

# ZERO MANUFACTURING, INC.

## QUALITY CLAUSES AND UNIQUE QUALITY REQUIREMENTS

The following Quality Clauses and Terms and Conditions apply when referenced on Purchase Orders from ZERO Manufacturing, Inc.  
If there are questions about these clauses, please contact your ZERO Manufacturing, Inc. Supply Chain Representative.

### GENERAL TERMS AND CONDITIONS—APPLICABLE TO ALL ORDERS

1 When "ZERO" is referenced in this document, it applies to "ZERO Manufacturing, Inc." only.

**2 SUB-TIER SUPPLIER:** "Sub-tier Supplier" is defined as any subcontractor of the prime Supplier identified on the ZERO Purchase Order.

**3 UNIQUE QUALITY REQUIREMENTS:** Applicable only when specified on the Purchase Order. See Page 2 of this document for details.

**ZG1 ISO9001-2008 QUALITY SYSTEM:** The Supplier shall implement and maintain an effective Quality System that has been deemed satisfactory by ZERO Manufacturing, Inc. The Quality System shall assure that all materials and services conform to Purchase Order requirements, be documented and provide for early detection of nonconformances. Records generated by the Quality Systems shall be made available for periodic review when deemed necessary or requested.

**ZG2 NONCONFORMING MATERIAL:** The Supplier shall not ship or make any unauthorized repairs to product with the intent of delivering material that does not fully meet Purchase Order or product specification requirements. The Supplier shall notify ZERO Quality Assurance of potential nonconformances prior to shipment. Authorization to ship nonconforming material may be approved with prior notification and approval from ZERO Quality Assurance. Shipping of nonconforming material without written prior approval may disqualify Suppliers from additional procurement.

**ZG3 RESUBMISSIONS OF REJECTED MATERIAL:** All material rejected by ZERO and subsequently resubmitted shall be identified as being previously rejected. The Supplier shall reference the ZERO NCM number on the packing slip and state whether the material had been reworked or replaced with new product. If material is subject to Government Source Inspection, it shall be resubmitted to the Government prior to delivery.

**ZG4 PRODUCT OR PROCESS CHANGES:** Changes to product design, materials or processes, which affect form, fit, function, performance, quality, reliability or safety shall not be implemented without written approval by ZERO. The Supplier shall notify ZERO of changes to facilities or locations where the product was initially produced or when product may require a recall due to a change in product or process.

**ZG5 CORRECTIVE ACTION REQUESTS:** When nonconforming materials received from Suppliers are detected at ZERO, corrective action will be required. Suppliers are expected to communicate how they intend to correct the immediate discrepancy as well as what they intend to do to correct the root cause of the nonconformance and prevent recurrences. Failure to respond in a timely manner may cause a delay in payment and adversely affect the Supplier's Quality Performance Rating.

**ZG6 PRESERVATION, PACKAGING, PACKING AND SHIPPING:** Unless specific packaging instructions are called out on the Purchase Order, the Supplier shall assure that material to be shipped is clean, dry, and packaged in a manner that will afford adequate protection against corrosion, deterioration, and physical damage during shipment. The container with the shipping documentation, certifications, test data, and inspection data shall be clearly marked.

*Note: Wood pallets fabricated outside of the United States must be treated for infestations and identified on the pallet in accordance with U.S. Regulations.*

**ZG7 LABELING:** All containers shall be properly labeled describing, as a minimum, the contents of the container. Labels for liquids, such as solvents, and coating, Freon, mold release agents, etc., shall comply with all applicable OSHA and EPA regulation, The Code of Federal Regulation (CFR) and the Clean Air Act, Section 611.

**ZG8 RECORD RETENTION:** Records shall provide objective evidence of inspection with applicable drawings and specifications. Record retention shall be as follows: ZERO Designed Product – 10 years; ZERO Customers Designed Product – 10 years; Commercial Off the Shelf Material – 5 years. Records shall include corrective actions taken when applicable. These files shall be subject to review within 48 hours and made available to ZERO customers, when requested.

**ZG9 ENVIRONMENTAL REQUIREMENTS:** Material furnished under this order shall be free from contamination by presence of mercury or any other toxic substance without prior approval from ZERO. Use of Class 1 Ozone Depleting Substances (ODS) is prohibited. Class 1 Ozone Depleting Substances include, but are not limited to; Halogens, Chlorofluorocarbons (CFCs), Carbon Tetrachloride (Tetrachloromethane), Methyl Chloroform (1, 1, 1 - Trichloroethane, and Methyl Bromide, etc.) The Supplier shall inform ZERO of any products manufactured with or containing ozone depleting substances.

**ZG10 WORKMANSHIP:** The Supplier shall ensure a consistently high quality of workmanship. Workmanship shall be monitored to assure that Purchase Order and specification requirements are being maintained.

**ZG11 FOREIGN OBJECT DEBRIS PROGRAM:** ZERO Manufacturing, Inc. is required to maintain a Foreign Object Debris (FOD) prevention program. Suppliers shall assure cleanliness of products provided to ZERO to the extent necessary to maintain compliance to this program. Delivered material must be clean and free from any material/debris, such as machined chips, burrs, grinding dust, forming materials, corrosion, oil and other foreign material on surfaces to prevent FOD entrapment.

**ZG12 FLOW-DOWN OF REQUIREMENTS:** The Supplier is responsible to ensure that all applicable requirements are flowed down to sub-tier Suppliers. Where a sub-tier Supplier controls critical processes, characteristics or features, the Supplier is responsible for control of sub-tier Suppliers and assuring that the sub-tier Supplier meets Purchase Order requirements. The Supplier is responsible to ensure that the sub-tier Supplier is using the latest process/drawing revision.

**ZG13 CALIBRATION:** The Supplier shall implement and maintain a system for the control and maintenance of measuring and test equipment in accordance ANSI/NCCL Z540-1 or equivalent. The Calibration System shall be documented, accountable, and traceable and provide for initial and re-calibration during the life of the equipment to traceable standards.

**ZG14 ELECTROSTATIC DISCHARGE DAMAGE (ESD) PROTECTION:** Components and assemblies that are susceptible to electrostatic discharge damage shall be handled and packaged to prevent ESD damage. All units which contain ESD sensitive devices shall be wrapped in a static shielding barrier in direct contact with and fully surrounding the unit. Containers shall be marked as containing ESD devices. (Reference DOD-STD-1686 or equivalent.)

**ZG15 RIGHT OF ENTRY:** The Supplier shall reserve the right of entry for ZERO, ZERO customers and regulatory agency personnel, for access to any and all facilities where work is being performed or is scheduled to be performed, including those facilities of Supplier's sub-tier Suppliers, in order to perform inspections, surveys or system surveillance as part of verification of conformance to the requirements. Supplier's denial of access may result in disqualification of future procurement with ZERO. The Supplier shall include the provisions of these facility access requirements in its PO's with sub-tier Suppliers.

This access shall provide, at no increase in price, cost or fee to ZERO, ZERO customers, or regulatory agencies, suitable facilities at Supplier's and sub-tier Supplier's manufacturing location to perform inspections, surveys, or surveillance.

**ZG16 ORDER OF PRECEDENCE:** The order of precedence for documents shall be as follows:

1. Purchase Order and attachments,
2. Drawing/Specification,
3. Customer Specification, and
4. Military Specification.

When a drawing or specification is referenced, the applicable revision shall be the revision in effect on the date the Purchase Order was issued, unless specifically stated on the Purchase Order or within the drawing.

**ZG17 PART SUBSTITUTION:** The substitution of parts is not authorized without ZERO written approval.

**ZG18 LANGUAGE REQUIREMENT:** All data or correspondence shall be provided in English.

**ZG19 RAW MATERIALS:** Where the Supplier supplies raw material (e.g. coils, sheets, rails, bars, rods, etc.) either directly to ZERO Manufacturing, Inc. or purchases the material for use in manufacturer of machined or sheet metal products for ZERO Manufacturing, Inc. (standard hardware items are specifically excluded from this paragraph), the Supplier shall assure that the material is manufactured and distributed by sources approved by ZERO Manufacturing, Inc.'s customer.

*Note: All items delivered to ZERO Manufacturing, Inc. must maintain Job/Lot traceability.*

Suppliers of Raw Materials (e.g. coils, sheets, rails, bars, rods, etc.) shall provide every time a shipment is made, Certificate of Compliance with actual results of physical and chemical test reports. Material must be identified by heat lot and or heat treat load, (if applicable). Test reports must be traceable to the material lost supplied.

All Purchase Orders, which include a prime contract number, require compliance to DFAR 252.225-7014. Suppliers shall provide evidence of compliance, including flow down to all sub-tier Suppliers, with all shipments.

**ZG20 SEGREGATION OF LOTS:** The Supplier will not co-mingle different date codes or production lots, nor combine resubmitted parts with new production parts. Parts may be submitted in one shipment provided the different date codes and lots are identified and segregated.

**ZG21 CERTIFICATE OF CONFORMANCE REQUIREMENTS:** A Certificate of Conformance (C of C) shall be provided with each lot. The C of C shall include a statement that the items meet the requirements of the Purchase Order and/or specifications referenced on the drawing and/or Purchase Order. C of C must include, as a minimum, the following information:

Supplier Name and Address	Signature of Authorizing Agent
ZERO Purchase Order Number	Quantity of Parts in Shipment
Part Number on Purchase Order	Part Revision on Purchase Order
Serial Number(s), as applicable	Specifications Used, when applicable
Date Code(s) or Lot Number(s), as applicable	Statement Certifying Product Compliance
Date of C of C	

**ZG22 CONTROL/IDENTIFICATION OF ITEMS WITH LIMITED SHELF LIFE** (Epoxy, Paint, Rubber, Adhesives, etc): Items with limited shelf life shall be marked on the item, package or container with the manufactured date, storage temperature, special handling requirements, and expiration date of the items. When items are fabricated of rubber, the cure date of the rubber is to be shown in lieu of the date of manufacture. All identification markings shall be placed in accordance with applicable specifications. ZERO will NOT ACCEPT material that has less than 90% of the useful life remaining (not applicable for adhesives, paints and inks), without written authorization from ZERO and/or ZERO's Customer.

**ZG23 LOTS HELD MORE THAN 24 MONTHS:** Material, which has passed the Suppliers final inspection and test and has been held by the Supplier for 24 months or more, shall be re-inspected and tested prior to shipment to ZERO. In case of a lot failure during re-inspection, the lots shall be subjected to 100% inspection for all failed characteristics. The Supplier shall notify ZERO regarding critical characteristic failures that may have been in prior lots shipped.

**ZG24 SAMPLING INSPECTION:** When the Supplier is performing lot inspection sampling, instead of 100% lot inspection, then the sample plan shall not accept lots where the lots have known non-conformities (discrepancies). The use of a C = 0 sampling plan must be incorporated.

**ZG25 FIRST ARTICLE INSPECTIONS:** Suppliers are required to perform First Article Inspection Report (FAIR) when any of the following conditions exist:

- A. For all first production lot,
- B. First production lot after engineering changes and/or changes to manufacturing processes that may affect conformance to design. In most cases, the FAIR need only record those features changed,
- C. If there has been a 24 months or greater lapse from the last production lot. Suppliers will provide a FAIR to ZERO with shipment. ZERO recommends use of AS9102 format and may require it.

**ZG26 SUB-TIER SUPPLIER MANAGEMENT CONTROL:** The Supplier shall implement and maintain a program for the selection, approval, rating, and maintenance of sub-tier Suppliers. The program shall include provisions for effective root cause corrective action and when necessary disqualification of underperforming sub-tier Suppliers. The Supplier's Sub-tier Supplier Management Program shall be available for review by ZERO, when requested.

**ZG27 FRANCHISED/LICENSED "DISTRIBUTOR" TRACEABILITY:** Distributors shall ensure traceability of all purchased product to the original equipment manufacturer on the Certificate of Conformance for all material/date code provided on the Purchase Order. Distributors shall not modify, rework or repair material shipped on this order. The original manufacturer must be identified for each lot/date code on the Certificate of Conformance. In the case of bulk items, this may be accomplished by bag and tag method. The preferable method is for the Distributor to provide a copy of the Manufacturer's certificate for the lot number being supplied, along with their Franchised Distributor certification.

**ZG28 CONFIGURATION MANAGEMENT:** The Supplier is responsible for providing for and

implementing configuration management that will control all changes to deliverable products associated with this Purchase Order. All changes are subject to ZERO approval as follows:

1. CLASS I – Changes as defined in MIL-STD-481 must be submitted to ZERO prior to implementation.
2. CLASS II – All changes that do not fall in CLASS I category. A copy of all CLASS II changes as defined in DOD-STD-480 must be forwarded to ZERO for review a minimum of 30 days prior to delivery of any equipment or product with the change incorporated. Engineering change documentation is to be submitted to ZERO purchasing/engineering review.

**ZG29 COUNTERFEIT PARTS AND MATERIALS AVOIDANCE IN ZERO'S SUPPLIER PRODUCTS:** Components and parts shall be procured only through Original Equipment Manufacturers (OEMs)/Original Component Manufacturers (OCMs) or their franchised dealer or distributors.

- The Supplier shall verify the procurement source and associated certifying paperwork.
- Appropriate incoming inspection test methods shall be used to detect potential counterfeit parts and materials.

#### UNIQUE QUALITY REQUIREMENTS—APPLICABLE ONLY WHEN SPECIFIED ON THE PURCHASE ORDER

**Z01 ISO9001 CERTIFIED QUALITY PROGRAM:** The Supplier shall have a "Quality System" that is certified to ISO9001, or equivalent.

**Z01A AS9100 QUALITY PROGRAM:** The Supplier shall have a Quality System that complies with AS9100 or equivalent.

**Z01B AS9100 CERTIFIED QUALITY PROGRAM:** The Supplier shall have a Quality System that is certified to a AS9100 or equivalent.

**Z01D BOEING QUALITY MANAGEMENT SYSTEM:** The Supplier shall have a Quality System the complies with Boeing D6-82479 Boeing Quality Management System requirements.

**Z01E ZERO SUPPLIER APPROVED QUALITY SYSTEM:** Supplier is required to maintain a Quality System acceptable to ZERO for the product(s) purchased under this agreement. ZERO shall be notified of any changes to the Supplier's Quality System that may affect the product(s) form, fit or function.

**Z02 STATEMENT OF WORK:** A Statement of Work is in effect for this Purchase Order. Contact your ZERO representative for a copy, if necessary.

**Z03 GOVERNMENT SOURCE INSPECTION:** Government Source Inspection is required prior to shipment. The Supplier shall furnish, at no cost, the necessary facilities, equipment, data, and perform tests as required by applicable drawings, specifications, and inspection instructions. The Government reserves the right to re-inspect or re-test all items covered by this Purchase Order. Final acceptance will be made at ZERO facilities. Please notify your Government Representative to allow for adequate planning for Government Source Inspection.

**Z04 ZERO SOURCE INSPECTION:** ZERO Source Inspection is required prior to shipment. ZERO reserves the right to re-inspect or retest all items covered by this Purchase Order. Final acceptance will be made at ZERO facilities. Please notify the Buyer on the Purchase Order to allow for adequate planning for Source Inspection. A copy of ZERO Source Inspection Documentation shall be attached to the shipping document and accompany the material. The Supplier shall furnish, at no cost, the necessary facilities, equipment, data and perform tests as required by applicable drawings, specifications, and inspection instructions.

**Z05 CUSTOMER SOURCE INSPECTION:** ZERO Customer Source Inspection is required prior to shipment. ZERO Customer reserves the right to re-inspect or retest all items covered by this Purchase Order. Final acceptance will be made at ZERO facilities. Please notify the Buyer on the Purchase Order to allow for adequate planning for Customer Source Inspection. The Supplier shall furnish, at no cost, the necessary facilities, equipment, data and perform tests as required by applicable drawings, specifications and inspection instructions.

**Z06 DELEGATED INSPECTION:** ZERO Delegates Inspection to the Supplier's personnel in accordance with all applicable ZERO procedures. Selection, evaluation and certification of Supplier personnel shall be by ZERO Quality Assurance. The suppliers will be informed in writing of personnel qualified to act as inspection agents for ZERO. The type, methods, forms and frequency of inspection shall be coordinated between the Supplier and ZERO.

**Z07 CERTIFICATE OF CONFORMANCE CALIBRATION C OF C REQUIREMENTS:** The Supplier shall have a calibration system in accordance with ANSI/NCSL Z540-1-1994. The Supplier shall calibrate and provide a Certificate of Calibration showing Measurement and Laboratory Traceability IAW ANSI/NCSL Z540-1-1994 standards or equivalent ISO Standards (Examples: ISO 17025:2005, 10012:2003, or other Accredited Recognition Arrangements).

**Z08 PRODUCT PROCESS BASELINE:** The Supplier shall have a documented revision controlled process baseline for the part number ordered. The baseline shall identify all critical process, materials, and sub-tier Suppliers used in the fabrication of the part number ordered. No changes may be made to any critical processes, materials, or sub-tier Suppliers without written approval of ZERO.

Product Baselines ensure that manufacturing processes, inspections and/or tests critical to the fabrication of ZERO business critical items are maintained and documented.

The Supplier accepting this order agrees that parts will be manufactured to the same processes/procedures previously approved via the process baseline. Any changes to this *Process Baseline* must have prior approval from ZERO.

**Z09 FUNCTIONAL AND DIMENSIONAL REPORTS:** A signed legible copy of actual test results shall be submitted with each lot. Actual readings are to be supplied for all quantitative measurements. Notations that readings are within specification limits will be accepted only for those tests performed on automatic or "go/no go" equipment lacking quantitative readout capability.

**Z10 CHEMICAL/PHYSICAL REPORTS:** A test report verifying the physical and chemical properties as specified in the applicable document shall be provided with each lot.

**Z11 FIRST ARTICLE INSPECTION REPORT (FAIR):** First Article Inspection Report is required with this shipment. A FAIR shall be in compliance with AS9102 latest revision.

**Z12 TEST DATA:** Test data is required with each shipment. The test data shall be traceable to the serial number or lots for the each test performed. When testing is conducted by an outside test lab, the test lab shall be traceable and identified on the test data sheets for the tests performed.

**Z13 SPECIAL PROCESSES:** Special Processes such as soldering, welding, casting, molding, potting, etc., shall be in accordance with specifications and standards stated on the drawings and/or Purchase Order. ZERO and/or its customers may require certification and approval of special processes.

Suppliers shall ensure that all personnel performing such processes as welding, soldering and Non-destructive Evaluation or Testing are certified in accordance with the specifications contained on the drawings and Purchase Orders. Suppliers shall also ensure the associated equipment used is certified as appropriate.

**Z14 NON-DESTRUCTIVE TEST REQUIREMENTS (NDT):** Items requiring NDT inspection shall be submitted in accordance with applicable specifications and standards. The copy of the report shall accompany the material when delivered to ZERO, and the report shall be signed by the technician performing the service.

**Z15 HEAT TREATING REQUIREMENTS:** A cross-reference between heat treat lots and raw material heat numbers shall be maintained as applicable. Each traceable lot shall be treated in accordance with the applicable specification and shipped separately with a packing slip and mechanical analysis report.

**Z16 FASTENER QUALITY ACT:** The guidelines imposed in the Federal Fastener Quality Act of 1990 are in effect for this part number. Inspection, testing, and certification from an approved test facility shall be provided with each lot.

**Z17 SPECIAL PROCESS APPROVED SUPPLIERS:** Supplier shall use Special Process Suppliers approved by ZERO CUSTOMER LISTED on Purchase Order (e.g., Boeing, Lockheed, Airbus, Honeywell, etc., and Government Agencies).

**Z18 SERIALIZATION MARKING:** Materials procured by this Purchase Order shall be uniquely serialized. Individual serial numbers or number series shall be marked on the C of C.

**Z19 GENERAL STATISTICAL PROCESS CONTROL (SPC):** SPC shall be implemented and maintained by the Supplier. The Supplier's SPC program shall be documented and include provisions for selection and identification of key characteristics and/or processes, statistically based control charting, demonstration of continuous improvement, management supervision, corrective action, training, and flow down to sub-tier Suppliers when the key characteristic and/or process is controlled by a sub-tier Supplier. The requirement for and establishment of SPC key characteristics and/or key processes may be based on similar parts or processes.

**Z20 PART NUMBER SPECIFIC STATISTICAL PROCESS CONTROL (SPC):** SPC shall be implemented and maintained for this part number. The requirement for and establishment of SPC key characteristics and/or key processes for this part number shall be unique for this part number and based on this part number only. The Supplier must be able to validate that this part number is controlled by individual control charts for the key characteristics and/or key processes selected.

**Z21 KEY CHARACTERISTIC STATISTICAL PROCESS CONTROL (SPC) (Reference AS9103):** Variation reduction shall be implemented and maintained for the key characteristic identified by ZERO on the design drawing or as part of this Purchase Order. Key characteristics using variable data shall demonstrate process control to a capability level of 1.67 Cpk for Critical and 1.33 Cpk for Major Characteristics. Key characteristics that do not meet projected Cpk's shall have improvement plans developed.

**Z22 DRAWING APPROVAL:** A copy of the Supplier's drawings shall be forwarded to ZERO Quality Assurance for review and approval prior to the start of fabrication. The Supplier shall maintain the approved configuration and revision of the drawing and shall not make any changes unless approved by ZERO.

**Z23 PROCEDURES AND PROCESSES:** A copy of the Supplier's procedure/processes, as identified by ZERO, shall be forwarded to ZERO Quality Assurance for review and approval prior to the start of fabrication. The Supplier shall maintain the configuration control (revision level) of the approved documentation and shall not make any changes without approval by ZERO.

**Z24 UNIQUE PACKAGING REQUIREMENTS:** Unique packaging is in effect for this order. See Purchase Order or contact ZERO for instructions.

**Z25 UNIQUE PART NUMBER REQUIREMENTS:** Contact your ZERO Procurement representative for assistance or a copy of the special instructions/requirements.

**Z26 BAR CODE REQUIREMENTS:** Bar coding using standard bar code formatting is required for this part. The bar code must be readable upon receipt.