

GENERAL DYNAMICS

Ordnance and Tactical Systems

AS9102 First Article Training

Supplier Quality Assurance Team

January 2019

Background History

- AS9102 was developed in 1998 by International Aerospace Quality Group (IAQG) to significantly improve quality and reduce cost in the value stream.
- IAQG was represented by Aerospace companies in Americas, Asia, and Europe and sponsored by SAE, SJAC, and AECMA who have responsibility for technical content of the standard.

FAI Package - Common Mistakes

1. Photo of Marking not included
2. Missing Bubble Print
3. Missing Certificates
4. Use of an unapproved special process supplier
5. Missing Dimensions
6. Typing Errors
7. Incorrect Dimensions recorded
8. Did not ask for clarification



AS9102 format is required

- GDOTS Purchase Order Quality Text requires that FAI documentation shall be AS9102 or equivalent
- AS9102 forms are available at:
<http://www.sae.org/aaqg/publications/as9102a-faq.htm>
- Suppliers may also use their own version, as long as all requirements of AS9102 are met
- One of the following Q Clauses should be on every PO:
Q92, Q94, Q109, Q111, Q113
- A FAI Checklist to guide effective first time right submissions is available <https://www.gd-ots.com/wp-content/uploads/2019/02/Supplier-FAI-Checklist-QSP-CHK-10.0.1.pdf>

When should an FAI be performed?

- Full FAI

- New part introduction
- New supplier or new location of manufacture
- 2 year lapse in production
- When requested by GD-OTS

- Delta FAI

- Design change
- Significant change in the method of manufacture
 - e.g. Tooling, Processes, Location, Machine, Numerical Control Program, Sequence of Manufacture

FAI Submission Requirements

Each FAI must include the following:

- Completed AS9102 Forms 1, 2 & 3 (equivalent forms permitted)
- Complete Bubbled Print
- Certification of Conformance
- All associated Material Certifications
- Heat Treat Certifications
- All associated Special Process Certifications
- Manufacturing Plans, Work Instructions, Process Control Plans sufficient to document production process
- All test documents/procedures
- Final Inspection Plan (required for distributors)
- Picture of Part Marking

FAI Submission Requirements

- Submit First Article Inspection package (FAI) **BEFORE** the parts are shipped
- Receipt of FAI Approval from GD-OTS is required **PRIOR** to shipping parts
- Submit First Article Inspection package through the secure GD-OTS SharePoint Portal. Link below:
 - <https://portal.gd-ots.com/projects/guns/SitePages/Home.aspx>
- Contact your SQE if you do not have a SharePoint account or if you are having problems submitting items
- Errors cause delayed shipments and extra cost to **YOUR COMPANY** and to GD-OTS

AS9102 Forms 1, 2 & 3

- Form 1: Part Number Accountability
- Form 2: Product Accountability
 - Materials, Specifications and Special Process(es), Functional Testing
- Form 3: Characteristic Accountability
 - Verification and Compatibility Evaluation

Note: The following pages outline each numbered section and detail requirements needed for completion

AS9102 Forms 1, 2 & 3

GENERAL DYNAMICS
Armament and Technical Products
 First Article Inspection
 Form 1: Part Number Accountability
(see AS9102 for Instructions on Completion)

Sheet 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 | 10. Organization Name | 11. Supplier Code | 12. P.O. Number |
| 13. Detail FAI <input type="checkbox"/> Assembly FAI <input type="checkbox"/> | Full FAI <input type="checkbox"/> Partial FAI <input type="checkbox"/> | Baseline Part # including Rev. 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.

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|-----------------|---------------|------------------------|---------|
| 15. Part Number | 16. Part Name | 17. Part Serial Number | 18. FAI |
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1) Signature indicates that all characteristics are accounted for; meet drawing requirements or documented for disposition.
 2) Also indicate if FAI is complete per Section 5.4: FAI Complete FAI not Complete

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

GENERAL DYNAMICS
Armament and Technical Products
 First Article Inspection
 Form 2: Product Accountability – Raw Material, Specifications and Special
 Process(es), Functional Testing
(see AS9102 for Instructions on Completion)

Sheet of

| | | | |
|-----------------------------|-------------------------|------------------|---|
| 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) |
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| 11. Functional Test Procedure Number | 12. Acceptance Report Number, if Applicable |
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13. Comments

14. Prepared By

15. Date

GENERAL DYNAMICS
Armament and Technical Products
 First Article Inspection
 Form 3: Characteristic Accountability – Verification and Compatibility Evaluation
(see AS9102 for Instructions on Completion)

Sheet of

| | | | |
|-------------------------------|----------------------|---------------------------|--|
| 1. Part Number | 2. Part Name | 3. Serial Number | 4. FAI Report Number |
| Characteristic Accountability | | Inspection / Test Results | |
| 5. Char No. | 6. Ref. Loc. | 7. Char. Desig. | 8. Requirement |
| 9. Results | 10. Designed tooling | 11. Non-Conformance No. | 14. Misc. Info as required by customer |
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The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition

12. Prepared By

13. Date

AS9102 Form 1 Instructions

(See form on next page. Items in red are required entries)

1. Part number as ordered on GDOTS Purchase Order.
2. Part name as ordered on GDOTS Purchase Order.
3. If a serial number exists, enter serial number of part from which actual data was measured.
4. FAI report number inputted here, if one exists.
5. Rev level of the part must be inputted here including the latest CN if applicable (i.e. B.05 corresponding to CN-5) (Ref. P.O.)
6. If the drawing number should differ from the part number (i.e. items were GDATP supplied material (-OSP) or tabulated drawings)
7. If the drawing name should differ from the part name.
8. If the drawing rev level should differ from the part revision level
9. Indicate the manufacturing process (i.e. casting, machining, etc...)
10. Indicate name of your organization.
11. Indicate supplier code which can either be the assigned by GD or the U.S. Government.
12. P.O. number issued by GDOTS for part number listed.
13. Check appropriate box
 - Indicates whether part is the final assembly or a detail part of an assembly
14. Indicate whether the FAI is a delta (partial) or a complete FAI. Partial FAI are typically completed when a revision change is made or a part has been disqualified. A subsequent delta FAI is needed to verify that the dimensions or attributes that were previously rejected, now conform.

AS9102 Form 1 Instructions (continued)

(See form on next page. Items in red are required entries)

15. Used to list part numbers for components that were used to complete the part number listed in section 1
16. Part name associated with the part number in section 15
17. If a serial number exists the associated S/N goes with the part number listed in section 15
18. If a FAI was completed for a sub-assembly component part that was listed in section 15, the FAI report number should be listed in this section. This section allows for traceability should a sub-assembly part ever be determined to be defective or non-conforming.
19. There are two components to this section. S
 - Signature of the appropriate personnel who prepared the FAI testifying that all information is true and accurate.
 - Check appropriate, FAI complete or incomplete.
 - *Note: No FAI submitted to GD should be an incomplete FAI.*
20. Date that the preparer signed the form.
21. Validation by a second person at the supplier that testifies the FAI is true and accurate.
22. Date on which the FAI was reviewed by another member of the suppliers organization.
23. GDOTS signatures to approve FAI. An FAI is only approved by GDOTS when this box is signed. Anytime an FAI is submitted a cover sheet with the appropriate signatures should be returned and retained for records by the supplier. (For SEP Suppliers Illustration 2 is authorization)
24. Date that the GDOTS approved the FAI.

AS9102 Form 1

★ = Required Field

AS/E/S/JAC 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"/> Assembly FAI <input type="checkbox"/> | 14. Full FAI <input type="checkbox"/> Partial FAI <input type="checkbox"/> Reason for Partial FAI: | Baseline Part Number including revision level | |
| 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 ★ |
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| 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, 9102 Rev A, Date: Oct 31, 2003

AS9102 Form 2 Instructions

(See form on next page. Items in red are required entries.)

1. Part number as ordered on GDOTS Purchase Order.
2. Part name as ordered on GDOTS Purchase Order.
3. If a serial number exists, enter serial number of part which actual data was measured.
4. FAI report number inputted here, if one exists.
5. Used to detail the materials (including hardware, sealants, adhesives, etc.), processes (i.e. chem. film, paint, heat treat, etc...) and any other special processes used to manufacture the part.
6. Used to detail the specification number used to process material listed in section 5 (i.e. chem. Film -> Mil-DTL-5541F). If possible, spec rev levels are appreciated with the spec number but are not a requirement.
7. Outline any codes used in association with the proper material or process listed in section 5
8. Used to list the supplier code of the supplier who preformed any special process (reference GDOTS special processes listed on the GDOTS website under procurement.) This supplier code is used as a verification that the supplier used was a GDOTS approved supplier for this special process.
9. Verify that the special process suppliers are approved for the processes being preformed. If at any point the answer no is listed, the FAI should NOT be submitted to GDOTS. N/A should only be listed for processes preformed that GDOTS has not determined to be a "Special Process". To find a list of GDOTS special processes, reference the GDOTS website under procurement.
10. Associated C of C number should be listed here, if C of C does not have number, Supplier shall assign a distinct number.
11. Should a functional test be performed on that part, it should be listed here under this section
12. The acceptance report for the associated functional test should be provided under this section associated with the appropriate line in section 11.
13. Open to any general or specific comments regarding the part or FAI.
14. Personnel who prepared document, should sign this section testifying that the information is true and accurate.
15. Date when the form was signed and completed listed here.

AS9102 Form 3 Instructions

(See form on next page. Items in red are required entries.)

1. Part number as ordered on GDATP Purchase Order.
2. Part name as ordered on GDATP Purchase Order.
3. If a serial number exists, enter serial number of part which actual data was measured.
4. FAI report number inputted here, if one exists.
5. Sequential number order down the column for as many features and notes that exist on the print. (i.e. 1, 2, 3, 4, etc.). If additional pages are needed, a second page should be used identical to the first except that the character numbers should be carried over to the next page. (i.e. if the last number on the first page is 27, the first number on the second page should be 28).
6. The drawing zone of the feature or note. *Note: Ballooned drawings are REQUIRED.*
7. Details whether the feature is a diameter, flatness, straightness, true position, etc...
8. Dimension of the feature as required on drawing with tolerance included. Under no circumstances should a dimension be listed without a tolerance unless the feature is a basic or geometric tolerance. Features that do not have specific dimensions, but are governed by the tolerance listed in the title block must be listed with the feature.
9. Actual results of the measurement should be listed in this section.
10. Specific to designed tooling only (i.e. special fixtures, GDATP issued measuring tools and gages, etc...)
11. Used for listing any non-conforming documents that were issued for these features. This becomes a mandatory field if the part has any nonconformances.
12. Signed by the appropriate personnel that prepared the report and are testifying that the report is true and accurate. Sign each page supporting Form 3 submission.
13. Date when the report was signed.
14. Also known as comments. This section should be used to list generic measuring equipment such as micrometers, CMM, calipers, micro heights, etc... as well as any other comments regarding this feature the customer should be aware of.

AS9102 Form 3

★ = Required Field

AS/EN/SJAC9102 Rev A First Article Inspection
Form 3: Characteristic Accountability, Verification and Compatibility Evaluation

Sheet 1 of _

| ★ 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. [insert columns, etc, as required by Organization or Customer] | |
| ★ | ★ | ★ | ★ | ★ | ★ | | | |
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| The signature indicates that all characteristics are accounted for; meet drawing requirements or are properly documented for disposition. | | | | | | | | |
| 12. Prepared By ★ | | | | | | | 13. Date ★ | |

Form 3, 9102 Rev A, Date: Oct 31, 2003

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AS9102 First Article Training

Supplier Quality Assurance Team

January 2019