

**I. Purpose:**

This QC flow chart guides for manufacturing 3mm cord Magetsuyo product.

**II. Application:**

This QC flow chart is applied to Magetsuyo with cord 3.0 mm products manufactured in FOV.

This operation procedure has a connection with Engineering, Quality Assurance, Production and Planning, PLNistic

**III. Reference documents:**

- Customer specification

No	Specification	Remark
1	PNJHC-1005-25-01AK HC-1005-001\$002	
2	PNJHC-1005-25-02Y HC-1005-002\$002	
3	HC-1071-006#8\$001	
4	HC-1005-003\$003	
5	PNJHC-1143-25-01B HC-1143-001\$001	
6	PNJHC-1005-25-04J	
7	PNJHC-1071-25-03J	
8	PNJHC-1093-25-01	
9	PNJHC-1071-25-02A	
10	PNJHC-1071-25-05	
11	PNJHC-1137-25-01B	
12	PNJHC-1137-25-02	
13	PNJHC-1138-25-01B	
14	PNJHC-1138-25-02	
15	PNJHC-1189-25-01A	

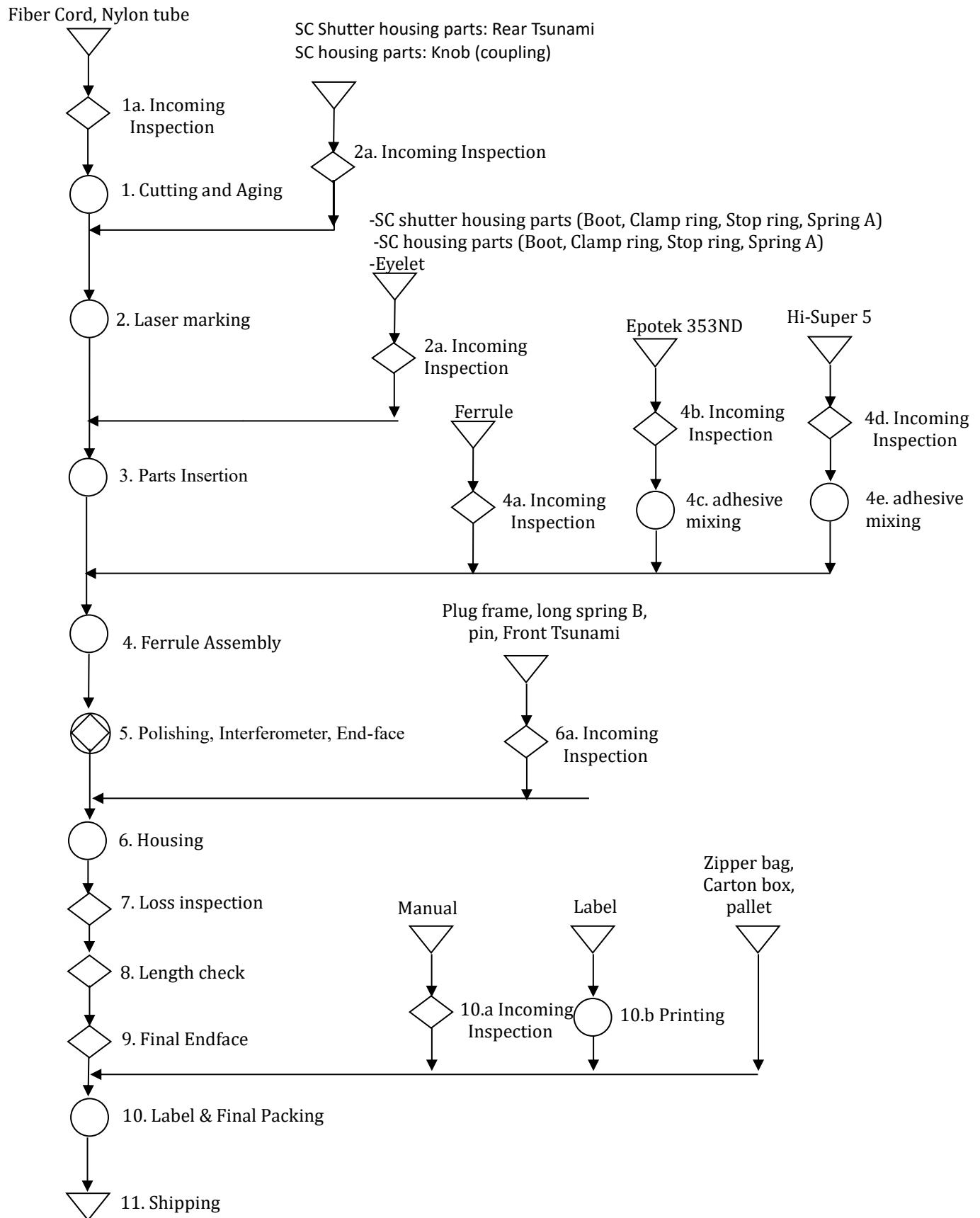
- FMEA: 0-PR-012-0-FO-001-4-RC-0141 Version 13

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**IV. Term definition:**

- **FOV:** Fujikura Fiber Optics Viet Nam Ltd.
- **Samp:** Size of sample
- **P.I.C:** Person In Charge
- **IL:** Insertion Loss
- **RL:** Return Loss
- **QAE:** Quality Assurance section
- **PRE:** Production engineering section
- **PRD:** Production section
- **PLN:** PLNistic section
- **WH:** Warehouse section

<u>Checked by:</u> Nguyen Thanh Ban Date: Follow DMS	<u>Approved by:</u> Nguyen Trung Kien Date: Follow DMS
<u>Prepared by:</u> MyNTH and checked by: Duc TNM Date: 30-Sep-2024	<u>Originator:</u> Dinh Tan Tien Date: 27 Apr 2011

**V. Content:****1. QC Flow chart:**


## 2. Quality control items for each process

Quality control items for each process for Magetsuyo product are shown in the following table:

Process		Quality control items	Instrument	Sampling size	Related document	SIC
No	Name					
1a	Incoming inspection [Cord]	9-PR-012				PLN, QAE
1b	Incoming inspection [nylon tube]	9-PR-012				PLN, QAE
1	Cutting & Aging	-Quantity -Type & Color of cord, nylon tube	Manual Visual	All	4-OP-0483	PRD, PRE
		-Cord cutting length	Machine/ Ruler	- When start machine: + Measure 3 pcs if change roller status + Measure 1 pc if not change roller status - When stop machine: measure 1 pc		
		-Nylon tube cutting length	Machine/ Ruler	When machine stop or re-running or frequency check after 30mins measure 3pcs		
		- Appearance of cord (no deform)	Visual	1 <sup>st</sup> set/cutting time		
		- Aging (For PNJHC-1143-25-01 and PNJHC-0923-25-04A)	Chamber/ recorder	All	4-OP-0176	
2a	Incoming inspection - Rear TSUNAMI (SC Shutter) - Knob (coupling) (SC connector)	9-PR-012				PLN, QAE
2	Laser marking	- Position, direction of part on jig - Position, direction of Laser jig	Visual, Manual, Jig	All	4-OP-577	PRD, PRE
		- Laser marking condition - Laser marking content - Appearance	Visual/ Program			
3a	Incoming inspection (Boot/ Clamp ring/ Stop ring/ Spring A/ Eyelet)	9-PR-012				PLN, QAE
3	Part Insertion	- Quantity - Type & Color of part	Manual, Visual	All	4-OP-0392	PRD, PRE
		- Parts direction - Part position - Insert direction	Jig			
		- Barcode serial no and Laser serial No on Rear Tsunami matching.	Visual	First serial number/batch 6		
		- Eyelet position	Visual	All		
		- Outer jacket stripping length	Machine/ stripper			
		- Kevlar cutting length	Cutter			
		- Cord marking length	Template			

Process		Quality control items	Control equipment	Sampling size	Refer Doc. No	Function incharge
No	Name					
4a	Incoming Inspection (Ferrule)	9-PR-012				PLN, QAE
4b	Incoming Inspection (Epotek-353ND, Part A & B)	9-PR-012				PLN, QAE
4c	Adhesive Mixing (Expotek-353ND, Part A & B)	- Expiry date of Adhesive	Manual	All	4-OP-500	PRD, PRE
		- Mixing Ratio	Balancer			
		- Mixing Time	Mixer			
		- Degas time	Centrifugal			
		- Air bubble checking	Visual			
		- Pot life (start at mixing time)	Clock			
4d	Incoming Inspection (Hi-Super 5, Part A & B)	9-PR-012				PLN, QAE
4e	Adhesive Mixing (Hi-Super 5, Part A & B)	- Expiry date	Manual	All	4-OP-500	PRD, PRE
		- Mixing Ratio - Mixing appearance	Visual			
		- Pot life (start at mixing time)	Timer			
4	Ferrule Assembly	- Epotek injection into ferrule	Vacuum Machine/Dispenser	All	4-OP-500	PRD, PRE
		- Fiber stripping length	Stripper/template	1pcs/shift or when change machine	4-OP-503	
		- Nylon tube marking length (for fiber insertion into ferrule)	Template	All		
		-Fiber length before insert to ferrule	Template	All		
		- Fiber cleaning, screening, medome method. - Ferrule insertion method	Manual	All		
		- Heating Temperature, Time	Heater			
		- Adhesive on ferrule body	Ring Gauge			
5	Polishing, Interferometer, End-face	- Polishing Condition	Manual	All	4-OP-528	PRD, PRE
		- Ferrule endface Checking	Microscope	The first jig/line/shift		
		- Ferrule length before & after re-polishing	Micrometer/Template	All		
		- Interferometer checking + Radius of curve + Offset + Fiber height	Interferometer	1set/ first jig/line/shift for SPC/UPC connector	9-PR-008-4-WI-0001	
				All for APC connector		

Process		Quality control items	Control equipment	Sampling size	Refer Doc. No	Function incharge
No	Name					
6a	Incoming Inspection - Plug frame - Long spring B - Front TSUNAMI - Pin	9-Pr-012				QAE, PLN
6	Housing	- Check lack of shutter inside Front Tsumami.	Manual	All	4-OP-0484  9-PR-008-4-WI-0001	PRD, PRE
		- Connector appearance				
		- Pin and spring position on front Tsumami	Manual	All		
		- Distance from strip point to flange edge.	Template	All		
		- Eyelet Position - Stop ring, ferrule flange, frame direction - Clamp ring position	Visual	All		
		- Clamp ring appearance after crimping - Cord marking position after crimping	Visual	All		
		- Clamp ring dimension after crimping	Caliper	3pcs/day and 3pcs after 1000 times crimping		
		- Connector rotation check. - Boot fix completely with clamp ring.	Visual	All		
		* For SC housing: - Knob moving checking	Visual	All		
		- Check Shutter Function: Front Tsunami lease out of Rear Tsunami - Check Shutter have inside Font Tsumami or not.	Visual, manual	All		
7	Loss inspection	- P <sub>0</sub> Value (if any) - IL, RL value	Loss system	All	4-OP-506  9-PR-008-4-WI-0001	PRD, PRE
		- Control Master cord end face	Microscope	At least 1time/24 cons		
		-Connection diagram	Loss system, Master cord	All		
		- Front Tsunami lease out of Rear Tsunami.	Visual	All		
8	Length check	- Total product length	OTDR	Sampling 3pcs at first, end of roll and machine stop & re-start	4-OP-333  9-PR-008-4-WI-0001	QAE,PRD
			Jig or ruler for others product can't measure by machine	All		
			Reworked product	All		

Process		Quality control items	Control equipment	Sampling size	Refer Doc. No	Function incharge
No	Name					
9	Final End face	-Final connector end-face check	Microscope	All	4-OP-527 9-PR-008-4-WI-0001	PRD, PRE
10a	Incoming Inspection Manual	Checking manual about appearance and content	Visual	Sampling AQL1.5II	4-OP-333	QAE
10.b	Print label	- Printing content	Visual	All	4-OP-333	QAE
10	Label &Final Packing	- Color, position, appearance of product label 	Visual	All	4-OP-333	PRD, QAE
		-Serial No. of product	Program			
		- Appearance of Manual	Visual			
		- Label No. for carton box	Program			
		- Products Quantity	Program			
11	Shipping	- P/O number	Manual	All	4-OP-333	PLN
		- Product name, quantity	Program			

\*1) Only apply for Pin with spec LGC-SPH303-6a: Pin has protruded

## VI. Record

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

- 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	Person in charge	Version	Content		Reason	Change Requester
			Old description	New description		
30 <sup>th</sup> Sep 2024	MyNTH	33	Item 10: Label &Final Packing  - Label No. for product	Item 10: Label &Final Packing  <del>-Label No. for product</del> -Color, position, appearance of product label	(Follow 4M: 9-PR-0014-9-FO-0001-9-RC-0013)	TienDT DucTNM
09-Jul-2024	ThuTT	32	- Item III: FMEA version 11  - Item V.2.6: Housing process has not connector appearance checking item  - Item 9: QAE Appearance	- Item III: FMEA version 12  - Item V.2.6: Add connector appearance checking item into Housing process  <del>-Item 9: QAE Appearance</del>	Follow 9-PR-0014-9-FO-0001-9-RC-0012	TienDT
12-Mar-2024	ThuTT	31	- Item III: FMEA version 10 - Item V.2.5: Check Ferrule endface 100%	- Item III: FMEA version 11 - Item V.2.5: Check Ferrule endface sampling	Follow 9-PR-0014-9-FO-0001-4-RC-0009	TienDT
20-Nov-2023	Tan NDD	30	-	Item III:Reference documents Add: FMEA	Update	TienDT
			Item V.1 5. Polishing	Item V.1. 5. Polishing, Interferometer, End-face		
			Item V.2.1 Refer to 4-OP-333	Item V.2.1 Refer to 4-OP-0176, 4-OP-0483	Update Reference document follow G.OP project	
			Item V.2.2 Refer to 4-OP-333	Item V.2.2 Refer to 4-OP-577		
			Item V.2.3 Refer to 4-OP-333	Item V.2.3 Refer to 4-OP-0392		
			Item V.2.4 Refer to 4-OP-333	Item V.2.4 Refer to: 4-OP-500 4-OP-503		
			Item V.2.5 Refer to 4-OP-333	Item V.2.5 Refer to 4-OP-528		

			Item V.5.6 Refer to 4-OP-333	Item V.2.6 Refer to 4-OP-484		
			Item V.2.7 Refer to 4-OP-333	Item V.2.7 Refer to 4-OP-506		
			Item V.2.10 Refer to 4-OP-333	Item V.2.10 Refer to 4-OP-527		
			Item 2.1: -Lot no	Remove	Remove control Item	
			Item 2.3: -Lot no	Remove		
			Item 2.4c: - Lot No (Part A & B)	Remove		
			Item 2.4e: - Lot No (Part A & B)	Remove		
			Item 2.4e: - Ferrule Lot No. - Stripper No. - Heater No.	Remove		
			Item 2.5: - Polisher No	Remove		
			- Check cord marking length at Housing process	- Move cord marking length checking item from Housing to Part insertion		- Follow 4M: 4-PR-0007-4- FO-001-4- RC-0114 - Update template
			-	- Add item VII. Record and change format	- Update template	



24 Oct 2022	Phuong LTA	29	-QC length and appearance 1 - QAE Appearance 2	- QAE Length - QAE Appearance	Correct the appearance process from two separate stages to one as actual	Executive Nguyen Van Dep
			-PNJHC-1005-25-01AJ  - PNJHC-1005-25-02X  -PNJHC-1005-25-03AF  -PNJHC-1143-25-01A	Add Obligator spec  - PNJHC-1005-25-01AK HC-1005-001\$001  - PNJHC-1005-25-02Y HC-1005-002\$001  - HC-1005-003\$003  -PNJHC-1143-25-01B HC-1143-001\$001	-Updated new spec	
			9-QC-001	9-PR-012	Update document	
			3. Part insertion: check All for Barcode serial no and Laser serial No on Rear Tsunami matching	3. Part insertion: check 1 <sup>st</sup> serial number/batch 6 for Barcode serial no and Laser serial No on Rear Tsunami matching	Follow 4M: 4-PR-007-4- FO-001-4- RC-0953  4-PR-007-4- FO-001-4- RC-01230	
			6. Housing: -	* For SC housing: - Knob moving checking - Check Shutter Function: Front Tsunami lease out of Rear Tsunami	Update more item for clear requirement	