unidentified material is segregated from the normal flow of production material until conformance of material to all specifications is established.

13.10 Reworked material is segregated from other materials until conformance of material to all specifications is established by the Quality Department.
14.0 TOOL AND GAUGE CONTROL

14.1 All special tools, jigs, fixtures, gauges and measuring equipment shall be properly identified.

14.2 Each new or reworked tool, jig, fixture, gauge items of measuring equipment are inspected prior to being issued for use.

14.3 All gauges, measuring and test equipment are checked to standards which are traceable to the National Institute of Standards and Technology (formerly NBS).

14.4 A written schedule of frequencies for calibrating gauges, measuring and test equipment is maintained and is strictly adhered to. The schedule is based on type, purpose and severity of usage.

14.5 A restricted area is maintained for storage and calibration of gauges, measuring and test equipment.

14.6 Correlation of special gauging supplied by B & N's customer is inspected in accordance to the schedule supplied by the customer. If no schedule is supplied, a schedule will be assigned, based on type, purpose and severity of usage.

14.7 Calibration is performed in accordance with written procedures maintained in the calibration area.

14.8 Obsolete or out-of-service tools and gauges are identified by tags.

14.9 Decals or stickers are applied to tools and gauges or their storage containers. The decals or stickers show the date of calibration, the due date for the next calibration and identification of inspector.

14.10 Calibration of personal or company owned inspection tools is required.
15.0 OVERRUN STOCK CONTROL

15.1 The Quality Department shall have the responsibility of surveillance of any overrun stock.

15.2 The Quality Department will assure that any overrun parts presented for stock are properly identified as to inspection status (acceptance), part number, latest drawing number and revision, specification revision, date of inspection acceptance, job number quantity of parts, identification of inspector and that the parts are adequately packaged to prevent deterioration or damage.

15.3 No overrun parts are shipped to a customer until reinspection is accomplished to assure they are in acceptable condition and meet all the latest drawing and specification revisions.
Chapter 16

16.0 PACKAGING AND SHIPPING

16.1 No order will be shipped to a customer until all shipping papers are identified by the Final Inspector's acceptance stamp, or Inspector's signature and date of inspection acceptance.

16.2 No material will be shipped until all required certifications, test reports, special samples, etc., have been packaged with the material in accordance to B & N's customer.

16.3 All items shall be packaged in a manner that prevents damage, deterioration or substitution.

16.4 Adequate marking shall appear on the packaging, parts, and as otherwise necessary to provide positive identification to the applicable customer.

16.5 Any required special packaging will be controlled as specified by B & N's customer.
17.0 IDENTIFICATION OF PARTS

17.1 Parts will be marked in accordance with customer requirements and specifications.

17.2 Material and articles having a critical application are also identified by a serial number or lot number.
18.0 PROCESS CONTROLS

18.1 Process controls shall be an integral part of B & N's inspection system when such inspections are part of the specification or contract.

18.2 Special Processes: Only approved vendors will be used to do special processes. For example, plating or painting will be controlled by Vendor Surveys and B & N's conformance to customer requirements.
Appendix B:

PURCHASE ORDER

To: Ward Levertt  
ABC Metals  
916 Lawrence Road NE  
Canton OH 44704

Phone: 514/433-6239  
Fax: 514/433-6299

WYOMING INDUSTRIAL PARK  
26595 FALL BROOK AVENUE  
P.O. BOX 187  
WYOMING, MN 55092  
612/462-4225  
FAX 612/462-0570

Purchase Order # 10027

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A366 CARBON STEEL SHEET  
50-SHEETS  
Due Date: 12/14/96 | 0.27950 | LB | 1,397.50 |

1,397.50

Signed  
JOHN DOE

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B & N Sheet Metal, Inc.
Appendix C:

INSPECTION REPORT

REJECTION REPORT AND REWORK REPORT

Customer _________________________  Date _________________________
Part No. __________________________  P.O. No. _______________________
Quantity __________________________  Our Job No. ___________________

☐ Fab Reject
☐ Finish Reject
☐ Customer Reject
☐ Other __________________________

Description of defect / reason rejected:

Quantity Accepted ____________________  Quantity Rejected _____________

☐ Scrap
☐ Repair
☐ Reject to Finisher
☐ Other __________________________

Corrective action taken:

Q.A. _______ Date _______ Production ___________ Date _______

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Appendix D:

IDENTIFICATION TAGS

Acceptance Tag:  Rejection Tag:  Rework Tag:
Appendix E:

SHOP TRAVELER

Job 18375

Part 1503-3022-000
Revision
Description BRACKET RIGHT ANGLE
Prod Qty 250
Customer ELECTRONIC ASSEMBLY CORPORATION

PLANNED DELIVERIES
Ship-to:
ELECTRONIC ASSEMBLY CORPORATION
BUILDING 4
563 ENTERPRISE DRIVE
NEWARK DE 54956

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Final Assembly

Part 1503-3022-000
Rev
Qty 250

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OPERATION

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Appendix F:

EQUIPMENT CALIBRATION RECORD

Calibration Periods

14.1  Gage Blocks (working set)  1 year
14.2  Surface Plates, Angle Plates (Granite)  1 year
14.3  Heigth Gage  1 month
14.4  Gage Pins  1 month
14.5  Calipers - (Vernier Dial)  3 months
14.6  Test Indicators  3 months
14.7  Drop Indicators  1 month
14.8  Micrometers  1 month
14.9  Optical Compartor  1 year
14.10 Master Gage Blocks  2 years

Note: This is for company and employee owned equipment.