

DIAMOND METAL PRODUCTS, INC.

13815 LINCOLN STREET NE

HAM LAKE, MN 55304

QUALITY ASSURANCE MANUAL

QA Manual #_____

2010

*JOHN PAHL
PRESIDENT*

MISSION STATEMENT

The principal mission of Diamond Metal Products, Inc. is to provide our customers with a top quality product and on time delivery.

INTRODUCTION

This manual is issued to describe the quality assurance system to be employed by Diamond Metal Products, Inc. to attain compliance with the intent of the general inspection system requirements of the major Government Procurement Agencies when specified in customer purchase orders, contracts, and subcontracts. The policy of Diamond Metal Products, Inc. is to apply the system to articles and materials received by Diamond Metal Products, Inc. as well as to articles produced by Diamond Metal Products, Inc. or its suppliers for end use in most governmental, but especially in military and/or aerospace products.

The manual provides personnel and customers of Diamond Metal Products, Inc. with a description of company policy for maintaining an effective and economical quality assurance system planned and developed in conjunction with other planning functions with a goal of ISO 9000 certification.

Throughout this manual as revisions occur, Diamond Metal Products, Inc. may be referred to as DMP.

Written procedures for implementing the policy described herein shall be established as dictated by complexity of the product design, manufacturing techniques employed, and customer requirements.

No changes in the manual or supplementary quality assurance procedure are valid until approved by the Plant Manager, or his assignee.

This manual complies with the requirements of MIL-1-45208A.

REVISION CONTROL

<u>Rev</u>	<u>Section</u>	<u>Page</u>	<u>Description</u>	<u>Date</u>
A			Initial Release	04/22/1998
B	18.0	22	Added Para 18.6	02/23/1999
C			Added Mission Statement	05/16/2000
C	2.0	2	Re-write of Para 2.2.7	05/16/2000
D	18.3	22	Added Para 18.3.9 and 10	
			Added Name on Organization Chart	06/30/2001
E			Updated Organization Chart	08/26/2004
F			Updated Organization Chart	07/23/2007

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1.0 Quality System

- 1.1 The Quality System is documented at several levels to guarantee the planning and building of quality into our products. Management has the responsibility to define and implement process, procedures, controls, and measurements necessary to assure that products and services meet the quality requirements of our customers.
- 1.2 Implementation of the system is achieved through operating procedures and its maintenance through Internal Quality Audits at regular intervals.
- 1.3 Operating and documenting work instructions will be used to assure processes are carried out in a controlled manner.
- 1.4 Documented plans are created, as required, that define the verification activities throughout the process of defining, developing and producing the products and ensuring that the designs, processes, and necessary equipment are compatible, updating testing procedures and equipment as needed. Plans are controlled documents.

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2.0 Management Responsibility

- 2.1 Management supports the efforts required to comply with the Quality Assurance Manual and is responsible to convey the quality policies and responsibilities to each employee.
- 2.2 The Quality Assurance Manager reports directly to the Plant Manager and has responsibilities that shall encompass the following:
 - 2.2.1 Interpretation of conformance to customer quality requirements.
 - 2.2.2 Review of customer drawings and specifications.
 - 2.2.3 Determination of necessary inspection points.
 - 2.2.4 Documentation of necessary inspection and test documents.
 - 2.2.4.1 Establishing a change control procedure for such documents.
 - 2.2.4.2 Maintain copies of inspection forms and documents used.
 - 2.2.5 Planning, developing, initiating, coordinating, implementing, and maintaining the most effective and efficient procedures for optimum quality assurance.
 - 2.2.6 Maintenance of adequate quality assurance records.
 - 2.2.7 The management reviews the effectiveness of the Quality System at six month intervals. Quality Management reviews include, but are not limited to, records of the Corrective Action System and Internal Audit results.
 - 2.2.8 Vendor quality assurance and corrective action follow up.

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2.0 Management Responsibility - Continued

- 2.2.9 Original and periodic inspection and testing of all special and standard gages, equipment and tooling used to manufacture product.
- 2.2.10 Coordinate internal corrective action on product rejected by the customer. Notify customer of the action taken and evaluate the action for effectiveness.
- 2.2.11 Assure the inspection personnel are capable of rendering an unbiased decision to accept or reject any product inspected.

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3.0 Purchasing Order Control

- 3.1 All DMP purchase orders require authorization of Plant Manager or his authorized representative.
- 3.2 On release of a purchase order, DMP will furnish vendor with all necessary drawings and specifications. This will include requirements for chemical analysis, inspections, material and process certification and physical properties.
- 3.3 In the event of a drawing or specification change, DMP will issue a purchase order change incorporating the latest effected changes.
- 3.4 Copies of all purchase orders are on file and are available for review by DMP customers.
- 3.5 All purchase orders shall be written on an approved form. All orders requiring special quality provisions, shall be clearly outlined on the purchase order.
- 3.6 Copies of all purchase orders will be made available to the government quality representative on request.
- 3.7 Subcontract work and services will be done only by approved sources.

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4.0 Drawing and Specification Control

- 4.1 DMP fabricates and manufactures to customer drawings and/or specifications which are filed in job number folders in Production Control Files.
- 4.2 Production Control is responsible for controlling issuance of drawings and specifications.
- 4.3 The Sales Department when receiving engineering changes, drawings and specification changes from DMP customers is responsible to immediately forward customer changes to Production Control.
- 4.4 Production Control is responsible for issuing the latest engineering changes, drawings and specifications to departments that need them and for voiding outdated engineering changes, drawings and specifications.
- 4.5 A standard procedure to ensure that all changes are controlled and will assure that change effectively will be controlled by:
 - 4.5.1 Effective date of print and revision(s) will be recorded on the master copy.
 - 4.5.2 All copies of prints given out for non-production use will be clearly marked "NOT TO BE USED FOR PRODUCTION".
 - 4.5.3 Engineering changes will be immediately checked against log sheet to recover all prints effected by the change.
 - 4.5.4 Time Interval (Responsibility of Plant Manager).
 - 4.5.5 Prints will be returned when job is complete.
 - 4.5.6 All prints or specifications which are not the current revision will be clearly stamped "OBSOLETE".

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5.0 Receiving Inspection

- 5.1 All parts and materials are received and logged in by the Receiving Department.
- 5.2 All parts and materials are presented to the Receiving Inspector after being logged in by the Receiving Department.
- 5.3 Receiving Inspector will not inspect parts and/or materials until it has been determined that the proper certification, physical and chemical test data, special process certification, or government or DMP Source Inspection Certification accompanies the parts and/or materials presented for inspection.
- 5.4 The Receiving Inspector shall document the results of all inspections and/or tests.
- 5.5 Accepted lots are identified by inspection and sent to stock.
- 5.6 Rejected lots are identified and are held segregated in Receiving Inspection until disposition is made by the Material Review Board.
- 5.7 The Purchasing Department has the responsibility of assuring that a pattern of continually receiving faulty items from any supplier doesn't develop and assuring supplier correction action.
- 5.8 The Quality Department will follow up to see that a supplier who has furnished DMP with items that DMP has rejected, has effectively corrected the problem.
- 5.9 Receiving Inspection instructions are issued in written form as applicable, with consideration given to complexity of the parts, material received and customer requirements. If available, the material will be inspected to customer furnished inspection instructions.
- 5.10 Sampling plans utilized conform to MIL-STD-105E, latest revision or customer requirements.

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5.0 Receiving Inspection - Continued

- 5.11 A periodic review is made of Receiving Inspection records by the Quality Department to detect vendor process capability problems.
- 5.12 All inspection records will show the number inspected, the number rejected and the name of the inspector.
- 5.13 Inspection records will include information as to the disposition of vendor supplied records and data.
- 5.14 All limited life material will be marked with expiration date on each container when received.

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6.0 Raw Material Control

- 6.1 Raw material, bar stock and castings are identified to the proper certification and are stored in an area apart from the normal flow of in process material.
- 6.2 Copies of all certification are filed in the job order number folder by job order number and are available for review at the customer's request.
- 6.3 Only Receiving Inspection accepted raw material is released for production.
- 6.4 Certified stock is issued from the raw material storage area to comply with the job order number requirements.
- 6.5 Verification of suppliers certifications are accomplished by independent testing laboratories when deemed necessary by Quality Department or DMP customer purchase order requirements.
- 6.6 All certifications will be identifiable to the applicable purchase order, date of receipt of the material and the inspector who inspected the material.
- 6.7 The Receiving Department will mark all raw materials in a method which will insure that the material can be identified.
- 6.8 All unused material will be tagged and returned to stock or placed in a segregated area.
- 6.9 Where customer specifications require that parts run from more than one lot of material, the material must be traceable to a specific lot. This will be noted on the operations sheet, and the lots will be segregated and tagged and records kept to maintain traceability.

7.0 In Process Inspection

- 7.1 First piece inspection is performed by the Quality Department only after machine set-up is completed and approved by Production Supervisor. First piece is defined as the first production unit conforming to the operation drawing or specification requirements.
- 7.2 No production runs are made until first piece inspection is completed and found acceptable.
- 7.3 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.
- 7.4 Records of all first piece and in process inspections are maintained by Quality Department.
- 7.5 Inspection records are stored in job number folders and are available for customer review.
- 7.6 Rejected items are clearly identified by a tag or other applicable means and moved to an area apart from the normal flow of in process materials.
- 7.7 It is the responsibility of the Production Supervisor to take corrective action. The Quality Department will follow up to prevent the recurrence of faulty material.
- 7.8 Inspection reports will include the number of pieces accepted, number rejected, nature of defects and basic causes of rejection, date of inspection and the name of the inspector.
- 7.9 Samples shall be drawn and handled in accordance with the following:
 - 7.9.1 All samples shall be randomly selected from submitted lot.

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7.0 In Process Inspection – Continued

- 7.1.1 All sampling plans shall comply with customer requirements. In absence of customer instruction sampling will be conducted IAW current edition of MIL-STD-105E or approved derivative.
- 7.1.2 The complete sample shall be inspected for characteristics listed in the inspection instructions.
- 7.1.3 All nonconforming characteristics shall be termed a “DEFECT”.
- 7.1.4 One or more discrepancies occurring in the inspection of the same sample, or assembly, shall be termed a “DEFECT”
The lot shall be considered acceptable whenever the total number of defectives is equal to or less than the number given in the acceptance limits.
- 7.2 An inspection report shall be made for each lot subjected to the sampling inspection procedure. The inspection report shall be filled out by inspection and a copy maintained in the Quality Department. This inspection report shall be available for government and/or customer inspection.
- 7.3 Statistical controls will be used when deemed necessary per customer contact. They will be used for machine process capability studies as well as inspection by variables and/or attribute analysis.

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8.0 Assembly Inspection and/or Functional Test

- 8.1 Assembly inspection and necessary functional testing will be performed by production personnel.
- 8.2 The Quality Department will perform surveillance inspection of functional tests as specified in applicable procedures.
- 8.3 Inspection records will be maintained by Quality Department.
- 8.4 Inspection records are filed in job number folders and will be available for customer review on request.
- 8.5 All nonconforming assemblies are identified and segregated to preclude usage.
- 8.6 Corrective action and follow up action to prevent recurrence of discrepant material is the responsibility of the Quality Department.
- 8.7 Inspection records will include characteristics, lot size, number accepted, number rejected, date of inspection and name of the inspector.
- 8.8 The government representative servicing this plant will be notified five days in advance of the time of assembly and functional testing. Inspection records will be submitted to this representative for review of mandatory characteristics.
- 8.9 Statistical controls will be used when deemed necessary per customer contract. They will be used for machine process capability studies as well as inspection by variables and/or attribute analysis.

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9.0 **Final Inspection Test**

- 9.1 Final inspection test will be performed as applicable to complexity of the items produced and/or customer requirements.
- 9.2 Final inspection test reports are maintained by the Quality Department.
- 9.3 Inspection test records are filed in job number folders and will be available for review at request of the customer.
- 9.4 Corrective action and follow up action to prevent recurrence of discrepant material is the responsibility of the Quality Department.
- 9.5 All nonconforming material is identified and segregated apart from the normal flow of finished material.
- 9.6 Nonconforming material is not released for shipment without specific instruction from the customer to submit the material.
- 9.7 Rejected material which is subjected to any repair or sorting is resubmitted to final inspection for verification of the adequacy of the rework.
- 9.8 Inspection records will include the number of pieces accepted, number rejected, date of inspection and name of the inspector.
- 9.9 Statistical controls will be used when deemed necessary per customer contract. They will be used for machine process capability studies as well as inspection by variable and/or attribute analysis.

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10.0 **Nonconforming Material Control**

- 10.1 All nonconforming supplies, parts and/or material 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 other identification as required.
- 10.2 The nonconforming characteristic(s) are clearly indicated on a rejection tag attached to each part or container.
- 10.3 No one is authorized to remove nonconforming items from the segregated area until a review is completed by a Material Review Board consisting of the Plant Manager, Production Representative and a Quality Inspector. When there is a requirement for customer source inspection, the applicable representative must be a part of the review committee.
- 10.4 Repair of nonconforming supplies shall be in accordance with procedures acceptable to the customer.
- 10.5 Nonconforming material will not be shipped until concurrence from the customer buyer is received.
 - 10.5.1 All nonconforming material shipped to the customer on buyer occurrence shall have the discrepancy clearly indicated on the shipping documents.
- 10.6 The integrity of all lots submitted for acceptance inspection will be under the control of Quality Department at all times, and will be segregated from the normal material flow.
- 10.7 During the processing of material, a system will be used to assure proper sequence and completion of production of inspected material.
- 10.8 A system of inspection status will be used to identify the status of inspected materials.
- 10.9 Unidentified material shall be segregated from the normal flow of production until conformance of material is established.
- 10.10 Reworked material is segregated from other material until conformance to specification is established by Quality Department.

11.0 Tool and Gage Control

- 11.1 All special tools, jig, fixtures, gages and measuring equipment are identified.
- 11.2 Each new or reworked tool, jig, fixture, gage and items of measuring and test equipment are inspected prior to issue for use.
- 11.3 All gages, measuring and test equipment are checked against standards traceable to the National Bureau of Standards.
- 11.4 A written schedule of frequencies for calibrating gages, measuring and test equipment is maintained and strictly adhered to. The schedule is based on type, purpose and severity of usage.
- 11.5 A restricted area is maintained for storage and calibration of gages, measuring and test equipment.
- 11.6 Correlation of special gauging supplied to DMP 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 in accordance to DMP procedures.
- 11.7 Calibration is performed in accordance with written procedures maintained in the calibration area.
- 11.8 Obsolete or out of service tools and gages are identified by tags.
- 11.9 Decals or stickers are applied to tools and gages or their storage containers. The decals or stickers show the date of calibration and the due date for the next calibration.
- 11.10 Calibration of personal, as well as company owned production and inspection tools is strongly enforced.
- 11.11 When tooling such as dies, jigs, molds, etc. are used, such tooling shall be inspected or checked out prior to production use. Records shall be maintained as to the accuracy and frequency for re-inspection and rework as necessary.

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11.0 Tool and Gage Control – Continued

- 11.12 Measuring, test equipment and standards shall be calibrated and utilized in an environment area controlled to the extent necessary to insure accuracy. When applicable, compensating corrections shall be applied to results obtained.
- 11.13 When measuring of test equipment is found to be out of tolerance during calibration, an evaluation shall be made as to the impact on quality of products tested with the equipment. Records of the result of the analysis and the corrective action taken will be maintained and be available for the government representative.

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12.0 Overrun Stock Control

- 12.1 The Quality Department shall have the responsibility of surveillance of any overrun stock.
- 12.2 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 specification revision, date of inspection acceptance, job number, quantity of parts and that the parts are adequately packaged to prevent deterioration or damage.
- 12.3 No overrun parts are shipped to a customer until re-inspection is accomplished to assure they are in acceptable condition and meet all the latest drawing and specification revisions.

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13.0 Packaging and Shipping

- 13.1 No order will be shipped to a customer until all shipping papers are identified by the final inspector's acceptance tag with the inspector's signature and date of inspection acceptance.
- 13.2 No material will be shipped until all required certifications, test reports, special samples, etc. have been packed with the material in accordance to DMP customer requirements.
- 13.3 All items shall be packaged in a manner that prevents damage, deterioration, or substitution.
- 13.4 In absence of customer requirements, adequate marking shall appear on the packaging, parts and as otherwise necessary to provide positive identification to the applicable customer.
- 13.5 Any required special packaging will be controlled and will be as specified by the applicable DMP customer.

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14.0 Identification

- 14.1 All materials and articles are identified by a basic part number.
- 14.2 Materials and articles that have a critical application are also identified by a serial number or lot number.

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15.0 Controlled Documents

- 15.1 Documents and data are reviewed and approved for adequacy by authorized personnel prior to issue.
- 15.2 Controlled documents will have:
 - 15.2.1 A title identifying the document
 - 15.2.2 A unique reference number for a series of documents
 - 15.2.3 A revision and date of the document
 - 15.2.4 Approval from the issuing department
 - 15.2.5 Identification of the department that has issued the document
 - 15.2.6 A reference on a master list which will be readily available to determine the current revision of issued documents
 - 15.2.7 A reference to the operating procedure that the document is implementing
- 15.3 Invalid and/or obsolete documents are promptly removed from all points of issue or use, or otherwise marked to assure against unintended use.

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16.0 Process Control

- 16.1 Processes are controlled conditions that include documentation of work instructions defining the method of production for activities where documented instruction is necessary to ensure product quality.
- 16.2 Controlled conditions include criteria for workmanship standards as specified through written standards, illustrations, photographs, or samples.
- 16.3 Controlled conditions include documented information defining methods of monitoring and controlling product characteristics where appropriate.
- 16.4 Controlled conditions include qualifying and approving equipment and processes where appropriate, including suitable maintenance of equipment to ensure continuing process capability.
- 16.5 Records shall be maintained for qualified processes, equipment, and personnel, as appropriate.

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17.0 Corrective and Preventive Action

- 17.1 A documented program for corrective and preventive action is used to ensure that conditions having an adverse effect on quality are identified and action taken to correct the situation will be to the degree appropriate to the risks encountered.
- 17.2 Causes of nonconformance, when appropriate occurrences exist, are investigated. An appropriate corrective action is determined and documented according to a procedure to prevent recurrence.
- 17.3 The actual or potential cause of nonconformance will be documented. Processes, work operations, quality records, audit reports and customer complaints may all be used to detect, analyze and eliminate potential causes of nonconformity's.
- 17.4 The corrective and preventive actions taken to prevent recurrence will be documented along with any changes to other controlled documents.
- 17.5 Records of corrective and preventive actions are maintained to ensure the actions are taken and that they are effective.

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18.0 Control of Quality Records

- 18.1 Quality records are generated and maintained to document control of quality related activities.
- 18.2 Procedures exist and are maintained for identifying, collecting, indexing, filing, accessing, storing, maintaining, and disposing of quality records.
- 18.3 Internal quality records include the following types of records
 - 18.3.1 Vendor Quality Records
 - 18.3.2 Calibration Records
 - 18.3.3 Corrective and Preventive Action Reports
 - 18.3.4 Training Records
 - 18.3.5 Internal Audit Reports
 - 18.3.6 Nonconformity Records
 - 18.3.7 Inspection and Test Records
 - 18.3.8 In Process Inspection Reports
 - 18.3.9 Quality Management Meeting Minutes
 - 18.3.10 Purchase Order Contract Records
- 18.4 Quality records are clearly written and relate directly to the product or activity involved.
- 18.5 Quality records are stored and maintained in a suitable environment to minimize deterioration and damage, and to prevent loss.
- 18.6 Quality records are archived for a minimum of two years or as long as directed by customer requirements.

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19.0 Internal Quality Audits

- 19.1 A comprehensive system of planned and documented internal quality audits verify the implementation and effectiveness of the Quality System.
- 19.2 Internal audits are scheduled according to status and importance of the activity. The audit schedule will cover the entire scope of the defined quality system on an annual basis. The audit schedule is reviewed by management on a yearly basis.
- 19.3 Audit procedures comply with the following requirements
 - 19.3.1 Audits are conducted by qualified personnel
 - 19.3.2 Audits are conducted by personnel with no direct responsibility for the activities audited
 - 19.3.3 Audits are carried out following a written plan or procedure
 - 19.3.4 Audits are conducted to verify the implementations and effectiveness of processes, products, procedures and documentation
 - 19.3.5 Audits are conducted to verify effectiveness of corrective actions
- 19.4 Audit reports are written, reviewed with the audited area and sent to the appropriate level of management responsible for any required action. Corrective actions are written for any deficiencies discovered during the audit. Audit results are used to evaluate the implementation and effectiveness of the Quality System.
- 19.5 Records will be kept of follow up audit activity showing the implementation and effectiveness of corrective action taken.
- 19.6 A summary of internal audit results is presented during management reviews along with the quality manual requirements.

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20.0 Training

- 20.1 Managers of departments are responsible to implement the requirements for any training needs.
- 20.2 Training is provided according to the determined need. Personnel performing specified tasks are qualified according to relevant education, training and/or experience. Any training records are to be kept and maintained.

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21.0 Statistical Techniques

- 21.1 Statistical techniques and controls will be used when deemed necessary per customer contract. They will be used for machine process capability studies as well as inspection by variables and/or attribute analysis.

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22.0 Control of Customer Supplied Material

22.1 Material supplied by the customer is controlled by

22.1.1 When contractually required, materials supplied by customers are assigned a part number and/or a work order number and controlled under standard part handling processes.

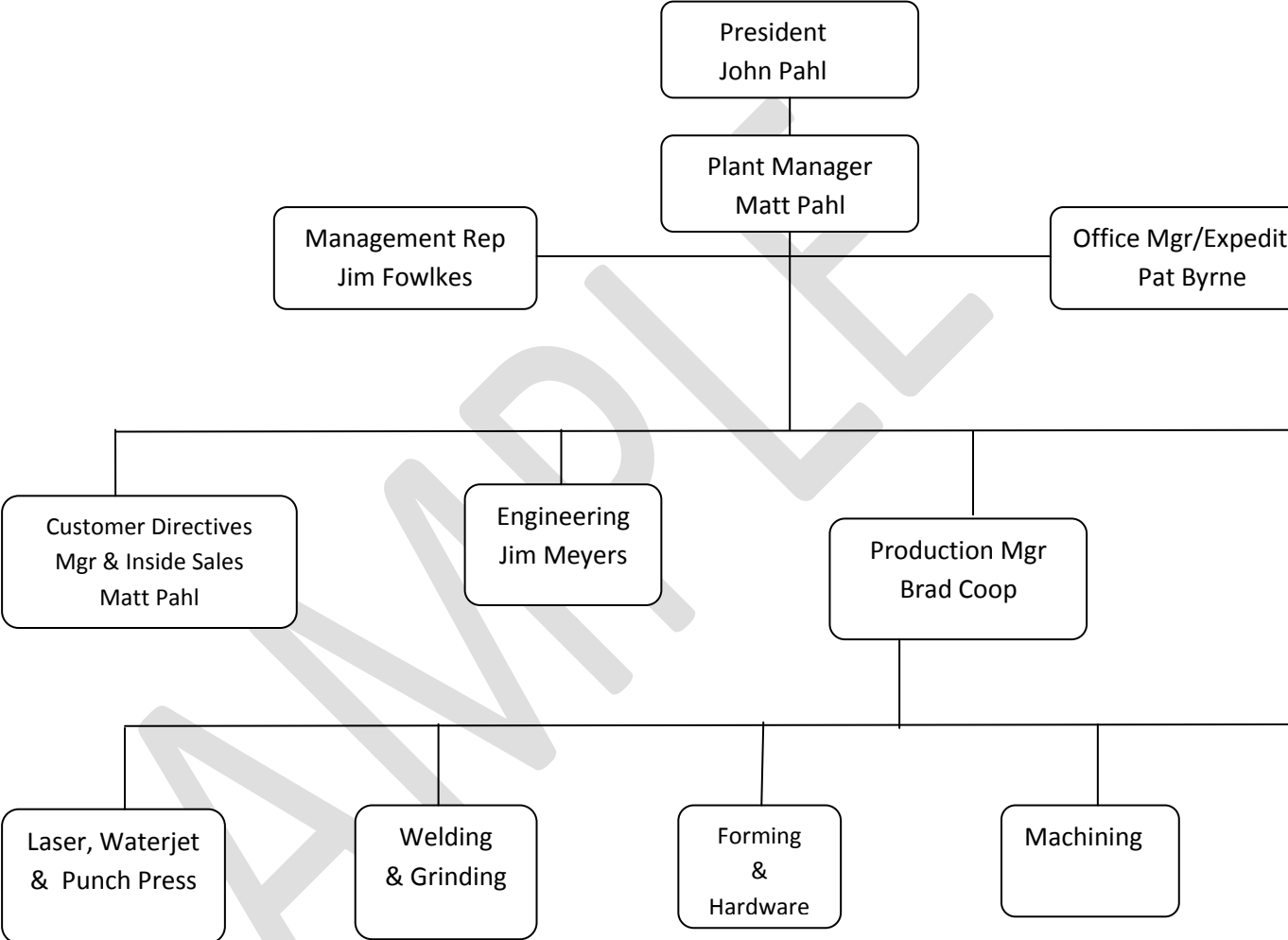
22.1.2 Material that is lost, damaged or found to be unsuitable for use is recorded and reported according to documented procedures. Records are maintained of such reports.

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Diamond Metal Products, Inc.

Organizational Chart



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