

4M AMENDMENT REQUEST AND RECORD

Form: 4-Pr-007-4-Fo-001

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Requested by: TramNTN

Issued date: 13-Aug-2021

Record No. (get by EIC program):

4-PR-007-4-FO-001-4-RC-0965

Record name: **Apply cancel grinding for hytel tube of FSC Series product****A - Information of amendment:****A.1 Topic for 4M amendment recommendation:**

- ☐ Man ☐ Material ☒ Method/Document ☐ Machine, Tool/Jig
☐ Process ☐ Supplier ☐ Factory/Section ☐ Others:

A.2 Detail information: (For document, please write down document number, current version fully)* **Scope of amendment:** (list out relating Products name, Specification number,... if any)

Apply for all Products of FSC series using hytel tube inside module case.

* **Description of amendment:**

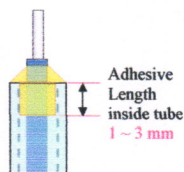
	Current Method	Propose Method
Procedure	<p>Grinding tube at one side which make connector</p> <p>Grinding area(3~5mm) at ferrule side</p> <p>Hytel tube Ø 0.9mm</p> <p>Make ferrule & housing connector</p> <p>Casing product inside Module case</p>	<p>Cancel grinding tube</p> <p>Hytel tube Ø 0.9mm</p> <p>Make ferrule & housing connector</p> <p>Casing product inside Module case</p>
Cycle time for grinding	4 seconds/con	0 second/con

A.3 Reason:

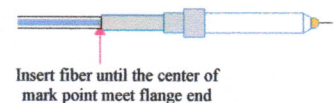
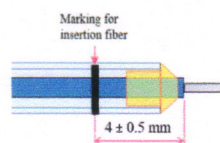
Grinding tube is basically applied to make stable fixing force for tube-ferrule-fiber. However, we can review to cancel for some reasons as below:

1. Ferrule assembly method is controlled to make stable bonding for tube-ferrule-fiber

+ Medome:
Control adhesive over flow length (L1)



+ Insert ferrule:
Control tube insertion length inside flange (L2)



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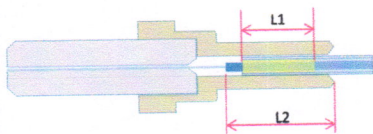
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* Check L1, L2 by samples taken in production line, here is the results:

=> All samples meet requirement which proves that operation has still be controlled well.



(L1) Adhesive over flow length
(L2) Insertion length inside flange

		L1 (mm)	L2 (mm)	Judgement
	Spec	1 ~ 3	4 ± 0.5	
1		2	4.2	OK
2		2.5	4.1	OK
3		2	3.8	OK
4		1.5	3.9	OK
5		2	3.9	OK
6		2.5	4	OK

2. Cancel grinding hytel tube gives a same strength for fixing between hytel tube and ferrule

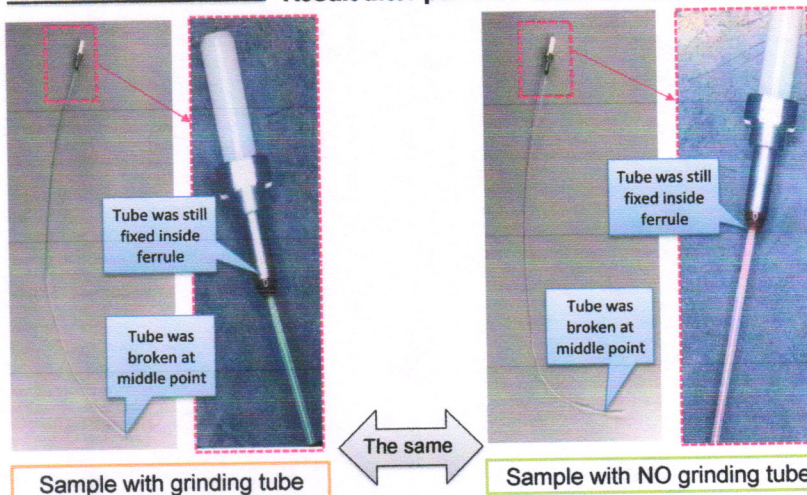
Refer Pull test result: Samples of grinding tube & No grinding tube are the same

+ Hytel Tube was still fixed inside ferrule after testing.

+ Hytel Tube was broken with the same pull force for 2 types of sample after elongated about 300 mm

Sample	Pull force (kgf)	
	Grinding Tube	NO Griding tube
1	0.93	0.96
2	0.91	0.91
3	0.85	0.94
4	0.93	0.93
5	0.90	0.87
6	0.92	0.83
7	0.95	0.96
8	0.88	0.91
9	0.94	0.93
10	0.89	0.91
MIN	0.85	0.83
MAX	0.95	0.96
AVERAGE	0.91	0.91
STD	0.03	0.04

Result after pull test



=> No risk of tube come out after ferrule assembly with current handling process

3. Connector side was wired inside module case so there is no outside force impact to the tube pull out of ferrule inside module => Have no risk tube came off after assembly

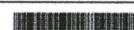
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4. Not found any tube come off defect before.

Product kind	Tube type	Cancel grinding tube end	History of Customer complain tube come off
			2017 ~June 2021
Module CNC	Hytrel	Not yet (under proposal)	0
Module SG	Hytrel	Already applied	0

5. Expand method: This method was applied in many other production lines in FOV (Ex: SG module product)

6. This change will reduce 4 seconds/con. Saving 169USD/month (Plan 67000con/month)

A.4 Declare signification of amendment:

The amendment is affected to:

- ☐ "Special customer" ☐ Customer Specification ☒ Instruction from customer ☐ General requirement (IEC, JIS, etc.)
☐ Corrective action promised to customer ☐ Products Material or QC flow/item changed ☐ Quality change or risk of quality level down ☐ Customer can't use by current method ☐ FOV internal only

A.5 Review and approve by requester's manager:

☒ Accept☐ Do not accept

* Note: Approver will decide items (check to boxes) be controlled as section B and section E below.

Reviewed by section manager:

Confirmed by Technical advisor (if any)

Assign project Leader to:

Name: Tram.NTN

Reviewed date: 12.Aug.2021

Confirmed date:

Code: 60097

Comment:

B - Evaluation of amendment:

B.1 Review and update document:

☒ YES☐ NO

(List out the document relating to the change require to revise/establish, current version and confirm for completion)

Document#	Document name	Current version	PIC confirm completion
4-OP-382	FSC110 and FSC105	8	TramNTN
4-OP-382-4-PS-009-0001	PART	1	TramNTN

B.2 Risk assessment and review:

☐ REQUIRED☒ NOT REQUIRED

a) REQUIRED: the result of updating below

FMEA report No.:

Version:

b) NOT REQUIRED: please breakdown the reason/information

The change is not affect to other quality control item.

B.3 Design review request:

☐ YES (☐ DR0 ☐ DR1 ☐ DR2 ☐ DR3)☒ NO

Plan No. for Test Run:

Result of Trial Run/Validation: refer to attached Technical report No.:

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**C - FOV approval of amendment:** (Do not require for change of document)Note : Significant amendment should be approved by Dept. Manager upwards, others are approved by Section Manager.

Approve of amendment:

☒ YES☐ NO

Require to control of amendment:

☒ YES☐ NO

Need customer approval?

☒ Yes☐ No

Signature:

Date: 12-Aug-2021.....

Need inform to customer?

☐ Yes☐ No

Comment:

D. Customer's confirmation & approval (by email or signature):

(Please feedback your confirmation & approval (if any) before date:)

Approved by:

Date:.....

Comment (if any):

Follow customer approval: JE-58-24-1490(1)

E. Review the implementing of the change:E.1 Initial control:☐ YES☒ NO

Initial control plan number:

Initial control completion report number:

E.2 Training requirement:

Re-train, with updating qualification record:

☐ YES☒ NO

Re-instruct, no need update qualification record:

☒ YES☐ NO

In case training required, please write down Training record number or Meeting minutes (& date):

F- Confirmation for mass production: (Do not require for change of document)F.1 Completion review and approve by Section manager in charge of changed area:

Approved by section manager:

Approved date:

20-Jun-24

Manager's comment:.....

F.2 Implementing history (started date, ID#,...): 17-Jun-2024, ID 378468

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