

QUALITY CONTROL FLOW CHART OF PUMP COMBINER (MPC-I)

QC FLOW CHART: 4-QC-0507

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**I. Purpose**

This QC flow chart is used for controlling the quality of **PUMP COMBINER**, which is made in FOV.

II. Application

This QC flow chart is applied to **PUMP COMBINER** products manufactured in FOV.

This document concerns to Production function, Production engineering function, Quality Assurance function and Planning function.

III. Reference Documents

Customer specification

Reference document	Product Name	Maker Model
SPC3-10747(2)	Cezanne Forward Pump CMB	MPC-I-006-H
SPC3-10747(2)	Cezanne Backward Pump CMB	MPC-I-006-C
SPC3-10766(1)	Cezanne Forward Pump CMB	MPC-I-007-H
SPC3-10766(1)	Cezanne Backward Pump CMB	MPC-I-007-C

FMEA: 0-PR-012-0-FO-001-4-RC-0187 version 1

Other documents:

Document number	Document Name	Remarks
4-OP-0507	PUMP COMBINER (MPC-I)	-

IV. Term definition

FOV: Fujikura Fiber Optics Vietnam Ltd.

PIC: Person in Charge.

PRD: Production

PRE: Production Engineering

QAE: Quality Assurance Engineering

PRD: PRD

Checked by: Section manager
Date: (Follow DMS)

Approved by: Division manager
Date: (Follow DMS)

Prepared by: Nam HA + Cross check by: Ly HC
Date: 30 Sep 2024

Original: Nam HA
Date: 08 Jan 2024

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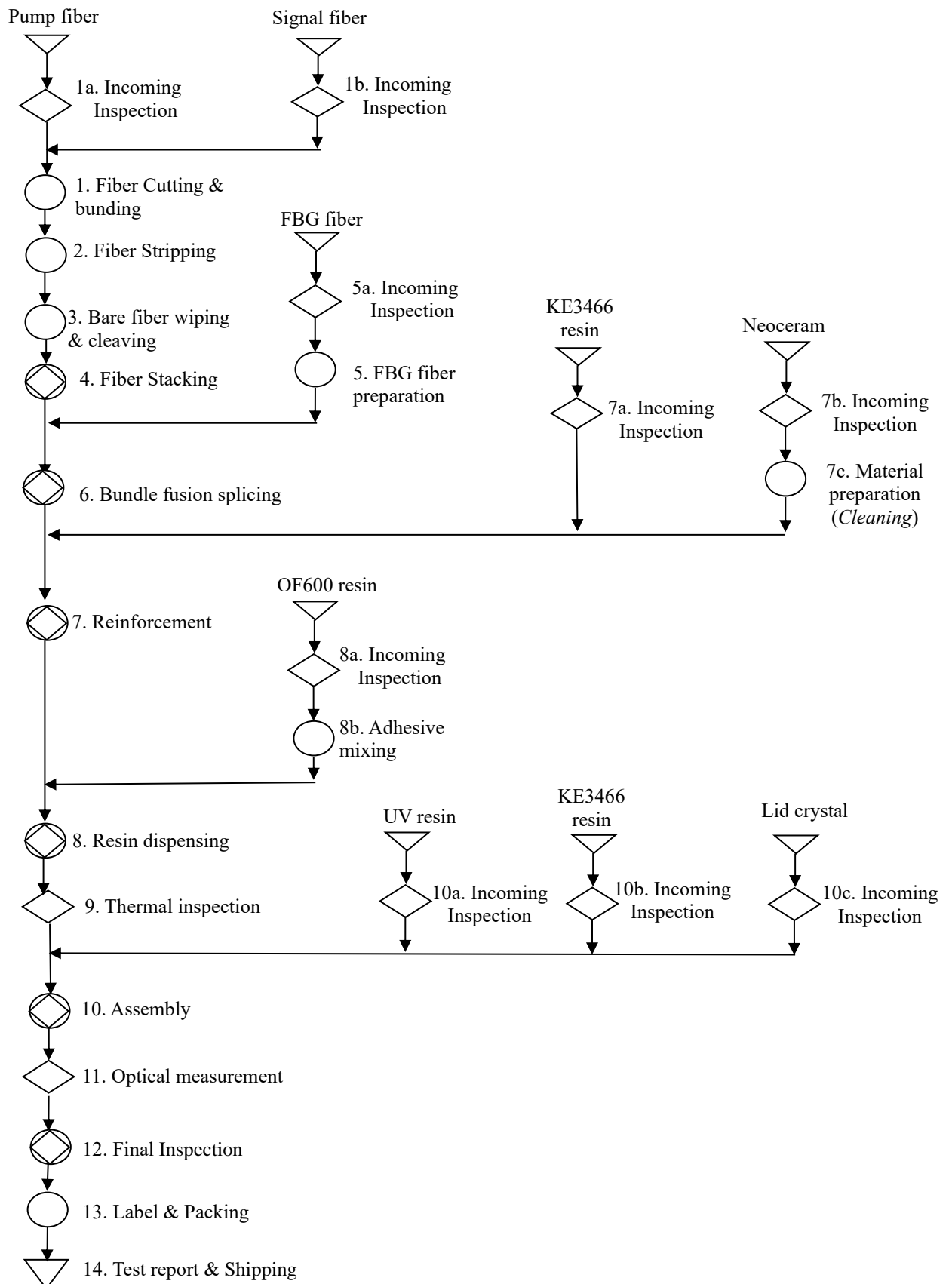
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V. Content

1. QC flow chart for all process.

QC Flow Chart for all processes is shown in the following Figure:



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2. Quality control items for each process.

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

Process		Quality control items	Instrument	Sampling size	Related document	SIC
No	Name					
1a	Incoming Inspection (Pump fiber)	Refer to 9-PR-012				PRD, QAE
1b	Incoming Inspection (Signal fiber)	Refer to 9-PR-012				PRD, QAE
1	Fiber cutting & bunding	Fiber cutting length	Ruler	All	4-OP-0507	PRD, PRE
		Fiber appearance	Visual	All		
		Marking signal fiber	Ruler & pen	All		
		Fiber bunding diameter	Jig	All		
		Fiber arrangement	Anti-tangle jig	All		
2	Fiber stripping	Fiber stripping length	Stripper PCS-100	All	4-OP-0507	PRD, PRE
		Surplus fiber length	Visual			
		Coating removing	Clean wipe			
		Stripping point shape	Magnifier			
3	Bare fiber wiping & cleaving	Bare fiber cleanness	Red light, magnifier	All	4-OP-0507	PRD, PRE
		Fiber length after cleaving	Cleaver			
		Fiber angle cut	Splicer			
4	Fiber stacking	Fiber bundle order	Visual	All	4-OP-0507	PRD, PRE
		Fiber length after stacking	Ruler/template			
		Fiber twist	Visual, Ion fan			
		Fixing fiber order with stacking plate	Manual			
		Stacking plate order	Manual			
		Fiber bundle shape	Magnifier			
5a	Incoming Inspection (FBG fiber)	Refer to 9-PR-012				PRD, QAE
5	FBG fiber preparation	FBG fiber type, side	Visual	All	4-OP-0507	PRD, PRE
		Fiber stripping length	Stripper			
		Stripping point shape	Magnifier			
		Bare fiber cleanness	Red light, magnifier Ultrasonic			
		Fiber length after cleaving	Cleaver			
6	Bundle fusion splicing	P0 measure	OPM	When change lead fiber	4-OP-0507 9-PR-008-4-WI-0023	PRD, PRE
		FBG fiber position	Manual	All		
		Bundle fiber position	Manual			
		Bare fiber cleanness	Red light, Ultrasonic			
		FBG fiber angle cut	Splicer			
		Bundle bare fiber angle cut	Splicer			
		Bundle fiber alignment, diameter	Splicer, software			
		Splicing condition	Splicer			
		Power before & after splicing	OPM			
		Splicing point no broken	Visual			
		Fiber stretch when remove out of tool	Fixing tool			
		Dust on bare fiber	Red light, Visual			
7a	Incoming Inspection (KE3466 resin)	Refer to 9-PR-012				PRD, QAE
7b	Incoming Inspection (Neoceram)	Refer to 9-PR-012				PRD, QAE
7c	Material preparation (cleaning)	Cleaning time	Ultrasonic	All	4-OP-0507	PRD, PRE
		Remove dust on surface	Cotton swab			
		Appearance neoceram	Magnifier			
7	Reinforcement	Fiber position	Fixing tool, holder	All	4-OP-0507 9-PR-008-4-WI-0023	PRD, PRE
		Proof test force	Weight, force gauge			
		Proof test time	Clock			
		Neoceram position	Fixing tool			
		Resin position	Template			

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Process		Quality control items	Instrument	Sampling size	Related document	SIC
No	Name					
		Splicing point position				
		Curing temperature	Heater			
		Curing time	Clock			
8a	Incoming Inspection (OF600 resin)	Refer to 9-PR-012				PRD, QAE
8b	Adhesive Mixing	- Expiry date of adhesive	- Manual	All	4-OP-0507	PRD, PRE
		- Mixing Ratio	- Scale			
		- Mixing Time	- Mixing machine			
		- Air bubble eliminated	- Vacuum box			
		- Air bubble checking	- Visual			
		- Pot life	- Manual			
8	Resin dispensing	Neoceram position	Dispensing / Vacuum machine	All	4-OP-0507 9-PR-008-4-WI-0023	PRD, PRE
		Curing temperature	Heater			
		Resin amount	Manual			
		Resin length inside neoceram	Magnifier			
		Curing time	Clock			
		Appearance neoceram	Magnifier			
9	Thermal inspection	Appearance neoceram	Magnifier	All	4-OP-0507 9-PR-008-4-WI-0023	PRD, PRE
		Connection of product on cart	Splicer Cleaver Fixing area			
		Cleanness after splicing	Cotton swab, Redlight			
		P0 measure	Sensor, Cart	When change connection fiber		
		Temperature of product	Thermal camera	All		
		Pump Transmittance	Sensor			
10a	Incoming Inspection (UV resin)	Refer to 9-PR-012				PRD, QAE
10b	Incoming Inspection (KE3466 resin)	Refer to 9-PR-012				PRD, QAE
10c	Incoming Inspection (Lid crystal)	Refer to 9-PR-012				PRD, QAE
10	Assembly	Appearance neoceram	Magnifier	All	4-OP-0507 9-PR-008-4-WI-0023	PRD, PRE
		Cleanness of lid crystal	Cotton swab, Magnifier			
		Position of neoceram, lid crystal	Fixing jig			
		UV curing power	UV light source			
		Resin cover appearance	Magnifier			
		KE3466 resin curing time	Clock			
11	Optical measurement	Wavelength	OPM	Daily	4-OP-0507 9-PR-008-4-WI-0023	PRD, PRE
		P0 measure	OPM			
		Alignment adjustment	Manual	All		
		M2 measure	M2 system			
		Temperature apply on product when measurement	Heater box			
		Signal Transmittance	OPM			
12	Final Inspection	Color & appearance of Fiber (Pump, Signal, FBG	Green light, Magnifier	All	4-OP-0507	PRD, PRE

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Process		Quality control items	Instrument	Sampling size	Related document	SIC
No	Name					
		Color & appearance of Recoat	Visual, Magnifier		9-PR-008-4-WI-0023	
		Color & appearance of Neoceram	Loupe 10X, Magnifier			
		Appearance of FBG label (QR label)	Visual			
		Correct position of yellow tape & red tape on fiber	Visual			
		Signal fiber length	Ruler			
		Pump fiber length	Ruler			
		FBG fiber length between reinforcement structure and FBG recoat	Ruler			
		FBG fiber length between FBG recoat and fiber end	Ruler			
13	Label & Packing	Appearance of product case (re-use FBG case)	Visual	All	4-OP-0507	PRD, QAE
		Appearance of sponge	Visual	All		
		Appearance of QR label of FBG fiber, product case's label, outer box's label	Visual	All		
		Content of product case's label, outer box's label	Visual	1pc/roll		
		Correct position of Neoceram, Recoat area, FBG fiber, Pump fiber, Signal fiber on packing case	Visual	All		
		Correct position of Yellow tape, Red tape, QR label of FBG fiber, product case's label on packing case	Visual	All		
		Correct Qty sponges of each tray	Tool	All		
		Correct Qty product cases of each outer box	Software	All		
		Correct outer box size	Software	All		
		Storage condition	Thermal & humidity recorder	All		
		Expired date of product	Software	All		
14	Test Report & Shipping	- P/O number	- Manual	All	4-OP-0507	QA, LOG
		- Product name, quantity	- Manual			
		- Format of test report	Test report + form	All	4-OP-0507	QAE
		- Judgement of product				

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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

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Date	Person in charge	Ver	Revised Content description		Reason	Change requester
			Old content	New content		
30-Sep-24	ChauVNB	03	13. Label & Packing - Control by Software & Visual for product case's label, outer box's label - Correct position of Neoceram, Recoat area, FBG fiber, Pump fiber, Signal fiber, Yellow tape, Red tape, QR label of FBG fiber, product case's label	13. Label & Packing - Only Control by Visual for product case's label, outer box's label - Add position of Neo, ... on packing case	-Update control item -Make clear position on packing case	Manager DucTNM
27 Sep 24	Nam HA	02	8. Resin dispensing	8. Resin dispensing Remove "Cleanness of cover" item	Re-arrange content by internal review	Manager Trung DN
			10.Assembly Cleanness of lid crystal: Cotton swab, Cotton swab, ethanol, SOLBLE	10.Assembly Cleanness of lid crystal: Cotton swab, Magnifier	Update content by internal review	
			14. Shipping	12. Final Inspection 13. Label & Packing 14. Test Report & Shipping Additional control items for these process	Update control item	Manager DucTNM
12 Jan 24	Nam HA	01	-	Established	-	Manager Trung DN