

Guidelines for Suppliers Working At EMBRAER's Facilities

REVISION: D	REVISION DATE: November, 2020
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CHANGES IN THIS REVISION

A sidebar on the left side of the text indicates changes.

OBJECTIVE

This document establishes guidelines and responsibilities related to activities to be performed by Suppliers at EMBRAER's facilities, on items manufactured, and/ or supplied, which need outstanding works, modification, repair and rework in order to comply with EMBRAER requirements.

DEFINITIONS

Employee dossier: document that evidences qualification and/ or certification of each employee;

Supplier list of qualified employees: Controlled list of the supplier's employees qualified to perform the activities at EMBRAER's facilities. It contains the following information: supplier name, name of qualified employees, employee's ID registration, employee's stamp number (if applicable), employee's signature (if applicable), and activities that each employee is qualified to execute at EMBRAER's facilities.

Job instruction: document issued by the Supplier with detailed instructions of operations to perform an activity, including sequence of operations, register of characteristics control and evidence of conformity;

Qualification: theoretical and/or on the job training according to pre-established procedures to empower an employee to perform a specific activity in order to ensure that the requirements of this activity comply with the specifications.

FOD: Foreign Object Damage

FO: Foreign Object

FOE Program: The Program to Remove Foreign Objects established to identify and to remove potential dangers, to remove causes of damages resulted of foreign objects in the aircraft and their components, besides defining the responsibilities for its implementation.

ESD Program: (Electro Static Discharge) ESD Control Program, with the objective to avoid damages to the equipment and/or components sensitive to electrostatic discharge.

Notes:

- ✓ An employee is considered qualified when there is evidence of employee compliance with the qualification document (for example, a certificate, a dossier, etc.);
- ✓ The qualification procedures of an employee shall contemplate, when appropriate, the recognition of knowledge and previous experience, replacing formal trainings;
- ✓ If applicable, the procedures for qualification shall also include medical fitness requirements.

Notes:

- ✓ Supplier shall ensure that employee who performs the operations and signs logbook/ log card is qualified in accordance with Aeronautical Authority requirements.

SUPPLIER RESPONSIBILITIES

Before starting any activity at EMBRAER's facilities, Supplier shall comply with the requirements as follows:

- ✓ Define requirements of qualification for each activity to be performed at EMBRAER's facilities (required trainings, knowledge, competences, skills, abilities);
- ✓ Prepare employees' dossier according to the requirements defined above;
- ✓ Keep the requirements updated (qualifications, skills and abilities) in the qualification dossier of authorized employee to perform activities at EMBRAER's and maintain evidences of qualifications;
- ✓ Issue and provide updated revisions of **Supplier list of qualified employees**;
- ✓ Provide the employee's dossier for EMBRAER's Supplier Quality Engineer, when requested;

- ✓ Prepare a job instruction for the activity to be performed with the information and contents as established on item "b".

When performing the activity at EMBRAER's facilities:

- ✓ Perform, inspect and conform to the activity established in the job instruction;
- ✓ Request to EMBRAER's Quality representative in the assembly line to issue a document to report nonconformity or any FOE occurrence occurred during the execution of the activity, if applicable;
- ✓ Attach a copy of the job instruction to the original EMBRAER document and provide for quality inspection to perform the final conformity;
- ✓ Provide the necessary resources for the implementation of activities, such as equipment, tools, specifications, manufacturing processes, procedures, etc.;
- ✓ Provide all items, products, and materials to be used to perform operations;
- ✓ Coordinate the activities and control applicable rules, in their respective areas of work;
- ✓ Ensure that the original documents of all activities performed at EMBRAER's facilities be archived with Supplier productive documents;
- ✓ Provide training to staff indicated to perform activities under his responsibility as a means to ensure the requirements;
- ✓ Attach the job instruction to EMBRAER non-conformity document CD when requested by EMBRAER's Material Review Board;
- ✓ Comply with EMBRAER Quality Requirements for Suppliers as tooling calibration/ identification, FOE, ESD (according to instructions "c", "d" and "e") when working at EMBRAER's facilities;
- ✓ Formally identify employees to perform the operation conformity in order to assure that the performed job is in accordance with the job Instruction.

Notes:

- ✓ Only employees in the **Supplier list of qualified employees** will be authorized to perform the operations at EMBRAER facilities;
- ✓ EMBRAER's acceptance of employee list does not exclude Supplier's responsibility for quality of the job;
- ✓ If any accepted employee does not comply with expected results for qualification and/ or quality of performed job, EMBRAER may require his replacement or exclusion.

INSTRUCTIONS

a) Supplier list of qualified employees

Each Supplier shall provide the list of qualified employees and processes for which they are qualified to perform the activities at EMBRAER's facilities. The on-site manager or other responsible for the supplier's activities at EMBRAER's facilities shall control this list.

This list shall be submitted to EMBRAER's quality engineering, which is responsible for reviewing this information and, in case of approval, making it available within EMBRAER's system in order to assure the traceability of the operations and the qualification of the employees who performed them.

Note: For suppliers for structural parts there is the template (see annex 1) for the Supplier list of qualified employees and for the others technologies can be used the same template or others formats (letters, ability matrix, etc...).

b) Job Instruction

When Supplier performs modifications, complements pending operations, reworks and/ or repairs at EMBRAER's facilities, Supplier shall formalize these operations on Supplier documents (job instructions) supported by an EMBRAER's conformity document.

The job instructions should be issued preferably prior to the issuance of EMBRAER's job order. In case of special processes or operations for which the supplier does not have a qualified employee so EMBRAER's involvement becomes necessary, this shall be described in the supplier's job instruction in a specific operation, which shall have the description of the activity and at the end the following statement: "The operation will be performed by EMBRAER, because the supplier does not have a qualified person".

The job instruction shall have at least the information:

- ✓ Job instruction identification number;
- ✓ Item part number;
- ✓ Drawing reference and revision;
- ✓ Identification of reference document (SB, AD, FTSI, MM, Revision Number, Date, Chapter), when applicable;
- ✓ Item description;
- ✓ Company identification (name, logo);
- ✓ Reference documentation or modification/ rework reason (i.e., engineering order (EO), nonconformity document, Assembly Inspection Summary Outstanding Work (AIS/ OW, etc.) ;
- ✓ Purpose / objective of the activity;
- ✓ Serial number of the A/C, or the End item or the supplier batch number;
- ✓ Job instruction issuance responsible;
- ✓ Job instruction issuance date;
- ✓ Operation description (establishing WHAT and HOW to perform the operations);
- ✓ Intermediate inspections when there are operations for replacement of parts, in order to check the integrity of the product prior to installation of the new parts. Such integrity shall be assured by a member of the supplier's quality team or by someone qualified and delegated by the supplier's quality team;
- ✓ Cleaning and Foreign objects verification, when applicable;
- ✓ Process characteristics registration, when applicable (ex: diameter of hole inspected, sealant and paint registration, or other measurement required);
- ✓ Conformance evidences by qualified and authorized operator, when a report of the inspection results is required, insert in the job instruction a field for description of the inspection results so EMBRAER's quality can check the final results;
- ✓ Register the final conformance with evidence of WHO and WHEN (Name or ID registration, Signature or stamp according the Supplier list of qualified employees, and date of the operation conclusion).

The job verification and conformity are Supplier's responsibility. Therefore, a qualified quality representative shall be designated to perform these operations.

Any waiver to the job instruction will be addressed by non-conformity report and shall be formally evaluated by Supplier and officially included in a job instruction revision.

Supplier qualified employee shall:

- ✓ Write the name or ID, Sign or stamp (when applicable) , and inform the date of the conclusion of the operation the specific operation into the EMBRAER's job order related to the operation under Supplier's responsibility;
- ✓ Request to the responsible for next operation to perform "work-flow" in the EMBRAER's job order, or if the supplier has the access to execute the "work-flow" send the document to the work center responsible for the next operation and after execute the "work-flow" in the system;
Assure that the job instruction records are in accordance with EMBRAER Quality Requirements for

Suppliers;

- ✓ Request to an EMBRAER's Quality Inspector of the assembly line to issue a non-conformity document for a nonconformity occurred during the operations;
- ✓ Request to a EMBRAER's Quality representative in the assembly line to register any FOE occurrence (missing or found) detected by the Supplier;
- ✓ Manage the operations to assure compliance with EMBRAER internal rules in the area the job is being performed;
- ✓ In case of EMBRAER's documents which are not clear or lack technical information necessary for the analysis of the non-conformity, the supplier shall return this document (OM, CD, etc.) to the EMBRAER's employee responsible for the workflow and ask for correction or provision of additional information;
- ✓ When a rework or repair requires special tools and/or can impact EMBRAER's production or available area, the supplier's on-site representative shall request authorization to the production supervisor or contract administrator and to the EMBRAER's quality engineer responsible for the supplier, in order to arrange a meeting with the production responsible to agree on a way to continue the activities without impact to the production schedule.

Notes:

For products that have logbook or log card, the job instruction shall be issued making reference to the documents below. In this case, there is no need to transcript the detailed activity to the job instruction:

- Service Bulletin (SB);
- Airworthiness Directive (AD);
- Flight Test Service Instructions (FTSI); or
- Maintenance Manual (MM).

When the above documents require record of the operations results, Supplier shall provide a job Instruction to register the results. This job Instruction shall be attached to EMBRAER conformity document.

In addition to the job instruction, Supplier shall register the evidence of operation execution in logbook/ log card when the record of the operations results does not require registering process characteristics. These documents shall be available to an EMBRAER's Process Quality Inspector without attaching a copy to EMBRAER conformity document.

c) Tooling Calibration

All tools to be used at EMBRAER's facilities shall:

- ✓ Have calibration identification on it (i.e.: calibration sticker, tag);
- ✓ Be within calibration validation;

Supplier shall keep a list of equipment that used at EMBRAER's facility with all calibration and expiration dates and communicate any irregular equipment event to EMBRAER's Supervisor of the area where the equipment is being used.

d) Foreign Object Elimination (FOE)

Supplier working at EMBRAER's facilities shall establish and maintain an effective FOD prevention program.

d.1) Basic Elements:

- ✓ FOD prevention training;
- ✓ Assembly sequencing and maintenance/ manufacturing techniques that include proper care and use of assembly/ maintenance equipment and parts protective devices;
- ✓ Handling of material;
- ✓ Housekeeping;
- ✓ Control of tools and personal items;
- ✓ Control of hardware/consumables;
- ✓ Awareness/ employee feedback.

d.2) Preventive practices:

- ✓ Follow procedures;
 - ✓ Practice good housekeeping, "Clean-As-You-Go";
 - ✓ Account for all tools, hardware and equipment at specific intervals;
 - ✓ Use x-ray, borescope, and other state-of-the-art equipment to inspect inaccessible areas;
 - ✓ Provide worker awareness to FOD causes;
 - ✓ Establish designated storage areas for ladders, hoses, tool boxes and other work aids;
 - ✓ Personnel shall have completed FOE/ FOD training before accessing areas.
- ✓ Notification to any Quality representative in the assembly line of any occurrence (or suspect) of missing/found tools/items, inside or outside the product.
 - ✓ Use of personal ID to evidence individual control of who is the employee using a specific tool. When the tool will be used, to remove the tool from the kit, the employee must place the personal ID in the tooling location.
 - ✓ Monitoring of tool kits at the beginning and end of the day, shift, or activity - Check list filled in as evidence
 - ✓ Monthly evidence of tool kits inventory
 - ✓ Evidence of FOE document number in the check list and inventory sheet, document issued by any Quality representative in the assembly line of any occurrence (or suspect) of missing/found tools in the supplier kits.
 - ✓ In case that Supplier uses Embraer's cloths, supplier shall verify with any Quality representative in the assembly line if a check list of control is applicable in the related area. Supplier shall comply with Embraer procedures for cloths disposal.

d.3) Supplier shall provide FOE/ FOD training to all employees working at EMBRAER's facilities.

The primary objective of a FOE/ FOD training program is to increase employee awareness to the causes and effects of FOD, promote active involvement through specific techniques, and stress good work habits through work disciplines.

Training subjects include:

- ✓ Proper storage, shipping and handling of material, components, and equipment;
- ✓ Techniques to control debris (FO);
- ✓ Housekeeping;

- ✓ Cleaning and inspection of components and assemblies;
- ✓ Accountability/ control of tools and hardware;
- ✓ Control of personal items, equipment and consumables;
- ✓ Care and protection of end-items;
- ✓ Quality workmanship ("Clean-As-You-Go", Inspection);
- ✓ Notification of any potential FO to any Quality representative in the assembly line.
- ✓ Notification of any missing or found tool or material to any Quality representative in the Assembly line.
- ✓ Notification to any Quality representative in the assembly line of any occurrence (or suspect) of missing/found tools/items, inside or outside the product.
- ✓ Use of personal ID to evidence individual control of who is the employee using a specific tool. When the tool will be used, to remove the tool from the kit, the employee must place the personal ID in the tooling location.
- ✓ Monitoring of tool kits at the beginning and end of the day, shift, or activity - Check list filled in as evidence. The check list shall have at least the information: Month/year, Kit number, date, shift employee's name, signature and identification (Embraer ID) - responsible of verification, status of kit, non-conformity described (FOE occurrence if identified) and the related FOE document issued by Embraer Quality Representative.
- ✓ Monthly evidence of tool kits inventory. The inventory sheet shall have at least the information: Month/year, Kit number, date, employee's name, signature and identification (Embraer ID) - responsible of verification, status of kit (quantity of non-conform tooling), non-conformity and action described (FOE occurrence if identified) and the related FOE document issued by Embraer Quality representative
- ✓ Evidence of FOE document number in the check list and inventory sheet, document issued by any Quality representative in the assembly line of any occurrence (or suspect) of missing/found tools in the supplier kits.
- ✓ In case that Supplier uses Embraer's cloths, supplier shall verify with any Quality representative in the assembly line if a check list of control is applicable in the related area. Supplier shall comply with Embraer procedures for cloths disposal.

d.4) Supplier working at EMBRAER's facilities shall identify and control all the Kits and tools to be used with the following identification:

CCC-KK, where:

CCC: company identification letters (acronym). It shall be negotiated with EMBRAER in order to avoid same acronyms for different companies; KK: kit sequential number

All Kits shall have the identification number that must be the same registered (KK) in the related tools.

All kits shall have shadow boards in order to make easier the verification of missing tools. In addition, a list indicating quantity and identification of tools shall be available at the kit;

- ✓ Tools without identification shall not be accepted and shall be considered as a foreign object (FO). The usage of an unidentified tool is totally forbidden;
- ✓ Supplier shall use personal ID to evidence individual control of who is the employee using a specific tool. When the tool will be used, to remove the tool from the kit, the employee must place the personal ID in the tooling location.

- ✓ All kits shall be monitored at the beginning and end of the day, shift, or activity. Kits being used during flight preparation and engine tests shall be checked before and after each activity. This monitoring shall be done and registered via check list that shall have at least the information: Month/year; Kit number, date, shift, employee's name, signature and identification (Embraer ID) - responsible of verification, status of kit, non-conformity described (FOE occurrence if identified) and the related FOE document issued by Embraer Quality representative. Suggested template attached (see attachment 3).
- ✓ Supplier shall perform an inventory in each kit monthly (last work week of the month). The inventory sheet shall have at least the information: Month/Year, Kit number, date, employee's name, signature and identification (Embraer ID) - responsible of verification, status of kit (quantity of non-conform tooling), non-conformity and action described (FOE occurrence if identified) and the related FOE document issued by Embraer Quality representative. Suggested template attached (see attachment 4).
- ✓ The evidences of check list and inventory shall be available and retained for Embraer evaluation (when requested). The deadlines for retaining the records are: check list - 2 months, inventory - 12 months.

d.5) Control of personal items, material, and consumables

The primary objective of the control of personal items, material, and consumables is to avoid contact with the product.

- ✓ Personal items of employees shall be kept out of the production area in order to prevent them as foreign object;
- ✓ Material and equipment shall be kept in their original packaging up to the installation;
- ✓ Structural parts, instruments and equipment shall be protected against chemical, physical or environmental hazards using covers, cap lugs or adequate containers
- ✓ Special attention shall be given to hardware (nuts, bolts, screws, rivets, etc.) to be used in any task. The usage of covered spring-loaded containers is strongly recommended.
- ✓ In case that Supplier uses Embraer's cloths, supplier shall verify with any Quality representative in the assembly line if a check list of control is applicable in the related area. Supplier shall comply with Embraer procedures for cloths disposal.

d.6) Cleaning & organization

- ✓ Maintenance, manufacturing and operational areas shall remain clean. Employees shall be informed that housekeeping is a part of their job and they will be graded on their performance;
- ✓ Supplier's employees shall incorporate "Clean-As-You-Go" practice to prevent foreign objects (debris) in the product;
- ✓ Smoking is not allowed inside EMBRAER's installations;
- ✓ Cigarette stubs, toothpicks, skin and seeds of fruits, piece of paper or any other debris shall be disposed in specific containers;
- ✓ Ground Support Equipment (GSE) shall be kept clean and continuously checked against potential FO's;
- ✓ Manufacturing debris shall be removed from the product by the end of the activity. Special "bags" called "Collector FOE" are available at the manufacturing area and shall be used to collect debris. Any debris found into the product after the end of the activity shall be considered as foreign object;
- ✓ The usage of compressed air for cleaning is strictly forbidden.

d.7) Assembly operations

Supplier working at EMBRAER's facilities shall plan and sequence maintenance/ manufacturing tasks to preclude foreign object damage and entrapment of debris or soldering contamination. As applicable, the following shall be considered:

- ✓ Adequately protect hardware and equipment from splatter accumulation during brazing, welding and similar operations;
- ✓ Inspect components and equipment for damage prior to installation and repair as necessary. Always ensure part integrity and FO-free environment before starting working;
- ✓ Verify required protective devices (dust covers, temporary seals, cushioning, etc.) are present and properly installed. Items with protective devices missing are to be inspected for FOE, cleaned if necessary and protective devices installed;
After fluid system lines and tubing are cut and debarred, assure through cleaning and cap ends of lines;
- ✓ Inspect for and remove extraneous material as part of the assembly step, conduct a foreign object inspection and remove debris;
- ✓ Inspect production tooling (jigs, fixtures, handling equipment, etc.) to assure it is clean, undamaged and free of foreign material prior to installation and build-up of components or assemblies;
- ✓ Protect products by using FOD barriers, foam pads, covers, etc. For instance, cover composites on wings and place pads between a tool and the aircraft/ assembly. Always protect sensitive areas and potential FOD entrapments (engine, open fuel line, harnesses, connectors, etc.).

d.8) Report

Supplier's employees working at EMBRAER's facilities shall notify EMBRAER's Quality Assurance personnel and Quality Representative in the assembly line:

- ✓ Problems related to cleaning and organization;
- ✓ Any occurrence (or suspect) of missing/found tools/items, inside or outside the product.

e) Electrostatic discharge (ESD)

- ✓ Supplier shall provide ESD prevention training to all employees working at EMBRAER's facilities, if applicable;
- ✓ The primary objectives of an ESD prevention-training program are to increase employee awareness to the causes and effects of ESD, promote active involvement through specific techniques, and stress good work habits through work disciplines.

f) Non conformity

- ✓ Non-conformities occurred during the operations shall be immediately informed to an EMBRAER's Process Quality Inspector and an EMBRAER non-conformity document shall be issued, if applicable;
- ✓ Supplier working at EMBRAER's facilities shall report any occurrence of ESD affecting the product, any potential foreign object, and any missing tool to EMBRAER's Quality Assurance Department;
- ✓ In case it is suspected that a non-conformity reported by EMBRAER affects the parts in stock or in transit the supplier's representative shall request (to the EMBRAER's quality engineer responsible for the supplier) a stock reinsertion and a special inspection plan (e.g. PI111) to ensure all suspect parts will be inspected in order to avoid impacts to the assembly line;
- ✓ Supplier's representatives working at EMBRAER's facilities shall provide support (to the EMBRAER's quality engineer responsible for the supplier) on the management of actions related to quality escapes and on execution of activities necessary to find, to report and eliminate the problem.

g) Preliminary analysis of non-conformances.

Whenever a non-conformance is found in supplier's products at EMBRAER, the EMBRAER's quality inspector shall request the supplier's analysis of the problem before issuing a non-conformity document, and the Supplier shall attend the request in time necessary to avoid impact in the EMBRAER production schedule.

Notes:

The requests can be formalized in the ANDON at EMBRAER system and/or by phone. (In case that EMBRAER uses the ANDON System, there is an instruction about this system in the annex 2).

In case the supplier is simultaneously contacted by two different areas with urgent problems, the supplier shall request EMBRAER's planning and quality personnel to contact both areas and determine which problem shall be addressed first.

h) EMBRAER's audits

EMBRAER audit team may audit Supplier working at EMBRAER's facilities, after previous communication, in order to evidence compliance with the requirements of this document. Non-conformities shall be analyzed, and a corrective action plan shall be issued. Audit team will follow up the implementation of this plan in order to check its effectiveness.

I ATTACHMENTS

1. Template of the Supplier list of qualified employees



Supplier list of
qualified employees

2. Workflow of the Supplier activities at EMBRAER installations



Workflow

3. Template - Tool Kit - Check List



Template - Check
list - English



Template - Check
list - Portuguese

4. Template - Tool Kit - Inventory



Template -
Inventory - English



Template -
Inventory - Portuguese