

# Working Instruction

First Article Inspection



STORK®

*Fokker*



28

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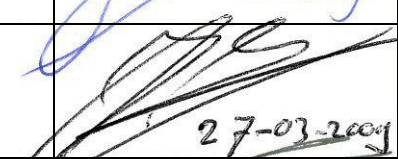
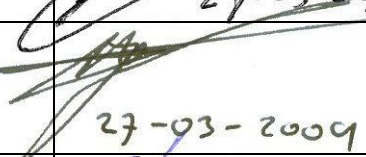
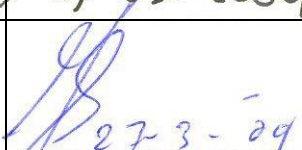
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**1 CHANGE CONTROL WORKING INSTRUCTION.**

Issue	Reason of change
08.jun.2008/01	Initial release
28.08.2008/02	Form 2: Field 6: Possibility to fill out BaaN product code. Form 3: Field 5: Examples added
13.03.2009/03	Paragraph 6.1: additional instruction added for field 15,16,17,18.

**2 AUTHORIZATION**

Involvement	Naam	Function	Signature and date
Owner	J. Teeuw	Manager QC Hoogeveen	 23/03/09
Owner	J.M. Luijten	Manager QC Papendrecht	 27-03-2009
User	J. Nolle	Manager PV Hoogeveen	 27-03-2009
User	J.H. Santbergen	Manager PV Papendrecht	 27-3-09

### **3 INTRODUCTION**

#### **Goal of this instruction**

This document describes the requirements for performing and documenting the First Article Inspection (FAI).

#### **Purpose of an FAI**

- Give objective evidence that all engineering, design and specification requirements are correctly understood.
- Give objective evidence that all engineering, design and specification requirements are correctly accounted for.
- Give objective evidence that all engineering, design and specification requirements are correctly verified and recorded.
- Provide a consistent documentation requirement for aerospace components FAI.

#### **Applicability**

- Parts and Assemblies
- Suppliers, standard hardware is excluded for this procedure

## 4 PROCEDURES/DOCUMENTS

The following procedures are required for conducting the FAI within Stork Fokker AESP BV.

1. AS9102 "Aerospace First Article Inspection requirement"
2. [QMS-4040](#) "First Article Inspection".
3. [QMS-0080](#) "Archivering".
4. [PRD-1010](#) "Definiëren en uitgeven van productiedocumenten".

The following documents are required in order to conduct a correct FAI.

At Suppliers the following procedure is required for conducting the FAI.

1. AS9102	"Aerospace First Article Inspection requirement"
<b>Specifications</b>	All process-, material- and standard hardware specifications
<b>Model</b>	3D model (e.g. Catia). This model presents all product features and requirements of the part, e.g. annotations, materials, dimensions.
<b>Drawings</b>	2D drawings including parts list or comparable
<b>Noteslist or Comparable</b>	These can be separate lists which are available within the engineering data package. The lists are part of the Engineering requirements
<b>QAP</b>	The QAP, Quality Assurance Plan, is a document where the main customer requirements are stated. e.g. If a customer adds requirements to the standard FAI procedure AS9102; these requirements need to be added to the QAP. The program specific QAP are documented in the QMS-system; Quality Liaison Engineers are responsible for these documents.
<b>Special processes list</b>	This list is located on the FAI-drive: <a href="\\aerospace.intra\projects\FAI\5. Processen database">\\aerospace.intra\projects\FAI\5. Processen database</a>
<b>ASL</b>	ASL, Approved Supplier List, This list can be viewed on <a href="\\aerospace.intra\publications\ASL">\\aerospace.intra\publications\ASL</a>
<b>FAI Compliancy matrix</b>	Aanvullende FAI eisen vanuit de klant: <a href="\\aerospace.intra\projects\FAI\6. Compliancy matrix">\\aerospace.intra\projects\FAI\6. Compliancy matrix</a>

This list of documents is not mandatory but is generated according most occurred examples. This list can also be extended.

## **5 OVERALL**

### **5.1 BLANK FIELDS**

In case a field is blank it is required to fill out: "N/A" (Not Applicable). Blank fields are not permitted.

### **5.2 COMPLEMENTARY DOCUMENTS**

All documents needed to provide objective evidence (routing sheets, shop floor instructions, inspection data, test data, NDI, etc) need to be added to the FAI package.

The executive process/production step is responsible in adding these documents.

## 6 EXPLANATION FORM 1: PART NUMBER ACCOUNTABILITY.

### 6.1 FILLING THE FIELDS

Numbering of the Fields according AS9102. Examples for program specific requirements are presented in the FAI compliancy matrix.

- Field 1 (R)** Part Number: This is the formal product number of the FAI part as stated in the engineering requirements.  
Suffix numbers need to be added on a separate line.  
Check FAI compliancy matrix for program specific examples.
- Field 2 (R)** Part Name: Name of the part as shown on drawing. Use the formal nomenclature as stated in the engineering requirements.  
Check FAI compliancy matrix for program specific examples.
- Field 3 (CR)** Serial Number: Serial number of the part. Only applicable for Class 1 parts and other parts that have a engineering serial number requirement  
Check FAI compliancy matrix for program specific examples.
- Field 4 (O)** FAI Report Number: Reference number that identifies the FAI. This may be an internal report number. This number is equal to the BaaN order number.  
Check FAI compliancy matrix for program specific examples.
- Field 5 (CR)** Part Revision Level: Latest part revision that affects the part being first article inspected. If there is no revision, indicate as such.  
Note: The latest drawing revision (Field 7) does not always affect all parts contained on a drawing.  
Check FAI compliancy matrix for program specific examples.
- Field 6 (CR)** Drawing number: Drawing number of the FAI part.  
For models note the used "Catpart" en "Catproduct" files and Noteslist, partslist, datalist etc etc.  
Check FAI compliancy matrix for program specific examples.
- Field 7 (CR)** Drawing revision level: The revision/sequence level of the engineering Drawing/Models.  
If no revision available indicate as such: No Revision or N/A.  
Check FAI compliancy matrix for program specific examples.
- Field 8 (CR)** Additional Changes: Note the formal engineering changes which are complementary to referenced engineering drawing (Field 6 en 7).  
Check FAI compliancy matrix for program specific examples.
- Field 9 (R)** Manufacturing process reference: A reference number A reference number that provides traceability to the manufacturing record of the FAI part (e.g., router number, manufacturing plan number, etc.). For Stork Fokker this is the BaaN order number. For suppliers this the internal shop order number on which the part is produced.
- Field 10 (R)** Organization name: Name of the Organization performing this FAI:  
e.g.: **Stork Fokker AESP B.V.**
- Field 11 (O)** Supplier Code: If no customer requirement for this field is present fill out N/A.  
When mandatory: Supplier Code is a unique by the customer defined number.  
Terms used are Vendor code, Vendor Identification Number, Supplier Number etc.  
For Stork Fokker AESP purchased parts the supplier number of the Fokker ASL needs to be filled out. Check FAI compliancy matrix for program specific examples.

- Field 12 (O)** P.O. Number: If no customer requirement for this field is present fill out N/A.  
Fill out the formal Purchase Order number of the customer. For purchased parts fill out the Fokker Purchase Order number including the line item.  
Check FAI compliancy matrix for program specific examples.
- Field 13 (R)** Detail part or an Assembly FAI: Check as appropriate
- Field 14 (R)** Full FAI or Partial FAI: Check as appropriate.  
Full FAI: In case of a new product or an existing part that has a reason for Full FAI.  
Partial FAI: In case a previous FAI has been conducted.  
Reason for Partial FAI: For a partial FAI, provide the baseline part number (including revision level) to which this partial FAI is performed and the reason for it. Stork Fokker will perform a full FAI, or a partial FAI for affected characteristics, when any of the following events occurs:  
A change in the design affecting fit, form or function of the part.  
A change in manufacturing source(s), process(es), inspection method(s), location\* of manufacture, tooling or materials, that can potentially affect fit, form or function.  
A change in numerical control program or translation to another media that can potentially affect fit, form or function.  
A natural or man-made event, which may adversely affect the manufacturing process.  
A lapse in production for two years or as specified by the Customer.  
\* Example: If supplier A is outsourcing a sub process to supplier B and supplier A changes to supplier C then it is the responsibility of supplier A to perform a partial FAI on this sub process at supplier C.

15, 16, 17 and 18: This section is required only if the part number in Field 1 is an assembly requiring lower level parts to be installed into the assembly or specific FAI requirements have been verified on an earlier conducted FAI on exactly the same characteristics and fabricated by exactly the same means.

Furthermore, in case of a partial FAI for an Assembly, only part numbers of the parts that are affected in the partial FAI need to be referenced in these fields.

- Field 15 (CR)** Part Number: Detail or next level sub-assembly part number to be included in the assembly or detail or next level sub assembly of specific FAI requirements which have been verified on an earlier conducted FAI on exactly the same characteristics and fabricated by exactly the same means.
- Field 16 (CR)** Part Name, see Field 2 of Form 1 of this FAI report of this specific part.
- Field 17 (CR)** Part Serial Number of the parts/assy installed, if applicable
- Field 18 (O)** FAI Report Number: If no customer requirement for this field is present fill out N/A. Otherwise FAI report number of field 15 called out part/assy
- Field 19 (R)** Signature:  
The signature on this form certifies the following two things:  
That all characteristics are accounted for; meet drawing requirements or are properly documented for disposition. Check FAI complete if appropriate.  
FAI is inspected according the following requirement:  
The FAI is not complete until all non-conformances affecting the part are closed and corrective actions have been implemented. A partial FAI shall be performed those affected characteristics and the results shall be recorded.
- Field 20 (R)** Date: Date FAI report is prepared
- Field 21 (CR)** Name of the person of the organization who has approved the FAI.  
At Stork Fokker QC is responsible for this field

- Field 22 (CR)**      Date of FAI approval
- Field 23 (CR)**      Customer Approval: Customer signs for approval of FAI. Customer can be TDL (GQAR), source inspection etc. For purchased parts Quality Procurement is the Customer.
- Field 24 (CR)**      Date of FAI approval by Customer

## 7 EXPLANATION FORM 2: PRODUCT ACCOUNTABILITY.

### 7.1 FILLING THE FIELDS

- Field 1 t/m 4** See Form 1
- Field 5 (CR)** Material: Description of the material as stated in the engineering requirements. Also state dimensions when appropriate (metal parts)  
Caution: When material thickness and/or grain direction are called out on drawing then also note and verify this feature on Form 3.
- Field 6 (CR)** Specification number: Specification as required by the customer. Also BaaN material codes may be filled out for conveniency purposes.  
Raw Material: Call out all materials and standard hardware which are permanently added to the FAI part. Process materials such as acid etchants are not needed to be called out.  
Processes: Call out the process specification. For information about the special processes check the special process database of Stork Fokker AESP.  
Link: <\\aerospace.intra\projects\FAI\5. Processen database>
- Field 7 (O)** Code: If no customer requirement for this field is present fill out N/A.
- Field 8 (CR)** Special Process Supplier Code: Customer given Supplier code of the organization performing special process(es) or supplying material, as applicable.  
Also add, Special process supplier name and address.
- Field 9 (CR)** Customer Approval Verification: Indicate if the special process or material source is approved by the Customer. Write N/A if Customer approval is not required.
- Field 10 (CR)** Certificate of Conformance number  
Materials: The Lot number of used material. Lot number is the "partijcode" from Baan, this code always starts with a letter (Letters commonly used: E, V en N)  
Processes: Report/Certificate which has qualified the process.
- Field 11 (CR)** Functional Test Procedure Number: Functional test procedure as called out in engineering requirements.
- Field 12 (CR)** Acceptance Report Number: Functional test report number which is objective evidence that all requirements are accounted for.
- Field 13 (O)** Comments: As applicable. For everyone possible.
- Field 14 (R)** Prepared By: Name of the person who prepared form 2.
- Field 15 (R)** Date: Date when FAI report is prepared.

## 8 EXPLANATION FORM 3: CHARACTERISTIC ACCOUNTABILITY

**Overall** Verify every Design Characteristic during FAI and record the results. Every Design Characteristic shall have its own unique characteristic number.  
NOTE: Reference characteristics may be omitted from the FAI.  
NOTE: Use more than one line if needed for any characteristic.  
NOTE: Characteristics not measurable in the final product shall be verified during the manufacturing process (as long as they are not affected by subsequent operations or by destructive means. Characteristics verified at the detail level may be referenced in the assembly-level FAIR.

### 8.1 FILLING THE FIELDS

**Field 1 t/m 4** Automatically from Form 1

**Field 5 (R)** Characteristic Number: Unique assigned number for each Design Characteristic. The numbering needs to be sequential.  
At Stork Fokker AESP the following numbering system is used:

- In case of specific routing steps: [number routing step].[unique number engineering requirement]
- In case of a TPD check point a k-number is used, eg. k703. The relationship to the routing step is made through the BaaN shop traveler.

This system is not mandatory but are the most used within Stork Fokker AESP.

The following situations can occur:

**Situation 1:** Engineering requirement is standard requirement and cannot be witnessed during production.

Example: Partslist G3: "Unless otherwise specified, tolerances are in inches".

Agreement: Requirement is mentioned in FAI at process step 00 and has a unique number relating to the engineering requirement.

**Situation 2:** The engineering requirement + measurement results can be witnessed in 1 process step.

Example: Partslist C10: "FP-2034 Thermoforming using hard moulds ACC.to" with underlying requirements:

- 1: Evenly of colour and atructure;
- 2: No wrinkles allowed;
- 3: No delamination allowed

This requirement can be conducted at the process step Pressing.

Afspraak: This requirement + underlying requirements are mentioned on the routing step where they are being performed. See Affairs example 60P5542023C001 with Char. number 10.17 (Eng. eis). 10.18, 10.19 en 10.20 are the underlying requirements and need to be mentioned as:

FP-2034 Thermoforming using hard moulds ACC.to

- 10.17.1 Evenly of colour and atructure
- 10.17.2 No wrinkles allowed
- 10.17.3 No delamination allowed

**Situation 3:** The engineering requirement + underlying requirements need to be witnessed on multiple process steps.

Example: "fabrication according BAC 5317" with underlying requirements:

- 1: Number of plies (Checked at pre cut)
- 2: Ply direction (checked at lay up)
- 3: Ply geometry (checked at lay up)

This needs to be mentioned on the FAI as:

(eg: eng req. is 23; routing step pre cut is 10; routing step lay up is 20):

- 00.23 Fabricate according BAC 5317
  - 10.23.1 Number of plies
  - 20.23.2 Ply direction
  - 20.23.3 Ply geometry

**Field 6 (CR)** Reference location: Location of the Design Characteristic:  
 e.g:  
 - Drawing zone  
 - Model annotations  
 - Drawing notes  
 - Specifications

**example**

FAI Field	5	6	7	8	9	10
	k501	<b>2ZZP00XX</b> <b>LMA-XXX</b> <b>(Note 21)</b>	minor	Correct ID plate	Accept / Reject	N/A

**Field 7 (CR)** Characteristic Designator: If applicable, record characteristic type. If no specific characteristic is stated on drawing, fill out "minor".  
 Possible characteristic types: KC, MIC, CTQ, Major, Minor, Critical, Flight Safety

**Field 8 (R)**

Requirement:

Requirement for the design characteristic, e.g: Dimensional requirements on drawing, note the nominal and tolerance values. Also note drawing notes and specification requirements.

The way of presenting the requirement can differ per customer. Some Customers demand complete texts of a drawing note or other engineering requirement in this Field. Check the FAI compliancy matrix for this matter.

**Example 1:**

FAI Field	5	6	7	8	9	10
k501	Model annotation	minor	<b>Hole diameter 25x:</b> - min: 0.2500" - max: 0.2530"		MIN:....." MAX:....."	N/A

**Example 2:**

FAI Field	5	6	7	8	9	10
50.01	Model Annotation	minor			0,050 voorbeeld	N/A
50.02	Model annotation	minor			0,015 voorbeeld	N/A

**Example 3:**

FAI Field	5	6	7	8	9	10
50.01	Datalist/MBD: 113U2711-1	minor	DOUBLER LOCATION ZOLERANCE: DOUBLER PLY LOCATION TOLERANCE +.25 / -0.00 FROM INDICATED LOCATION AS SPECIFIED IN PART DATASET		accept / reject	N/A

**Field 9 (R)** Results: Provide results of measured Design Characteristics.  
 In case of Multiple Characteristics\* list each characteristic as individual values or list once with the minimum and maximum of measured values attained. If a characteristic is found to be non-conforming then that characteristic must be listed separately with the measured value noted.  
 \*Multiple Characteristics: Identical characteristics that occur at more than one location but are established by a single set of drawing requirements.

**Example:**

FAI Field	5	6	7	8	9	10
k501	Model annotation / balloon 5	minor	Hole diameter 25x: - min: 0.2500" - max: 0.2530"	MIN:....." MAX:....."	N/A	

Results from inspection of design characteristics shall be expressed in quantitative terms (Variables Data) when a Design Characteristic is expressed by numerical limits.

The results shall be record in the units specified on the drawing or specification, unless otherwise approved by the Customer.  
 Production/Operations can be aided in filling out the variable data fields by giving a fill out direction for the requirement. e.g. : .....Inch/", of .....mm, .....lbs.  
 Attribute Data (e.g., Accept / Reject) may be used if no inspection technique resulting in Variables Data is feasible. Attribute Data is permitted when the Design Characteristic does not specify numerical limits (e.g., break all sharp edges). It is also permitted where qualified tooling is consistently used as a check feature and a go/no-go feature has been established for the specific characteristic.  
 If a Design Requirement requires verification testing, then the actual results willbe recorded on the form. If a laboratory report or certificate of test is included in the FAIR, then these results need not be written on the form, record thereference number in this field. The laboratory report or certificate of test must show specific values for requirements and actual results. For some customers a CMM reports and other measuring tables can be treated as a laboratory report and results may be referenced on Form 3. In all cases: add a copy to the FAI package. For metallurgical characteristics with visual verification requirement that are rated against standard photographs, list the photo number of the closest comparison. A statement of conformance is acceptable: Accept / Reject.  
 For processes that require verification per Design Characteristic, include statement of compliance: Accept / Reject. (e.g., certification of compliance, verification indicator such as "accept" etc.).  
 For part marking, ensure that marking is legible, correct in content and size and properly located, per applicable specification.

**Field 10 (CR)** Designed Tooling:  
 This field needs only to be filled out in case of specially designed tooling (including NC programming) used as a media of inspection, record the tool identification number.  
 This can also be a measuring model used for 3D Measurements.

**Field 11 (CR)** Non Conformance Number: Record a non-conformance document reference number if the characteristic is found to be non-conforming.

**Field 12 (R)** Prepared By: Name of the person who prepared form 3.

**Field 13 (R)** Date: Date of completion of this form.

**Field 14 (O)** Not Applicable

==#==