

# Guidelines Assembly Inspection Summary

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## CHANGES IN THIS REVISION

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

| Informative Report template and Supplier Informative Report Workflow were included

## OBJECTIVE

This document establishes guidelines for Suppliers to consolidate the end assy “as built configuration” data of segments (end assembly, parts) and provide the evidence of end assy “as built” configuration at delivery time.

## DEFINITIONS

**Aircraft effectivity:** defines the applicability of an end assy part number on an aircraft. It is used to indicate the applications related to the parts of the end assy.

**Assembly Inspection Summary (AIS):** is a set of data associated with each end assy serial number that shall be available at end assy delivery to EMBRAER. It shall be the document used to record and evidence that end assy “as built” configuration reflects the end assy “as designed” configuration. The exception occurred during the manufacturing process shall be previously assigned as outstanding works and submitted to EMBRAER’s approval.

**Cartography** - Graphical representation of the material indicating the positioning of nonconformities  
**Design configuration document (DCD):** is a document to record the “as designed” configuration for a specific aircraft or end assembly (end assy).

**End assy:** means those sections (assembly, primary part) defined by aircraft production breakdown document (fuselage, wing, tail, flight control surface, etc.) with a defined serial number, exchanged between Supplier and EMBRAER.

**Loose items:** are all end assy parts planned in the product structure, manufactured, but not assembled into end assy. These items shall be shipped as “loose items” every time an end assy is delivered. EMBRAER’s drawing installation indicates the loose items in order to be assembled at EMBRAER’s facilities.

**Major nonconformity:** is any nonconformity other than minor nonconformity.

**Manufactured items:** are the items to be certified under the aircraft requirements (certification agencies requirements such as ANAC, FAA, EASA, etc.).

**Material kit list (MKL):** is a list of items manufactured by Supplier, but not incorporated in the end assy, according to configuration and manufacturing plan. These parts shall be delivered together with the end assy, listed in the MKL and characterized as an outstanding work to be proposed to EMBRAER’s approval.

**Minor nonconformity:** is nonconformity that has no appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product.

**Missing items:** are all parts associated with an end assy or manufactured kit not delivered together with the end assy.

**Part list:** is part of the drawing, a list of all the components of the related part, sub assy, and end assy with reference of position, location on the drawing, necessary quantity. All the information regarding NL and NI indicated on the drawing shall be listed on the part list. References of the next assembly of the drawing part number are also given on the part list.

**Part type code:** is used to indicate the type of the item, separating it in two defined categories: manufactured items and purchased items.

**Position:** is a cross reference between the parts represented on the illustrative drawing and the parts list. The position number allows identification of all parts illustrated in the 2D drawing.

**Outstanding work/ inspections (OW):** are planned manufacturing or inspections activities not or partially performed by Supplier that are previously submitted to EMBRAER's approval in order to be incorporated by EMBRAER or Supplier after end assy delivery.

**Section, cuts, details, and auxiliary views:** are complementary views that are used by the designers as an auxiliary way for helping the part or assembly interpretation.

**Manufactured kit:** identifies a kit defined in the program product structure, made of manufactured item according to drafting standard manual (DSM) rules.

**Supplier Informative Report (SIR) -** Is a complement document related the cartography that have details about the "major non-conformities" with the information about the discrepancy, location, disposition and the rework or repair results that occurred during the manufacturing.

**Note:** The Supplier Informative Report have an EMBRAER standard model that shall be followed by all suppliers.

**Zone:** the purpose is to facilitate the location of items of the illustrative drawings, as well as views, sections, etc. It is based on a reference system, where the margins (vertical and horizontal) of the illustrative drawing are divided into equal parts.

## INSTRUCTIONS

### a) General requirements

Assembly Inspection Summary (AIS) data shall be consolidated at EMBRAER's ERP system application and available to EMBRAER before of the end assy delivery.

In case of programs not supported by EMBRAER's ERP system, Supplier shall consolidate the AIS in a paper form and provide to EMBRAER 1 (one) hard copy within the product package.

The consistency between AIS data and EMBRAER's configuration control system regarding to engineering order (OE), design configuration document (DCD), non-conformity report, weight, serialized components assembled on the end assy and other data considered relevant by Supplier or by EMBRAER shall be considered at the time of AIS data transferring from Supplier to EMBRAER.

End assy manufactured according to EMBRAER DSM program rules certified under the aircraft requirements

(Airworthiness Authorities' requirements such as RBAC, FAR, EASA, etc.) and delivered to EMBRAER as end assy is a characteristic of applicability of AIS.

**Notes:**

The following bullets shall not be supported by AIS:

- Hardware kit built from hardware parts like bolt, washer, screw, nut, rivet, pin, or collar;
- Components kit built from equipment like actuators, pumps, valves and avionics equipment;
- Manufactured kit made of structural parts according to EMBRAER DSM program rules, certified under the aircraft requirements (Airworthiness Authorities requirements such as RBAC, FAR, EASA, etc.) and delivered to EMBRAER as a kit.

**b) AIS Contents**

The AIS content is defined by basic end assy identification, outstanding works/ inspections, report of nonconformity, list serialized items, loose items, material kit list (MKL), end assy weight, non-conformities that affect visual aspect.

**b.1) Electronic AIS on ERP system**

The AIS system is available at EMBRAER's ERP system at URL address:

<https://web.embraer.com.br>

**Note:**

The AIS application available at web portal is valid only for Suppliers that already use this application not for new suppliers and new programs. This application is available at EMBRAER web system, under program process/ integrated product development.

**b.2) Supplier end assy**

The first section of AIS on web portal system introduces the application and allows the users to record the end assy part number, defined in the contract and in the product structure program as Supplier's manufacturing responsibility. The system does not allow the creation of AIS for end assy not previously registered in this section.

**b.3) Actual weight**

This section records the actual weight found for the (complete or incomplete) assembly to be transferred. The real weight information shall be added in the AIS according requirement defined by Weight Engineering area and Supplier Quality Engineering for each program.

#### **b.4) Outstanding works/ inspections - OW**

The delivery of incomplete product to EMBRAER is unacceptable under the program directives. Otherwise, if the application of this conduct is mandatory to avoid worst impact to the program, this position can be adopted, but strictly under EMBRAER formal authorization.

The outstanding works shall be used only to record the fabrication and/ or inspections operations not or partially performed in the end assy to be transferred to EMBRAER. The OWs shall be previously agreed and approved by EMBRAER to be embodied by Supplier or EMBRAER after end assy delivery, according to negotiation process made directly in the OW section of AIS application.

#### **ORDINARY SITUATIONS THAT CHARACTERIZE OUTSTANDING WORK:**

- ✓ Engineering order (EO) not or partially incorporated by Supplier and works/ inspections not or partially performed by Supplier;
- ✓ Non-conformity report, which MRB disposition was defined with some activity to be taken at EMBRAER;
- ✓ End assy parts not delivered together with end assy (missing parts). In this case, they shall be considered like outstanding work and shall be previously agreed between companies (see paragraph d).
- ✓ Changes requested from customer, certification authority or from any other "emergency" reason established by EMBRAER, and cannot be performed on the convenient time by the end assy responsible Supplier. The condition to enclose an OW in the AIS is that it has been proposed previously by Supplier and approved by EMBRAER (see paragraph d).

The condition to enclose an OW in the AIS is that it has been proposed previously by Supplier and approved by EMBRAER.

By the time of OW proposal, Supplier shall define the responsible company, Supplier or EMBRAER to perform the OW after delivery. The activity performed by Supplier shall be supported by job instruction according to document "Guidelines for Suppliers working at EMBRAER's facilities", available at [www.embraer.com/ftp/pub](http://www.embraer.com/ftp/pub).

EMBRAER shall analyze the proposed OW and gives a technical and commercial disposition (suggest modification, approve or reject).

#### **b.5) Material kit list (MKL)**

It is a list of parts associated with OW that has just been manufactured by Supplier, which shall be delivered together with end assy to be incorporated after end assy delivery.

#### **b.6) Non-conformity report**

This section shall be used to record non-conformities found on end assy during the manufacturing process.

#### **Note:**

The general directives and requirements associated with the non-conformity procedure are established EMBRAER Quality Requirements for Suppliers.

The following “types” of non-conformity reports shall be reported in the AIS:

- ✓ All majors non-conformity reports;
- ✓ All (major or minor) non-conformity reports with disposition to be repaired and after that the visual aspect has been affected;
- ✓ All (major or minor) non-conformity reports with disposition, which requires some action to be taken by EMBRAER. In this case, the non-conformity report shall be reported as OW;
- ✓ All non-conformity reports associated with "structural test article/ non-flight test article" with disposition that has been defined as "use as is" or "repair".

**Note:**

If the (Major or Minor) non-conformity report affects the visual aspect, Supplier shall report the nonconformity report indicating the following additional information:

- Location - describe the position, where the non-conformities occurred, indicating the parts around as references e.g. (frame, string, spar, panel, rib, lower, upper skin, and so on);
- Non-conformity description - short description of the non-conformity;
- Short description of the technical disposition of material review board (MRB);
- A graphical description of the end assy (sketch) showing the points where the non-conformities happened shall be attached (cartography).

**b.7) Attachments**

This section shall be used to attach the data regarding to AIS attachments and some additional data associated with the END ASSY, such as:

- ✓ End assy sketch (cartography), showing the view associated with a non-conformity report (minors and majors);
- ✓ | Supplier informative report (SIR) with non-conformities that affects visual aspect or maintenance as below:
  - Holes plugged into the skin in areas of high and medium visibility
  - Installation of bushing in the skin or components subject to maintenance actions;
  - Change of fasteners in relation to original callout in accordance with SRM;
  - Repairs in skins (i.e. sanding,..) with reduced thickness or change the geometry outside the tolerance envelope on the drawing;
  - Repairs in skins when the repair results include of internal or external reinforcements, or doubles, etc.
  - Application of superficial protection different of the design (only when there is a difference regarding the color or tone between the protection applied and the protection specified).
  - Values of asymmetry on the angle of incidence of the wing and stabilizers, other than mentioned in the Maintenance Manual (AMM);

**Notes:**

| In annex follow the Supplier informative report (EMBRAER template) and the Supplier Informative Report workflow.

- ✓ Inspections results from key characteristics of end assy;
- ✓ Other information considered relevant by Supplier or by EMBRAER.

#### **b.8) Serialized items**

This section shall be used to record the part number of serialized components/ items installed in the assembly (end assy) and which shall be controlled for traceability, part number with traceability indicator: I or S according part list.

#### **b.9) Loose items**

In the context of AIS application on EMBRAER's ERP system, loose items are planned to be delivered together end assy. The loose items part number shall be planned in the AIS database (Supplier/ end assy) section and require previous agreement involving EMBRAER and Supplier.

#### **b.10) AIS Releasing**

It is mandatory that all data associated with end assy "as built" configuration, shall be consolidated in the AIS system and released before the end assy shipment.

The responsible for AIS releasing shall be a representative person from Supplier Quality Control Organization.

To release an AIS in the web system the drawings of associated part number (assembly and subassembly) shall be previously released in the program database.

#### **c) AIS in a paper form**

In case of programs not supported by EMBRAER's ERP system, Supplier shall consolidate the AIS in a paper form and provide to EMBRAER 1 (one) hard copy within the product package.

#### **d) Outstanding work**

##### **d.1) Objective**

This paragraph describes the procedures and guidelines to be followed by EMBRAER's Suppliers, concerning the pending production/ inspection required by product design and process under Supplier's responsibility to be performed at EMBRAER's facilities after the end assy receiving.

##### **d.2) Procedures**

Supplier shall have a focal point for OW interface and submit the OW to EMBRAER at least five working days before shipment of product from Supplier's manufacturing plant.

The information of OW description shall be inserted by Supplier and contain the information needed to satisfy the total understanding of EMBRAER manufacturing focal point.

#### **Note:**

Each pending item shall have a specific OW (one pending item = one OW).

### d.3) Responsibilities

For all OW proposed to EMBRAER, Supplier shall define and inform in OW who is responsible for OW execution (EMBRAER or Supplier)” on “Responsible by OW Execution” field in AIS System.

#### ✓ OW TO BE PERFORMED BY EMBRAER

Supplier job instruction is not required and it is necessary an EMBRAER manufacturing documentation.

For this OW, all information is needed to avoid any doubt and misunderstandings at EMBRAER, considering EMBRAER’s responsibility for documentation issuing and pending execution.

Minimum information required:

1. Reference drawing and review of drawing according to end assy design configuration;
2. Part number, position and localization in drawing of all parts to be installed;
3. Process description, step by step, some examples:
  - Drilling;
  - Riveting;
  - Painting touch up;
  - Faying sealant;
  - Electrical bonding;
  - Tight to be applied;
  - Cold work;
  - Gasket sealing;
  - Aerodynamic sealing.
4. All parts shall be listed in MKL.

#### ✓ OUTSTANDING WORK TO BE PERFORMED BY SUPPLIER

For this condition, two situations are foreseen:

##### 1. Activities to be performed by Supplier and EMBRAER:

In this case, Supplier is not able to perform at EMBRAER any operation involved in the OW execution. It is necessary workers of EMBRAER to be possible the OW completion, closure and conformity. The OW description shall describe:

- Activities to be performed by EMBRAER;
- Activities to be performed by Supplier through job instruction and declare that Supplier team will perform these activities at EMBRAER through job instruction of Supplier.

##### 2. Activities to be performed exclusively by Supplier:

In this case, Supplier is able to perform all the operations involved in the OW execution, including inspection and conformity at EMBRAER’s facility. The OW description shall have the following information and declare that the operations will be performed at EMBRAER’s facility by Supplier team supported by a job instruction of Supplier:



- Reference drawing and review of drawing according to end item configuration;
- Part number, position and localization in drawing of all parts to be installed;
- All parts shall be written in MKL.

#### **d.4) Outstanding work associated to non-conformity**

This case occurs when a pending is associated to non-conformity. Minimum conditions to propose an OW from non-conformity:

- ✓ Supplier shall issue an EMBRAER non-conformity document;
- ✓ This non-conformity report shall have EMBRAER disposition and Quality approval.

#### **Note:**

The OW description process is required in order to EMBRAER to analyze the OW.

If the defect and/ or disposition reported in EMBRAER non-conformity document changes after OW technical approval, Supplier shall propose the OW again before AIS releasing. If AIS is released, Supplier shall follow non-conformity detected after delivery (NDD) procedure.

#### **e) | Form:**



INFORMATIVE  
REPORT TEMPLATE.d

#### **f) | Process flow:**



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REPORT FLOW.pdf