NBC

Process Name/ Title: **Vinyl Tube Cutting / Process Flow**	Document No:	**WI-PRO-CNC-001**
WORK INSTRUCTION	Effective Date:	**October 17, 2024**
Product Code/Name: **All**	Customer Code: **All**	Rev. No.: **9**	Page No.: **1 of 4**

No.	Work Procedure/ Illustration	Records/Remarks/ Quality Pointers
1	Check work area. Conduct 5s on table.	
2	Check daily plan(Identification Tag), Prepare cutting ledger and check raw materials availability. If not available, request parts from warehouse using Parts Request Kanban.	
3	Record Start time on Tube Cutting Daily Report and Set-Up and Downtime Monitoring. Perform machine checking and fill-out Machine Daily Check sheet. After finishing, record end time on Set-Up and Downtime Monitoring.	Daily Report (F-PRO-CNC-005) Set up and Downtime Monitoring (F-PRO-CNC-004)

In case of abnormality is encountered during machine checking, follow STOP-CALL-WAIT Procedure

4 Proceed to Machine Set-Up.

4.1 Record Set Up and Adjustment start time on Set-Up and Downtime Monitoring.

4.2 Set guide jig on feeding machine, roller guide and on machine tube guide.

4.3 Get the tube from the tube rack or on the box. Check material label.

tube rack   tube box

4.4 Load vinyl tube on loading saucer. Untie or remove the plastic of tube. Cut the end of the tube.
End of tube must be on the left side. Loading saucer must rotate counterclockwise.

counter clockwise

end of tube

4.5 Get label and parts Kanban put in designated area.

Parts supply kanban

Parts label/identification tag

Records/Remarks/Quality Pointers:

⑨ Note: Adjust pipe if set up cannot fit tube, loose bolt and adjust.

If change set up from sunprene(vm) tube to vinyl (sv) and vice versa

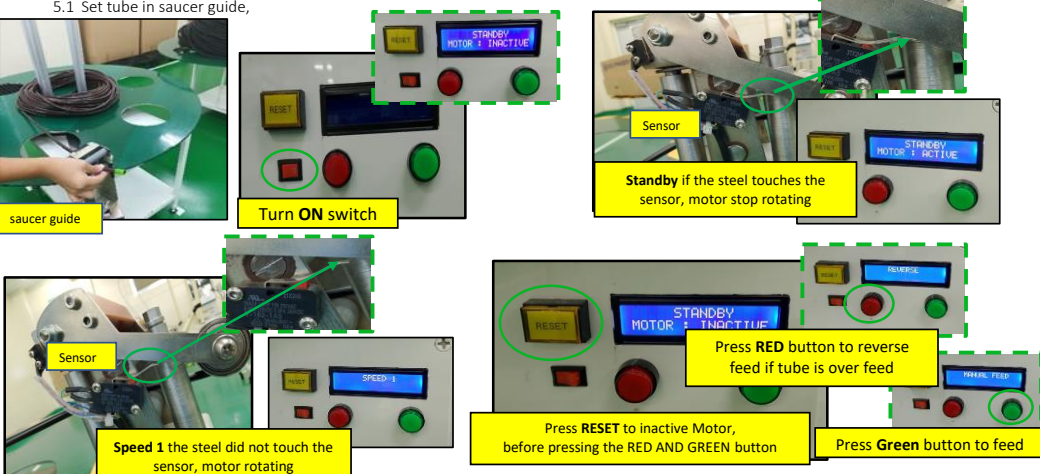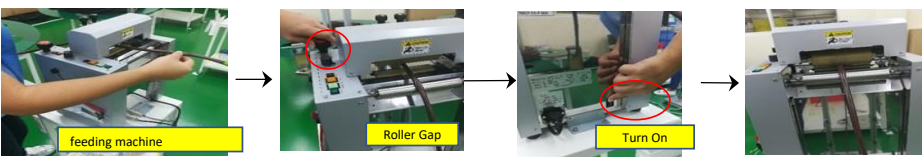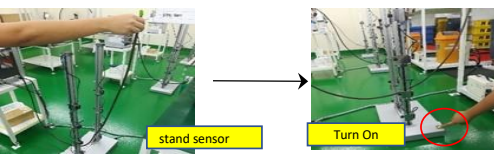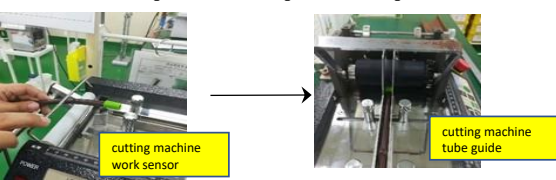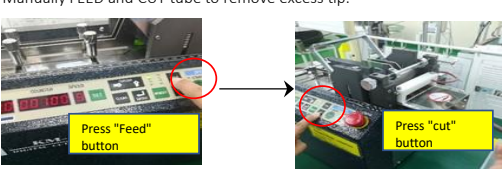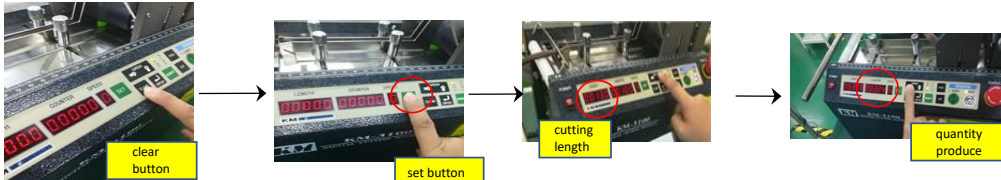* Don't force tube to fit to avoid scratch
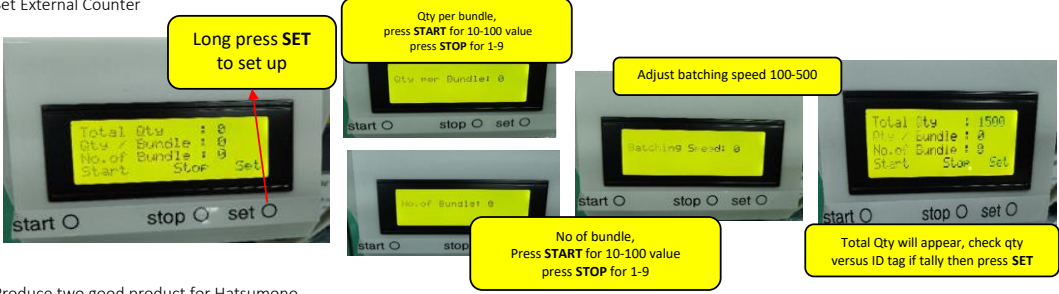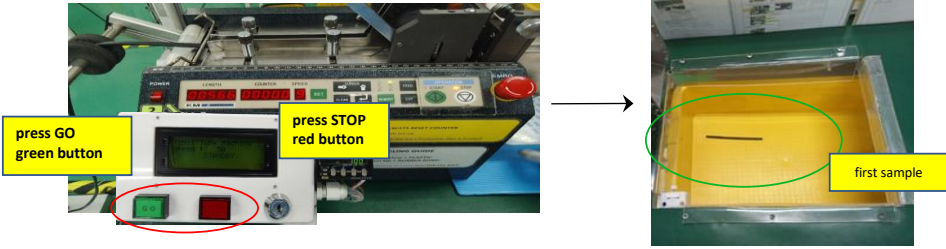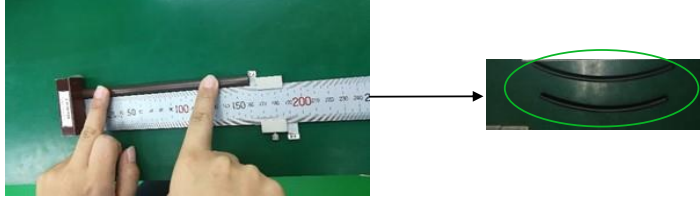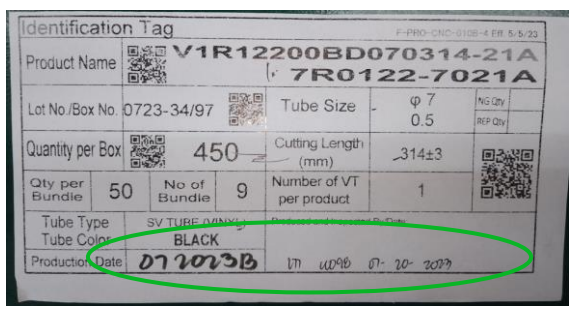
Note: If the tube is not consume return the tube in the vinyl tube rack or in the box.

No.	Work Procedure/ Illustration	Records/Remarks/ Quality Pointers
5	Set the tube to cutting machine	

5.1 Set tube in saucer guide,

saucer guide — Turn **ON** switch — Sensor — **Standby** if the steel touches the sensor, motor stop rotating

Sensor — **Speed 1** the steel did not touch the sensor, motor rotating

Press **RESET** to inactive Motor, before pressing the RED AND GREEN button

Press **RED** button to reverse feed if tube is over feed

Press **Green** button to feed

⚠ **9**

Loading Saucer Motor - automatically rotate the loading saucer to avoid stretched tube during operation

Note: If the motor is malfunction inform Maintenance to check and fix the problem

5.2 Set tube in feeding machine, adjust the roller gap ,turn on the machine and manual feed.

feeding machine → Roller Gap → Turn On →

5.3 Set tube in the stand sensor and "turn on" the sensor.

stand sensor → Turn On

5.4 Set the tube in working sensor and cutting machine tube guide

cutting machine work sensor → cutting machine tube guide

Tube must be inserted to work sensor

5.5 Manually FEED and CUT tube to remove excess tip.

Press "Feed" button → Press "cut" button

6	Set up length, counter for needed quantity to produce and speed in Cutting Machine	Note: Refer to Identification Tag for JO and Replenish Request F-PRO-CNC-010

clear button → set button → cutting length → quantity produce

⚠ **9** For the setting of speed:

Vinyl Tube	
Length	Speed
0 - 350 mm	6 ~ 9
351 mm - above	1 ~ 5

Sunprene Tube	
Length	Speed
any length	1~9

6.1 To input length, press "SET" button once, use "CURSOR" key to select desired values then press "SET" to save and to proceed to next display window.

6.2 To input target quantity, repeat step 6.1 starting from pressing the "CURSOR" key onwards. Refer to Kanban Request Card.

6.3 To input speed, repeat step 6.1 starting from pressing the "CURSOR". Refer to Speed guide.

6.4 Set scale stopper jig on scale based on product specifications, refer to wire cutting ledger.

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No.	Work Procedure/ Illustration	Records/Remarks/ Quality Pointers
7	Set External Counter	Refer to Identification tag

7 Set External Counter

- Long press **SET** to set up
- Qty per bundle, press **START** for 10-100 value, press **STOP** for 1-9
- Adjust batching speed 100-500
- No of bundle, Press **START** for 10-100 value, press **STOP** for 1-9
- Total Qty will appear, check qty versus ID tag if tally then press **SET**

Refer to Identification tag

8 Produce two good product for Hatsumono.

8.1 Press "start" then stop to produce the 1st piece.

- press GO green button
- press STOP red button
- first sample

8.2 Measure the first piece. If first piece does not meet the target value, adjust setting until target value is met. Attach first piece tag.

Note: If first piece is within the tolerance refer to cutting ledger (CL-ENG-PDE) include in good product, if out of tolerance immediately scrap to avoid mixing to good product

8.3 Record end time in set up and downtime monitoring.

SET UP and EXPECTED D		
TIME	DURATION (mins)	ACTIVITY
8:00 – 8:02		A
8:02 – 8:06		B

9 Accomplish daily report, and set up and downtime monitoring.
Record start time of Daily Entry in set up and downtime monitoring.
Complete details in daily report
Accomplish Parts Identification Tag and place it on parts box.

For Set up and Downtime Monitoring:

8:00 – 8:02		A
8:02 – 8:06		B
8:06 –		C

For Identification Tag

Identification Tag		F-PRO-CNC-0108-4 Eff. 5/5/23
Product Name	V1R12200BD070314-21A 7R0122-7021A	
Lot No./Box No. 0723-34/97	Tube Size φ7 0.5	NG Qty REP Qty
Quantity per Box 450	Cutting Length (mm) 314±3	
Qty per Bundle 50	No of Bundle 9	Number of VT per product 1
Tube Type SV TUBE (VINYL)		
Tube Color BLACK		
Production Date 07 2023 B		

Note:
To accomplish ID Tag
Produce by use CNC Code

No.	Work Procedure/ Illustration	Records/Remarks/ Quality Pointers

10	Call Senior Line Leader / Line leader and Freeman to check the first 2 good product. ⚠9
	
	Hatsumono Checkpoints;
	  Cutting Ledger
	  Id Tag
	  Material Label
	  Inside diameter
	  Cutting length
	  Appearance
	  Cross section
	
	Conduct **STOP CALL WAIT** if encounter maximum and minimum inside diameter tube, Inform immediate superior .
	
	Senior Line Leader/Line leader or Freeman record actual measurement in daily report (inside diameter, cutting length), cross section judgement.
	  Checker will sign Id tag and scan name in daily report.
		⚠9 Note: Operation can start after producing of 2 good product for hatsumono of leader and end time of daily entry while waiting of leader or checking is on going.
		
		Waiting of leader should be reflected in downtime.

11	Operator will record end time of Daily entry right after recording of 1st piece. 	8:00 - 8:02		A
8:02 - 8:06		B
8:06 - 8:09		C		

12	During Mass Production.
	  Note:
	⚠9 For below 400mm no inspection of appearance, cross section and length,
	  Conduct sampling inspection only in first 3 bundles atleast 3pcs each bundles.
	  For **400mm** and above conduct 100% inspection
	
	Wear PPE gloves once mass production start.
	
	Bundling of tube:
	  For the length of **100mm** to **155mm** - Align and **" TAKTAK "** each bundle to check if there is length variation and tie the tube.
	  For the length of **156mm ~ above -** **"TAKTAK"** each bundle to check if there is length variation and tie the tube.
	
	  Use plastic for **99mm** and below, use rubber band to tie tube when bundling for **100mm** and above
	
	Inspection should be done on affected parts on tray if any machine error occurred.
	  (e.g. stuck on loading saucer, looping on stand sensor, feeding error)
	
	⚠9 Note :
	  Any problem encounter **STOP CALL WAIT** should be done.
	  Leader will verify and reset machine when error to proceed mass production if machine was on error
	  When encounter stuck on loading saucer check tube from the feeding machine to stand sensor must be done, if tangled tube in loading saucer must check tube from loading saucer to stand sensor
		⚠9 Using of tray is allowed to catch the tube for length 250mm below
		
		Use Sorting Data to record the result of sorting.
		
		⚠9 Note:
		Call leader if product is about to finish for checking of last piece. Operator may start to set up machine but cannot start operation if last piece is for checking of leader

13	⚠9 After finishing one model, operator must measure and check the last piece, put it on the table beside last bundle and attach last piece tag.
	
	Operator will call Senior Line Leader / Line Leader or Freeman for checking of last piece.
	Leader or Freeman will record actual length , cross section cut (last piece) and scan their name as sign in daily report.
	  Note: After checking of last piece immediately put the last piece on last bundle then put in the box.
	  Make sure no tube left inside the box and tray, do **"taktak"** of the box/tray.
	
	⚠9 Reminder:
	  Press **RESET** in external counter when quantity per box is finished then repeat step 6 & 7 to set up machine and external counter.
	  If the lot is more than one box, press **RESET** in external counter then press **CLEAR** in Cutting machine and start operation.	

14	At the end of the shift, operator will accomplish daily report and set up and downtime monitoring. Perform 5S and accomplish machine check sheet and summary of defects.	Summary of Defects F-PRO-CNC-014B

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