Supplier First Article Inspection

Document Number WI0036 **Version** 1.00

Work Instructions	**Divisions**	All WT USA
	Location(s)	All US Locations
	Old Document Number	Click here to enter text.

	Name	Title
Governance Owner	Ronald Koplin	Supplier Quality Manager
Department	Purchasing	
Sub-Department	SQM	
Related Business Manager	Heather Krueger	Manager of Quality Systems
Related Business Manager	Mark Kelly	Dir. Manufacturing NA

Impacted Areas

n/a

Special Notes/Instructions

n/a

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1 Purpose

To provide a consistent method for suppliers to document and submit first article inspection (FAI) results for Evoqua Water Technologies (WT) designed product.

2 Background

N/A

3 Scope

This document applies to any supplier submitting first article inspection documentation for WT designed product. This procedure does not apply to product supplied by suppliers of off the shelf product i.e. catalog items.

4 Conformance

Adherence to this procedure is mandatory for all US Evoqua Water Technologies (WT) locations. Where applicable, it may be applied to International suppliers.

5 Exceptions

First Article Inspections are only required for WT designed product; however, may be requested on other product. Indirect material / MRO suppliers, distributers, and supplier designed product are exempt from this procedure.

6 Roles and responsibilities

6.1 Supplier

6.1.1 The supplier is responsible for

- flagging products that require a FAI based on the criteria listed below
- ensuring all characteristics and notes are verified and documented; and adequate processes and procedures are established for the legible and full completion of the FAI
- submittal of the FAI results in a timely manner

6.1.2 The supplier receiving the WT purchase order is responsible to ensure the FAI documents are completed and submitted. The supplier receiving the purchase order is responsible for the documentation from any of their sub-tier supplier(s)

6.2 Buyer

6.2.1 Identify and request FAI from supplier when a part meets the requirements described below

6.2.2 Forward supplier completed FAI documents to SQM for approval

6.3 SQM

6.3.1 Review, approve or reject FAI documents provided by supplier

6.3.2 Provide supplier with signed warrant for approved FAI

6.3.3 Forward FAI documents to facility QM or segment

6.4 Engineering

6.4.1 Review and provide FAI acceptance feedback (accept, reject, provide exceptions)

7 Consultation with subject matter experts

Name	Title / Department
Rahoul Bhagat	Quality Management & EHS
John King	Quality Management & EHS
Kevin O'Connor	Quality Management & EHS
Patrick O'Connor	Purchasing Management
Charles Duncan	Purchasing Management
Rob Dudek	Quality Engineering

8 Cycle time

n/a

9 Inputs

- PO for an WT designed part based on the criteria

10 Outputs

- Supplier: FAI Supplier Inspection Report, records of material / performance test results, WT bubble drawing, and FAI Submission Warrant
- WT: Signed approved warrant

11 Measurement

n/a

12 Glossary of terms

Term	Definition
FAI	First Article Inspection – inspection of a new part, new tool, or process at a supplier whereby all characteristics, notes, referenced standards are verified to full compliance
Characteristic	A dimension or a property of the item that can be inspected (measured, tested, etc.)
Engineering Drawing notes	Verbiage added to a drawing that convey word information regarding the part
Material specification	Listed on the engineering drawing that details the material the product is to be constructed from

13 Instructions

13.1 Reasons for submitting a FAI include:

- Upon receipt of a new order for a part for an WT designed part
- Transfer of a tool to another location
- Replacement of a tool or a fixture
- Addition of new tool to the existing tool or fixture
- Modification of an existing tool
- Change of sub-tier suppliers
- Change to materials
- Product or process changes
- Change of manufacturing location
- Engineering changes to drawings or specifications

13.2 The Buyer

13.2.1 The Buyer must notify the supplier of the FAI requirement.

13.2.2 It is advisable for the Buyer to place a separate line item on the PO indicating the FAI as a deliverable. This line item can be a zero cost item.

13.2.3 Fabrications are exempt from verification of 100% of characteristics shown on the drawing. Fabrication FAI's are inspected to a Quality Plan. This Quality Plan must identify key quality characteristics (such as fit up dimensions, critical quality characteristics, etc.).

13.3 The Supplier

13.3.1 The supplier shall ensure all verifications conform to all specified documents and specifications.

13.3.2 Any results outside of the specification limits (engineering drawing, related specifications, etc.) should be properly documented with corrections and are cause for the supplier not to submit the FAI. The supplier must make every effort to correct the process so the product conforms to all of the specifications.

13.3.2.1 If the supplier is not successful in producing a product that conforms to all of the specifications, the supplier may submit a Temporary Deviation form for review by WT engineering.

13.3.3 The supplier must verify and record the results for:

- 100% of all characteristics on the engineering drawing
- 100% of all notes
- Material specifications (physical and chemical and must show specification and results)

13.3.4 The supplier shall perform tests for all parts and product materials when chemical, physical, or metallurgical requirements are specified by the engineering drawing. Material certifications provided by sub-tier suppliers may be used. Suppliers that make the material used in the final product will need to validate the chemical, physical, or metallurgical results. The use of sub-tier supplier results for material and physical properties is acceptable.

13.4 First Article Inspection

13.4.1 The FAI must be conducted on product produced from a stable manufacturing process.

13.4.2 To properly communicate the FAI information, the supplier must follow these requirements:

- Place a numbered bullet by each dimension, characteristic, or note on the engineering drawing.
- Transfer the bullet number and the dimension, characteristic, or note to the Supplier Inspection Report form.
- Upon completion of the inspection activity for each item listed on the Supplier Inspection Report form, ensure all results are included.
- Continue to enter the remaining items of the Supplier Inspection Report form.
- DO NOT FORGET TO IDENTIFY IF THE ITEM MEETS REQUIREMENTS (ACC - accept) OR (REJ-reject)

13.4.3 The supplier must submit the FAI electronically to the Buyer as listed on the purchasing document.

13.4.4 The Buyer forwards the FAI documentation to Supplier Quality Management (SQM).

13.4.5 SQM reviews the FAI document and provides approval status and returns to the buyer.

- **Approved**: the warrant is signed and returned to the supplier.
- **Rejected**: if the FAI documentation indicates characteristics that are outside of the specification, and a Temporary Deviation created, the FAI documentation and waiver are submitted provided to the appropriate engineering group for review and approval or rejection.

13.4.6 If the FAI documentation is not approved or is not complete, the waiver is checked 'rejected' and is returned to the supplier.

13.4.6.1 If the FAI is rejected, the supplier must re-submit the FAI with any non-conforming conditions corrected. The buyer must communicate all rejection information to the supplier and indicate a new FAI is required.

13.4.6.2 If the FAI is accepted with exception**s,** the exceptions will need to be corrected prior to next FAI submittal.

14 References

FO0127	Supplier First Article Inspection Submission Warrant
FO0128	Supplier Inspection Report form
FO0129	Temporary Deviation Request

15 Version History

Version	Date	Description of Change	Author	Approver
1.00	9/30/2015	Initial release to Pipeline	Ron Koplin	Ron Koplin

16 Appendix I: Warrant example

EVOQUA WATER TECHNOLOGIES

FIRST ARTICLE INSPECTION SUBMISSION WARRANT

Part Name: Flame Cell Ring Part Number: 441-20020

Purchase Order No.: 123456 Engineering Drawing Change Level: 0 Dated: 1963

SUPPLIER MANUFACTURING INFORMATION

Freds Machining & casting (Supplier Name) 104044 (Supplier Code)

Anywhere street (Street Address)

Anywhere USA (City/State/Postal Code)

SUBMISSION INFORMATION

Xo Dimensional o Materials/Functional

Customer Name/Division: Evoqua Water - Municiple

Buyer: John Smith

REASON FOR SUBMISSION

X☐ Initial Submission
☐ Engineering Change(s)
☐ Tooling: Transfer, Replacement, Refurbishment, or additional
☐ Correction of Discrepancy
☐ Other - please specify

☐ Change to Optional Construction or Material
☐ Sub-Supplier or Material Source Change
☐ Change in Part Processing
☐ Parts Produced at Additional Location

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SUBMISSION RESULTS

The results for X☐ dimensional measurements ☐ material and functional tests ☐ statistical process package

These results meet all drawing and specification requirements. X☐ Yes ☐ No (If "NO" - Explanation Required)

DECLARATION

I affirm that the samples represented by this warrant are representative of our parts and have been made to the applicable customer drawings and specifications and in the case of production samples, are made from specified materials on regular production tooling with no operations other than the regular production process. I have noted any deviations from this declaration below:

EXPLANATION/COMMENTS:

Print Name: Freddy Jones Title: Owner Phone No.: 1-555-5555

Supplier Authorized Signature: *Freddy Jones* Date:

FOR CUSTOMER USE ONLY

☐ Approved ☐ Rejected ☐ Other / Exceptions

Part Disposition

Customer Name: Customer Signature: Date:

17 Appendix II: Inspection results example

EVOQUA WATER TECHNOLOGIES

SUPPLIER INSPECTION REPORT

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DATE: 5/5/2015 PART NUMBER: 441-20020

P.O. NO.: 123456 REV. 0

TOTAL QUANTITY: 1 QUANTITY INSPECTED: 1

OPERATIONS TO BE PERFORMED:

PART INFORMATION		SUPPLIER COMPLETE									Evoqua COMPLETE			
B/P ZONE or Number	CHARACTERISTIC CHECKED OR SPECIFIED DIMENSION	TOL.	FREQ.	LOWER SPEC LIMIT	UPPER SPEC LIMIT	MEASURED DIMENSION RESULTS	INSPECTION DEVICE	ACC	REJ	INSP. NAME & DATE	MEASURED DIMENSION VERIFICATION	ACCEPT & DATE	DMR NO.	DISPOSITION AND DATE
1	(3) 11/32 holes (0.3438)	+/- 1/64	100%	21/64 (0.34)	23/64 (0.36)	0.344	plug gage	X		FJ 1/1/15				
2	36.625 dia BC	+/- 1/32	100%	3.594	3.656	3.63	caliper	X		FJ 1/1/16				
3	11/32 X 3/8 (0.344 X 0.375)	+/- 1/32	100%	10/32	12/32	11/32 x 0.375	plug gage + caliper	X		FJ 1/1/17				
4	1.06	-0.02	100%	1.04	1.06	1.05	caliper	X		FJ 1/1/18				
5	0.53	+/- 1/32	100%	0.50	0.56	0.54	caliper	X		FJ 1/1/19				
6	3" dia	+/- 1/32	100%	2.97	3.03	3.01	caliper	X		FJ 1/1/20				
7	4.250	+/- 1/32	100%	4.22	5.57	4.248	caliper	X		FJ 1/1/21				
8	125		100%	125	125	125	profolometer	X		FJ 1/1/22				
9	125		100%	125	125	125	profolometer	X		FJ 1/1/23				
10	Cast part number 1/4" high	+/- 1/32	100%	-	-	OK	caliper & visual	X		FJ 1/1/24				
12	120 degrees	+/- 1 °	100%	119°	121°	119°	protractor	X		FJ 1/1/25				
	NOTE: FOR MATERIAL - MUST PROVIDE CHEMICAL AND PHYSICAL PROPERTIES													
11	Cast aluminum 141-10030 aa #319 OR astm b26-68-sc64d		100%	-	-									
	SI			5.50%	5.60%	0.55		X		JM 1/1/15				
	IRON				1.00%	1		X		JM 1/1/16				
	COPPER			3.00%	4.00%	3.5		X		JM 1/1/17				
	MANGANESE				0.50%	0.5		X		JM 1/1/18				
	MANGNESIAM				1.00%	1		X		JM 1/1/19				
	NICKLE				0.35%	0.35		X		JM 1/1/20				
	ZINC				1.00%	1		X		JM 1/1/21				
	TITANIUM				0.25%	0.25		X		JM 1/1/22				
	TENSILE (PSI)				23,000	23,000		X		JM 1/1/23				
	TEMPER													

* ALL INSPECTION SMUST BE ACCOMPLISHED WITH TOOLS WHICH HAVE BEEN CALIBRATED. NOTE (SEE BACK)

NOTE: Inspection by Evoqua or their representative does not release the supplier from responsibility for any non-conforming conditions (such as with workmanship, material or other requirements of the purchase order) discovered at either at Evoqua Industriepection b representative or customer.

Evoqua Industries Inspector _____

Supplier _____

18 Appendix III: Bubble drawing example