



Operation Description: Supplier Quality Requirements

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Revision: B

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DOCUMENT HISTORY

Rev	Date	Description	Document Coordinator
A	3/3/2009	Release	L. Zellmer
B	3/31/2009	Reviewed and Updated	L. Zellmer

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1.0 Purpose

- 1.1 This document establishes the basic flowdown Quality Assurance requirements for Suppliers to Dynetic Systems Inc. The document also contains inspection guidance for the acceptance of product. This procedure applies to the Purchasing of all Purchasings for use in Dynetic Systems, Inc. manufactured products that are for customer delivery.

2.0 Scope and Applicability

- 2.1 The scope of this document is to establish the minimum Quality requirements for suppliers in the manufacture and delivery of product to Dynetic Systems INC.
This information applies to all suppliers of production components, assemblies and materials for Dynetic Systems Inc.

3.0 Responsibilities

- 3.1 Purchasing shall assure that the information contained herein is transmitted for each Purchasing of productive materials to a supplier to Dynetic Systems, Inc. The Supplier shall ensure that purchased products conform to specified purchase requirements. The type and extent of controls applied to the Supplier and the purchased product shall be dependent upon the effect of the purchased product on subsequent product realization or the final product. Supplier Quality shall establish the necessary level of controls to assure that products meet their intended requirements.

NOTE: Dynetic Systems, Inc.'s Purchasing Quality requirements are accessible via the Internet at <http://www.dynetic.com/>- Vendor Information.

This site also contains samples of Supplier instructions for performing First Article Inspections to the AS9102 requirement as well as forms. The Supplier Deviation Request procedure, deviation request form and an example of a Certificate of Conformance. These requirements will be specified on the PO and are available on the website which are mandatory documentation flow down suppliers must comply with.

4.0 Definitions, Abbreviations, and Acronyms

- 4.1 The following lists the definitions used in this procedure:
- 4.1.1 Product: Result of activities or processes.
 - 4.1.2 Contract: Agreed requirements between a Supplier and a Customer embodied in a purchase order or in a valid electronic representation thereof.
 - 4.1.3 COTS: Commercial off the shelf. Items generally available through component distributors.
 - 4.1.4 New: means composed of previously unused components, whether manufactured from virgin material, recovered material in the form of raw material, or materials and by-products generated from, and reused within, an original manufacturing process; provided that the supplies meet contract requirements, including but not limited to, performance, reliability, and life expectancy.
 - 4.1.5 Virgin: Previously unused raw material, including previously unused copper, aluminum, lead, zinc, iron, other metal or metal ore; or any undeveloped resource that is, or with new technology will become, a source of raw materials.
 - 4.1.6 DFAR 252.225-7014 Preference for Domestic Specialty Metals: Defense Federal Acquisition Regulation requiring specific materials is melted in the United States

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or specific authorized countries.

See <http://www.acq.osd.mil/dpap/dars/dfars/html/current/252225.htm#252.225-7014>

5.0 General Requirements for Suppliers

Dynetic Systems Inc. – Supplier Quality and Purchasing shall jointly assure that suppliers have the correct information and requirements to meet customer flow-down requirements. When customer specific requirements are in addition to the requirements herein, they shall be so stated on the Dynetic Systems, Inc. design information transmitted to the supplier or they shall be clearly stated on the Dynetic Systems, Inc. Purchase Contract. Dynetic Systems, Inc. Buyers shall be responsible for reviewing flow-down requirements and assuring that the proper specifications and information to complete the work is transmitted to the supplier.

5.1 Dynetic Systems Inc. General Purchasing Quality Requirements (See section 6.3 for requirements for Distributors).

The following are general requirements of all suppliers to Dynetic Systems Inc. The level of compliance and acceptance of a supplier shall be dependent on the product and services provided to Dynetic Systems, Inc.

- Quality System Requirements - Control of Quality –
 - The Supplier shall provide and maintain a quality system that complies with ISO 9001:2000, AS9100 or with those requirements identified by Dynetic Systems, Inc.
 - They have been a Supplier to Dynetic Systems within the last three years.
- A Supplier's approved status is contingent on receipt of satisfactory responses on the survey and the acceptance of the first shipment of parts as well as timely responses to Corrective Action requests.
- Control of Purchased Materials – ISO 9001:2000 or AS9100 Suppliers are required to comply with all elements outlined in Section 7.4.3 of these standards, Verification of Purchased Product. Compliance with the provisions of this clause in no way relieves the Supplier of the final responsibility to furnish acceptable supplies or services as specified. This system shall be subject to approval and audit by Dynetic Systems Inc.
- Control of Monitoring and Measurement Devices – ISO 9001:2000 or AS9100 Sec. 7.6 - All measuring equipment used in the manufacture of items for Dynetic Systems Inc. (including gages supplied by Dynetic Systems, Inc.) shall be calibrated and controlled to the requirements of Sec. 7.6, Control of Monitoring and Measurement Devices. Calibration control systems may also be based on, ISO 10012-1 or ANSI/NCSL Z540-1.
- Suppliers performing soldering operations on electrical/electronic products such as: electrical connectors, wire terminations and populated printed circuit boards must be compliant to J-STD-001, Class 3 or as otherwise indicated on the drawing and/or purchase order.
- Dynetic Systems Inc. and Customer Inspection/Surveillance Access Rights – Dynetic Systems Inc., our customers and pertinent regulatory agencies reserve the right to perform surveillance and/or inspect any or all of the materials, processes and procedures used for the production and processing of items for Dynetic Systems Inc. at the Supplier's facility and/or Supplier's sub-tier suppliers facilities. Advance notification of such a visit will be provided.

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- Source Inspection - All items purchased by Dynetic Systems, Inc. may be subject to inspection at the Supplier's facility by a Dynetic Systems Inc. Source Inspector prior to shipment at the discretion of Dynetic Systems, Inc. (if source inspection is required, Dynetic Systems, Inc. shall notify the Supplier via the Purchase Order). At the time of source inspection the Supplier shall make available to the Dynetic Systems Inc. Source Inspector the Supplier's inspection records. The Supplier shall also be prepared to verify any dimension and/or drawing requirement upon request by the Dynetic Systems Inc. Source Inspector. Evidence of acceptance by the Source Inspector must accompany materials on each source-inspected shipment.
- First Article Inspection – A first item /article inspection report listing all characteristics on the drawing and the applicable specifications and showing the actual measurements and test results of each characteristic shall be furnished with the part. Use of Dynetic Systems, Inc. First Article Report per QCC22 or equivalent and a "ballooned" drawing is required. Instructions to complete the form are available in the "Supplier Instruction Sheet for Completing Dynetic Systems, Inc.'s QCC22 First Article Form" available on the Dynetic Systems, Inc. Internet site. Additional information on first article completion can also be found in the SAE publication AS9102, available from SAE (<http://www.sae.org>). Actual chemical and physical test reports including any special process certifications are required on machined, cast, stamped, molded, extruded, and/or sintered materials as an integral part of the first item inspection package. The item upon which the First Article Inspection was performed shall be identified and tagged.
- First article inspections will be required for all incoming parts that meet the following criteria:
 1. The part is a Dynetic Systems, Inc.-designed part or a Dynetic Systems, Inc. Customer designed item
 2. The part is not a Mil-spec part or a catalog item with a vendor part number (such AS, MS or NAS type items).
 3. The part is the first production to be produced for Dynetic Systems Inc. by the Supplier or is not new but has been significantly changed.
 4. A lapse in production for two years or as specified by the Customer.
- "Delta" First Article - A limited scope first article inspection of a part which had previously passed a full first article inspection is required if:
 1. A design or process change has been made that affects the form, fit, or function of the part upon which the previous first article inspection was performed
 2. The drawing revision level or manufacturing process or tooling has changed
 3. A change has occurred in the facilities utilized to produce the part upon which the previous first article inspection was performed
- Documentation Requirements - With every shipment the Supplier must include the following information in such a manner as to preclude it getting lost or destroyed:
 1. A Certificate of Conformance (C of C), which is a statement signed by either an officer of the company or an authorized Quality person certifying that all the materials, processes and/or parts on the shipment are in conformance with requirements, specifications and/or drawings listed on the purchase order. (Suppliers may use Dynetic Systems, Inc.'s C of C Form, available on the Dynetic Systems, Inc. website in the supplier's area as their Certificate of Conformance). The Certificate of Conformance must contain, at a minimum, the following information: the supplier's name and address, the supplier's batch/lot identification number(s) when applicable, the Purchase Order

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- number, Line Item, and date, the date shipped, the quantity and unit of measure of parts in the shipment, and the Dynetic Systems, Inc. Part Number(s) and Trace ID (when provided by Dynetic Systems, Inc. to the supplier). C of Cs provided for items that have shelf life limitations must have the shelf life expiration date clearly stated on the C of C.
2. Copies of the certifications for all secondary processes such as heat treat; nondestructive testing, plating, anodizing etc. must be shipped with the items when secondary process(es) are specified on the PO, attached documentation or on the drawing.
 3. If the item being produced is a metallic component that is cast, machined, stamped, molded, extruded, and/or sintered, a copy of the material certification of the raw material used in that lot of parts is required to be supplied, unless the supplier is authorized by Dynetic Systems, Inc. Quality to retain on file at the supplier facility. Material certifications and analyses must be kept on file at the Supplier's facility and they must be traceable to the lot(s) of parts the material was used on.
 4. Components that are non-metallic require that material certifications and analyses must be kept on file at the Supplier's facility and they must be traceable to the lot(s) of parts the material was used on. This material analysis must contain the chemical composition as well as mechanical attributes.
 5. Customer supplied materials require either a certificate of conformance or a packing list from the customer indicating the part number(s) and purchase order of each component supplied by the customer.
- Interpretation of Drawings - Interpretation of drawings shall be in accordance with the provisions of American Standard Drafting Practices, ANSI Y14.5 – Rev 1994.
 - Dimensioning and Tolerancing Standard.
 - Preservation, Packaging, and Shipping – It shall be the Supplier's responsibility to maintain adequate control of packaging and choice of shipping carriers to ensure that quality of the fabricated article is maintained and that damage, deterioration, and loss in transit are prevented.
 - General Packaging Marking Requirements:
 1. Supplier shall clearly mark all exterior and interior component packaging with the Dynetic Systems, Inc. part number, purchase order number with line item number, supplier name, vendor number and lot code (if applicable).
 2. Shelf Life Item Marking Requirements (Examples include lubed bearings, paints, epoxies, sealants, adhesives, etc): All shelf life items shall have the item's expiration date clearly marked on the exterior and each interior package or unit.
 3. Chemicals: All chemicals shall have the MSDS ratings clearly marked on the exterior, interior and individual unit packaging.
 - Retention of Test and Inspection Data - For a period of thirty (30) years after the completion of this contract, the Supplier shall keep on file at their facility all the inspection and test records relative to material, processes, services and parts shown on this purchase order. These analysis reports and processing C of C's must also be kept in Suppliers' files available for release upon demand by Dynetic Systems Inc. and/or any Government regulatory agency.
 - Special Processes –Special processes including Heat Treat, NDT, Irridite, Anodize, all Platings, etc. are required to be procured from an Dynetic Systems Inc. approved or a Nadcap accredited source. The NADCAP requirement is for special processes

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performed to a military, aerospace industry or other recognized standard indicated on Dynetic Systems, Inc. or Dynetic Systems, Inc. customer drawings, EIs, operation sheets, purchase orders or specifications. If no specific processing standard or method is indicated, a non-NADCAP Dynetic Systems, Inc approved supplier may be used. After March 31,2009, Dynetic Systems, Inc. will require use of Nadcap approved suppliers unless written approval from Dynetic Systems, Inc. is received allowing use of an alternate non-Nadcap approved supplier. If required by purchase order or engineering drawing or specification, Customer and Dynetic Systems, Inc. approved special process suppliers must be used. Contact the Buyer for a list of Approved Suppliers for the particular process. All Special Processes shall be performed to the latest revision of the specification indicated on the drawing or P.O. unless otherwise noted by Dynetic Systems Inc. The revision the process was performed to shall appear on the certification of compliance provided.

- Exemptions to the NADCAP requirements:
 - A special process that is captive to an operation to give specific results. An example of this would be the heat treating of springs to achieve a specific force.
 - A special process that is performed internal to a production process that cannot be separated due to cleanliness, timing of operations or other specific requirements. Examples of this would be gold plating of hybrid housings for cleanliness issues.
 - All of the above require review and approval of the process requirements by Dynetic Systems, Inc. Quality Engineering and a deviation request from the supplier.
 - Commercial off the Shelf Items (COTS). COTS items are exempt from NADCAP requirements and do not require a deviation.
- Nonconventional machining and surface enhancement methods are not allowed unless stated on the drawing or in writing from Dynetic Systems, Inc. These methods are set forth by Nadcap and include: Electrochemical Machining (ECM), Electrochemical Grinding (ECG), Electrical Discharge Machining (EDM), Laser Beam Machining (LBM) and shot peening
- Material Requirements
 - Dynetic Systems Inc. requires new materials be used in the production of all products and as supplied as raw material, unless otherwise stated on the drawing to provide virgin material or produce components from a drawing specified component. Drawing specified components could include but are not limited to: COTS components such as MS or NAS fasteners, insulation tubing, etc.
 - Dynetic Systems Inc. requires all specialty metals purchased for internal consumption or used in the production of components be compliant to DFAR 252.225-7014 Preference for Domestic Specialty Metals unless the supplier receives written authorization from Dynetic Systems, Inc. Purchasing or Supplier Quality to use non-DFAR compliant material.
- X-Ray Reporting Requirements - When X-rays are required by the drawing or specification, results shall be reported on a form which provides results of the X- ray evaluation, name of X-ray reader, date, signature of responsible laboratory representative, and an adequate method of identifying and cross-referencing each film exposure to specific parts being X-rayed. When parts are serialized, serial numbers must appear on the report. Unless otherwise directed, the films and report shall accompany shipment to Dynetic Systems Inc.

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- Electro Static Discharge (ESD) - Suppliers producing electronic components, or assemblies or subassemblies containing electronic components, are required to have an Electro Static Discharge (ESD) prevention program that complies with the requirements of ANSI/ESD S20.20 or MIL-STD-1686. Static discharge protective packaging must be used on these items as prescribed by the aforementioned standards. Such packaging must be clearly identified as containing ESD sensitive components and be free from physical damage (such as punctures and tears).
- FOD (Foreign Object Debris) Control - Suppliers producing assemblies or sub-assemblies for Dynetic Systems Inc. must comply with housekeeping and cleanliness control to prevent potential contamination of components per NAS 412.

6.2 Nonconformance to Dynetic Systems Inc. Requirements

Reporting of Discrepant Material - Any departures from drawings, specifications, or other purchase order requirements must have the written approval of Dynetic Systems Inc. prior to shipment to Dynetic Systems, Inc. In order to receive permission to ship non-conforming material, the Supplier must complete a deviation request form and contact their Dynetic Systems, Inc. Purchasing Representative (Buyer). If Dynetic Systems, Inc. agrees to allow receipt of the non-conformance; the Buyer will return the approved Deviation Request form to the supplier. The Supplier must send a copy of the approved Deviation Request form with the non-conforming material. A copy of the Supplier's inspection report plus a statement of cause and corrective action shall also be submitted to Dynetic Systems Inc. for disposition.

NOTE: Under no circumstances shall discrepant materials be shipped to Dynetic Systems Inc. without prior written approval. Deviation Request forms (F-740-007) are also available on-line at www.dynetic.com - Vendor Information.

Suppliers that discover a nonconformance related to the requirements of products or processes after delivery are to immediately notify their Dynetic Systems Inc. – Buyer and Supplier Quality with the following information:

1. Dynetic Systems, Inc. Part Number and Quantity (and serial numbers or lots) affected
2. Dynetic Systems, Inc. Purchase Order Number
3. Date of Shipment (Shipper number)
4. Description of the Nonconformance
5. Root Cause and any other relevant information to assist Dynetic Systems, Inc. in making a determination with respect to use or recall of product.

Corrective Action Requests - When material is found to be discrepant, or a noncompliance to the items in 6.1 above is discovered a Corrective Action Request may be sent to the Supplier. The return of this request must be completed within the time specified. The cause of the discrepancy must be correctly identified and the corrective action must be effective and permanent in preventing the cause of the defect. Failure to respond satisfactorily or within a reasonable time is cause for revocation of the Supplier's Approved Supplier status and Dynetic Systems Inc. refusal to accept further shipments.

6.3 Requirements for Distributors (Excludes Brokers, see Section 6.4)

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In addition to applicable sections of the above requirements, the following apply for distributors:

- Distributors must be compliant to AS9120 requirements.
- Distributors of hardware items such as: raw materials, fasteners, washers, AN, MS and NAS components must provide original manufacturer's certificates of conformance for all items, unless authorized by Dynetic Systems, Inc. Supplier Quality to maintain them on file at the supplier's facility.
- Distributors of Electronic components and chemicals may provide their own certificate of conformance unless otherwise stated on drawing or purchase order.
- Distributors of Electronic components must participate in the Government Industry Data Exchange Program (GIDEP) and take appropriate actions for suspect or known problem materials / components.
- All Distributors must maintain records of lot traceability, shelf life, test data, product origin, conformity and shipment for eleven years (11) or as stated on purchase order.

6.4 Requirements for Brokers

Under certain circumstances electronic parts or other component brokers may occasionally be used. Brokers are not franchised or authorized distributors of OEM components. Purchasing will indicate on the purchase order that the supplier is a broker. Additionally, the purchase order will indicate that a certificate of conformance from the components OEM or authorized distributor is required.

The broker shall provide:

- Original certification of the parts origin including manufacturing dates or lot codes.
- Certification from an authorized distributor of the original component manufacturer that produced the component.
- If neither of the above is available, the parts must be screened by a supplier approved by Dynetic Systems, Inc. The screening supplier shall perform screening as directed by Dynetic Systems, Inc engineering. The screening shall be based upon the original OEM data or specific attributes as indicated by Dynetic Systems, Inc. Engineering. The screening supplier shall provide certifications indicating the testing or inspection performed.

6.5 Dynetic Systems Inc. Inspection Requirements for Suppliers

Dynetic Systems Inc. requires suppliers to perform mechanical inspections using a measurement capability that meets or exceeds a 4:1 ratio between the product tolerance and the certified accuracy of the measurement device to ensure identification of nonconforming product consistent with the Quality parameters.

6.5.1 Use of Dynetic Systems Inc. Gages

Gages required to produce components are the responsibility of the supplier. Some long lead time specialized gages may be available for use by the supplier from Dynetic Systems, Inc. There is no guarantee that Dynetic Systems Inc. will have the required gage(s), or that any such gages will be available during the time period that the Supplier needs them.

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Gages that are borrowed by the Supplier must be returned promptly by the due date. There may be a charge imposed for the use of the gage to cover the cost of calibration upon its return. Any damage in excess of normal wear on the gage (as judged by Dynetic Systems Inc. Calibration Department) will result in additional charges to the Supplier by Dynetic Systems Inc. to cover the cost of the rework or replacement of the gage.

6.5.2 Burrs and Sharp Edges

Dynetic Systems, Inc. has several standard notes defining burrs and sharp corners; for example, "Remove all burrs and sharp edges equivalent to Outside 0.020 max / 0.005min, Inside 0.016 max Radius unless otherwise specified." The interpretation of these requirements is as follows:

1. Parts will be inspected for burrs visually and by feel (running a finger across edge).
2. Shape or configuration of edge break is optional as long as it is within .005" limits.
3. Sharp corner is allowable as long as one can run a finger over the burr without catching or cutting it.
4. When a note specifies to "prevent lead wire abrasion", the Supplier may round the edges using any means possible to achieve a very smooth transition between surfaces.

6.5.3 Inspection of Plated Threads

- When a Class 2A external thread has been plated (provided that the maximum coating thickness is no more than $\frac{1}{4}$ of the allowance), it shall be inspected using a NO-GO Class 2A ring gage and a GO Class 3A ring gage (the same would hold true with the Johnson gages). (Note: Class 3A external threads must pass a Class 3A ring gage after plating.)
- "Unless otherwise specified, size limits for standard external thread Class 2A apply prior to coating. The external thread allowance may thus be used to accommodate the coating thickness on coated parts, provided that the maximum coating thickness is no more than $\frac{1}{4}$ of the allowance. Thus, the thread after coating is subject to acceptance using a basic Class 3A size GO gage and a Class 2A gage as a NO-GO gage." (Refer to ANSI B1. 1a-1984 "Unified Inch Screw Threads", Section 7, Paragraph 7.2.).

6.5.4 Inspection of Anodized Parts

All parts must meet drawing and purchase order requirements after anodizing unless otherwise specified.

6.5.5 Cut-Off Tips

Cut-Off tips are characteristic of screw-machine parts. They are allowable as long as they do not cause the part to go oversize on length.

6.5.6 Inspection using 3D CAD/CAM Files

Drawings calling out dimensional requirements per 3D CAD/CAM files shall be acquired by the supplier from Dynetic Systems, Inc. Purchasing each time the job is run or verification has to be completed to determine that the previous revisions meet the current revision.

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Supplier first articles and subsequent inspections shall be performed using the most current 3D CAD/CAM file. This file shall be obtained from Dynetic Systems, Inc. Purchasing. Generated CMM readings shall be forwarded to Dynetic Systems, Inc. for review as part of the required certification package with each shipped lot.

Dynetic Systems, Inc. inspection shall perform these inspections using the most current Dynetic Systems, Inc. drawing.

6.5.7 Inspection of Populated Soldered Printed Circuit Boards

Any populated printed circuit board being produced by a supplier must be inspected per J-STD-001 Class 3 or as specified on the drawing and/or purchase order.

7 Records and Audits

7.1 Record Information

Copies of records shall be maintained for the life of the document or eleven (11) years or as specified by contract or regulatory authority.

7.2 Audit Information

Supplier Quality shall periodically audit the Purchase Order issuance process to assure proper flow down of Dynetic Systems, Inc. and customer requirements. Supporting functions and organizations must assure their processes and procedures are in alignment with this document.

8 Training

Personnel responsible for executing this process shall be trained and instructed on this process and the expectations for meeting these requirements.

Management is responsible for communicating the procedure requirements to their employees.

6.0 Forms and Records

6.1 F-740-007 Supplier Deviation Request Form

7.0 Attachments

7.1 None

8.0 Related Documents

8.1 F-740-004 Purchasing Terms and Conditions

8.2 F-740-006 Supplier Deviation Request Procedure.

8.3 AS9102-001 Supplier Instruction Sheet for Completing Dynetic Systems, Inc.'s AS9102 First Article Form.

8.4 SAE AS9102 - Aerospace First Article Inspection Requirement.

8.5 QCC16 Supplier Quality System Survey Form.

8.6 F-740-008 Filling Out a Corrective Action Report

8.7 F-740-009 Supplier Corrective Action Report Forms

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- 8.8 F-740-010 Supplier Requirements – Bearings
- 8.9 F-740-011 Letter to Vendors – Bearings
- 8.10 F-740-012 Certificate of Compliance - Bearings
- 8.11 F-740-013 Certificate of Compliance - Example

9.0 References

- 9.1 Supplier Selection, Approval and Evaluation.
- 9.2 ANSI/ESD S20.20 - Protection of Electrical and Electronic Parts, Assemblies and Equipment.
- 9.3 MIL-STD-1686 - Electrostatic Discharge Control Program For Protection Of Electrical And Electronic Parts.
- 9.4 NAS 412 Foreign Object Debris / Foreign Object Damage Prevention.
- 9.5 DFAR 252.225-7014 Defense Federal Acquisition Regulation requiring specific materials be melted in the United States or specific authorized countries.