


QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345	Version: 25	Page: 1/11	
			4 -QC-0345/25

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 ASN Submarine Coupler product.
- This document concerns to Production function, Production engineering function, Quality Assurance function and Planning function.

Table II.1 List of ASN coupler products

No	Product code	Product name	Product type	Termination 1x2	RL sampling size
1	OCT0112	95-5% Tap Coupler, 1525/1570nm, 4 fibers	CPL-C-13DB-4P	N/A	1%/ID
2	OCT0111	98-2% Tap Coupler, 1525/1570nm, 4 fibers	CPL-C-17DB-4P	N/A	1%/ID
3	OCT0113	3dB splitter, 975nm, 4 fibers	CPL-980-3DB-4P	N/A	1%/ID
4	OCT0119 (*)	3dB splitter, 975nm, 4 fibers	CPL-980-3DB-4P	N/A	1%/ID
5	OCT0114	3dB Splitter, 1525/1570nm, 4 fibers	CPL-C-3DB-4P	N/A	1%/ID
6	OCW0028	1550/980nm WDM coupler	CPL-980/C-WDM-3P	Applied	100%
7	OCW0030 (*)	1550/980nm WDM coupler	CPL-980/C-WDM-3P	Applied	100%
8	OCW0033	45nm Signal Bandwidth 980/1550nm WDM	ADM-0100-1-B	Applied	100%
9	OCT0085	45nm Bandwidth 2% Tap coupler	ACL-0102-2-B	N/A	1%/ID
10	OCT0011	980nm High Power 50:50 Splitter	ACL-9150-2-B	N/A	3%/ID (Min. Q'ty: 3pcs/ID)
11	OCT0003	45nm Bandwidth 5% Tap coupler	ACL-0105-2-B	N/A	3%/ID (Min. Q'ty: 3pcs/ID)
12	OCT0007	3dB, 2x2 Splitter 1530nm to 1570nm	ACL-0150-2-B	N/A	3%/ID (Min. Q'ty: 3pcs/ID)

(*) Products made on FOC elongation machines.

Checked by: Section Manager Date: (follow DMS)	Approved by: Division Manager Date: (follow DMS)
Prepared by: ThangHX + Cross check by: KhiemB Date: 16-Oct-2024	Originator: Duong Thi Mong Thu Date: 22 nd Apr, 2019

QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 2/11

III. Reference Documents:

- Table III.1 Customer specification

No	Reference document	Product name	Remark
1	AOP81-6015-27-08(01)	95-5% Tap Coupler, 1525/1570nm, 4 fibers	
2	AOP81-6015-27-06(01)	98-2% Tap Coupler, 1525/1570nm, 4 fibers	
3	AOP81-6015-27-09(01)	3dB splitter, 975nm, 4 fibers	
4	AOP81-6015-27-07(01)	3dB Splitter, 1525/1570nm, 4 fibers	
5	AOP81-6015-27-10(02)	1550/980nm WDM coupler	
6	AOP81-6015-27-02(11)	45nm Signal Bandwidth 980/1550nm WDM	
7	AOP81-6015-27-01(13)	45nm Bandwidth 2% Tap coupler	
8	AOP81-6015-27-03(08)	980nm High Power 50:50 Splitter	
9	AOP81-6015-27-04(12)	45nm Bandwidth 5% Tap coupler	
10	AOP81-6015-27-05(06)	3dB, 2x2 Splitter 1530nm to 1570nm	

- FMEA: 0-PR-012-0-FO-001-4-RC-0135 version 10- pFMEA for Submarine coupler

- Other reference document:

Table III.2 Working direction list:

No	Working direction	Application description	Process
1	PTE81-59-16-0014(01)	Applying heat treatment before UV-coat removing process	Fiber Heating
2	AOR81-59-16-0015(01)	Applying the new temperature cycle for all types of couplers produced in FOV	Temperature cycling (Aging)
3	PTE81-59-18-0014(02)	Modification of Termination (1x2) process	Termination 1x2
4	PTE81-59-18-0017(01)	Return loss measurement process	Return loss inspection
5	PTE81-59-18-0015(01)	Daily and weekly check method of RL measurement machine	Return loss
6	PTE81-59-19-0002(01)	Specification change of UV-7 appearance for all submarine coupler	Appearance after elongation
7	PTE81-59-19-0003(02)	Specification change of Hakuri and Egre	Appearance after 24H
8	PTE81-59-19-0004(02)	Specification change of FIL for all submarine coupler	Final loss inspection
9	PTE81-59-19-0008(01)	Periodical quality check of elongation condition	Elongation
10	PTE81-59-19-0009(01)	Quality check of fiber coat removing tool	Coat removing
11	PTE81-59-19-0010(01)	Periodical quality check of elongation condition	Elongation
12	PTE81-59-19-0011(01)	Elongation specification of submarine coupler	Elongation
13	PTE81-59-19-0026(03)	Tension specification of daily check on elongation machine	Elongation
14	PTE81-59-19-0027(02)	Applying TDL sampling condition and modified optical specifications for ASN couplers	Final loss inspection
15	PTE81-59-19-0021(01)	Correcting the Spool layout for ASN WDM couplers	QC Casing
16	PTE81-59-20-0006(01)	Relax PDL spec for ASN CPL-C-17DB-4P (AOP81-6015-27-06)	1. Process loss inspection 2. Final loss inspection
17	PTE81-59-20-0009(01)	Correction of ATR for ASN WDM AOP81-6015-27-02(11)	Test report
18	PTE81-59-20-0010(01)	Relax specification of gap between fiber and bottom of Neoceram	App after Elongation
19	PTE81-59-20-0011(01)	Label format and ETR (Text Data) instructions for ASN coupler	Test report
20	PTE81-59-20-0012(01)	Relax specification of gap between bare fiber and outer of FEP tube	App after Elongation
21	PTE81-59-20-0015(01)	Applying TDL sampling condition for couplers	Final loss inspection

QUALITY CONTROL FLOW CHART OF ASN COUPLER**QC FLOW CHART: 4-QC-0345**

Version: 25

Page: 3/11

22	PTE81-59-20-0019(04)	Applying new standard of incoming inspection for Clear Neoceram	1. Incoming inspection 2. Material preparation
23	PTE81-59-20-0023(02)	Changing specification of port marking for ASN	1.Port coloring 2.QC appearance
24	PTE81-59-20-0029(08)	Part number change for Clear Neoceram	Elongation
25	PTE81-59-21-0012(06)	Addition of marking pen type (Shachihata Artline EK-50)	1. Cutting 2. Port coloring 3. Incoming inspection
26	PTE81-59-22-0001(05)	Change inner carton box label information	QC packing
27	PTE81-59-21-0009(1)	Specification revision and change of TR format (Clear Neoceram)	1. Incoming inspection 2. Material preparation
28	PTE81-59-23-0007(02)	Manufacturing Couplers by FOC Machine	Elongation
29	PTE81-59-23-0008(03)	RL specification of Couplers	Return Loss

- Relating document:

Table III.3 Operation procedure list:

No	Document number	Document name
1	4-OP-0366	General operation procedure for submarine coupler
2	4-OP-543	Coupler Product Requirements
3	4-OP-546	Drop Test
4	4-OP-549	OPERATION PROCEDURE OF Coupler Material Preparation
5	4-OP-599	Definition of 4M amendment at Elongation process

IV. Term definition:

FOV: Fujikura Fiber Optics Viet Nam

OACAP: Out of Control Action Plan

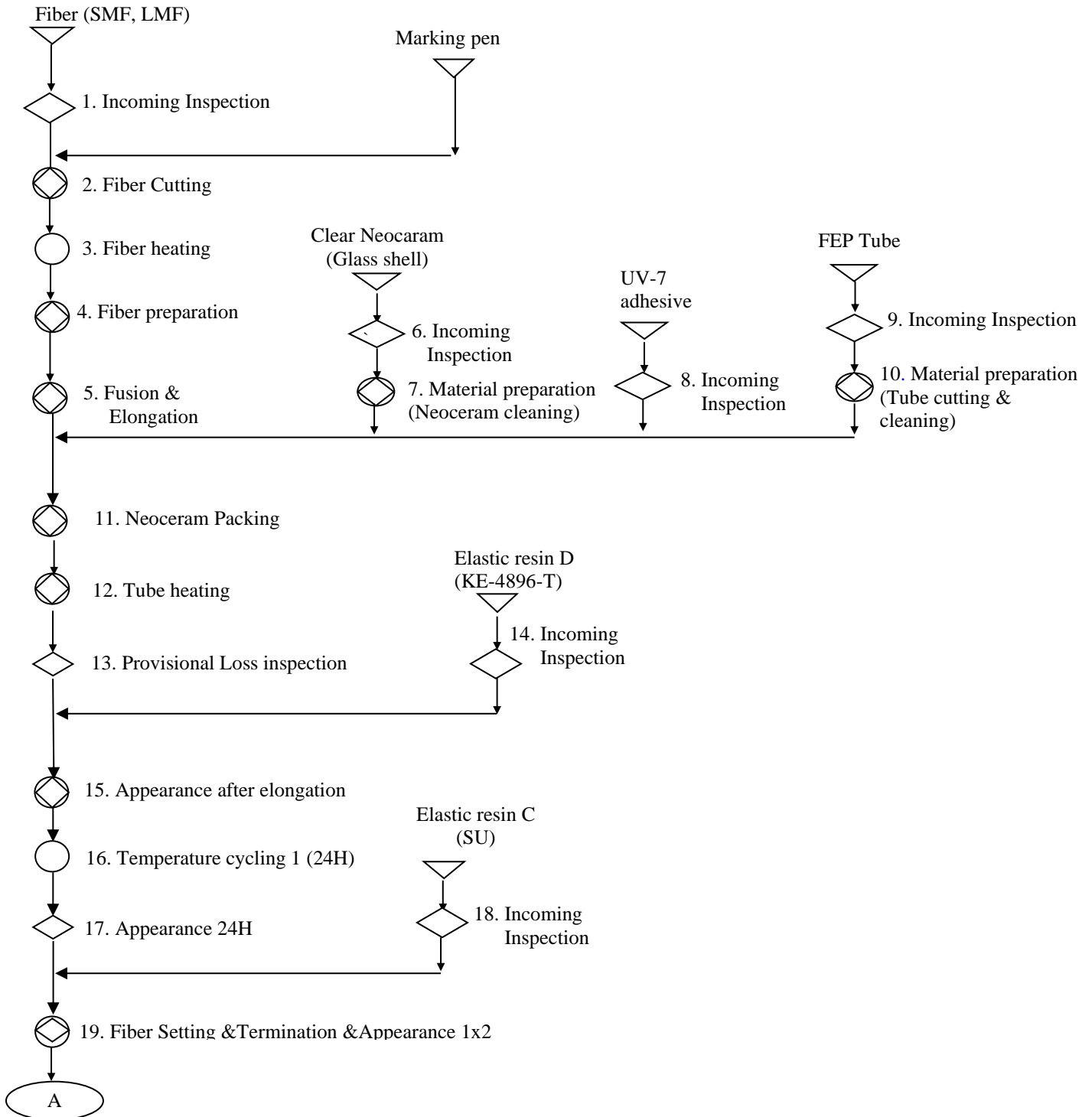
SIC: Section In Charge

QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 4/11

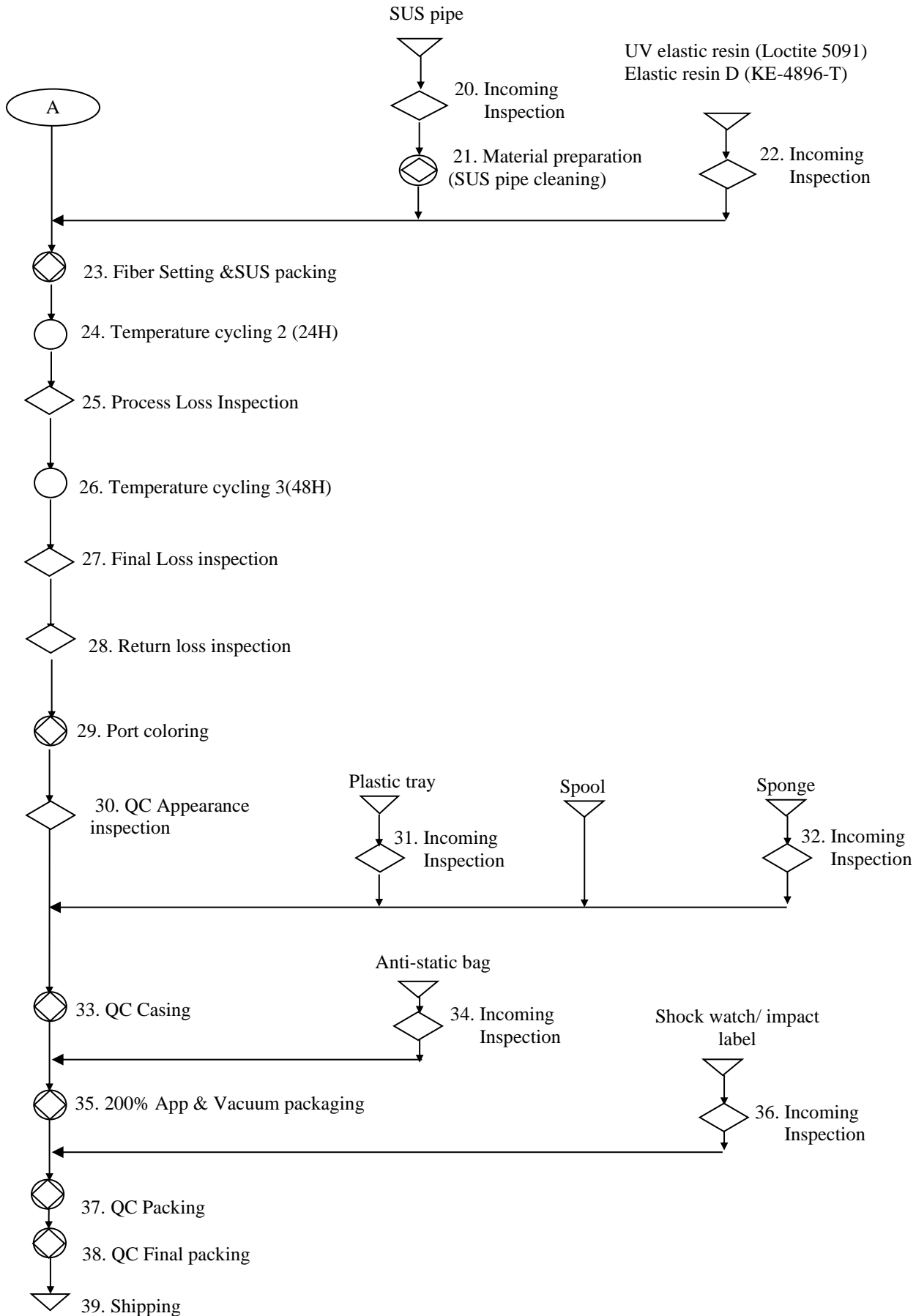
V. Content:**V.1. QC Flow chart for all processes**

QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 5/11



QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 6/11

V.2. Quality Control Items for each process:

Quality control items for detail of ASN as shown in the following table:


Process		Quality Control Items	Instrument	Sampling	Document	PIC
No.	Name					
1	Incoming Inspection Fiber (SMF, LMF)	- Refer to 9-PR-012				QAE PRD
2	Fiber cutting	- Cutting length	Winding machine	<div>25</div> 100%	4-OP-0366	PRD PRE
		- Marking length - Marking position	Template Program, Winding machine			
		- Marking color	Program and Screen Art-line pen and Fixture			
		- Ionized treatment	Ionized Air Blower			
		- Fiber cleaning	Dust Blowing System			
3	Fiber heating	- Heating temperature	Heater	100%	4-OP-0366	
		- Heating time	Timer			
4	Fiber Preparation	- Appearance of removing position	Visual	100%	4-OP-0366	PRD PRE
		- Swelling time	Timer			
		- Fiber broken tension	Proof tester	3pcs/tool/ day		
		- Removing length	Coat removing tool Template	<div>25</div> 100%		
		- Appearance after cleaning	Microscope			
		- Fiber strength (proof screening)	Proof test machine.			
5	Fusion & elongation	- Gas flow (H ₂ , O ₂)	Gas control panel Elongation system	100%	4-OP-0366	PRD PRE
		- Fiber port position.	Visual			
		- Twisting point	Visual			
		- Fiber tension	Elongation system		OCAP 000-5-WI- 0131 4-OP-0366	
		- Coupling length				
		- Proof test (screening)				
		- Fiber shape after elongation	Visual & elongation system		4-OP-0366	
		- Optical characteristic (IL, Exl, WDL)	Optical power meter			
		- Fiber strength (broken test)	Elongation system (Tensile module)			
6	Incoming Inspection (Clear Neoceram/ Glass Shell)	- Refer to 9-PR-012				QAE PRD
7	Material preparation (Neoceram/ Shell cleaning)	- Type	Visual	100%	4-OP-549	PRD PRE
		- Cleaning time	Ultrasonic machine			
		- Cleaning liquid	Visual			
		- Drying	Cleanroom condition or Ionized Air Blower			
		- Dry cleaning time	Timer			
- Appearance after cleaning	Visual Microscope (if any)					
8	Incoming inspection (UV-7 adhesive)	- Refer to 9-PR-012				QAE PRD
9	Incoming Inspection (Tube)	- Refer to 9-PR-012				QAE PRD
10	Material preparation	- Cutting length	Jig	100%	4-OP-549	PRD PRE
		- Cut tube length after cutting	Template			

QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 7/11

	(Tube cutting and cleaning)	- Appearance after cutting	Visual	5pcs/cutting length type		
		- Cleaning time	Ultrasonic machine			
		- Cleaning liquid	Visual	100%		
		- Drying time	Timer			
		- Appearance after cleaning	Visual	5pcs/cleaning time		
11	Neoceram packing	- UV resin Expired date	Visual Program			
		- Clear Neoceram blow cleaning	Ionized Air gun	100%	4-OP-0366	PRD PRE
		- Fiber position	Elongation system & Visual			
		- UV resin position	Visual			
		- Fiber Tension	Tensile meter			
		- UV curing	UV light source, Program	100%		
		- Curing (moving) time				
		- Optical characteristic (IL, Exl, WDL)	Power meter, computer	100%		
12	Tube heating	- Tube heating temperature	Tube heater			
		- Tube's position and appearance after heating	Visual	100%	4-OP-0366	PRD PRE
		- Drop test	Drop test system	1pc/Elong machine/week	4-OP-546	
13	Provisional Loss inspection	- Optical characteristic	Loss system	Optional	4-OP-0366	PRD PRE
14	Incoming Inspection (Elastic resin D)	- Refer to 9-PR-012				QAE PRD
15	Appearance after elongation	- Elastic resin D expired date.	Visual, Program			
		- FEP tube position				
		- UV adhesive structure	Microscope & scale	100%	4-OP-0366	PRD PRE
		- Bare fiber position				
		- Gap of FEP tube and fiber				
		- Appearance of Coupler body				
16	Temperature cycling 1 (24H)	- Heating temperature	Temperature chamber			
		- Heating cycle (time)				
		- Quantity	Visual	100%	4-OP-0366	PRD PRE
		- Heating diagram	Thermo recorder Template			
17	Appearance 24H	- Appearance of UV adhesive and Neoceram	Microscope with camera & program	100%	4-OP-0366 OCAP 9-PR-008-5-WI-0005	PRD PRE
18	Incoming Inspection (Elastic resin C)	- Refer to 9-PR-012				QAE PRD
19	Fiber Setting & Termination & Appearance 1x2	- Port cutting	High precision nipper RL system			
		- RL value				
		- Elastic resin C Expired date	Visual	100%	4-OP-0366 and Table II.1	PRD PRE
		- Curing of resin	Timer			
		- Appearance of fiber (terminated)	Microscope & scale			
		- Appearance (resin) after curing				
20	Incoming Inspection (SUS pipe)	- Refer to 9-PR-012				QAE PRD
21	Material preparation (SUS pipe cleaning)	- Appearance after cleaning	Visual	4pcs/cleaning time		
		- Laser printing content with label	Visual			
		- Cleaning time	Ultrasonic machine			
		- Cleaning liquid	Visual	100%	4-OP-549	PRD PRE
		- Drying	Cleanroom condition or Ionized Air Blower			
		- Drying time	Timer			

QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 8/11

22	Incoming Inspection (- Loctite 5091 - Elastic resin D)	- Refer to 9-PR-012				QAE PRD
23	Fiber Setting &SUS packing	-Loctite 5091 resin Expired date -Elastic resin D Expired date	Visual ECS system	100%	4-OP-0366	PRD PRE
		- Laser printing content - SUS pipe label - Identify color of port	Visual Magnifier (if any)			
		- SUS pipe’s laser printing direction	Visual			
		- Injection wait time for Loctite	Timer			
		- UV curing	UV curing jig UV light source			
		- Dry time of resin D	Clock			
		-Resin appearance	Magnifier			
24	Temperature cycling 2 (24H)	See Process 16			4-OP-0366	PRD PRE
25	Process Loss Inspection	- Optical characteristic	Loss system	100%	4-OP-0366	PRD PRE
26	Screening (Temp. cycling 48H)	- Heating temperature - Heating cycle (time)	Temperature chamber	100%	4-OP-0366	PRD PRE
		- Quantity	Visual			
		- Heating diagram	Thermo recorder Template			
27	Final Loss Inspection	- Optical characteristic	Loss system	100%	OCAP 000-5-WI- 0704 4-OP-0366	PRD PRE
		- Optical characteristic: TDL	Loss system, program	1%/ID	4-OP-0366	
28	Return Loss inspection	- Optical characteristic: RL	RL system /RL system MFG & ECS program	Refer table II.1	4-OP-0366	PRD PRE
29	Port coloring	- Laser printing content	Visual	100%	4-OP-0366	PRD PRE
		- Resin appearance	Visual	100%		
		- UV fiber appearance	Magnifier	NC item (Define NC)		
		- Marking color	Art-line pen	100%		
		- Marking length, position	Template	100%		
			Ruler	NC item (Define NC)		
		-Marking coverage on fiber	Visual	100%		
30	QC Appearance inspection	- Product name, laser printing	Visual	100%	4-OP-0366	PRD QAE
		- SUS appearance	Visual	100%		
		- Resin appearance - UV fiber appearance	Magnifier	NC item (Define NC)		
		- Fiber length	Template	100%		
		- Fiber coloring: color, position & length.	Template	100%		
			Template or ruler	NC item (Define NC)		
		- Tray label appearance	Visual	100%		
31	Incoming Inspection (Plastic tray)	- Refer to 9-PR-012				QAE PRD

QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 9/11

32	Incoming Inspection (Sponge)	- Refer to 9-PR-012				QAE PRD
33	QC Casing	- SUS pipe fixing. - Spool position - Fiber spool winding & layout - Sponges: fixing position, quantity - Case: direction, appearance. - Case label: fixing position and direction	Visual and Template	100%	4-OP-0366	PRD- QC QAE
		- Bag label printing: content, appearance	Visual			
34	Incoming Inspection (Anti-static bag)	- Refer to 9-PR-012				QAE PRD
35	200% App & Vacuum packing	- Product's appearance. - Spool position - Product type, Quantity - Product direction in vacuum packing bag - Label quantity - Correct label - Label position	Visual	100%	4-OP-0366	PRD- QC QAE
		- Labeling (serial checking)	Software			
36	Incoming Inspection (Shock watch)	- Refer to 9-PR-012				QAE PRD
37	QC Packing	- Carton box type - Carton box appearance - Shock watch/impact label type, color, appearance - Packaging bag appearance - Shock watch/impact label quantity - Shock watch/impact label position and direction	Visual	100%	4-OP-0366	PRD- QC QAE
		- P/O No. - Quantity of product	Software			
		- Test report	Computer			
38	QC Final Packing	- Storage temperature	Thermo recorder	100%	4-OP-543	PRD- QC QAE
		- Shock watch/ Impact labels are not activated. - Carton box appearance - Correct PO, shipment - Correct pallet	Visual	100%	4-OP-0366	PRD- QC QAE
39	Shipping	- P/O No. - Quantity of pallet - Shock watch/ Impact labels are not activated when transferring to forwarder. - Appearance of cargo when transferring to forwarder.	Visual	100%	4-OP-0366	PLN

VI. Record

No.	Record	Retention time	Responsibility for keeping
1	Related check sheet of PRD	29years	PRD
2	Related check sheet of QA	29years	QAE

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.


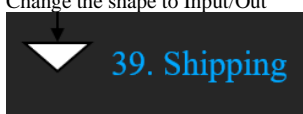
QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 10/11

REVISION HISTORY

Preparing Date	Person	Ver	Description		Reason	Requester
			Old content	New content		
16-Oct-2024	ThangHX 10641	25				PRE2 Manager Dao Ngoc Trung
			V.2. Quality Control Items for each process 2. Fiber Cutting Fiber marking, coloring: Marking pen and fixture	V.2. Quality Control Items for each process 2. Fiber Cutting Marking length, marking position: Template, Program, Winding machine Marking color: Program and Screen, Art-line pen and fixture	Make clear control item follow QMS Audit QLA2405	
			4. Fiber Preparation Removing length: Template	4. Fiber Preparation -Removing length: Coat Removing Tool, Template -Add Appearance after cleaning: Microscope	Make clear control item follow QMS Audit QLA2405	
			10. Material preparation (Tube cutting and cleaning) Appearance after cleaning: 4pcs/cleaning time	10. Material preparation (Tube cutting and cleaning) Appearance after cleaning: 5pcs/cleaning time	Correction sampling follow QMS Audit QLA2405	
14-Aug-2024	KhiemB	24	Table III.2 Working Direction list PTE81-59-20-0019(03) PTE81-59-23-0008(02) PTE81-59-21-0012(05)	Table III.2 Working Direction list PTE81-59-20-0019(04) PTE81-59-23-0008(03) PTE81-59-21-0012(06)	Customer's WD extension of effective period	PRE2 Manager Dao Ngoc Trung
			FMEA: 0-PR-012-0-FO-001-4-RC-0135 Ver09	FMEA: 0-PR-012-0-FO-001-4-RC-0135 Ver10	New version	
			Incoming inspection (PIC): QAE, LOG 39. Shipping (PIC): PLN, LOG	Incoming inspection (PIC): QAE, PRD 39. Shipping (PIC): PLN	New arrangement in FOV organization	
27-May-2024	KhiemB	23	Table III.2 Working Direction list PTE81-59-22-0001(04) PTE81-59-20-0029(07)	Table III.2 Working Direction list PTE81-59-22-0001(05) PTE81-59-20-0029(08)	Customer's WD extension of effective period	PRE2 Manager Dao Ngoc Trung
			III. Reference Documents: FMEA: 0-PR-012-0-FO-001-4-RC-0135 version 08	III. Reference Documents: FMEA: 0-PR-012-0-FO-001-4-RC-0135 version 09	Follow Change Order No.: 9-PR-0014-9-FO-0001-4-RC-0087	
			29. Port coloring Quality control items: - Resin appearance - UV fiber appearance - SUS appearance	29. Port coloring Quality control items: - Resin appearance - UV fiber appearance		
29-Dec-2023	Thang 10641	22	III. Reference document -FMEA: 0-PR-012-0-FO-001-4-RC-0136 ver 06	III. Reference document -FMEA 0-PR-012-0-FO-001-4-RC-0136 ver 07	FMEA update version	PRE3 Manager Dao Ngoc Trung
			III. Reference Documents 4-OP-555 4-OP-556	III. Reference Documents Remove 4-OP-555 Remove 4-OP-556		
			V. Content V.I QC flow chart for all processes 39. Shipping 	V. Content V.I QC flow chart for all processes 39. Shipping Change the shape to Input/Out 	Standardize follow 0-Pr-001-0-TEM-003 ver 7	
			V.2. Quality Control Items for each process: Lack of No 4. Fiber Preparation	V.2. Quality Control Items for each process: Add No 4. Fiber Preparation	Correction the mistake when merge cell	
			39. Shipping Quantity of product	39. Shipping Quantity of pallet	Correction follow the actual control	
			7. Material preparation (Neoceram cleaning) Document: 4-OP-555	7. Material preparation (Neoceram cleaning) Document: 4-OP-549	Combine content of 4-OP-555 and 4-OP-556 to simplify document structure	
			22. Material preparation (SUS pipe cleaning) Document: 4-OP-556	: 22. Material preparation (SUS pipe cleaning) Document: 4-OP-549		
			Revision history: keep information for all version	Revision history: keep information for the latest 5 version	As new guideline 0-PR-001 ver35	
12-Dec-2023	ThangHX 10641	21	Table III.2 Working direction list PTE81-59-22-0001(03) PTE81-59-20-0029(06) PTE81-59-21-0012(04) PTE81-59-23-0007(01) PTE81-59-23-0008(01)	Table III.2 Working direction list PTE81-59-22-0001(04) PTE81-59-20-0029(07) PTE81-59-21-0012(05) PTE81-59-23-0007(02) PTE81-59-23-0008(02)	Customer's WD extension of effective period	PRE3 Manager
			III. Reference Documents N/A	III. Reference Documents -Add Table III.1 Customer specification -Add FMEA	Standardize follow 0-Pr-001-0-TEM-003 ver 7	

QUALITY CONTROL FLOW CHART OF ASN COUPLER

QC FLOW CHART: 4-QC-0345

Version: 25

Page: 11/11

		2 Quality Control Items for each process Sampling size: All/ Sample	2 Quality Control Items for each process Sampling size: All → 100% Sample → Describe detail sampling size Remove 3. Reference additional control items from pFMEA	Internal review and standardize	
		2. Fiber Cutting Quality control items: Fiber Lot No	2. Fiber Cutting Quality control items: Remove Fiber Lot No		
		4. Fiber Preparation Quality control items: Coat Removing tool No. Proof test machine No.	4. Fiber Preparation Quality control items: Remove Coat Removing tool No Remove Proof test machine No.		
		5. Fusion & Elongation Quality control items: -Optical characteristic -Gas flow (H2, O2) Instrument: Gas control panel	5. Fusion & Elongation Quality control items: -Rename Optical characteristic (IL, Ex1, WDL) -Gas flow (H2, O2) Instrument: Gas control panel Add Elongation system -Add OCAP for failed 250gr and 500gr		
		7. Material preparation (Neoceram/ Shell cleaning) Quality control items: Lot No., Quantity	7. Material preparation Quality control items: Remove Lot No., Quantity		
		10. Material preparation (Tube cutting and cleaning) Quality control items: Lot No., Quantity	10. Material preparation (Tube cutting and cleaning) Quality control items: Remove Lot No., Quantity		
		11. Neoceram packing Quality control items: UV resin Lot No and Expired Date Clear Neoceram controlled No Tube controlled No.	11. Neoceram packing Quality control items: Remove UV resin Lot No, Clear Neoceram controlled No, Tube controlled No.		
		12. Tube heating Quality control items: Heating machine No	12. Tube heating Quality control items: Remove Heating machine No	Internal review and standardize	
		12. Tube heating Drop test Document: 4-OP-0366	12. Tube heating Drop test :Document: 4-OP-546		
		15. Appearance after elongation Quality control items: Elastic resin D Lot No.	15. Appearance after elongation Quality control items: Remove Elastic resin D Lot No.		
		19. Fiber Setting & Termination & Appearance 1x2 Quality control items: Elastic resin C lot no	19. Fiber Setting & Termination & Appearance 1x2 Quality control items: Remove Elastic resin C lot no		
		21. Material preparation (SUS pipe cleaning) Quality control items: Lot No., Quantity	21. Material preparation (SUS pipe cleaning) Quality control items: Remove Lot No., Quantity		
		23. Fiber Setting & SUS packing Quality control items: Loctie 5091 lot no Elastic resin D lot no	23. Fiber Setting & SUS packing Quality control items: Remove Loctie 5091 lot no Remove Elastic resin D lot no		
		27. Final Loss Inspection N/A	27. Final Loss Inspection Add OCAP for Reaging		
		29. Port coloring Quality control items: -Product's appearance -N/A	29. Port coloring Quality control items: Make clear Apearance of resin D UV fiber appearance SUS appearance -Add marking coverage on fiber		
		36. 200% App & Vacuum packing -Block direction in vacuum bag -N/A	36. 200% App & Vacuum packing Rename: Product direction in vacuum bag -Add Label quantity -Add Correct label -Add Label position		
		-VI. Review	-VI. Review: Remove	Follow 0-Pr-001-0-TEM-003 ver 7	
		32. Incoming Inspection (Spool)	Remove 32. Incoming Inspection (Spool)	Correction. The material do not go to incoming process	
		-FMEA: 0-PR-012-0-FO-001-4-RC-0136 ver 05	-FMEA 0-PR-012-0-FO-001-4-RC-0136 ver 06	FMEA update version	