C.A.S.E. 1-A STANDARD

COMPONENT REPAIR/OVERHAUL VENDOR QUALITY PROGRAM REQUIREMENTS

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1. Policy

A. This standard is intended to be a supplement to applicable CFRs. It is not meant to be a restatement of or replacement for the CFRs. CACS-20 is the C.A.S.E. checklist associated with this standard.

B. This standard represents the applicable CFR requirements and minimum requirements for all sustaining member air carriers of the C.A.S.E. organization. Vendors must comply with all items of this standard to be considered for listing in the C.A.S.E. Register. The standard is revised approximately every six (6) months, is available at www.caseinc.org, and should be acquired. This standard is designed to aid surveillance of a vendor who performs maintenance, preventive maintenance, or alteration on aircraft, engines, propellers, or component parts thereof. This standard may be used to determine the adequacy of the vendor's quality program. [C.A.S.E.]

C. Compliance with this standard does not necessarily accept a vendor for entry into the C.A.S.E. Register. Vendors that are accepted for listing in the C.A.S.E. Register must continue to meet the requirements of this standard. Vendors will acknowledge this by having a "Vendor Authorized Representative" sign the Vendor Expectations and Limitations (VEL), which is a written agreement between the vendor and the organization. Reasons for removal include, but are not limited to: safety of flight concerns, intent to defraud, ceasing operations or business, move of principal operations, or refusal of an audit from a C.A.S.E. authorized auditor performing an allocated audit to a C.A.S.E. standard. Further, a vendor shall be removed from the Register for failure to implement corrective action(s), refusal to sign the VEL prior to closure of the audit process, or failing to correct audit findings within the prescribed time limits agreed upon with the auditor. A vendor may be removed from the Register if the vendor is found to be in non-compliance with any section(s) of the C.A.S.E. standard, fails to perform work in accordance with air carrier instruction(s), or is in non-compliance with requirements of the VEL. Vendors may not publicize by statement or inference their C.A.S.E. Register status in any form (e.g., advertising, other solicitation of business) or use the C.A.S.E. logo. [C.A.S.E.]

D. In addition to complying with this standard, all activities shall be accomplished in accordance with applicable portions of the Code of Federal Regulations (e.g., Title 14 CFR Parts 21, 39, 43, 45, 65, 121 subpart L, 120 subparts D, E, and F, 135, 145, 183, 49 CFR Parts 171-180, and BASA/MAG (applicable to all U.S. domestic repair stations holding an EASA certificate and to all E.U. AMOs holding an FAA certificate).

E. The vendor shall establish a policy that ensures compliance with the air carrier's or commercial operator's program and applicable sections of the air carrier's maintenance manual. [121.367, 135.425, 145.205, C.A.S.E.]

F. The Original Equipment Manufacturer (OEM) may alter or rebuild parts manufactured under the manufacturer's authorization (PMA, PC, TSO, etc.) but must have an Air Agency Certificate to overhaul or repair a part it manufactures. [43.2, 43.3, 121.367, 135.425, 145.5 C.A.S.E.]

G. Vendors are subject to a technical audit at any time during normal working hours. The audit may be conducted by a C.A.S.E. member, whether or not that member is an air carrier customer of that vendor. The audit may encompass the entire technical portion of the vendor's operation or any part thereof. Normally, the auditor will notify the vendor and arrange the audit so as to cause minimal interference with the vendor's operation, however, should circumstances dictate, the auditor may arrive unannounced. [C.A.S.E.]

NOTE: Register action may be taken anytime a C.A.S.E. qualified and authorized auditor/evaluator performs an audit using this standard.

H. Vendors are subject to a technical audit at any time during normal working hours. An acceptable audit result does not relieve the vendor of its responsibility to provide an acceptable product. [C.A.S.E.]

I. Definitions: [1.1, 145.3]

1) **Accountable Manager** – person designated by the certificated repair station who is responsible for, and has authority over, all repair station operations that are conducted under Part 145, including ensuring that repair station personnel follow the regulations, and serves as the primary contact with the FAA/NAA.
2) **Article** – an aircraft, airframe, aircraft engine, propeller, appliance, or component part.
3) **Directly in charge** – having the responsibility for the work of a certificated repair station that performs maintenance, preventive maintenance, alterations, or other functions affecting aircraft airworthiness. A person directly in charge does not need to physically observe and direct each worker constantly but must be available for consultation on matters requiring instruction or decision from a higher authority.
4) **Maintenance** – Inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.
5) **Person** – An individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.
6) **Supervisor** – A person who directs the work performed under the repair station's certificate and operation specification.

2. Certifications

A. All certificates, Operations Specifications, licenses, repairman certificates, and registrations required by the CFRs or NAA for any individual, equipment or facility shall be kept current and available for inspection and verification. [145.5, 145.55, 145.153, 145.155, 145.157, 145.213, C.A.S.E., 49 CFR Part 180.205 subpart C]

B. Vendors that utilize Airframe and/or Powerplant-rated mechanics shall have a documented procedure to obtain a written verification letter from the FAA to verify the validity of certificates for no accident, incident, or enforcement action from the FAA. [C.A.S.E.]

C. Capabilities Listing [145.215, C.A.S.E.]

1) A certificated repair station with limited ratings must identify each article on which the repair station is authorized to work either on a capabilities listing acceptable to the administrator or on their Operations Specifications.
2) Each item on the capabilities list must have documentation to show that an evaluation was performed to determine that the vendor has necessary housing, facilities, tools and test equipment, materials, technical data, processes, and trained personnel to accomplish the work.
3) The capabilities list must identify each article by make, and model or other nomenclature designated by the article's manufacturer.
4) This evaluation must be performed in accordance with procedures outlined in its Repair Station Manual.

D. Repair stations based in the U.S. shall have an FAA registered anti-drug and alcohol misuse prevention program. The plan may be the vendor's plan, a consortium plan to which the vendor subscribes, or an air carrier's plan. The certificate holder shall have an Anti-drug and Alcohol Misuse Prevention Program Operations Specification (A449), have a form showing registration with the FAA Drug Abatement Division, or be covered under the plan for each employer (121/135 operator) for which the holder performs work. [14 CFR 120 subparts D, E and F]

E. Vendors shall have a process to ensure their U.S. based sub-contracted maintenance/ preventive maintenance providers, at all tiers (certificated and non-certificated), are participating in a U.S. Department of Transportation anti-drug and alcohol misuse prevention program as required per 14 CFR Part 120 subparts D, E, and F. Examples of sub-contracted maintenance/preventive maintenance functions include: [14 CFR 120 subparts D, E and F, C.A.S.E.]

1) Preparation of an aircraft for a cleaning process which requires the removal or protection of components (e.g., closing and securing upper and lower fan cowl doors on a transport category aircraft prior to cleaning, or, after the cleaning process, the reapplication of lubrication compounds and preservatives to aircraft components). Cleaning of seat cushions/covers is not considered maintenance.
2) Refinishing decorative coatings on the fuselage, wings, tail group surfaces, fairings, cowlings, landing gear, and/or interiors when removal or disassembly of any primary structure or operating system is not required.
3) Repair of cargo containers.
4) Performance of tests, by manufacturers, to determine either the extent of repair necessary for, or the serviceability of, a component.
5) Work performed by mechanics' helpers.
6) Third-level sub-contracting (e.g., welding, plating, special processes, etc.).

3. Quality Programs

A. The certificated repair station must maintain a quality control system that ensures the airworthiness of the articles on which the repair station or any of its contractors perform maintenance, preventive maintenance, or alterations and complies with air carrier specifications. [121.367, 135.425, 145.205, 145.211, C.A.S.E.]

B. Repair station personnel must follow the quality control system when performing maintenance, preventive maintenance, or alterations. [121.367, 135.425, 145.211, C.A.S.E.]

C. The repair station must keep current an FAA/NAA acceptable Quality Control (or equivalent) Manual(QCM). The QCM must be accessible for use by all repair station personnel and to the air carrier's auditor (or designee). The QCM must include the following: [121.367, 135.425,145.205, 145.211, C.A.S.E.]

   1) A description of the systems and procedures used for:
      a) Inspecting incoming raw material to ensure acceptable quality.
      b) Performing preliminary inspections of all articles that are maintained.
      c) Inspecting all articles that have been involved in an accident for hidden damage before maintenance, preventive maintenance, or alteration is performed.
      d) Establishing and maintaining proficiency of inspection personnel.
      e) Establishing and maintaining current technical data for maintaining articles.
      f) Qualifying and performing surveillance of non-certificated persons who perform maintenance, preventive maintenance, or alterations for the repair station.
      g) Performing final inspection and return-to-service of maintained articles.
      h) Calibrating measuring and test equipment used to maintain articles, including the intervals at which the equipment will be calibrated.
      i) Taking corrective actions on deficiencies.
      j) Revising the Quality Control Manual required under this section and notifying the Certificate Holding District Office (CHDO) of the revisions, including how often the CHDO will get notified of revisions.
   2) References, where applicable, to the manufacturer's inspection standard for a particular article including references to any data specified by that manufacturer and/or owner/operator.
   3) Samples of the inspection and maintenance forms and instructions for completing such forms, or a reference to a separate forms manual.

D. The certificated repair station must maintain and follow a current FAA/NAA acceptable Repair Station (or equivalent) Manual (RSM). The RSM must be accessible for use by all repair station personnel and to the air carrier's auditor (or designee). The RSM must include the following: [121.367, 135.425, 145.161, 145.163, 145.203, 145.205, 145.207, 145.209, 145.215, 145.217, C.A.S.E.]

   1) The organizational structure:
      a) Each management position with authority to act on behalf of the repair station.
      b) The area of responsibility assigned to each management position.
      c) The duties, responsibilities, and authority of each management position.
      d) An organizational chart.
   2) Procedures for maintaining and revising the roster(s).
   3) A description of the certificated repair station's operations, including the housing, facilities, equipment, and materials.

4) Procedures for:
   a) Revising the capabilities list and notifying the CHDO of revisions to the list, including how often the CHDO will be notified of revisions.
   b) Performing a self-evaluation prior to revising the capabilities list, including methods and frequency of such evaluations, and procedures for reporting the results to the appropriate manager for review and action.
5) Procedures for revising the training program and submitting revisions to the CHDO for approval.
6) Procedures to govern work performed at another location.
7) Procedures for maintenance, preventive maintenance, alterations, and inspections performed for an air carrier.
8) Procedures for maintaining and revising contract maintenance information and notifying the CHDO of revisions to this information, including how often the CHDO will be notified of revisions.
9) A description of the required records and the record-keeping system used to obtain, store, and retrieve the required records.
10) Procedures for revising the RSM and notifying its CHDO of revisions to the manual, including how often the CHDO will be notified of revisions.
11) A description of the system used to identify and control sections of the RSM.

E. The vendor shall have a documented internal audit and surveillance function that: [121.363, 135.413, FAA AC 145-9A, EASA 145.A.65, C.A.S.E.]

1) Establishes an audit schedule which reviews its Part 145 subparts C, D, and E, and the quality programs to verify that procedures that assure compliance with air carrier specifications, regulatory requirements, and good industry practices are in place. The results of these reviews shall be communicated to the Accountable Manager.
2) Verifies that operations are being conducted in accordance with these programs.
3) Verifies that work performed by a sub-contractor is a quality product that meets air carrier specifications and legal requirements. The vendor shall be responsible for any work performed by a sub-contractor.
4) Includes a review of the quality assurance program by the Quality Manager or the person assigned managerial responsibility for the program for the purpose of ensuring compliance with the current requirements of the maintenance program and RSM/QCM.
5) Uses trained auditors for performance of audits.
6) Maintains at least 36 months or two (2) complete audit cycles (whichever is greater) of internal audit reports. Reports shall include immediate corrective action, root cause analysis, preventive action, follow-up date, and results.
7) Identifies, by title, an individual as primarily responsible for the internal audit program.

F. The vendor's internal audit and surveillance function shall contain provisions to assure that all discrepancies and corrective/preventive actions are documented and implemented promptly to: [121.363, 135.413, C.A.S.E.]

1) Correct the discrepancies reported.
2) Locate and correct similar discrepancies, if they exist, in areas not audited.
3) Correct the root cause of the problem evidenced by the discrepancies.
4) Identify actions to prevent re-occurrence.
5) Conduct a follow-up of corrective action and preventive action to assure they are effective.

G. Following the completion of a 1-A standard audit, if a vendor and an auditor have executed a VEL, the vendor shall maintain, for a minimum period of 36 calendar months, a file containing:

1) Audit findings and corrective actions resulting from that audit (if any); And,
2) A copy of the executed VEL.

NOTE: This file (which may be in electronic format) shall be accessible on-site to any C.A.S.E. authorized auditor on request. [C.A.S.E.]

H. The vendor shall: [145.217, C.A.S.E.]

1) Maintain a list of sub-contracted functions approved by the FAA/NAA.
2) Maintain a list of sub-contracted maintenance agencies, including the type of certificate and ratings, if any, held by each facility they have approved to perform these functions.

I. The vendor shall perform surveillance of all sub-contracted maintenance agencies at a frequency not to exceed 36 calendar months. [C.A.S.E.]

J. Records of contracted/sub-contracted surveillance must show: [145.205,145.217, 145.223, C.A.S.E.]

1) Evidence that the contractor/sub-contractor's quality meets air carriers' specifications and legal requirements. This evidence of quality system can be through either on-site or "mail" type audits and at a minimum must include:
   a) Certificates, operations specifications, and registrations (FAA Cert., EASA Cert., etc.) shall be kept current and available for inspection and verification.
   b) Evidence the facility has validated the capability for the work performed.
   c) If the vendor deals in non-aviation parts, materials, and/or maintenance activities, is there proper segregation from aviation activities.
   d) The contractor/sub-contractor's procedures:
      i. For ensuring that U.S. based contractors/sub-contractors (certificated and non-certificated), at all tiers, are participating in an anti-drug and alcohol misuse prevention program and maintaining evidence of (or availability to) participation documents.
      ii. For maintenance, preventive maintenance, alterations, and inspections.
      iii. For inspection of incoming materials to ensure acceptable quality.
      iv. For performing final inspections of maintained articles.
      v. For establishing and maintaining current technical data for maintaining articles.
      vi. For calibrating measuring and test equipment used to maintain articles.
      vii. For training and maintaining proficiency of personnel.

viii. For controlling shelf life items and scrapped parts.
ix. To determine major/minor repair scope.
x. To ensure compliance with air carrier specifications.

e) If the contractor/sub-contractor is not a certificated repair station, the vendor itself must determine the airworthiness of the article involved by inspection or test and must have a contract allowing the FAA/NAA to inspect the non-certificated repair facility.

K. The vendor shall have a documented procedure describing how they report defects and unairworthy conditions to the air carrier and the FAA/NAA. [121.703, C.A.S.E.]

L. The vendor shall have a documented procedure for handling suspected unapproved parts (SUP) which includes formal training, detecting SUP, and reporting SUP to the air carrier prior to or in conjunction with reporting SUP to the FAA/NAA. [C.A.S.E.]

M. The vendor shall have a process to furnish copies of all revised Repair Station Manual(s) and/or Quality Manual(s) promptly to all organizations and persons to whom the manual(s) has been issued. [C.A.S.E.]

4. Inspection Programs

A. For vendors that perform Required Inspections Items (RII) as defined in 14 CFR Part 121, the vendor's company structure shall be organized such that the inspection function shall be separate from the maintenance, repair, and overhaul function. The separation shall be below the level of administrative control at which overall responsibility for the inspection function and the maintenance, repair, and overhaul function is exercised. [121.365, 145.205, C.A.S.E.]

B. The vendor shall have a satisfactory method of assuring that: [21.130, 39.15, 43.2, 43.11, C.A.S.E.]

1) Incoming parts and materials comply with specifications including required certification documentation and traceability.
2) Parts are free of defects or malfunctions.
3) Parts are in a good state of preservation.
4) Records of inspections and tests used to make this verification are maintained.
5) Incoming parts tags include part name, part number, serial number, and modification status if applicable. And,
6) Receiving inspectors are trained.

C. If applicable, the vendor shall have documented system for controlling inspection and production stamps that includes the following: [C.A.S.E.]

1) A facsimile of each stamp type.
2) A means of identifying to whom stamps have been issued.
3) A policy for stamps that are lost or stolen. And,
4) A requirement that no stamp will be reissued within a six (6) month period to two (2) different employees.

5. Personnel

A. The vendor shall identify an employee as the "Accountable Manager." [121.365, 135.423, 145.151, C.A.S.E.]

B. The vendor shall employ a minimum of two (2) persons. [120.109, 120.217, C.A.S.E.]

C. The vendor shall maintain an up-to-date roster(s) of: [121.365, 135.423, 145.161, C.A.S.E.]

1) Management personnel, including the "Accountable Manager".
2) Supervisory personnel.
3) The names of all inspection personnel, which includes receiving inspectors.
4) The names of personnel authorized to sign a maintenance release or approving a maintained or altered article for return-to-service.
5) The roster(s) must be updated within five (5) business days of any respective changes.

D. The vendor shall provide a summary of employment for each individual whose name appears on the repair station roster(s). It shall include, in a stand-alone format (hard copy or electronic), the following required information: [121.367, 135.425, 145.161, C.A.S.E.]

1) Each person's present title.
2) The total years of experience and the type of maintenance work performed.

NOTE: Experience need not be updated annually provided the date the summary was revised is noted on the summary.

3) Past relevant employment with names of employers and employment periods.
4) The scope of their present employment. And,
5) The type of certificate held, mechanic or repairman, and the ratings on that certificate, if applicable.

E. Supervisory Personnel [121.367, 121.375, 121.378, 135.425, 135.433, 135.435, 145.153, C.A.S.E.]

1) Each person performing supervisory duties must be familiar with the methods, techniques, practices, aids, equipment, and tools used to perform maintenance, preventive maintenance, or alterations.
2) Each supervisor must:
   a) If employed by a vendor located inside the United States:
      i) Be appropriately certificated as a mechanic or repairman under Part 65 for the work being supervised.
   b) If employed by a vendor outside the United States:
      i) Have a minimum of 18 months of practical experience in the work being performed. Or,
      ii) Be trained in or familiar with the methods, techniques, practices, aids, equipment, and tools used to perform the maintenance, preventive maintenance or alterations.
   c. Understand, read, and write English.

F. Inspection Personnel [121.375, 121.378, 135.425, 135.435, 145.155, C.A.S.E.]

1) Each person performing required inspections (RII) must be appropriately certificated, properly trained, and authorized to do so.
2) Inspection personnel must be thoroughly familiar with the applicable regulations in Part 145, inspection methods, techniques, practices, aids, equipment, and tools used to determine the airworthiness of the articles on which maintenance, preventive maintenance, or alterations are being performed. They must:
   a) Maintain proficiency in using the various types of inspection equipment and visual inspection aids appropriate for the article being inspected.
   b) Have available and understand all applicable and current tolerances and procedures.
   c) Be able to properly identify defects.
   d) Understand, read, and write English.

G. Return-to-Service Personnel [121.367, 121.375, 135.425, 135.433, 145.157, C.A.S.E.]

1) A certificated repair station located inside the United States must ensure each person authorized to approve an article for return-to-service under the Repair Station Certificate and Operations Specifications is appropriately certificated as a mechanic or repairman under Part 65.
2) A certificated repair station located outside the United States must ensure each person authorized to approve an article for return-to-service under the Air Agency Certificate and Operations Specifications is:
   a) Trained in, or has 18 months practical experience with, methods, techniques, practices, aids, equipment, and tools used to perform the maintenance, preventive maintenance, or alterations.
   b) Thoroughly familiar with the applicable regulations in Part 145 and proficient in the use of the various inspection methods, techniques, practices, aids, equipment, and tools appropriate for the work being performed and approved for return-to-service.
3) A certificated repair station must ensure each person authorized to approve an article for return-to-service can understand, read, and write English.

6. Technical Data Program

A. All maintenance actions shall be accomplished in accordance with air carrier's manuals. This shall include: [121.365, 135.423, 145.205, C.A.S.E.]

1) Technical data originating with or provided by the air carrier.
2) OEM data as modified by the air carrier.
3) Unmodified OEM data if so specified by the air carrier.
4) Technical data developed by the vendor that is approved by the air carrier prior to use.

NOTE: "Manuals" in this context include any technical data required to perform the required maintenance action (e.g., drawings, wiring diagrams, test specs., etc.).

B. The vendor shall have a documented system to assure that: [121.365, 135.423, C.A.S.E.]

1) All technical data is kept current and there is a record of revisions received and filed.
2) Only the latest technical data, or technical data as specified by the air carrier customer, is available to persons performing maintenance actions. And,
3) The technical data used by persons performing maintenance actions is appropriate for the work being done, readily available, in good condition, and in adequate quantity.

C. If the vendor maintains a master copy of each "manual" in addition to the working copies used for maintenance actions, the working copies shall be revised at the same time as the masters. [121.365, 135.423, 145.109, 145.207, 145.209, 145.211, C.A.S.E.]

D. Technical data shall be properly identified as to applicability and stored in a manner that will protect it from dirt and damage. [121.365, 135.423, 145.207, 145.209, C.A.S.E.]

E. Where technical data is viewed on a device, the device shall be: [121.365, 135.423, 145.109, C.A.S.E.]

1) Maintained in good working order.
2) Protected from dust, dirt, water, and damage.
3) Available and convenient to the persons performing maintenance actions. And,
4) Adequate to display detail necessary to perform the work.

F. Should the vendor deviate from or supplement OEM data via an ODA (which must include an FAA approved manual and roster) the vendor shall have a documented system for approval (including air carrier's) and control of such data revisions. [121.365, 135.423, C.A.S.E.]

7. Shelf Life Program

A. If the vendor uses materials that have a shelf life, they shall have a documented program that defines the procedures and lists the parts and/or materials subject to shelf life (or references a listing). The listing may be maintained as a separate document. [43.13, 121.363, 135.413, C.A.S.E.]

B. The program shall include a means of identifying the expiration date of each shelf life-limited item. [43.13, 121.363, 135.413, C.A.S.E.]

C. Any part or material that is past its expiration date shall not be used in the maintenance action of an air carrier's unit or any spare unit that may be used on an aircraft. [43.13, 121.363, 135.413, C.A.S.E.]

D. The program shall specify a system that will assure that no expired material or part will be issued. [43.13, 121.363, 135.413, C.A.S.E.]

8. Tool Calibration, Control, and Equivalency

A. Tools and test equipment used to comply with or verify specifications must be calibrated periodically to assure their accuracy. [43.13, 121.367, 135.433, 145.109, C.A.S.E.]

B. The program shall include identification of the tools and test equipment in the program, the frequency of calibration, calibration limitations, and the applicable tolerance or specification. [43.13, 121.367, 135.433, 145.211, C.A.S.E.]

NOTE: Limited calibration is an accepted calibration condition with a specified limited performance. Any such specified limitations must be clearly marked on the equipment label (e.g., torque wrenches calibrated in the clockwise direction only).

C. All test and inspection equipment and tools used to make airworthiness determinations on articles must be properly protected, calibrated, and traceable to a standard acceptable to the FAA/NAA. [43.13, 121.367, 135.433, 145.211, C.A.S.E.]

D. The program shall provide a system for identifying the calibration status of each piece of equipment in the program and their calibration due dates. [43.13, 121.367, 135.433, C.A.S.E.]

E. Tools and test equipment that are in the calibration program, but are out of calibration or are past due calibration check, shall be identified in a manner that will prevent maintenance personnel from using them. [43.13, 121.367, 135.433, C.A.S.E.]

F. Personal tools or equipment used in verifying or complying with specifications shall be included in the program. The program shall include controls or safeguards to assure any such tools taken off-site are not returned for use by the repair vendor without first confirming continued serviceability and accuracy of these tools. [43.13, 121.367, 135.433, C.A.S.E.]

G. Records for tools and test equipment available for use shall: [43.13, 121.367, 135.433, C.A.S.E.]

1) Show the date the item was calibrated or checked.
2) Show the date the next calibration is due.
3) Identify the person that performed the calibration or check.
4) Contain a calibration certificate for each item calibrated by an outside agency.
5) Record the details of any required adjustment or repair.
6) Identify the standard used to calibrate the item, including the part number and serial number.

H. Records are to be kept for a minimum of two (2) years or two (2) calibration cycles (whichever is greater). [C.A.S.E.]

I. The program shall include controls for tools and/or test equipment which would typically require calibration (e.g., torque wrenches, volt/ohm meters, etc.) but are not in the calibration program. These tools and/or test equipment shall not be used to comply with specifications, verify specifications, or to make airworthiness determinations. [C.A.S.E.]

J. OEM/non-OEM designated tooling/test equipment: [43.13, 121.367, 145.109, C.A.S.E.]

1) For either OEM or non-OEM tooling/test equipment, the vendor shall:
   a) Have an operating manual and maintenance manual for the equipment.

NOTE: The operating manual is a set of instructions designed to ensure that the equipment meets the requirements/parameters to perform tests in accordance with technical standards and airworthiness. The maintenance manual is a set of instructions designed to ensure that the equipment operates and is maintained to ensure accuracy in complying with technical standards and airworthiness.

   b) Perform maintenance, preventive maintenance, and servicing as required by the operating and/or maintenance manual.
   c) Maintain records of maintenance, preventive maintenance, and servicing, if any is required, for a minimum of two (2) years.
   d) If appropriate, list the tooling/test equipment in its calibration program.
2) Where non-OEM specified tooling/test equipment is used, the vendor shall provide documentation that the tooling/test equipment adequately performs the functions and/or tests required by the OEM manual. The documentation must be signed and dated and come from an individual authorized and qualified to make such a determination.

NOTE: This section does not apply to standard test equipment (such as volt/ohm meters, oscilloscopes, power supplies, etc.) that is equivalent to the equipment called out in the component maintenance manual.

9. Training

A. The vendor shall assure that each employee is properly trained for the work the individual is to perform. [121.375, 135.433, 145.163, C.A.S.E.]

B. The vendor shall document both formal and on-the-job training. [121.375, 135.433, 145.163, C.A.S.E.]

C. Employee training records for mechanics, inspectors, and supervisors shall be retained for a minimum of two (2) years after the employee has left the company. The records shall be available for inspection. [121.375, 135.433, C.A.S.E.]

D. The certificated repair station must: [121.375, 135.433, 145.163, C.A.S.E.]

1) Have and use an employee-training program that consists of initial and recurrent training for maintenance, preventive maintenance, alteration, and inspections as required their FAA/NAA.
2) Document the employee training for any individual performing maintenance, preventive maintenance, and alterations, to include but not limited to technicians, inspectors, return-to-service personnel and receiving inspectors.
3) Have documented procedures used to establish competence of maintenance and inspection personnel, including a description of the initial and recurrent training required for each individual position or qualification. And,
4) Have a documented recurrent training interval not to exceed 36 months, which can be reduced based on the results of the vendor's program.

E. The FAA/NAA employee training program shall include but is not limited to: [US MAG (vi), CAR STD 573.06, C.A.S.E.]

1) The knowledge of regulations, standards, and procedures in accordance with customer requirements.
2) Human factors.
3) ESD (as applicable).
4) Receiving inspection.
5) Return-to-service.
6) Suspected Unapproved Parts. And,
7) Cyber Security (as applicable).

10. Housing and Facilities

A. Vendors that deal in non-aircraft parts, materials, or maintenance activities shall segregate the aircraft function from other functions to preclude getting unapproved parts or materials on an aircraft unit. [121.367, 135.425, 145.103, C.A.S.E.]

B. The certificated repair station must provide: [121.367, 135.425, 145.103, 145.109, C.A.S.E.]

1) Housing for the facilities, equipment, materials, and personnel consistent with its rating.
2) Facilities for properly performing the maintenance, preventive maintenance, or alterations of articles or the specialized services for which it is rated. The facilities must include:
   a) Sufficient workspace and areas for the proper segregation and protection of articles during all maintenance, preventive maintenance, or alteration.
   b) Segregated work areas enabling environmentally hazardous or sensitive operations such as painting, cleaning, welding, avionics work, and machining to be done properly and in a manner that does not adversely affect other maintenance or alteration articles or activities.
   c) Suitable racks, hoists, trays, stands, and/or other means of segregation for the storage and protection of all articles undergoing maintenance, preventive maintenance or alterations.
   d) Space sufficient to segregate articles and materials stocked for installation from those undergoing maintenance, preventive maintenance, or alteration.
   e) Ventilation, lighting, and control of temperature, humidity and other climatic conditions sufficient to ensure personnel perform maintenance, preventive maintenance, or alterations to standards required by the part and/or precision tools and test equipment.
   f) The areas for receiving and for shipping air carriers' units shall have adequate space, lighting, shelving, security, and fire protection to accommodate air carriers' units in a manner that will preclude damage, loss and theft.
   g) There shall be adequate and appropriate storage area to safely store air carriers' reusable shipping containers and to protect them from environmental damage.
   h) Sufficient communication equipment and information technology system(s).
   i) A secure, dry storage area to retain aircraft technical records.

C. A certificated repair station performing maintenance, preventive maintenance, or alterations on articles outside of its housing, must provide suitable facilities that are acceptable to the FAA/NAA and its air carrier customers. It must meet the requirements of paragraph 10.B. above so that the work can be done in accordance with the requirements of 14 CFR Part 43. [121.367, 135.425, 145.103(b), 145.201, C.A.S.E.]

11. Safety/Security/Fire Protection

A. The housing and facilities shall provide adequate security and protection from fire. [NFPA 10, C.A.S.E.]

B. Security systems shall be adequate to ensure the safety and security of air carrier's parts or aircraft. [C.A.S.E.]

C. Fire protection devices and systems shall be inspected periodically. [NFPA 10, C.A.S.E.]

D. Firefighting equipment and its locations shall be well identified and maintained in serviceable condition. [NFPA 10, C.A.S.E.]

E. Walkways, doors, and fire extinguishers shall be clear of obstructions and easily accessible. [NFPA 10, C.A.S.E.]

F. Appropriate safety devices shall be maintained in good condition and shall be used. [C.A.S.E.]

G. Operations shall be conducted in a safe manner and in a safe environment that will avoid personnel injury and damage to air carrier property. [145.103, C.A.S.E.]

12. Storage

A. Parts and materials shall be correctly identified and properly stored so that only acceptable parts and supplies will be issued for any job. [145.101, 145.103, C.A.S.E.]

B. Serviceability status of parts and materials shall be indicated in a manner that readily identifies serviceable parts and materials from the unserviceable. [145.101, 145.103, C.A.S.E.]

C. Rejected parts and materials, including questionable items awaiting disposition, shall be identified as rejected and stored in a quarantine area separately from usable stock to preclude them from being issued for any job or shipped to the air carrier as serviceable. [145.101, 145.103, C.A.S.E.]

D. Parts and materials shall be protected in storage and during transit, until installation, in a manner that will prevent damage, contamination, loss, or substitution. If the vendor stores Aircraft Network Security Program (ANSP) components, these components shall be isolated from potentially malicious systems, storage media, and unauthorized access. [145.101, 145.103, DO-355A 3.2.1 and 3.2.3, C.A.S.E.]

E. Flammable, toxic, and/or hazardous materials shall be stored in an appropriate, properly identified cabinet or facility meeting applicable safety regulations. [145.101, 145.103, NFPA 30, C.A.S.E.]

F. Sensitive parts and equipment (e.g., oxygen parts, O-rings, electrostatic sensitive devices, temperature/humidity-controlled items, etc.) shall be properly packaged, stored, identified, and protected from contamination and damage. [145.101, 145.103, C.A.S.E.]

G. If the vendor utilizes high pressure bottles or provides oxygen servicing: [C.A.S.E.]

1) High pressure bottles must be correctly labeled, properly stored, and properly secured.
2) Traceability/Certification for Aviator's Breathing Oxygen shall be maintained for each oxygen bottle. [MIL-PFR-27210, Rev J]

H. Vendor must maintain uninterrupted traceability and batch control for all aeronautical parts and material from receiving inspection (or from manufacturing in the case of a repair station within an OEM), through the stores or warehousing process. It is highly desired that a vendor will be able to provide positive traceability of all parts and materials at any point or place in their facility. [C.A.S.E.]

I. Vendor must have systems in place that ensure only approved, traceable (at time of issue) parts and materials are issued to the work process area(s). Additionally, the internal audit program periodically verifies the integrity of the work process area and tests the traceability of material being introduced therein. [C.A.S.E.]

13. Work Processing

A. Within the United States, each certificate holder (or person performing maintenance or preventive maintenance functions for it) shall relieve each person performing such work from duty for a minimum period of twenty-four (24) consecutive hours during any seven (7) consecutive days, or the equivalent thereof within any one (1) calendar month. [121.377, C.A.S.E.]

B. No vendor may perform any maintenance action unless the person performing that maintenance action: [43.7, 65.81, 65.103, 121.375, 135.433, 145.151, 145.153, 145.155, 145.157, 145.163, 145.211, C.A.S.E.]

1) Is properly trained, authorized, and (if required) certificated.
2) Has available the appropriate tools and test equipment in serviceable condition and properly calibrated, the correct parts, and current technical data.
3) Should any of the above requirements be lacking, the vendor shall refuse the work, or take appropriate corrective action to correct the deficiency.

C. The vendor shall ensure maintenance personnel are able to: [C.A.S.E.]

1) Interpret maintenance requirements into maintenance tasks and have a full understanding that they have no authority to deviate from the customer specified maintenance data.
2) Carry out maintenance tasks to any maintenance standard specified by the customer and notify supervisors/lead mechanic of mistakes requiring rectification to meet required maintenance standards. And,

3) Carry out specialized maintenance tasks, as applicable, to the standard specified in the customer maintenance data and will both inform and await instructions from their supervisor/lead mechanic in any case where it is impossible to complete the specialized maintenance in accordance with the maintenance data.

D. The vendor shall have a system for identifying a specific air carrier's parts, materials, or units throughout the entire maintenance action process, including adequate and proper storage before and after the repair, overhaul, or modification. This system shall include complete identification of the part by nomenclature, part number, serial number, model number, as appropriate, and legible records of all work accomplished. [145.101, 145.103, C.A.S.E.]

E. Where there is work turned over from one shift to another or other similar work interruption, there shall be a system of documentation that assures continuity of the work and that the complete bill-of-work is accomplished. [121.369, C.A.S.E.]

F. The vendor shall have: [43.13, 121.369, 135.427, 145.109, 145.201, 145.211, 145.219, C.A.S.E.]

1) Procedures to obtain air carriers' specifications.
2) Procedures to incorporate the air carriers' specifications into the work processes and to ensure any sub-contractor used also incorporates those specifications with adequate documentation.
3) Controls to ensure the air carriers' specifications are incorporated.
4) Adequate checks, inspections, and tests to ensure the work was performed to air carriers' specifications.
5) Procedures to obtain air carriers' approval before deviating from the air carriers' specifications.
6) Procedures to ensure the work documents returned from a sub-contractor (at any tier) are adequate to support a major/minor determination.
7) Procedures to evaluate, perform, and document Airworthiness Directives.

G. The vendor shall have controls in place to prevent foreign object damage to (or contamination of) all aviation products in any area where articles are stored or worked (e.g., fuel controls, hydraulic units, instruments, electronic components, structural components, etc.), including such from smoking, eating, or drinking. [145.101, 145.103, C.A.S.E.]

H. Fluid Dispensers, blast media cabinets, cleaning tanks, and similar equipment used in the shop areas shall be properly marked as to contents and stored (as applicable) to prevent spillage. [C.A.S.E.]

I. The vendor shall maintain adequate records in English of all work performed that demonstrates compliance with the requirements of 14 CFR including: [Parts 43.2, 43.9, 43.11, 43 Appendix B, 121.380, and 135.439, 145.213, 145.219, C.A.S.E.]

NOTE: The "person" in the following items, may be one (1) or more individuals.

1) The description of the work performed or reference to data, including revision level, acceptable to the administrator, and to include applicable test data in hard copy or electronic format.

2) The date of completion of the work performed.
3) The name of the person performing the work.

NOTE: Persons not trained and authorized may perform maintenance actions if supervised by persons that are trained and authorized, however, that supervisor must be identified in the work records.

4) The name of the person inspecting the work.
5) A return-to-service document. Information on the document must include:
   a) Adequate information that positively identifies the part.
   b) A description of the work performed.
   c) A reference to data, including revision level.
   d) The return-to-service date.
   e) An authorized individual's signature. And,
   f) The repair station's certificate number.
6) Recording of major repairs and major alterations in accordance with Appendix B to Part 43.

J. The vendor shall ensure that, if corrections to records are made, the original entry (entries) are not erased, deleted, nor obscured (i.e., remain readable). [C.A.S.E.]

K. The vendor shall retain each record of a maintenance action for a minimum of two (2) years from the date the article was approved for return-to-service. [43.11, 121.380, 135.439, C.A.S.E.]

14. Shipping

A. Components shall be returned to the air carrier in an appropriate shipping container, or one required by the air carrier. [ATA 300, 121.367, 135.425, C.A.S.E.]

B. Part number, or model number, serial number (including dash numbers or letters) on the documentation for the part shall match the identification information on the part data plate. [ATA 300, 43.9, 121.367, 135.425, C.A.S.E.]

15. Scrapped Parts Program

A. The vendor shall have a documented procedure in place to either return scrapped parts to their owner or to mutilate them by drilling, grinding, cutting, or other appropriate means. Parts shall be mutilated to the extent that will preclude the possibility of them being restored and returned to service. Aircraft Network Security Program (ANSP) components shall be disposed of in such manner that the software and data are properly wiped or made physically unrecoverable. [43.10, DO-355A 2.2.4, 3.2.5 and 6.2.6, C.A.S.E.]

B. The vendor shall maintain a record of all life-limited parts scrapped out. The record shall contain a description of the part, its part number, serial number (if applicable), and the date the part was scrapped. The vendor shall retain this record for a minimum of two (2) years. [43.10, 121.380(2) (iii), 135.439, C.A.S.E.]

C. When a vendor outsources the mutilation of scrapped parts, they shall have a procedure to ensure documentation confirming the mutilation is obtained and retained for two (2) years. [C.A.S.E.]

16. Hazmat Program

A. Each repair station that meets the definition of Hazmat employer (below) under 49 CFR Part 171.8 must have a hazardous materials training program that meets the training requirements of 49 CFR Part 172 subpart H. [121.1005, 135.505,145.206]

NOTE: A Hazmat employer means a person who 1) employs or uses at least one (1) hazmat employee on a full-time, part-time, or temporary basis; 2) transports hazardous material in commerce; 3) causes hazardous materials to be transported in commerce; or 4) designs, manufactures, fabricates, inspects, marks, maintains, reconditions, repairs or tests a package, container, or packaging components that is(are) represented, marked, certified, or sold by that person as qualified for use in the transporting hazardous materials in commerce. [49 CFR Part 171.8, C.A.S.E.]

17. ESD Program

A. The vendor, which works on or handles ESD components, shall have a documented ESD Program in place to: [C.A.S.E.]

1) Ensure that shop grids are grounded, if installed.
2) Ensure all ESDs are only handled using grounding wrist or heel straps and conductive desk mats.
3) Ensure devices are contained in ESD conductive packaging sealed with conductive tape.
4) Prevent from storing ESDs on shelves covered with carpet, foam, vinyl, or any other material that can store or produce an electrical charge.
5) Appropriate warning and caution signs and decals are placed in areas where ESDs are handled.
6) Wrist straps, heel straps and grounding mats must either be constantly monitored or tested for conductivity at regular intervals or prior to use. Test results shall be recorded.
7) Train maintenance personnel in ESD handling.

18. Cyber Security/Information Security Program

A. Vendors that utilize Automated Test Equipment (ATE) or Portable Maintenance Access Terminals (PMATs) to make airworthiness determinations or that download software onto aircraft components shall have a documented Cyber Security/ Information Security Program. Such program shall, at minimum, cover the topics of Tooling, Software, Removable Media, Disposal, and Training as follows: [DO-355A Chapters 2 and 5] [NIST 800-53 CA-2, CA-5, RA-7]

1) Tooling: [Automated Test Equipment (ATE) and Portable Maintenance Access Terminals (PMATs)]
   a) Tooling shall be stored in a location secured from unauthorized access. [DO-355A 5.2.3, 5.2.4] [NIST 800-53 PE-3]
   b) There shall be a means (e.g., roster) to identify authorized individuals allowed unsupervised access to tooling. [DO-355A 5.2.3] [NIST 800-53 PE-3, IA-4, AT-3, AT-4]

c) The repair station shall maintain a list of tooling that is network-connected, and a documented information security review shall be performed for each item. [DO-355A Chapter 5] [NIST 800-53 CM-8, CA-2, CA-5, RA-7, SI-2]
d) Newly acquired tooling shall be evaluated to determine whether it utilizes network connectivity and warrants inclusion in the Information Security Policy and an information security review. [DO-355A 5.2.1, 5.2.2] [NIST 800-53 CM-8, CA-2, CA-5, RA-7, SI-2]

2) Software:
a) Software that is installed onto tooling and/or aircraft components will only be downloaded from approved sources (e.g., the OEM or applicable air carrier) and through an authenticated, secure/encrypted connection. [DO-355A 2.1, 6.2.1, 6.2.2] [NIST 800-53 AC-3, MP-5, SR-5, SR-9, SC-8]
b) Digital storage devices that host Automated Test Equipment (ATE) and aircraft component software shall be protected electronically from hackers, malware, and unauthorized personnel. [DO-355A 2.2.3, 6.2.2, 6.2.4, 6.2.6, 6.2.7, 6.2.8] [NIST 800-53 AC-3, MP-2, MP-4]
c) Physical storage of ATE and component software shall be secured from unauthorized access. [DO-355A 2.2.4] [NIST 800-53 PE-3, MP-2]
d) Technicians shall be granted only the minimal access needed to perform their assigned duties on digital systems where software is hosted. [DO-355A 6.2.2] [NIST 800-53 AC-2, AC-6, CM-7, AU-6]
e) Vendor shall keep a record to ensure traceability of what specific software was installed to a component/ATE, when it was installed, and who installed it. Said record shall be retained for a minimum of 36 months. [FAA AC 43-216A, 7.2.5, 7.6.1] [NIST 800-53 CM-3, CM-8, PM-5] [C.A.S.E.]

3) Removeable Media: [floppy discs, CDs/DVDs, USB thumb drives, PCMCIA cards, compact flash cards, portable hard drives, or other external storage devices]
a) All information security-affected removable media shall be kept in a secure location. [DO-355A 2.2.4] [NIST 800-53 MP-2, MP-4, AC-20]
b) Removable media shall be identified, labeled, and dedicated solely for aircraft components and tooling. [DO-355A 2.2.4] [NIST 800-53 MP-3]
c) Removable media shall be checked to ensure it is free of malware before it is used. [DO-355A 2.2.4] [NIST 800-53 SI-3, SI-5, RA-5]
d) Vendor's Information Security Program shall prohibit connecting any other nondedicated removable media to aircraft components and/or tooling. [DO-335A]

4) Disposal:
a) Tooling, Software, and Removable Media shall be securely and properly disposed of in such manner that the Software is properly wiped or made physically unrecoverable. [DO-355A 2.2.4, 6.2.6] [NIST 800-53 MP-6]

5) Training:
a) The vendor shall provide initial and recurrent training to all employees affected by its Cyber Security/Information Security Program, not to exceed three (3) years. [C.A.S.E.]

NOTE: The DO-355A is the industry standard as defined by RTCA that provides cyber security guidance for aircraft components, tools, and software. RTCA is a United States non-profit organization that develops technical guidance for government regulatory authorities and industry, including Boeing and Airbus. ED-204A is the European equivalent to DO-355A.