I. ***Purpose***

- To set up the manufacturing processes which are implemented in Fujikura Fiber Optics Vietnam
- To determine Quality control items of each process

II. ***Application***

- This guideline is applied for FUSECONNECT-SC product
- This document concerns to Production function, Production engineering function, Quality Assurance function and Planning function.

III. ***Reference document***

- Customer specification

No	Specification	Product Name	Remark
1	FUSECONNECT-SC-SF-SM-20/30	PNJHY-0107-25-29F	
2	FUSECONNECT-ST-SF-GI5-30	PNJHY-0107-25-43A#7	
3	FUSECONNECT-SC-SF-SM-09	PNJHY-0107-25-14C	
4	FUSECONNECT-SC-SF-APC-09	PNJHY-0107-25-15C	
5	FUSECONNECT-SC-SF-10G-09	PNJHY-0107-25-45B#3	
6	FUSECONNECT-ST-SF-SM-20	PNJHY-0107-25-43A#1	
7	FUSECONNECT-SC-SF-GI5-09	PNJHY-0107-25-45B#2	
8	FUSECONNECT-SC-SF-GI6-09	PNJHY-0107-25-45B#1	
9	FUSECONNECT-ST-SF-GI6-09	PNJHY-0107-25-42#2	
10	FUSECONNECT-FC-SF-APC-20/30	PNJHY-0107-25-38	
11	FUSECONNECT-FC-SF-APC-09	PNJHY-0107-25-40	
12	FUSECONNECT-ST-SF-10G-30	PNJHY-0107-25-43A#8	
13	FUSECONNECT-ST-SF-SM-30	PNJHY-0107-25-43A#5	
14	FUSECONNECT-SC-SF-10G-20/30	PNJHY-0107-25-34E#2	
15	FUSECONNECT-SC-SF-GI6-20/30	PNJHY-0107-25-34E#3	
16	FUSECONNECT-ST-SF-GI6-30	PNJHY-0107-25-43A#6	
17	FUSECONNECT-SC-QA-APC-20	PNJHY-0107-25-48J#1	
18	FUSECONNECT-SC-QA-APC-30	PNJHY-0107-25-48J#2	
19	FUSECONNECT-SC-QA-SM-20	PNJHY-0107-25-48J#3	
20	FUSECONNECT-SC-QA-SM-30	PNJHY-0107-25-48J#4	
21	FUSECONNECT-SC-QA-GI5-20	PNJHY-0107-25-49E#1	
22	FUSECONNECT-SC-QA-GI5-30	PNJHY-0107-25-49E#2	
23	FuseConnect-SC-SF-APC-35	JDAA-11-14-0473	
24	FUSECONNECT-SC-QA-APC-32	PNJHY-0107-25-56	
25	FUSECONNECT-FC-SF-GI6-20/30	PNJHY-0107-25-94A#1	
26	FUSECONNECT-SC-SF-GI6-09	HY-0107-095#1$002	
27	FUSECONNECT-FC-SF-GI5-20/30	PNJHY-0107-25-94A#2	
28	FUSECONNECT-FC-SF-10G-20/30	PNJHY-0107-25-94A#3	
29	FUSECONNECT-SC-QA-APC-20	PNJHY-0107-25-98E#1	
30	FUSECONNECT-SC-QA-SM-30	PNJHY-0107-25-98D#4	
31	FUSECONNECT-SC-QA-GI5-30	HY-0107-099#2$001	
32	FUSECONNECT-SC-QA-10G-30	HY-0107-099#4$001	
33	FUSECONNECT-SC-QA-GI6-30	HY-0107-099#6$001	

34	FUSECONNECT-SC-SF-SM-09	PNJHY-0107-25-64A	
35	FUSECONNECT-ST-SF-SM-09	PNJHY-0107-25-92#1	
36	FUSECONNECT-ST-SF-GI6-09	HY-0107-092#2$001	
37	FUSECONNECT-SC-SF-APC-09	HY-0107-065#1$005	
38	FUSECONNECT-SC-SF-GI5-09	HY-0107-095#2$002	
39	FUSECONNECT-SC-SF-10G-09	PNJHY-0107-25-95A#3	
40	FUSECONNECT-FC-SF-SM-20/30	PNJHY-0107-25-85A	
41	FUSECONNECT-ST-SF-10G-30	PNJHY-0107-25-93#8	
42	FUSECONNECT-SC-QA-SM-UPC-32	HY-0107-056#2$001	
43	FUSECONNECT-ST-SF-GI5-09	HY-0107-092#3$001	
44	FUSECONNECT-ST-SF-SM-30	PNJHY-0107-25-93#5	
45	FUSECONNECT-ST-SF-GI6-30	PNJHY-0107-25-93#6	
46	FUSECONNECT-ST-SF-GI5-30	HY-0107-093#7$001	
47	FUSECONNECT-SC-QA-SM-20	PNJHY-0107-25-98D#3	
48	FUSECONNECT-SC-SF-SM-20/30	HY-0107-079$001	
49	FUSECONNECT-SC-SF-GI5-20/30	PNJHY-0107-25-34E#1	
50	FUSECONNECT-FC-SF-SM-20/30	PNJHY-0107-25-35	
51	FUSECONNECT-FC-SF-SM-09	PNJHY-0107-25-39	
52	FUSECONNECT-SC-SF-APC-09(50PCS/BOX)	HY-0107-065#3$001	
53	FUSECONNECT-SC-QA-SM-UPC-32	HY-0107-056#3$001	
54	FUSECONNECT-SC-QA-APC-30	HY-0107-098#2$001	
55	FUSECONNECT-SC-APC-DC	PNJHY-0107-25-96C#4	
56	FUSECONNECT-SC-QA-SM-APC-32	PNJHY-0107-25-56K#1	
57	FUSECONNECT-SC-SF-APC-09	PNJHY-0107-25-65B#1	
58	FUSECONNECT-FC-SF-GI5-09	PNJHY-0107-25-97A#2	
59	FUSECONNECT-FC-SF-10G-09	PNJHY-0107-25-97A#3	
60	FUSECONNECT-FC-SF-GI6-09	PNJHY-0107-25-97A#1	
61	FUSECONNECT-SC-APC-DC	PNJHY-0107-25-96B#4	
62	FUSECONNECT-SC-SF-APC-09	HY-0107-065#2$001	
63	FUSECONNECT-FC-SF-APC-20/30	PNJHY-0107-25-88A	
64	FUSECONNECT-FC-SF-SM-09	PNJHY-0107-25-89A	
65	FUSECONNECT-FC-SF-APC-09	PNJHY-0107-25-90A	
66	FUSECONNECT-SC-SF-APC-09	PNJHY-0107-25-134	
67	FUSECONNECT-SC-QA-10G-20	PNJHY-0107-25-49E#3	
68	FUSECONNECT-SC-QA-10G-20	PNJHY-0107-25-99C#3	
69	FUSECONNECT-SC-QA-SM-APC-32	HY-0107-056#1$001	
70	FUSECONNECT-SC-QA-SM-20	HY-0107-098#3$001	
71	FUSECONNECT-SC-QA-10G-30	PNJHY-0107-25-49E#4	
72	FUSECONNECT-SC-QA-SM-30	HY-0107-098#4$001	
73	FUSECONNECT-SC-QA-10G-20	HY-0107-099#3$001	
74	FUSECONNECT-SC-QA-OM4-20	HY-0107-099#7$001	
75	FUSECONNECT-SC-QA-OM4-30	HY-0107-099#8$001	
76	FUSECONNECT-SC-QA-GI6-20	HY-0107-099#5$001	
77	FuseConnect-SC-SF-SM-20/30	PNJHY-0107-25-79B	
78	FUSECONNECT-SC-QA-GI5-20	HY-0107-099#1$001	

79	FUSECONNECT-SC-SF-APC-09	PNJHY-0107-25-65B#2	
80	FUSECONNECT-SC-QA-SM-20	HY-0107-048#3$001	
81	FUSECONNECT-SC-QA-APC-30	HY-0107-048#2$001	
82	FUSECONNECT-SC-QA-APC-20	HY-0107-098#1$001	
83	FUSECONNECT-SC-SF-APC-09	HY-0107-065#2$005	
84	FUSECONNECT-SC-QA-APC-20	TS-2202-02A#1	
85	FUSECONNECT-SC-QA-SM-20	TS-2202-02A#3	
86	FUSECONNECT-SC-SF-APC-09	HY-0107-065#4$003	
87	FUSECONNECT-ST-SF-10G-20	HY-0107-093#4$001	
88	FUSECONNECT-ST-SF-10G-09	HY-0107-092#4$001	
89	FUSECONNECT-ST-SF-SM-09	HY-0107-092#1$001	
90	FUSECONNECT-SC-SF-10G-09	HY-0107-095#3$001	
91	FUSECONNECT-SC-SF-GI5-20/30	HY-0107-084#1$001	
92	FUSECONNECT-SC-SF-10G-20/30	HY-0107-084#2$001	
93	FUSECONNECT-ST-SF-10G-30	HY-0107-093#8$001	
94	FUSECONNECT-SC-SF-GI6-20/30	HY-0107-084#3$001	
95	FUSECONNECT-SC-QA-APC-20	HY-0107-048#1$001	
96	FUSECONNECT-SC-QA-SM-30	HY-0107-048#4$001	
97	FUSECONNECT-SC-SF-APC-48	HY-0107-138#2$001	
98	FUSECONNECT-ST-SF-GI6-30	HY-0107-093#6$001	
99	FUSECONNECT-ST-SF-GI6-20	HY-0107-093#2$001	
100	FUSECONNECT-SC-SF-10G-09	HY-0107-095#3$002	
101	FUSECONNECT-SC-SF-SM-48	HY-0107-138#1$001	
102	FUSECONNECT-ST-SF-SM-30	HY-0107-093#5$001	
103	FUSECONNECT-ST-SF-GI5-20	HY-0107-093#3$001	
104	FUSECONNECT-SC-SF-APC-20/30	HY-0107-080$001	
105	FUSECONNECT-SC-SF-APC-09	HY-0107-065#4$004	
106	FUSECONNECT-ST-SF-SM-20	HY-0107-093#1$001	
107	FUSECONNECT-SC-SF-SM-09	HY-0107-064$001	
108	FUSECONNECT-SC-SF-OM4-09	HY-0107-095#4$002	
109	FUSECONNECT-SC-SF-APC-09	HY-0107-065#4$005	
12 110	FUSECONNECT-SC-SF-APC-09	HY-0107-140#1$001	

- FMEA No.: 0-PR-012-0-Fo-001-4-RC-0159 version 03

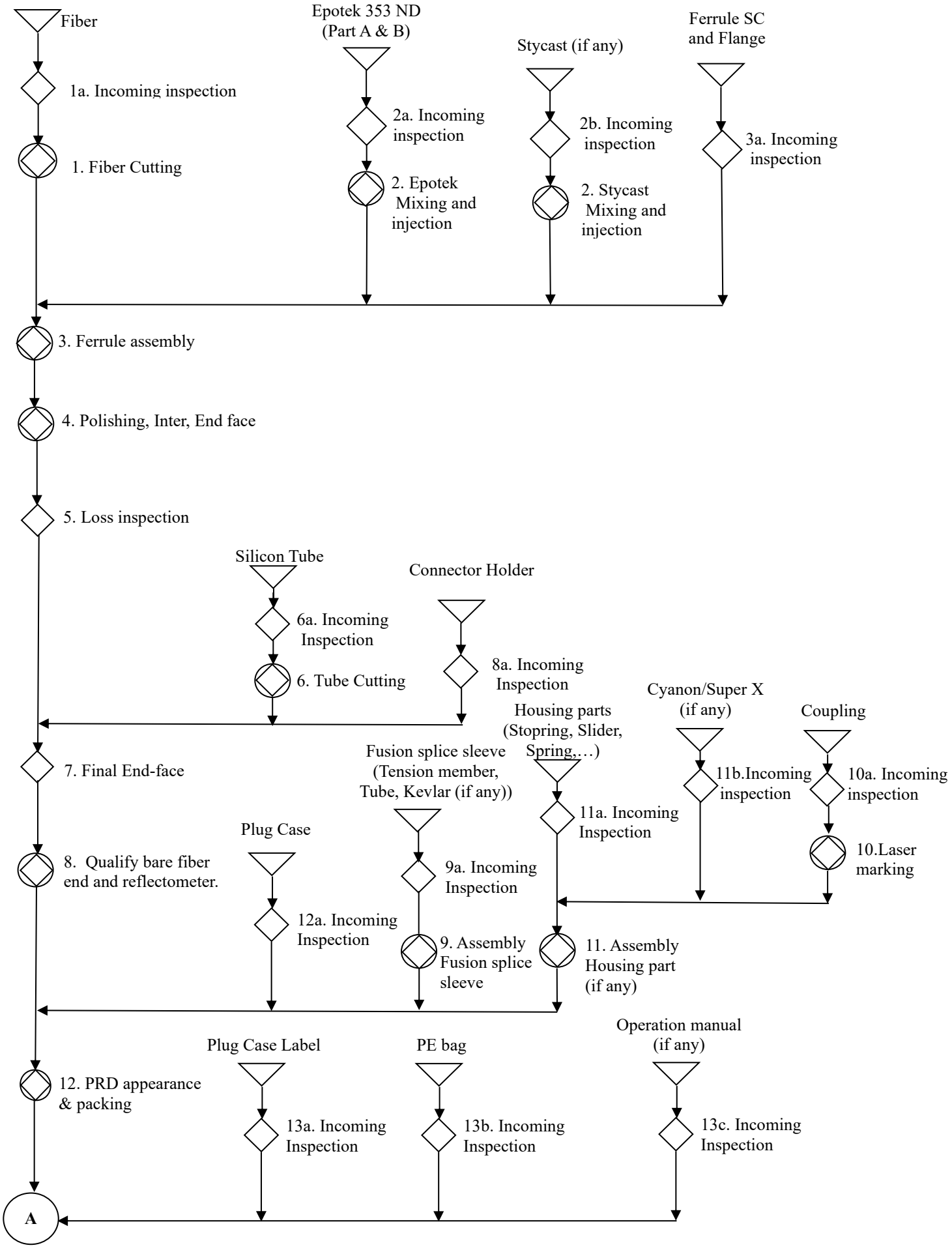
***Item number: Alternative item with same name and spec can be applied this QC.**

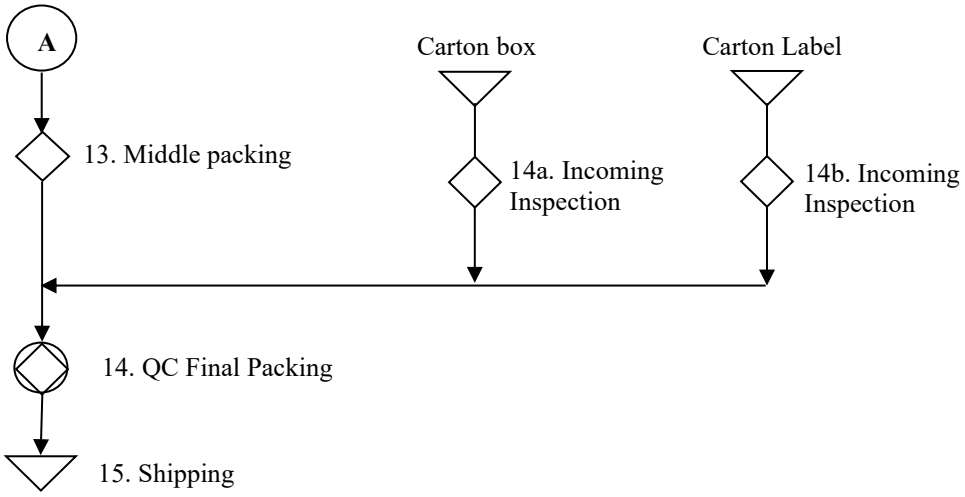
IV. ***Term definition***

- FOV: Fujikura Fiber Optics Vietnam Ltd.,
- PRD: Production section
- PRE: Production Engineering
- QAE: Quality Assurance Engineering
- LOG: Logistic section
- FUSECONNECT-SC: one kind of products which are manufacture in FOV.

V. Contents

1. QC flow chart:





2. Process condition and control items

Process		Quality Control Items	Instrument	Sampling size	Related Document	SIC
No.	**Name**					
1a	Incoming Inspection (Fiber)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
1	Fiber cutting	- Fiber type, lot No	Visual	All	4-OP-182	PRD PRE
		- Fiber length	Bobbin template			
		- Fiber length checking	Ruler	3 samples/ ID		
2a	Incoming Inspection (Epotek-353ND part A & B)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
2b	Incoming Inspection (Stycast 2057)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
2	Adhesive mixing and injection	- Lot No. (Part A & B) - Expiration date (Part A & B)	Visual	All	4-OP-500	PRE PRD
		- Mixing Ratio	Balance			
		- Mixing Time	Timer			
		Remove air bubble	Centrifugal			
		- Air bubble checking	Visual			
		- Lifetime of adhesive (start at mixing time)	Timer			
3a	Incoming Inspection (Ferrule SC and flange)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
3	Ferrule Assembly	- Epotek injection into ferrule	Dispenser/ Machine	All	4-OP-0470 4-OP-182 9-PR-008-4-WI-0020	PRD PRE
		- Epotek injection into flange	Dispenser/ Machine			
		- Assembly ferrule and flange	Tool			
		- Ferrule length after assembly	Dial gauge			
		- Stripper No. - Heater No.	Visual			
		-Fiber length before insert into ferrule - Check and cleaning adhesive flow out (if any)				
		- Lifetime of adhesive	Timer			
		- Heater condition - Heating time	Heater			
		- Epotek on ferrule (if any)	Combination tool/ Ring Gauge			

4	Polishing, Inter, End face	Polisher Condition APC/ UPC	- Polisher Condition APC/UPC	Manual	All	4-OP-182 4-OP-528 9-PR-008-4-WI-0020	PRE PRD
			- Polishing machine No. - Interference machine No.	Manual			
			- Ferrule & Fiber End-face	Microscope			
			- Interferometer checking APC	Interferometer	All		
			- Interferometer checking UPC		Sampling 2/24pcs		
			- Ferrule length after polishing	Dial gauge	All		
5	Loss Inspection		- System control No. - P0 value - Master cord control No. - Normal loss value (Connector Plug)	Loss system	All	4-OP-182 9-PR-008-4-WI-0020	PRE PRD
			- Normal loss value (Fusion Connector)		1/ 1000 products		
6a	Incoming Inspection (Silicon Tube)		Refer to 9-PR-012: Quality inspection control material				PLN QAE
6	Tube Cutting		- Tube length	Machine	All	4-OP-182	PRE PRD
			- Checking length	Ruler/Template	3samples/ ID		
7	Final End-face		- Fiber end-face check	Microscope	All	4-OP-182 9-PR-008-4-WI-0020	PRD, PRE
			- Length of silicon tube on ferrule	Template			
8a	Incoming Inspection (Connector Holder)		Refer to 9-PR-012: Quality inspection control material				PLN QAE
8	Qualify bare fiber end and Reflectometer		- Ferrule position in holder - Holder locking condition	Visual	All	4-OP-182 9-PR-008-4-WI-0020	PRE PRD
			- Striper No	Visual			
			- Fiber cleaning - Fiber screening	Manual			
			- Cleaver No. - Fusion splice machine No.	Visual			
			- Fiber bending check. - Bare fiber length	Jig, microscope			
			-Angle end-face checking -Splice ability	Splicer			
			- Fiber Appearance	Visual 12			
9a	Incoming Inspection (Tension member, tube, Kevlar (if any))		Refer to 9-PR-012: Quality inspection control material				PLN QAE
9	Assembly fusion splice sleeve tube		- Tube length	Machine/ruler	Sampling 3pcs/lot	4-OP-182 9-PR-008-4-WI-0020	PRE PRD
			- Heating machine check	Visual	All		
			- Heating condition				
			- Tension member position				
			- Tube appearance				
10a	Incoming inspection (Coupling)		Refer to 9-PR-012: Quality inspection control material				PLN QAE
10	Laser marking		Laser marking content, position, direction	Manual	All	4-OP-182	PRE PRD
			Laser appearance	Visual	All		

11a	Incoming inspection (Stopring, Slider, Spring,…)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
11b	Incoming inspection (Cyanon/ Super X)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
11	Assembly Housing part	-Assembly direction -Marking position (if any)	Manual	All	4-OP-182 9-PR-008- 4-WI-0020	PRE QAE
		-Appearance	Visual			
12a	Incoming Inspection (Plug case)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
12	PRD Appearance & Packing	- Product Appearance - Ferrule position in holder - Holder locking condition	Visual	All	4-OP-182	PRE PRD
		-Enough items -Correct position -Plug frame color -Correct attachment	Manual			
13a	Incoming Inspection (Plug case Label)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
13b	Incoming Inspection (PE bag)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
13c	Incoming Inspection (Operation manual) (if any)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
13	Middle Packing	- Correct manual spec	Visual	1pc/ID	4-OP-182	QAE PRD
		- Quantity of product	Program	All		
		- Label content/ appearance	Visual	All		
14a	Incoming inspection (Carton box)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
14b	Incoming inspection (Carton label)	Refer to 9-PR-012: Quality inspection control material				PLN QAE
14	QC Final Packing	- Quantity of product - Carton box type - Content/position of carton box ‘s label	Visual/Program	All	4-OP-182	QAE PRD
15	Shipping	- Quantity of product - Product Name - PO No.	Visual	All	4-OP-182	PLN

VI. Record

No.	Record	Retention time	Responsibility for keeping
-	-	-	-

Identification, storage, protection, retrieval & disposition of these records refer to 0-PR-004 Control of record.
Note: Nonconforming product/material shall be identified & controlled according to relevant procedures: 9-PR-008.

REVISION HISTORY

Date	PIC	Version	Description		Reason of change	Requester
			Old contents	New content		
10-Sep-2024	Ngan NLT	12	III. Reference documents: V. Content: Item 8: Fiber Appearance: Microscope	III. Reference documents: Add spec: v V. Content: Item 8: Fiber Appearance: Visual	Customer update spec Apply 4M: 9-PR-014-9-FO-0001-4-RC-0142	
09-May-2024	Ngan NLT	11	III. Reference documents: V. Content: Item 5: Normal loss value: 1/ 5000 products Item 15: Ferrule setting & stripping. Item 16: Qualify bare fiber end and reflect. Item 17: Final Appearance Item 27: Packing Item 11: Ferrule setting & stripping: Length of silicon tube on ferrule by Ruler 2. Process condition and control items QCE LOG 9-QC-001	III. Reference documents: Update the latest version. V. Content: Item 5: Normal loss value: 1/ 1000 products Item 8 Qualify bare fiber end and Reflect: Combine and update control items. Item 12: PRD Appearance & Packing: Combine and update control items. Item 7: Final End face: Length of silicon tube on ferrule by Template 2. Process condition and control items QAE PLN 9-PR-012 4-OP-500 4-OP-528 4-OP-0470 9-PR-008-4-WI-0020	Customer release new version Document review. Combine process as actual review. Combine to general OP. Apply new template 0-PR-001-0-TEM-003	Hieu PD
	Phuong TM		V. Content: Item 13 QC Appearance	V. Content: Item 13: Middle packing: update control item	Cancel QC Appearance follow 4M 9-PR-0014-9-FO-0001-9-RC-0006	Duc TNM
26.09.2018	Nguyen Ha Thuy Van	10	-	-In section 5.1 Change QC chart + Combine stopring, spring, connector cap, plug frame process on Housing process. +Cancel Hi-super 30, Hytrel tube process based on specification.	Update	PRE1

				-In section 5.2: Make clear instrument for all process.		
22.10.11	Hua Cong Nghiep	9	-	Cancel: Hytrel preparation Document of INC	Update	PRD1
20.12.2010	Hua Cong Nghiep	8	-	Combine SC & SC-SM	Update	PRD1