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GENERAL QUALITY CODES The requirements of this section apply to all purchase orders

A. CONTROL OF QUALITY

The supplier is required to provide and maintain an Inspection and Quality Control System to commensurate with the complexity and reliability of the product to be supplied, and with the quality requirements of the Purchase Order. The system employed shall be subject to verification by AVOX Systems Inc.

Note: It is AVOX's preference to engage in business with suppliers that are AS9100 certified.

B. MEASUREMENT SYSTEM TRACEABLE TO NATIONAL STANDARDS

The supplier shall control devices used for inspection and measurement and they shall be calibrated traceable to a national standard.

C. FIRST-ARTICLE INSPECTION (FAI)

The Supplier shall submit a First Article Inspection (FAI) when any of the following occur:

- The first time material is provided (full FAI),
- A change in design (partial FAI for affected features/characteristics),
- A change in manufacturing source(s), process(es), inspection method(s), location of manufacture, tooling, materials, NC programming, natural or man-made event (full FAI may be required),
- A lapse in production for 2 years or longer (full FAI),
- After 2 partial FAI's are completed a full FAI is required unless determined by AVOX QA to be no change to part (i.e., added new dash number configuration).
- Partial FAI must be submitted with the full FAI and any subsequent partial FAI to be considered complete.
- First Article material shall be produced using production tooling, processing and methods and must include all design data specified by the PO, Engineering drawing and any other applicable design document. A material certificate and special process certificate where applicable must be provided with the FAI report.
- For Standard Catalog Hardware (AN, AS, MS, NAS, etc.), a Certificate of Conformance with evidence that part complies to procurement specification is required.
- For Commercial Off-the-Shelf (COTS) parts that do not have an AVOX part number, no FAI will be required.
- Unmodified COTS items ordered as an AVOX part number, shall require FAI Form I & Form II with attached Certificate of Conformance. FAI Revision shall reflect the revision of the AVOX drawing.
- Modified COTS items ordered as an AVOX part number, shall require a full FAI and Certificate of Conformance.

<u>The FAI report will be retained by the supplier</u>, a copy of the FAI report must be provided to AVOX Systems Inc. with the material it represents. All characteristics must be compliant with the design data unless previous approval has been given by AVOX Systems Inc. The format of the FAI report must comply with SAE AS9102 or equivalent.

D. SAMPLING INSPECTION

Sampling Inspection may be employed with a statistically valid (C=0) sampling plan that precludes the acceptance of lots whose samples have known nonconformities. The use of other sampling plans or schemes is prohibited unless approved by AVOX Systems Inc.



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E. SUB-TIER SUPPLIER FLOW DOWN

The supplier is required to flow down all AVOX Systems Inc. purchase order requirements to sub-tier suppliers including but not limited to requirements contained herein, AVOX Terms and Conditions, design data and any special instructions, etc.

F. SUPPLIER CONTROLLED PRODUCT/PROCESS CHANGES

Notify AVOX Systems Inc. Purchasing Department prior to incorporating any change or substitutions for product ordered. Changes to tools, fixtures, molds, dies or other process controls, which may affect fit, form, or function must have written AVOX Systems Inc. approval.

G. WORKMANSHIP QUALITY See ER2253 Workmanship Standards Guideline.

H. SURFACE TEXTURE See ER2253_Workmanship_Standards_Guideline, para. 5.2

I. RECORD RETENTION

The supplier shall maintain on file at the supplier's facility, quality records traceable to the conformance of product delivered to AVOX Systems Inc. The supplier shall make such records available to regulatory authorities and AVOX Systems Inc. representatives. The supplier shall retain such records for a period of not less than 10 years from the date of shipment. At the expiration of the 10 years the supplier is to contact AVOX Systems Inc. for disposition of records.

J. CONTAMINATION CONTROL (Part Cleanliness Requirement ref SAE ARP1176)

Components and/or assemblies being supplied have LIFE-SUPPORT BREATHING APPLICATION.

Components shall be provided "Shop Clean", (ref. SAE ARP 1176, 2.2, Gross Cleaning definition) upon receipt, capable of meeting SAE ARP1176-3, cleanliness levels after precision cleaning has been completed at AVOX Systems.

Shop Clean, Parts shall be "visibly clean". An item is visibly clean with the absence of all particulate visible to the normal unaided (except corrected vision) eye, and non-particulate pass the "Wipe Inspection", (ref SAE ARP 1176, 5.2.3).

Visual Inspection methods, (after precision cleaning at AVOX Systems.)

White light, to detect Particulate is identified as matter of miniature size with observable length, width, and thickness. (Under proper illumination, the unaided eye should find particulate down to 70 um.)

Wipe test, to discern rejectable non-particulate contaminant. Tarnish and stains are not rejectable criteria provided parts pass wipe test evaluation (ref. SAE ARP 1176, 5.2.3)

Discoloration due to welding, passivation, oxidation, etc. will be permitted providing no scale or rust is associated with the discoloration.

Hanging burrs, scale, imbedded or attached particulate and loose materials such as chips and flakes must be removed. The use of organic based corrosion/tarnish inhibitors or sealers is prohibited. Packaging used shall maintain cleanliness during shipment and storage.

Reference AVOX, Contamination Assessment Process, M_0243_QA



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K. MERCURY EXCLUSION CLAUSE

Mercury Contamination – (i.e., during the manufacturing process, test or inspections). Supplies offered shall not come in direct contact with mercury or any of its compounds nor with any mercury containing devices employing a single boundary of containment (A single boundary of containment, is one which is not backed by a second seal or barrier to prevent contamination in event of rupture of the primary seal or barrier). Mercury contamination of the supplies will be cause for rejection of the supplies.

L. OXYGEN COMPATIBLE ELASTOMERS & LUBRICANTS

Assemblies offered containing elastomers and/or lubricants must be considered compatible with oxygen. A listing of all elastomeric compounds and/or lubricants contained in the products offered is to accompany each shipment of product.

M. NON-CONFORMING PRODUCTS

Shipment of product which knowingly fails to conform to AVOX Systems Inc. drawings and specifications is prohibited without written approval from AVOX Systems Inc. via formal submission of Supplier Waiver/Deviation. Supplier waivers will not be accepted for TSO/PMA parts. Per FAA CFR regulations, AVOX Systems must ensure that each TSO/PMA article conforms to its approved design and is in a condition for safe operation.

Notification to AVOX <u>is required</u> in the event of a product or component delivered to AVOX is later found to be nonconforming. Details of the nonconformance including delivery and quantities are required.

N. TEST REPORTS RAW MATERIAL/CHEMICAL/PHYSICAL

Each shipment shall be accompanied by a copy of the original test report containing quantitative data for the chemical analysis and/or physical properties, as applicable, for the material supplied or used in the manufacture of the product. (i.e. forging, casting, plate, bar, chemical).

O. CERTIFICATION OF CONFORMANCE

Each shipment shall be accompanied by a signed and dated certification which will include the AVOX Systems Inc.; Purchase Order number, and part number with current revision*, the quantity from each lot, supplier's P/N, "Date of Manufacture"**, and as applicable: serial number(s), lot/batch or heat number(s), shelf life/expiration date (refer to section T.). Certificate of Conformance shall include a positive statement of product conformance.

The information contained on the barcode shipping label (See S_0011W_IT_2D_Data_Matrix_Supplier _Label_Specification) and all associated documentation must agree.

See Table 1 on the following page for detail regarding the handling of Revision and Manufacturing Date on the Certificate of Conformance and 2D Barcode Shipping Label.



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TABLE 1. Certificate of Conformance and 2D Barcode Shipping Label Requirements – Handling of Revision and Manufacturing Date.

QUESTIONS			ACTIONS			
Does part have an AVOX Part Number?	Is part a Commercial- Off-the-Shelf (COTS) AN,AS,MS,NAS part?	Does part have a Shelf Life?	Place Revision on Cert?	Place Revision on 2D Shipping Label?	Place Manufacturing Date on Cert?	Place Manufacturing Date on 2D Shipping Label?
YES	NO	NO	YES	YES	YES Mfg Date in any date format	YES Mfg Date in mmyyyy format
YES	NO	YES	YES	YES	YES Mfg Date in any date format	YES Mfg Date in mmyyyy format
YES	YES	NO	YES	YES	NO Instead use Ship Date in any date format	NO Instead use Ship Date in mmyyyy format
YES	YES	YES	YES	YES	YES Mfg Date in any date format	YES Mfg Date in mmyyyy format
NO	YES	NO	NO	YES Use COTS	NO Instead use Ship Date in any date format.	NO Use 000000 in Mfg Date field
NO	YES	YES	NO	YES Use COTS	YES Mfg Date in any date format	YES Mfg Date in mmyyyy format

NOTE: SPECIAL PROCESS CERTIFICATION

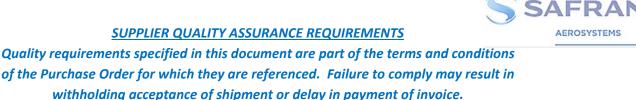
When applicable, in addition to the above, each shipment shall be accompanied by a signed certification, from the processor, indicating the special process that was performed and the specifications/standards that it was performed and compliant. Inspection and test reports are to be maintained on file and available for review. Special processes include but are not limited to heat treating, welding, brazing, plating, and non-destructive testing processes such as x-ray, liquid penetrant, magnetic particle, ultrasonic, and visual inspection.

NOTE: SOURCE CONTROLLED ITEM

Where Source Control is a requirement, objective evidence of the source of manufacture/process must be provided, i.e. manufacturer certification.

P. AVOX SYSTEMS INC. GOVERNMENT / CUSTOMER OWNED TOOLING AND FIXTURING

Where AVOX Systems Inc., AVOX Systems Inc. customer or Government owned tooling and fixturing are used during the performance of this Purchase Order, the tooling and fixturing shall be maintained and stored in such a manner as to prevent damage and deterioration. Annual tool inspection is to be performed with records of results maintained by the Supplier. Notify AVOX Systems Inc., Buyer, should tooling require repair, rework or replacement.



Q. AVOX SYSTEMS INC. LOANED INSPECTION EQUIPMENT

When standard gauging or other equipment is provided by AVOX Systems Inc. for use by the supplier during the performance of this Purchase Order, the equipment is to be maintained and used in a manner to prevent damage and deterioration. A calibration frequency is provided for loaned equipment, in the event this equipment remains at the supplier's facility beyond its scheduled calibration date, the Supplier is responsible to provide for such calibration by an AVOX Systems Inc. approved source or return the equipment to AVOX Systems Inc. for calibration. Exceptions will be approved by an AVOX Systems Inc. Quality Representative. The supplier is responsible for any repairs/replacement of loaned inspection equipment that is lost or damaged while in their possession.

R. PACKAGING

See ER2253 Workmanship Standards Guideline, Para. 9.0

S. KEY CHARACTERISTICS

When Key Characteristics are identified by AVOX, via Drawing Designation using the Symbol, or Purchase Order, the supplier is required to provide the following for these characteristics:

- Control plan
- Measurement Systems Analysis (Accuracy and Gage R&R Studies)
- 30 pc Capability Study

Lot #1 1st 30 pcs, Determine Cpk,

Lot #2 1st 15 pcs + data from 1st 15 pcs of lot#1, Determine Cpk,

Lot #3 1st 10 pcs + data from 1st 10 pcs of lot#1 + data from 1st 10 pcs of lot#2, Determine Cpk, etc., etc.

The supplier must request approval for proposed changes to the process.

The control plan must be submitted to AVOX prior to the implementation of any process change.

The supplier will be notified and the approved Control Plan will be returned to the supplier.

Any change to the process may require an updated Measurement System Analysis, and/or Capability Study.

Variation management activities must be performed until the process or processes that influence that characteristic are in control and process capability (>1.67 Cpk) has been established. Appropriate monitoring methodology such as SPC is then implemented to assure continued performance.

NOTE: Other variation methods such as control of process settings, standard processes and mistake proofing are encouraged and recommended to ensure process stability and capability. However, quantifiable evidence must be used to demonstrate that the controls are effective. Ref. SAE AS9103.

Related codes:

C. FIRST-ARTICLE INSPECTION (FAI)

F. SUPPLIER CONTROLLED PRODUCT/PROCESS CHANGES

T. SHELF LIFE CERTIFICATION (where applicable)

At the point of delivery, products shall have at least 80% of the usable shelf life remaining, as defined by the manufacturer. Each shipment shall be accompanied by a signed and dated certification listing shelf life, cure and/or manufacture date and expiration date. Cure and /or manufacturing date shall also be physically marked on product or packaging. Marking of expiration date is the preferred method.

NOTE: for o-rings, gaskets, seals etc. made from elastomers, reference SAE ARP 5316

NOTE: for other components made from elastomeric, reference MIL-HDBK-695

NOTE: for cylinders reference **P_0066AW_QA**



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U. CONFLICT MINERALS

Supplier recognizes, consistent with the public policy underlying enactment of the Conflict Minerals provision (Section 1502) of the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Act"), the significant legal and non-legal risks associated with sourcing tin, tantalum, tungsten and gold (the "Conflict Minerals") from the Democratic Republic of the Congo (DRC) or its surrounding countries (Angola, Burundi, Central African Republic, Rwanda, South Sudan, Tanzania, Uganda and Zambia). Accordingly, Supplier commits to comply with Section 1502 of Dodd-Frank and its implementing regulations. In particular, Supplier commits to have in place a supply chain policy and processes to undertake (1) a reasonable inquiry into the country of origin of Conflict Minerals incorporated into products it provides Buyer; (2) due diligence of its supply chain, as necessary, to determine if Conflict Minerals sourced from the DRC countries directly or indirectly support unlawful conflict there, and (3) risk assessment and mitigation actions necessary to implement the country of origin inquiry and due diligence procedures. Supplier shall take all other measures as are necessary to comply with the Act and its implementing regulations, as they may be amended over time.

V. REACH (ref ZA-Q-1030, para. 32.2, and http://echa.europa.eu/information-on-chemicals/registered-substances)

The supplier agrees to:

Meet European (CE) Regulation n° 1907/2006 (REACH) regarding registration, evaluation, authorization and restriction of chemicals by:

- Ensuring that authorization for use has been granted for chemicals included in appendix XIV,
- Informing if a candidate substance is in an item with a concentration above of 0.1% weight by weight,
- Ensuring registration of substances used,
- Informing, if concerned, if a substance included in appendix XVII (substances with restrictive uses) is included in an item

Propose, as soon as possible, alternate solution to a substance part of the candidate's substances in order to ensure continuity of deliveries.

W. RIGHT OF ENTRY: Representatives of AVOX, an AVOX customer, and/or cognizant Government Agencies (if non-domestic, equivalent Government Agency), have the right with the approval of AVOX Systems to inspect and evaluate Seller's and all Seller's subcontractors, facilities, systems, data, equipment, personnel and all completed articles manufactured for AVOX Systems.



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VARIABLE QUALITY CODES

These additional requirements apply only when called out on the purchase order by specific code number.

103 CALIBRATION SERVICE REQUIREMENTS

The supplier shall maintain a calibration system compliant with the requirements of ISO 17025 / ANSI/NCSL Z540-1.

105 QUALITY MANAGEMENT SYSTEM

The supplier shall maintain a Quality Management System certified with the applicable requirements of AS9100.

304 FUNCTIONAL TEST REPORT

Each shipment shall be accompanied by a copy of the actual Functional Test Report, which reflects the quantitative data on which product acceptance was based. Reports shall be identified to the product by serial number (each unit supplied), batch/lot number or other traceable means.

400 AVOX SYSTEMS INC. SOURCE INSPECTION

The supplier shall notify AVOX Systems Inc. Procurement at least (72) hours prior to the start of final inspection and/or acceptance test to facilitate witnessing by an AVOX Systems Inc. representative(s). The supplier shall not proceed without AVOX Systems authorization.

401 GOVERNMENT SOURCE INSPECTION

Government Source Inspection is required prior to shipment. Upon receipt of this order, promptly notify the Government Representative who normally services your facility so that appropriate planning for inspection can be accomplished.

404 AIRWORTHINESS DIRECT SHIPMENTAUTHORIZATION

An 8130-3/EASA FORM 1 or equivalent tag is required when direct shipment authorization has been granted by AVOX Systems.

800 VERIFICATION TEST SPECIMENS

Specimens of materials or products shall be furnished to AVOX Systems Inc. for verification testing. Specimens shall be of the type, configuration, and quantity required by AVOX Systems Inc. drawings, specifications and test standards.



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904 OXYGEN CLEAN PRODUCTS

Reference S_0014_QA Supplier Requirements for Oxygen Cleaning

Code	Cleanliness Level	NVR
904A	ARP 1176-3	3 mg/ ft ²
904B	ARP 1176-1	1 mg/ ft ²

904 (A / B) OXYGEN CLEAN PRODUCTS

Components and/or assemblies being supplied have HIGH PRESSURE LIFE-SUPPORT BREATHING APPLICATION.

Therefore, at a minimum, prior to assembly, components must meet the requirements of SAE ARP 1176-X (Oxygen System and Component Cleaning and Packaging).

- Cleanliness
 - Non Volatile Residue, NVR ARP1176-X per SAE ARP 1176, rev A,
 - Visual inspection using black and white light is acceptable in lieu of particulate verification for size and count. (ref SAE ARP 1176, table 2)
- Equipment Cleaning Category
 - Cleaning Level ARP1176-X per rev A (ref. SAE ARP 1176, table 1)
 - Work Area: (General Clean Room, Class B, or, Class C with Laminar Flow Bench) ref. SAE ARP 1176, 4.1.1

In the case of subassemblies, subsequent assembly and packaging processes containing these components must preserve the required cleanliness level.

In the event that the drawing specifies AVOX Systems' internal document SMP 7700009, the supplier is to comply for cleanliness requirements of ARP 1176-X.

Each shipment shall be accompanied by a signed Certificate of Conformance indicating that parts were cleaned, packaged, and labeled in accordance with SAE ARP1176-X

ASSEMBLY NOTES (904A/904B): Components MUST be cleaned and verified meeting the requirements stated herein <u>PRIOR</u> to assembly.

Components used must be assembled in a clean environment; use of smocks and gloves is required. Prior to assembly, components will be subjected to "particle purge" pressure blow off with clean, dry, filtered air. The assembled components must comply with the cleanliness levels and preservation and packaging requirements of this document.

905 CRITICAL TO FUNCTION ITEM – VALIDATION OF TEST REPORT ACCURACY

AVOX has identified the raw material for this item as critical to its function. Therefore, Avox requires the implementation of a process to validate the accuracy of test reports. This process involves the following:

- Given a piece of raw material and its corresponding original chemical and/or mechanical test report(s), obtain third party validation results for these chemical and/or mechanical properties contained in the original test report(s). This third party validation must be performed for each original testing facility once per year.
- 2. Provide evidence (signature and date) that the results from the original chemical/mechanical test report(s) were compared to the results generated by the third party testing facility and that no significant difference exists between the two.
- In addition to the supplier's Certificate of Conformance, each shipment must then contain (1) the original chemical/mechanical test report(s), (2) the third party validation results, and (3) the evidence of that the comparison was performed.



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1300 LOT CONTROL

Component parts or subassemblies identified with a Code 1300 have been determined to be "Critical to Quality".

BATCH/LOT IDENTIFICATION

The batch/lot identification will include traceability to; the original mill date, lot #, heat #, mixing date, or any other suitable means of tracing the raw material and process back to its original manufacture, where (location), when (date), who (operator), how (process parameters).

RAW MATERIAL

The supplier shall maintain full traceability of all raw material(s) used in the manufacturing of components delivered to AVOX. The supplier shall flow down traceability requirements to their sub-contractors of raw materials used in the manufacturing of the component part or sub-assembly and shall be traceable to the original lot of raw material(s) from the original manufacturer.

MATERIAL LOT CHANGES

The supplier must to able to identify and segregate components manufactured from different lots of raw material(s). In cases where there were two different lots of materials used to produce the delivered component part or sub-assembly, or a process change(s) occurred, the manufacturing lot(s) shall be kept separate and identified with a unique Batch/Lot/Manufacturing Identification Number.

PROCESS LOT CHANGES

In cases where there were two different lots of materials used to produce the delivered component part or sub-assembly, or a process change(s) occurred, the manufacturing lot(s) shall be kept separate and identified with a unique Batch/Lot/Manufacturing Identification Number.

Material(s) supplied by AVOX which are used in the delivered component are traceable through AVOX's "Material Acceptance Tag" which provides visibility to the "Transaction/Batch Lot Control Number.

CHANGE AUTHORITY

Changes in Batch/Lot requiring AVOX Systems Inc. approval

- Any changes, including but not limited to; method, material, measurement, manpower, environment, and any other source of variation affecting product quality.
- Source of raw material

PROCESS/MATERIAL CHANGES

Permissible changes without notification to AVOX Systems Inc.:

- Shift/ Operator (from list of qualified approved operators)
- Raw material lot changes,

Note: the above changes require new batch/lot identification.

DELIVERABLE

Raw material batch lot control number(s) and supplier internal manufacturing work order number shall be listed on the supplier Certification of Conformance.



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1420 SHELF LIFE CERTIFICATION (consumable products/materials)

At the point of delivery, products/materials shall have a minimum usable shelf life of 2 months, as defined by the manufacturer. Each shipment shall be accompanied by a signed and dated certification listing shelf life, cure and/or manufacture date and expiration date. Cure and /or manufacturing date shall also be physically marked on product or packaging. Marking of expiration date is the preferred method.

1430 SHELF LIFE CERTIFICATION (consumable products/materials)

At the point of delivery, products/materials shall have a minimum usable shelf life of 3 months, as defined by the manufacturer. Each shipment shall be accompanied by a signed and dated certification listing shelf life, cure and/or manufacture date and expiration date. Cure and /or manufacturing date shall also be physically marked on product or packaging. Marking of expiration date is the preferred method.

1460 SHELF LIFE CERTIFICATION (consumable products/materials)

At the point of delivery, products/materials shall have a minimum usable shelf life of 6 months, as defined by the manufacturer. Each shipment shall be accompanied by a signed and dated certification listing shelf life, cure and/or manufacture date and expiration date. Cure and /or manufacturing date shall also be physically marked on product or packaging. Marking of expiration date is the preferred method.

1490 SHELF LIFE CERTIFICATION (consumable products/materials)

At the point of delivery, products/materials shall have a minimum usable shelf life of 9 months, as defined by the manufacturer. Each shipment shall be accompanied by a signed and dated certification listing shelf life, cure and/or manufacture date and expiration date. Cure and /or manufacturing date shall also be physically marked on product or packaging. Marking of expiration date is the preferred method.

1415 SHELF LIFE CERTIFICATION (consumable products/materials)

At the point of delivery, products/materials shall have a minimum usable shelf life of 15 months, as defined by the manufacturer. Each shipment shall be accompanied by a signed and dated certification listing shelf life, cure and/or manufacture date and expiration date. Cure and /or manufacturing date shall also be physically marked on product or packaging. Marking of expiration date is the preferred method.

1500 NATIONAL AEROSPACE & DEFENSE CONTRACTORS ACCREDITATION PROGRAM (NADCAP)

For special processes (i.e. welding, heat treat, coating etc) NADCAP certification is required.

1600 CONTROL PLAN

Control Plan is required. Organizations may use their own control plan template as long as the template contains all elements as described in:

Chrysler Corporation, Ford Motor Company, General Motors Corporation. (2008). *Advanced Product Quality Planning (APQP) and Control Plan - Second Edition*. Southfield, MI: Automotive Industry Action Group.