

# First Article Inspection (FAI) Training

# What is the purpose an FAI?

- The purpose of the First Article Inspection is to provide objective evidence that all engineering design and specification requirements are properly understood, accounted for, verified, and documented.
- The purpose of this standard is to provide a consistent documentation requirement.



# Supplier FAI's

All Detailed, Assembly, and sub-assembly part shall have a FAI done.

# AS9102 Form 1 – Part Number Accountability

AS/EN/SJAC 9102 Rev A First Article Inspection Form 1: Part Number Accountability			Sheet 1 of _
1. Part Number	2. Part Name	3. Serial Number	4. FAI Report Number
5. Part Revision Level	6. Drawing Number	7. Drawing revision level	8. Additional Changes
9. Manufacturing Process Reference	10. Organization Name	11. Supplier Code	12. P.O. Number
13. Detail FAI <input type="checkbox"/>	14. Full FAI <input type="checkbox"/>	Baseline Part Number including revision level	
Assembly FAI <input type="checkbox"/>	Partial FAI <input type="checkbox"/>		
Reason for Partial FAI:			
a) if above part number is a detail part only, go to Field 19 b) if above part number is an assembly, go to the "INDEX" section below.			
<b>INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.</b>			

**YELLOW or LIGHT GREY fields – MANDATORY information required.**

**BLUE or DARK GREY fields – CONDITIONALLY REQUIRED. These fields must be completed when information is available.**

**WHITE fields – OPTIONAL information required when available.**

1) Signature indicates that all characteristics are accounted for, meet drawing requirements or are properly documented for disposition.	
2) Also indicate if the FAI is complete per Section 5.4: <input type="checkbox"/> FAI complete	<input type="checkbox"/> FAI not Complete
19. Signature	20. Date
21. Reviewed By	22. Date
23. Customer Approval	24. Date

# Form 1 of Supplier FAI doc.

- 1 - Part Number
- 2 - Part Name
- 3 - Serial #
- 4 - FAI Report #
- 5 - Part Rev Level
- 6- Drawing #
- 7 - Drawing Rev Level
- 8 - Additional Changes
- 9 – Manufacturing Process Ref
- 10 - Organization Name
- 11 - Supplier Code
- 12 - Purchase Order Number
- 13 – Delta or Assembly FAI
- 14 – Full or Partial FAI
- Index of part # or sub-assy required to make assy.
  - 15 – Part #
  - 16 – Part Name
  - 17 – Part S/N
  - 18 – FAI Report #
- 19 thru 24 – Signatures and Dates

AS/EN/SJAC 9102 Rev A First Article Inspection Form 1: Part Number Accountability			Sheet 1 of _
1. Part Number	2. Part Name	3. Serial Number	4. FAI Report Number
5. Part Revision Level	6. Drawing Number	7. Drawing revision level	8. Additional Changes
9. Manufacturing Process Reference	10. Organization Name	11. Supplier Code	12. P.O. Number
13. Detail FAI <input type="checkbox"/>	14. Full FAI <input type="checkbox"/>	Baseline Part Number including revision level	
Assembly FAI <input type="checkbox"/>	Partial FAI <input type="checkbox"/>		
Reason for Partial FAI:			
a) if above part number is a detail part only, go to Field 19			
b) if above part number is an assembly, go to the "INDEX" section below.			
<b>INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.</b>			
15. Part Number	16. Part Name	17. Part Serial Number	18. FAI Report Number
			Required by Goodrich
1) Signature indicates that all characteristics are accounted for, meet drawing requirements or are properly documented for disposition.			
2) Also indicate if the FAI is complete per Section 5.4: <input type="checkbox"/> FAI complete <input type="checkbox"/> FAI not Complete			
19. Signature			20. Date
21. Reviewed By			22. Date
23. Customer Approval			24. Date

Yellow –	Required
Blue –	Conditionally Required
White –	Optional

1. Part Number	2. Part Name	3. Serial Number	4. FAI Report Number
5. Part Revision Level	6. Drawing Number	7. Drawing revision level	8. Additional Changes

**1 – Goodrich Part Number**

The actual part number that is being FAI

**2 – Part Name**

The part name listed on the drawing

**3 – S/N**

The Serial Number for the part being FAI.

**4 – FAI Report Number**

FORMAT: Suppliers choice. We at Goodrich use:

“Part Number\_SN\_FAIREVX” (If no S/N just “Part Number\_FAIREVX”)

Example : 30138-03\_1001\_FAIREVB

**5 – Part Rev**

Latest part revision that affects the part being FAI. If no revisions indicate as such. Note: The latest drawing revision (Field 7) does not always affect all the parts contained in the drawing.

Almost always the same as Field 7.

**6 – Drawing Number**

Here you put in the actual drawing number. Not always the same as the part number since many drawings cover more than one part number.

**7 – Drawing Revision**

The revision of the Goodrich drawing for this part that this FAI is being performed to.

**8 – Additional Changes**

Always ‘N/A’

# 14 – Type of FAI

## ■ What is a Full FAI?

- All Notes and Dimensions with the exception of reference dimensions on the drawing are measured and/or inspected at the appropriate step in the process.

## ■ When is it a Full FAI?

- When one has not been submitted.
- Two years since manufacturing the part.
- Changes in manufacturing (look at AS9102 for details)

## ■ When is a Partial FAI used?

- When a full FAI is on file
- Have partials on all revs up too current rev
- To document the changes from an ECO
- For a partial FAI enter the reason for the partial.

*\* In "Reason for Partial FAI" put in ECO#*



# Index of Part Numbers or Sub-Assembly required to make assembly.

INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.			
15. Part Number	16. Part Name	17. Part S/N	18. FAI Report Number
30138-0401-03	A1 Circuit Board Assembly	0306	30138-0401-03_FAI
30138-0402-02	A2 Circuit Board Assembly	10001	30138-0402-02_VC4421
30138-1301-01	<u>Heatsink</u>	N/A	30138-1301-01_VC2720
30138-1302-01	Top Cover	N/A	30138-1302-01_REVA_FAI
30138-1303-01	Bottom Cover	N/A	30138-1303-01_REVC_FAI
30138-1304-0101	Stiffener	N/A	30138-1304-0101_VC2730
30138-1304-0102	Stiffener	N/A	30138-1304-0102_VC2720
042651-1	<u>Elastomeric Connector</u>	N/A	042651-2_VC5909

- The index of part numbers or subs that need to be on this list are all parts from the parts list. If the part is MS put N/A for the FAI Report Number, otherwise all the parts must all have documented FAI's on file.
- All columns must be filled out. If NOT the "FAI Complete" Check box can NOT be checked and "FAI Not Complete" must be checked

# Sign off -19, 20, 21, 22, 23, and 24

1) Signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition.	
2) Also indicate if the FAI is complete per Section 5.4: <input type="checkbox"/> FAI complete <input type="checkbox"/> FAI not Complete	
19. Signature	20. Date
21. Reviewed By	22. Date
23. Customer Approval	24. Date

- Check appropriate box of "FAI complete" or "FAI not Complete".
- Then text boxes 19 and 20 must be signed and dated by the appropriate personnel. Text boxes 21 through 24 can be as needed.



## 5 – Material Specification/Certification or Special Process Name:

Enter materials (for example, aluminum bar stock) and any special processes (for example, soldering, brazing, or painting) used in manufacturing with this product. See examples on “Example – Materials, Special Processes & Test Procedures” slide

## 6 – Specification Number:

Enter the specification number for the material or special process used, for example, J-STD-001, Mil Specs, etc. See More examples on “Example – Materials, Special Processes & Test Procedures” slide

## 7 – Code:

Code is always ‘N/A’

## 8 – Special Process:

Customer given Supplier code for the organization performing special process(es) or supplying material, as applicable. Or add Special process supplier name and address.

## 9 – Customer Approval Y/N:

Review customer requirements for special process or material source. Write ‘N/A’ if Customer approval is not required.

## 10 – C of C:

Number of the certificate: special process completion certification, raw material test report number, Standard Catalog hardware compliance report number, traceability number.

## 11 – Test Procedure Number and Revision:

Enter all functional test procedures (for example, ATP, and ESS) used to test the product. Include document revision. See examples on “Example – Materials, Special Processes & Test Procedures” slide

## 12 – Acceptance Report Number, if applicable:

The functional test certification indicating that test requirements have been met. Some reports will not have a report number – enter ‘N/A’

## 13 – Comments:

Enter Comments if necessary

# Example – Materials, Special Processes & Test Procedures

Form 2: Product Accountability – Raw Material, Specifications and Special Process(es), Functional Testing

2/3

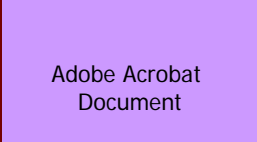
1. Part Number	2. Part Name		3. Serial Number		4. FAI Report Number
30002-1110-01	BRACKET SHAFT				64532
5. Material or Process Name	6. Specification Number	7. Code	8. Special Process Supplier Code	9. Customer Approval Verification (Yes/No/NA)	10. Certification of Conformance Number
¼ HD STEEL	ASTM-A-109		MEAD METALS	N/A	A9078
ELECTROLESS NICKEL	MIL-C-26074E/3		WEPCO	N/A	191-826567



# Example – Characteristic Evaluations

## 5 – Char. Number

These numbers coincide with the number that will be needed to be marked (“ballooned”) on the drawing. Note: the drawing should be attached to the FAI report. Click to see drawing mark up:

A small icon for Adobe Acrobat Document, consisting of a blue square with the text "Adobe Acrobat Document" in white.

## 6 – Reference Location

Is the page number and grid location on the Engineering drawing. For Example: sh2 – C6, sh1 – A10. For multiple sheet numbers make sure you put in a sheet number.

## 7 – Characteristic Designator

If applicable, record characteristic type (e.g., key, flight safety, critical, major, etc.).

## 8 – Requirement

Enter the specified requirement for the characteristic for example, drawing dimensional characteristics with nominal and tolerances, for notes just specifying note number will be enough (Note 2).



# More Example – Characteristic Evaluations

## 9 – Results

Enter measurement(s) obtained for the characteristics.

- For 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 nonconforming then that characteristic must be listed separately with the measured value noted.
- If a Design Requirement requires verification testing, then the actual results will be recorded on the form. If a laboratory report or certificate of test is included in the FAI, then these results need not be written on the form, record the reference number in this field. The laboratory report or certificate of test must show specific values for requirements and actual results.
- 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 (record the reference number in this field).
- For processes that require verification per Design Characteristic, include statement of compliance (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.

## 10 – Designed Tooling or Measurement Devices

If a specifically designed tooling (including NC programming) is used as a media of inspection, record the tool identification number.

# More Example – Characteristic Evaluations

11 – Nonconformance #:

Record a nonconformance document reference number (IE – Waiver Number) if the characteristic is found to be nonconforming.

14 – (extra column as needed)

See examples of Form 3 of a FAI on the next slide

First Article Inspection

Form 3: Characteristic Accountability, Verification and Compatibility Evaluation

1. Part Number 20097-1108-0101				2. Part Name Cap, End			3. Serial Number	4. FAI Report
Characteristic Accountability				Inspection / Test Results				
5. Char No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed Tooling	11. Non-Conformance Number	14. [Insert columns, etc, as required by Organization or Customer]	
1			.04±.01	.041	MV #527			
2			45°±5°	43.6°	MV #527			
3			Ø1.120±.005	1.120	CAL #130			
4			Ø1.030±.005	1.034	CAL #130			
5			Ø.075±.005	.077	CAL #130			
6			Ø.055±.005	.056	CAL #130			
7			.28±.010	.279	CAL #130			
8			Ø.92±.01	.923	CAL #130			
9			.225±.005	.222	CAL #130			
10			Ø1.00±.01	.996	MV #527			
11			Ø1.070±.005	1.065	CAL #130			
12			NOTE 1	OK	Per Spec			
13			NOTE 2	OK	Per Spec			

Note : Adding a Reference Location is recommended.

# For FAI Questions & Info

- <http://www.sae.org/iaqg/publications/faq9102.htm>

Questions?