SQA-006 Supplier First Article Inspection Information

Revision 1

Purpose

The primary purpose of FAI is to validate that product realization processes are capable of producing parts and assemblies that meet engineering and design requirements. A well-planned and executed FAI will provide objective evidence the manufacturer's processes can produce compliant product and that they have understood and incorporated associated requirements.

The purpose of this document is to provide a better understanding of completing a FAI report per AS9102.

Types 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 a report has not been submitted to ABT.
  - 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#

Getting To Know The Forms

The AS9102B First Article Inspection Report comprises of three forms. Use all three forms to document the results of the First Article Inspection. Additional sheets can be used as needed.

- AS9102 B Form 1: Part Number Accountability shall be used to identify the part that is being first article inspected (FAI part) and associated sub-assemblies or detail parts.
- AS9102 B Form 2: Product Accountability – Raw Material, Specifications and Special Process, Functional Testing shall be used if any material, special processes or functional testing are defined as a design requirement.
- AS9102 B Form 3: Characteristic Accountability, Verification and Compatibility Evaluation shall be used to record an actual measurement or inspection/verification of the FAI part for every design characteristic on the drawing, including the drawing notes.

Getting To Know The Forms

The input fields on the forms fall into the following categories:

- Required: meaning this is mandatory information. It is shown in Bold font on the form and the fields are highlighted yellow.
- Conditionally Required: meaning this field must be completed when applicable. It is shown in Bold Italic font and the fields are highlighted blue.
- Optional: meaning information is required when available or as specified by design. It is shown in Regular font and the fields are white.

Getting To Know The Forms

- The image of the three forms showed on the next pages in color provides a quick visual of the three categories. It is not necessary to use the color forms.
- ABT has form SQA-007 that can be used in creating their report. This form also includes notes for each requirement.

Form 1

- AS9102 B Form 1: Part Number Accountability shall be used to identify the part that is being first article inspected (FAI part) and associated sub-assemblies or detail parts.

Form 1

AS9102 Rev B First Article Inspection SQA-007
Form 1: Part Number Accountability

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	10. Organization Name	11. Supplier Code	12. P.O. Number
13. Detail FAI Assembly FAI	14. Full FAI Delta FAI	Baseline Part Number including Revision:	

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.

INDEX of part numbers or sub-assembly numbers required to make the assembly noted above

15. Part Number	16. Part Name	17. Part Serial Number	18. FAI Report Number	NOTES

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: FAI Complete FAI not Complete

19. Signature	20. Date
21. Reviewed By	22. Date
23. Customer Approval	24. Date

Form 1

Box 1. Part Number of the first article part (FAI)

Box 2 Name of the part as shown on the drawing. Typically, it is the part description in the title blank of the drawing.

Box 3 Serial Number of the FAI. You may or may not have a series number.

Box 4 Reference number that identifies the FAI. It may be your internal report number. (Note: Entries in Boxes 1 – 4 on Form 1 are repeated on all 3 forms.)

Box 5 The revision of the part being first article inspected. The revision level can be found in the title block of the drawing. If there is no revision, indicate as such.

Box 6 The drawing number associated with the FAI part.

Box 7 Reference the drawing revision level. Most of time, it is the same as what is in Box 6.

Box 8 Reference design, Engineering or manufacturing changes affecting the FAI part, not reflected by the current part/drawing revision level. It will be N/A in most cases.

Box 9 This is used to show production travelers or route card numbers.

Box 10 Company name of the company completing the FAI .

Box 11 The supplier Cage Code if supplier has one.

Form 1

Box 12 Reference the Purchase Order number.

Box 13 Check one of the two boxes as appropriate.

Box 14 Check as appropriate. For partial FAI, include the reasons why this is a partial instead of a full FAI. Change of manufacturing location, non-conformance found in the prior Full FAI, & etc. can be some of the reasons.

(Box 15, 16, 17 & 18 are required if the part number in Box 1 is an assembly with lower level parts. Enter "N/A" as appropriate. If entries are necessary, refer to the followings:)

Box 15 Reference all lower level parts or sub-assembly part numbers.

Box 16 Part name as shown on the drawing/part list.

Box 17 Reference the serial number of the part.

Box 18 A reference number that identifies the FAI package.

Box 19 The person who prepared the FAI should print his/her name and sign this box.

Box 20 Date when the FAI was prepared.

Box 21 The name of the person who reviewed or approved the FAI package (i.e. all 3 forms)

Box 22 Date when the FAI package was reviewed.

Box 23 Location for customer to sign. This will be left blank

Box 24 Location for date when customer approved. This will be left blank

Box 25 Comments

Form 2

- AS9102 B Form 2: Product Accountability – Raw Material, Specifications and Special Process, Functional Testing shall be used if any material, special processes or functional testing are defined as a design requirement.

Form 2

AS9102 Rev B First Article Inspection SQA-007
Form 2: Product Accountability - Raw Material, Specifications and Special Process(es), Functional Testing

1. Part Number	2. Part Name		3. Serial Number		4. FAI Report Number
5. Material or Process Name	6. Specification Number	7. Code	8. Special Process Supplier Code	9. Customer Approval Verification (Yes/No/NA)	10. Certificate of Conformance number
11. *Functional Test Procedure*	12. *Acceptance report number, if applicable*				
13. Comments					
14. Prepared By			15. Date		

Form 2

Box 1 – 4 Entries should be the same as what are in Form 1

Box 5 Should contain name of the material or process (one per line). E.g. Aluminum, Brass, Electro plating, Painting, Power Coating, Heat Treating, etc.)

Box 6 Should contain the material or process specification number, class and material. E.g. ASTM-B16 BRASS, MIL-STD-G-45204, 7075-T651 Al per ASTM-B211, Cleaning per ASTM-D-2651, etc.

Box 7 Reference any material code specified.

Box 8 Reference Special Process Vendor code

Box 9 Completed if technical approval is required by ABT or customer.

Box 10 Reference the report number of the Certificate of Conformance (CoC) or Certificate of Analysis (CoA), Lab report, etc.

Box 11 Reference the Functional Testing procedure as stated on the drawing.

Box 12 Reference the Functional Test report number.

Box 13 Comment as applicable

Box 14 The name of the person who prepared Form 2. This can be a different person than the one who completed Form 1.

Box 15 Date when Form 2 is completed.

Form 3

- AS9102 B Form 3: Characteristic Accountability, Verification and Compatibility Evaluation shall be used to record an actual measurement or inspection/verification of the FAI part for every design characteristic on the drawing, including the drawing notes.

Form 3

AS9102 Rev B First Article Inspection S QA-007
Form 3: Characteristic Accountability, Verification and Compatibility Evaluation

1. Part Number				2. Part Name			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. MISC	
This signature indicates that all characteristics are accounted for, meet drawing requirements or are properly documented for disposition.								
12. Prepared By							13. Date	

Form 3

Box 1 – 4 Entries should be the same as what are in Form 1 and Form 2.

Box 5 A unique number for each design characteristic. These should match what are on the ballooned drawing. What follows in the next two pages is an example of how the characteristics identified on the drawing are ballooned and their inspection results are documented in Form 3.

Box 6 Reference the drawing zone. When coordinates such as A-2, D-3 are used to describe the location, use the coordinates otherwise use the sheet number.

Box 7 Reference any zoned characteristics such as Key Characteristics, Safety Critical Characteristics, etc. otherwise enter “N/A”.

Box 8 Contains the specified or drawing requirements – dimensional features with the tolerances, drawing notes, specification requirement, etc. In the illustration on the next page, the tolerances are in a summarized format and entered on the bottom line of the form. However, it may be easier to include the tolerance with each individual requirement if the tolerances are not the same for all the requirements. The illustration immediately below shows what the columns for Box 6 to 9 would look like using this alternative format.

Form 3

Box 9 The measurement obtained for each characteristic. • Multiple characteristics shall be listed as individual values. • All drawing notes must be accounted for. • Processes that require design verification must have statement of compliance recorded on the form (i.e. CoA, CoC – state "PASS", "ACCEPT", etc.) • Laboratory reports or Certificate of test must show specific values for the requirements and actual results.

Box 10 Record of the tool identification number used for the inspection of that particular characteristic.

Box 11 Record of any non-conformance document reference number found with the previous first article (i.e. if the current FAI is a partial FAI).

Box 12 The name of the person who prepared Form 3. This can be a different person than the person who completed Form 1 or Form 2).

Box 13 Date when Form 3 is completed

Box 14 ABT has split this into multiple fields.

A OP number in processing showing when characteristic is completed or verified

B Acceptance plan used

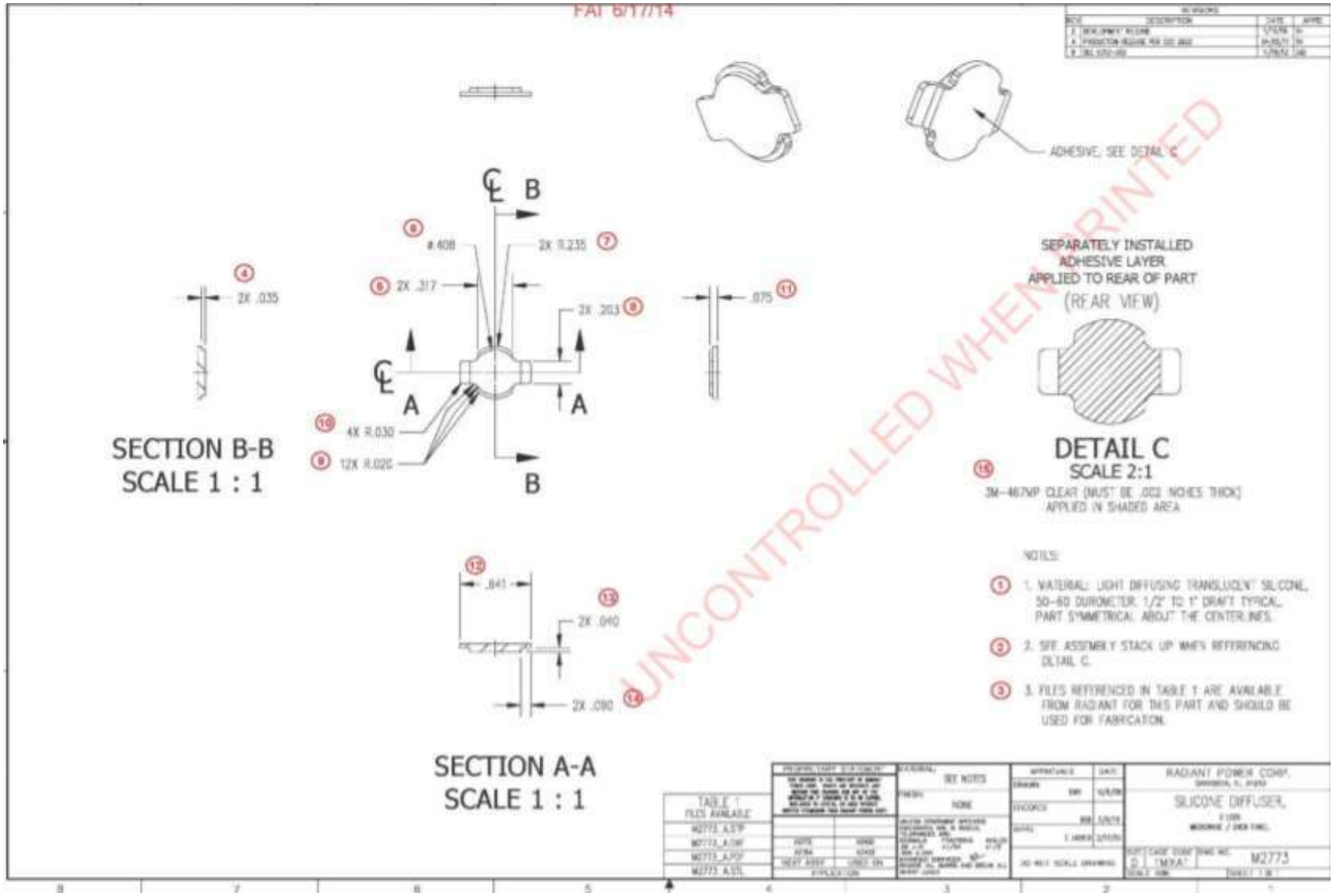
C Justification if 100% is required

Box 15 Misc. information

Box 16 Customer Approval

Box 17 Date of customer approval

Example of Ballooned Drawing



Common Errors With FAI's

- C of Cs do not accompany the FAIR
  - ABT requires certification for all components and raw material used in the manufacturing of the item.
- Missing FAI Reports or Test Reports for sub-assemblies and/or fabricated detail parts.
- Variable data requirements from the engineering drawing are not provided with numerical results.
- Missing or incorrect information provided.
- Missing special processor full address on AS9102 B Form 2, box 8.
- Missing tolerances on AS9102 B Form 3, box 8.
- Missing verification of referenced specifications
- Missing lower level FAI sections to cover subassemblies.
  - Each lower subassembly is required to have all 3 forms completed in the same manner as the upper level.

AS9102 Forms

The next few slides are to show what AS9102 forms look like.

AS9102 allows users of AS9102 to use their own forms as long as the required and conditionally required fields are covered.

AS9102 Form1

FORM 1 - PART NUMBER ACCOUNTABILITY

Sheet ___ of ___

1. Part Number:	2. Part Name:	3. Serial Number:	4. FAIR 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 Part: ____ Assembly FAI: ____	14. Full FAI: ____ Partial FAI: ____ Baseline Part Number (including revision level):		
	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.			
INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.			
15. Part Number:	16. Part Name:	17. Part Serial Number:	18. FAIR Number:
19. Signature: ___ FAI Complete ___ FAI Not Complete			20. Date:
21. Reviewed By:			22. Date:
23. Customer Approval :			24. Date:

AS9012 Form 2

FORM 2 - PRODUCT ACCOUNTABILITY - MATERIALS, SPECIAL PROCESSES, AND FUNCTIONAL TESTING

Sheet ___ of ___

1. Part Number:	2. Part Name:		3. Serial Number:		4. FAIR Number:
5. Material or Process Name:	6. Specification Number:	7. Code:	8. Supplier:	9. Customer Approval Verification:	10. Certificate of Conformance Number:
11. Functional Test Procedure Number:	12. Acceptance Report Number:				
13. Comments					
14. Signature				15. Date	

Form 3

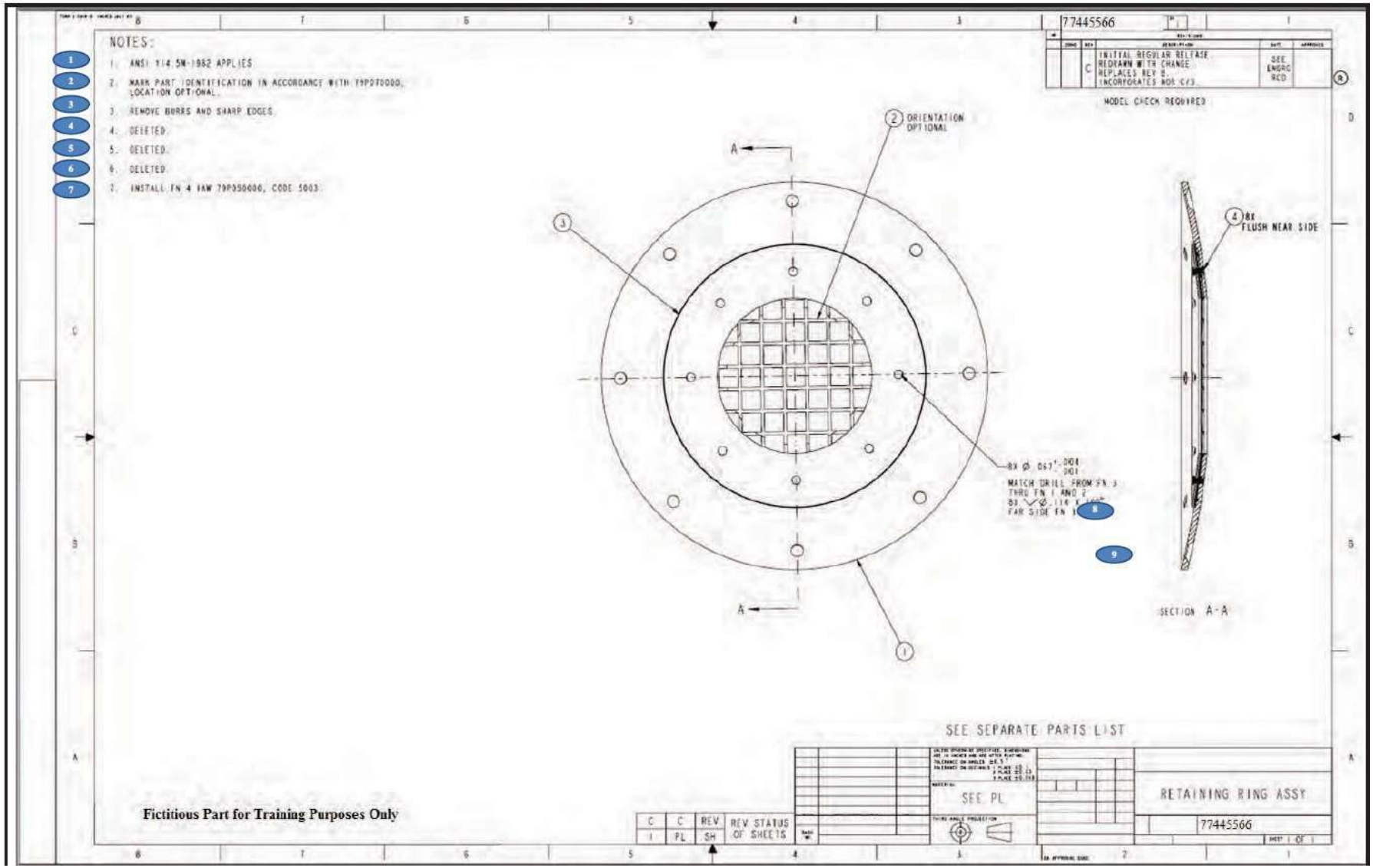
1. Part Number				2. Part Name			3. Serial Number	4. FAIR Number
Characteristic Accountability				Inspection / Test Results				
5. Char. No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed / Qualified Tooling	11. Nonconformance Number	14. Additional Data / Comments	
12. Signature							13. Date	

FORM 3 - CHARACTERISTIC ACCOUNTABILITY, VERIFICATION, AND COMPATIBILITY EVALUATION

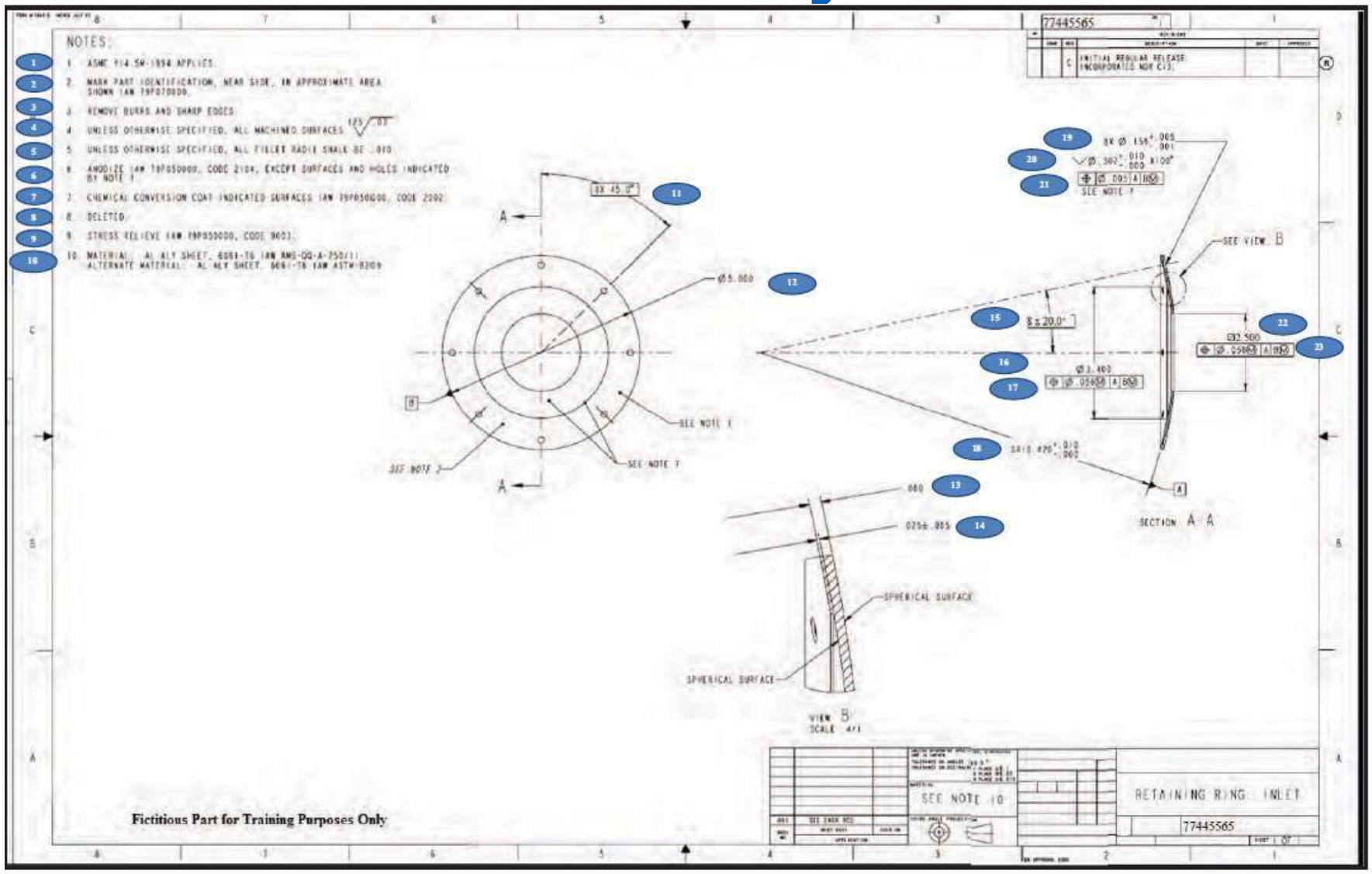
Ballooning Of A Drawing

- A common practice and a requirement for FAI reports submitted to ABT is to have each characteristic of the print ballooned.
- This requirement assures each characteristic is captured and organized in a manner to assure accuracy.
- The next page will show an example of a ballooned print.

Example Of A Ballooned Top Assembly



Example of Ballooned Print Sub Assembly



Example Of Form 1

FORM 1 - PART NUMBER ACCOUNTABILITY

Sheet ____ of ____

1. Part Number: 77445566-001	2. Part Name: Retainer Ring Assembly	3. Serial Number: 1	4. FAIR Number: 12345-67
5. Part Revision Level: Parts List Revision C	6. Drawing Number: 77445566	7. Drawing Revision Level: Revision C	8. Additional Changes: N/A
9. Manufacturing Process Reference: 1234	10. Organization Name: Supplier 123 Inc.	11. Supplier Code: LM123	12. P.O. Number: 41000000, Line Item 1
13. Detail Part: ____ X Assembly FAI: ____	14. Full FAI: ____ X Partial FAI: ____ Baseline Part Number (including revision level): 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.

INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.

15. Part Number:	16. Part Name:	17. Part Serial Number:	18. FAIR Number:
77445565-001	Retainer Ring	N/A	12345-89

19. Signature: John Smith ___ FAI Complete; John Smith ___ FAI Not Complete	20. Date: 5/3/2015
21. Reviewed By: Jane Doe Jane Doe	22. Date: 5/3/2015
23. Customer Approval:	24. Date:

Example Of Form 2

FORM 2 - PRODUCT ACCOUNTABILITY - MATERIALS, SPECIAL PROCESSES, AND FUNCTIONAL TESTING

Sheet ___ of ___

1. Part Number:	2. Part Name:		3. Serial Number:		4. FAIR Number:
77445566-001	Retainer Ring Assembly		1		12345-67
5. Material or Process Name:	**6. Specification Number:**	7. Code:	**8. Supplier:**	**9. Customer Approval Verification:**	**10. Certificate of Conformance Number:**
Rivet Solid CS 1000	MS20426L	N/A	ABC Rivets 10 Elm St Boston, Ma. LM0000	N/A	PO 98765
Sealant	MIL-PRF-2333777D	N/A	Sam's Sealants 43rd St. San Jose, Ca. LM1212	N/A	PO 98765

11. Functional Test Procedure Number:	12. Acceptance Report Number:

13. Comments

14. Signature	15. Date
John Smith John Smith	5/3/2015

Example Of Form 3 Top Assembly

1. Part Number	2. Part Name	3. Serial Number	4. FAI Report
77445566-001	Retainer Ring Sub Assembly	1	12345-87

Characteristic Accountability					Inspection / Test Results		
5. Item No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed Tooling	11. Non-Conformance Number	14. Additional Data/Comments
1	Note 1		ANSI Y14.5 1982 applies and dimensions were taken after all special processesses (Chem Film & Anodizing)	Accept			N/A
2	Note 2		Mark part IAW	64933-79703662-019			Visual
3	Note 3		Removed burrs & sharp	Accept			Visual
4	Note 4		Deleted	N/A			N/A
5	Note 5		Deleted	N/A			N/A
6	Note 6		Deleted	N/A			N/A
7	Note 7		Install FHS IAW 78P050000	Accept			Visual
8	Sheet 2 Zone J5		8X .067 (+.004/-.001)	.071, .070, .066, .068, .068, .070, .068, .066			Plug Gage
9	Sheet 2 Zone G9		8X ∨⌀ .114 x 100°	.115/.118 x 101°			CMM

(Use additional sheets as necessary)

12. Signature	13. Date
John Smith	5/3/2015

Top Assembly Part Example

Example Of Form 3 Sub Assembly

1. Part Number	2. Part Name	3. Serial Number	4. FAI Report
77445565-001	Retainer Ring	N/A	12345-89

Characteristic Accountability					Inspection / Test Results		
5. Item No.	6. Reference Location	7. Characteristic Designator	8. Requirement	9. Results	10. Designed Tooling	11. Non-Conformance Number	14. Additional Data/Comments
1	Note 1		ANSI Y14.5 1982 applies and dimensions were taken after all special processes (Chem Film & Anodizing)	Accept			N/A
2	Note 2		Parts marked 123456-01 in designated area Mark IAW 79P070000	Accept			Visual
3	Note 3		Removed burrs & sharp edges	Accept			Visual
4	Note 4		All machined surfaces exhibit 125 √ Q1	Surface Finish √32			Profilometer
5	Note 5		Unless otherwise specified (UOS) Fillet Radii .010	Less than 0.01			Radius Gage
6	Note 6		Anodized IAW 79P050000 Code 2104	Accept			Certificate of Conformance from Plating Supplier (See attached certification)
7	Note 7		Chemical Filmed IAW 79P050000 Code 2002	Accept			Certificate of Conformance from Plating Supplier (See attached certification)
8	Note 8		Deleted	N/A			N/A
9	Note 9		Stress Relief IAW 79P050000 Code 9003	Accept			Certificate of Conformance from Heat Treat Supplier (See attached certification)
10	Note 10		Material AL ALY Sheet 6061-T6 IAW AMS-QQ-A-250/11 used for parts	Accept			Certificate of Conformance from Raw Material Supplier (See attached certification)
11	Sht.1 Zone C6		8 x 45.0° (Basic Dimension)	44.7/45.3°			CMM
12	Sht. 1 Zone C4		Ø 5.000 (+/-.010)	5.004			CMM
13	Sht. 1 Zone B3		0.080 (+/-.010)	0.087			CMM
14	Sht. 1 Zone B3		0.025 (+/-.005)	0.027			CMM
15	Sht. 1 Zone C3		8 x 20.0° (Basic Dimension)	20.3/20.5°			CMM
16	Sht. 1 Zone C2		Ø 3.400 (+/-.010)	3.406			CMM
17	Sht.1 Zone C2		⌖.056/A/B	0.003			CMM
18	Sht. 1 Zone B2		SR 10.420 (+.010)	10.425			CMM
19	Sht. 1 Zone D2		Ø 8 x .159(+.005/-001)	0.16			Pin Gage
20	Sht. 1 Zone D2		8x √Ø.302(+.010/-.000) x 100° (+/-.5°)	.311 x 100°/.302 X 100°			CSK Micrometer
21	Sht. 1 Zone D2		8x ⌖.005/A/B	0.001/0.002			CMM
22	Sht.1 Zone C1		Ø 2.500 (+/-.010)	2.506			Caliper
23	Sht. 1 Zone C1		⌖ .006/A/B	0.009			CMM

(Use additional sheets as necessary)

12. Signature		13. Date
John Smith	(John Smith's Signature)	5/3/2015

Revision History

Revision	Date	Author	Change
1	02/14/19	June Pellerito	Original Release