



## WORK INSTRUCTION

## TAPING ASSEMBLY PROCESS

Effectivity Date:

March 12, 2024

Process Name/Title:

Validity Date:

n/a

Model code/Part number:

310D

/

7N0199-7020

Customer: TRJ

Car Model:

TOYOTA-RAV4

Document No.:

WI-ENG-PDE-771

Purpose:

☐ PROTOTYPE☐ PRE-LAUNCH☒ MASSPRO

Revision No.:

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PARTS:		1. Connector 6098-3802 (W)				JIG:	1. Insertion jig with switch cover										
NO.		PROCESS NAME		1 WORK PROCEDURE/ ILLUSTRATION				TOOLS/PPE		QUALITY POINTERS							
1		n/a		Connector setting to insertion jig 6098-3802 (W)				<div>Safety Instruction</div> <div>Be sure to wear required personal protective equipment during operation (gloves, finger cots, etc.)</div> <div>Housekeeping</div> <div>1. Maintain and always practice 5's.</div> <div>2. Personal things on the workplace is prohibited. Keep it in your locker.</div> <div>Alert level</div> <div>For any trouble, inform the Assembly Assistant Supervisor or Line Leader for immediate corrective action.</div>		<div>1. Use the provided jig per model</div> <div>2. No wrong orientation of connector</div> <div>3. No wrong use of connector</div> <div>4. No damaged connector</div> <div><div>I-mark is align</div><div>1 Hole is open</div><div>GOOD</div><div>I-mark is not align</div><div>1 Hole is open</div><div>NG</div><div>CONNECTOR ILLUSTRATION</div><div><div>GOOD</div><div>6098-3802 (W)</div><div>NG</div><div>6098-5668 (W)</div></div></div>							
<div>Visual reference</div> <div>INSERTION JIG WITH SWITCH</div> <div>Insertion jig</div> <div>I-MARK</div> <div>Lock</div> <div>CONNECTOR ORIENTATION</div> <div>INSERTION JIG ORIENTATION</div> <div>L</div> <div>Press</div> <div>1. Press the lock of insertion jig using left thumb.</div> <div>R</div> <div>Press</div> <div>2. Insert the connector 6098-3802 (W) into jig using right hand and release the lock.</div> <div>Note: Follow the connector orientation.</div> <div>L</div> <div>Release</div> <div>R</div> <div>3. Push the guide using left hand. The slot for Violet wire will be opened.</div> <div>Holes</div> <div>Guide</div>																	
Revision History										Prepared by		Reviewed by		Approved by		Noted by	
03/12/24		1		Changed purpose from Pre-launch to Masspro. Improved Work Procedure/Illustration on pages 1 to 14.				M. Ariola		C.Villanueva		A. Arañes		n/a			
01/03/24		0		Initial issue				M. Ariola		C.Villanueva		A. Arañes		n/a			
Eff. Date		Rev. No		Details of Change				Revised		Reviewed		Approved		Noted			

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PARTS:	1. Connector 6098-3802 (W) 2. AVSSf 0.3 wires Violet L=768±3mm 3. AVSSf 0.3 wires Black L=768±3mm			JIG:	1. Insertion jig with switch cover
NO.	PROCESS NAME	1 WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
2	n/a  Wire insertion to connector 6098-3802 (W)	<div data-bbox="781 387 1010 440"></div> <div data-bbox="1048 400 1137 421">Wire</div> <div data-bbox="573 459 860 730"></div> <div data-bbox="680 472 831 493">1 Violet wire</div> <div data-bbox="562 762 882 828">1. Hold the insertion jig using left hand. Get the Violet wire then insert to terminal slot 1 using right hand.</div> <div data-bbox="1025 464 1346 746"></div> <div data-bbox="1005 778 1375 823">2. Press the button using right thumb. The slot for Black wire will be opened.</div> <div data-bbox="577 874 916 1203"></div> <div data-bbox="680 887 848 908">2 Black wire</div> <div data-bbox="568 1235 875 1279">3. Get the Black wire then insert to terminal slot 2 using right hand.</div> <div data-bbox="1010 871 1375 1193"></div> <div data-bbox="1167 1043 1223 1064">Press</div> <div data-bbox="1005 1219 1368 1302">4. After insertion, push the lock using left thumb and then hold the wires and gently pull out the connector from jig using right hand.</div>		n/a	<div data-bbox="1733 379 2002 547">1. No wrong use of connector 2. No damaged connector 3. No wrong insertion of wires 4. No loose insertion 5. One by one insertion 6. No deformed terminal 7. No wrong wire facing</div> <div data-bbox="1742 632 2089 786"><b>Important reminder's/Note:</b> 1. Please hold the wire near terminal.  2. Make sure wires are properly inserted. Conduct Pull-Push-Pull-Push after insertion. Do not exert extra force.</div> <div data-bbox="1742 810 2089 946"><b>Document references:</b> 1. Refer to WI-PRO-CNC-017 for Wire Strip lenght tolerance.  2. Refer to GL PRO-ASY-029 for pull-push-pull-push procedure</div> <div data-bbox="1778 986 2085 1262"><div>CONNECTOR ILLUSTRATION</div><div><div>GOOD</div><div>NG</div><div></div><div></div><div>6098-3802 (W)</div><div>6098-5668 (W)</div></div></div>

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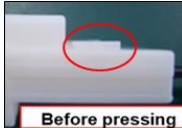



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PARTS:	1. Assy Parts		JIG:	1. Locking jig
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION	TOOLS/PPE	QUALITY POINTERS
3	n/a	Connector lock	<div>LOCKING JIG</div> <div></div>	<div>1. Use the provided jog per model</div> <div>2. No unlocked/half-locked connector</div> <div><b>Important reminders/Note/s:</b></div> <div>1. <b>Manual locking jig may caused damaged connector lock.</b></div> <div><b>Document references:</b></div> <div>1. Refer to GL-PRO-ASY-017 for the verification of connector lock.</div> <div><div><div><p>Before pressing</p></div><div><p>After pressing</p></div></div><div><div><div><div>GOOD</div><div><p>Full Lock</p></div></div><div><div>NG</div><div><p>Half Lock</p></div></div></div></div></div>

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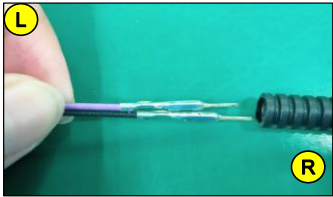
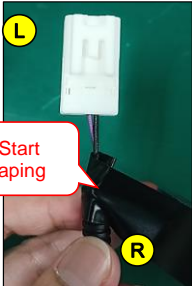

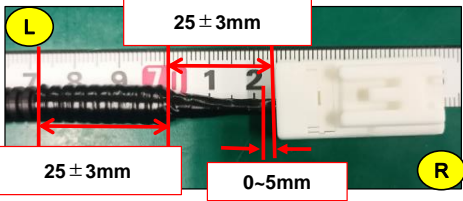

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PARTS:		1. Assy parts 2. Black Corrugated tube $\phi 5$ L=144 $\pm$ 3mm (no slit) 3. Black tape		JIG:	n/a
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
4	Wire Insertion to Black Corrugated tube $\phi 5$ L=144 $\pm$ 3mm (no slit)	 <p>2. Get the <b>Black Corrugated tube <math>\phi 5</math> L=144<math>\pm</math>3mm (no slit)</b> using right hand then insert the Violet wire and Black wire using both hands.</p>		n/a	1. No wrong usage of parts. 2. No deformed terminal
5	Taping 1 Black Corrugated tube to wire near connector	 <p>Start taping</p> <p>1. Get the <b>Black tape</b>, hold the assy parts using left hand then start taping using both hands.</p>  <p>25 <math>\pm</math> 3mm</p> <p>2. Measure the end of COT up to edge of connector <b>25<math>\pm</math>3mm then continue the taping process using both hands.</b></p>  <p>25 <math>\pm</math> 3mm</p> <p>0-5mm</p> <p>3. After taping, check the measurement and taping condition.</p>		<b>MEASURING TAPE</b> 	<b>Important reminders/Notes/:</b> <b>1. Please use calibrated/verified measuring tape when getting the measurement.</b>  1. No loose tape 2. No flip-out tape 3. No peel-off tape 4. No wrong use of tape 5. No wrong dimension

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PARTS:		1. Connector 6098-3810 (W)		JIG:	1. Insertion jig
NO.	PROCESS NAME	1 WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
6	n/a	<div><div><div>Insertion Jig</div></div><div><div>Insertion Jig Orientation</div></div><div><div>Connector Orientation</div></div></div> <div><div><div>L</div></div><div><div>L</div></div><div><div>L</div></div></div> <div><div><div>R</div></div></div>		n/a	<div><div>CONNECTOR ILLUSTRATION</div><div><div>GOOD</div></div><div><div>NG</div></div><div><div>6098-3810 (W)</div></div><div><div>6098-5677 (W)</div></div></div>

6098-3810 (W)

6098-5677 (W)

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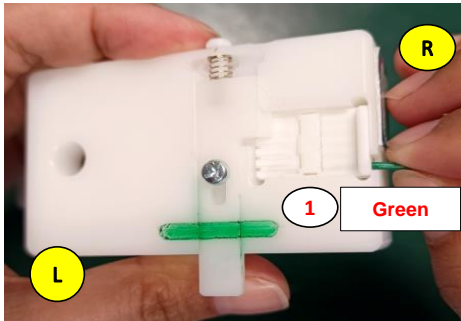
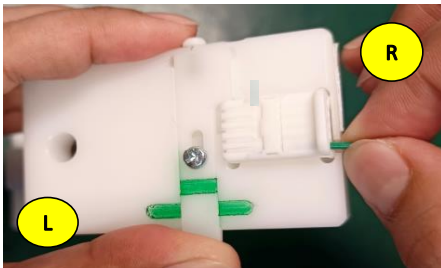
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PARTS:		1. Connector 6098-3810 (W) 2. AVSSf 0.3 wires Green L=659±3mm		JIG:	n/a
NO.	PROCESS NAME	1 WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
7	n/a  Wire insertion to Connector 6098-3810 (W)	<div><div>CONNECTOR ORIENTATION</div></div> <div><div>WIRE FACING</div></div> <div><div>1 Green</div><div>1. Get the <b>Green wire</b> and insert to <b>Slot 1</b> of connector using right hand. Conduct <b>2x</b> push pull after wire insertion.</div></div> <div><div>2</div><div>2. After insertion, push the lock using left thumb and then hold the wires and gently pull out the connector from jig using right hand.</div></div>		n/a	<div>1. No wrong use of connector 2. No damaged connector 3. No wrong insertion of wires 4. No loose insertion 5. One by one insertion 6. No deformed terminal 7. No wrong wire facing</div> <div><b>Important reminder's/Note:</b> <b>1. Please hold the wire near terminal.</b> <b>2. Make sure wires are properly inserted. Conduct Pull-Push-Pull-Push after insertion.</b> <b>Do not exert extra force.</b></div> <div><b>Document references:</b> <b>1. Refer to WI-PRO-CNC-017 for Wire Strip lenght tolerance.</b> <b>2. Refer to GL PRO-ASY-029 for pull-push-pull-push procedure</b></div>

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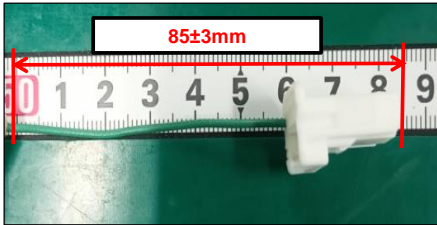
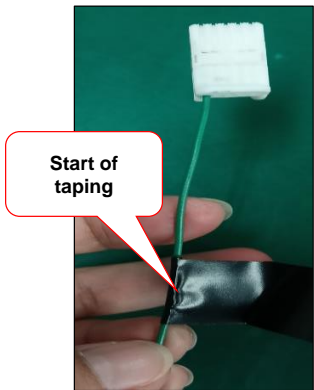


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PARTS:		1. Assy parts 2. Black tape		JIG:	n/a
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
9	n/a	Half wrap taping	<div></div> <div></div> <div></div> <div>1. Hold the wire using left hand, Measure from wire up to end of connector <b>L=85±3mm</b> using both hands.</div> <div>2. Get the <b>Black tape</b>. Start pre-taping make <b>1 winding</b> of tape then conduct <b>1/2 shifting</b> until you reach the edge of the connector. Make <b>2 windings</b> of tape before end of tape. <b>(Taping must be 1/2 shifting)</b></div> <div>3. After taping, check the measurement and tape condition.</div>	<div>MEASURING TAPE</div> 	1. No loose tape 2. No flip-out tape 3. No peel-off tape 4. No wrong use of tape 5. No wrong dimension

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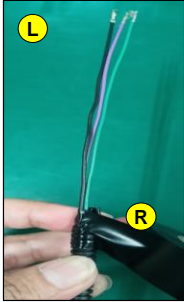
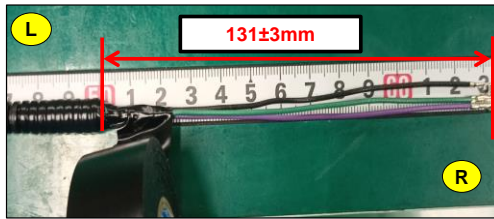
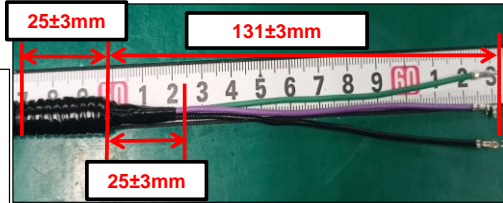

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PARTS:		1. Assy parts 2. Black Corrugated tube $\phi 5$ L=461 $\pm$ 3mm (no slit) 3. Black tape			JIG:	1. Terminal cover jig
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION			TOOLS/PPE	QUALITY POINTERS
10	Wire Insertion to Black Corrugated tube $\phi 5$ L=461 $\pm$ 3mm (no slit)	<div><p>1. Combine the <b>B-V-G wires</b> using both hands. Get the terminal cover jig using right hand then insert to <b>B-V-G wires</b> both hands.</p></div> <div><p>2. Get the Corrugated tube <math>\phi 5</math>, <b>L=461<math>\pm</math>3mm</b> using right hand then insert to <b>B-V-G wires</b> using both hands.</p></div> <div><p>3. After insertion, remove the terminal cover jig using right hand.</p></div>			<div>Terminal cover Jig</div> 	1. No wrong usage of parts. 2. No deformed terminal
11	n/a  Taping 2 COT to wire near terminal	<div><p>1. Hold the assy parts using left hand. Get <b>Black tape</b> using right hand and start pre-taping.</p></div> <div><p>2. Measure from COT to Connector <b>131<math>\pm</math>3mm</b> using both hands and continue the taping process.</p></div> <div><p>3. After taping, check the measurement and taping condition.</p></div>			<div>MEASURING TAPE</div> 	<b>Important reminders/Notes/:</b>  <b>1. Please use calibrated/verified measuring tape when getting the measurement.</b>  1. No loose tape 2. No flip-out tape 3. No peel-off tape 4. No wrong use of tape 5. No wrong dimension

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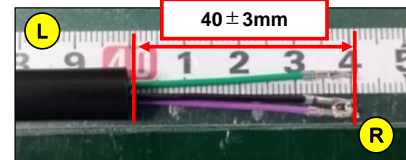
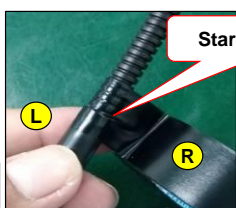
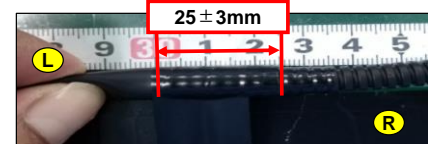



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PARTS:		1. Assy parts 2. Black tape 3. Black VM tube (Sunprene) Ø9 L=112±3mm		JIG:	n/a
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
12	Wire insertion to Black VM tube (Sunprene) Ø9 L=112±3mm	<div></div> <div>1. Get the Black VM tube (Sunprene) Ø9 L=112±3mm using right hand then insert the B-G-V wires.</div>			1. No loose tape 2. No flip-out tape 3. No peel-off tape 4. No wrong use of tape 5. No wrong dimension-out tape
13	n/a  Taping 3 Black Corrugated tube to Balck VM tube (Sunprene)	<div><div></div><div>1. Measure from end of VM tube (Sunprene) up to terminal pointed tip 40±3mm using both hands.</div></div> <div><div></div><div>Start of taping</div><div>2. Hold the COT using left hand, get the Black tape using right hand then start pre-taping using both hands.</div></div> <div><div></div><div>3. Confirm measurement of 25±3mm from end of tape up to end of tube then continue the taping process using both hands.</div></div> <div><div></div><div>4. Confirm measurement of 25±3mm from end of tube up to end of tape then continue the taping process using both hands.</div></div> <div><div></div><div>5. After taping, check the measurement, terminal appearance and taping condition.</div></div>		<div>MEASURING TAPE</div> 	<i>Important reminders/Notes/:</i>  1. Please use calibrated/verified measuring tape when getting the measurement.  1. No loose tape 2. No flip-out tape 3. No peel-off tape 4. No wrong use of tape 5. No wrong dimension

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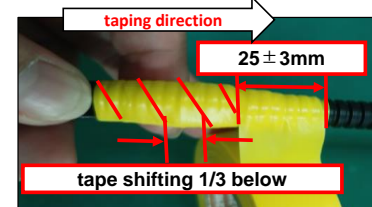

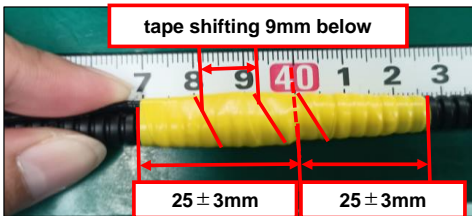

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PARTS:		1. Assy parts 2. Black tape		JIG:	n/a
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
14	n/a  Y-taping	<div><div><p>No gap between the tubes and wires</p></div><div><p>1. Fix the tubes and wires.</p></div></div> <div><div><p>Do not exert excessive force during pulling &amp; winding of tape.</p><p>Start of taping</p></div><div><p>2. Start taping at the middle of combined tubes and wires, then wind the tape to left side (width must be 25mm)</p></div></div> <div><div><p>taping direction</p><p>25 ± 3mm</p><p>tape shifting 1/3 below</p></div><div><p>3. Wind the tape 1/3 shifting until it reach the other side of the tubes and wires (must be 25±3mm)</p></div></div> <div><div><p>tape shifting 1/2 below</p><p>taping direction</p></div><div><p>4. Wind the tape 1/2 shifting</p></div></div> <div><div><p>tape shifting 9mm below</p><p>25 ± 3mm</p><p>25 ± 3mm</p></div><div><p>5. Wind the tape 1/2 shifting going to other side of tubes and wires then cut the tape. After taping, check the measurement and taping condition.</p></div></div>		<div>MEASURING TAPE</div> 	<p><b>Important reminders/Note/s:</b></p> <p>1. Use <u>yellow tape</u> for easy visualization of tape shifting, but actual should be <b>BLACK TAPE</b>. 2. Please use calibrated/verified measuring tape when getting the measurement.</p> <p>1. No loose tape 2. No flip-out tape 3. No peel-off tape 4. No wrong use of tape 5. No wrong dimension-out tape</p>

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WORK INSTRUCTION  
TAPING ASSEMBLY PROCESS

Process Name/Title:

Model code/Part number: **310D / 7N0199-7020** Customer: **TRJ** Car Model: **TOYOTA-RAV4**

Purpose: ☐ PROTOTYPE ☐ PRE-LAUNCH ☒ MASSPRO

Effectivity Date:

March 12, 2024

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
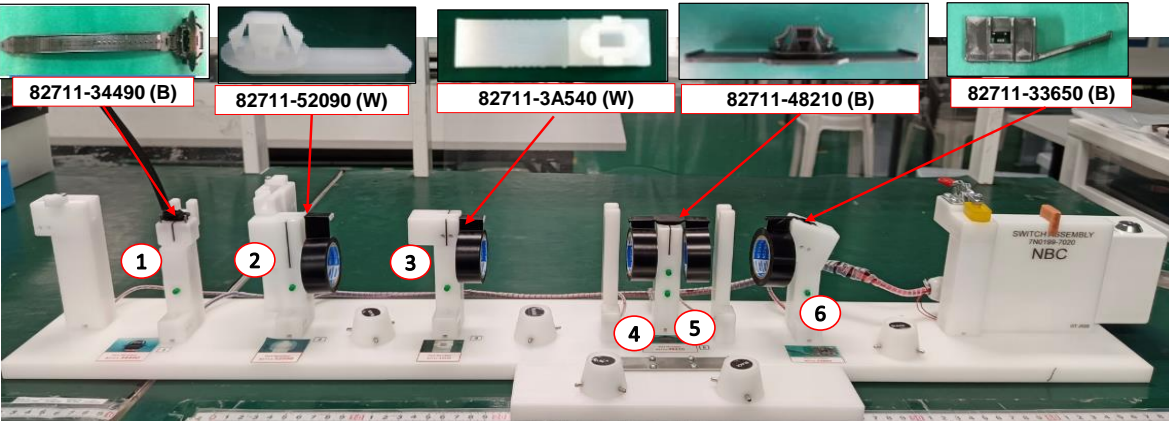
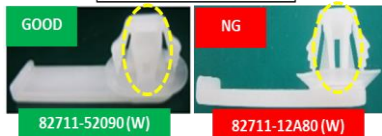
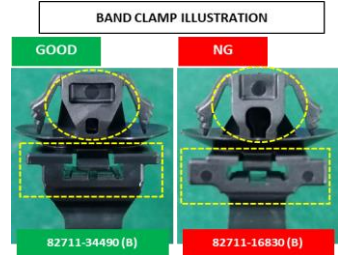
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PARTS:	1. Clamp 82711-52090 (W) 2. Clamp 82711-48210 (B) 3. Clamp 82711-34490 (B)	4. Clamp 82711-3A540 (W) 5. Clamp 82711-33650 (B) 6. Black tape [5 pcs.]	JIG:	1. Clamp assembly jig
NO.	PROCESS NAME	 WORK PROCEDURE/ ILLUSTRATION	TOOLS/PPE	QUALITY POINTERS
15	n/a  Clamp Setting	 <div><div>1. Get 1pc. of clamp <b>82711-34490 (B)</b> using right hand and set to clamp location <b>1</b> using both hands.</div><div>2. Get 1pc. of clamp <b>82711-52090 (W)</b> using right hand and set to clamp location <b>2</b> using both hands.</div><div>3. Get 1pc. of clamp <b>82711-3A540 (W)</b> using right hand and set to clamp location <b>3</b> using both hands.</div><div>4. Get 1pc. of clamp <b>82711-48210 (B)</b> using right hand and set to clamp location <b>4 and 5</b> using both hands.</div><div>5. Get 1pc. of clamp <b>82711-33650 (B)</b> using right hand and set to clamp location <b>6</b> using both hands.</div><div>6. Initially attach <b>Black tape</b> to clamp location <b>2, 3, 4, 5 and 6</b> using both hands.</div></div>	 	<p>1. No wrong use of parts 2. No wrong use of tape 3. No damaged clamp 4. No wrong clamp position</p> <p><b>Important reminders/Note/s:</b></p> <p><b>1. Please check the Clamp first before start of assembly to avoid wrong use of clamp.</b></p>

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## WORK INSTRUCTION

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7N0199-7020

Customer: TRJ

Car Model:

TOYOTA-RAV4

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Purpose:

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PARTS:	1. Assy parts		JIG:	1. Clamp assembly jig
NO.	PROCESS NAME	<div>1</div> WORK PROCEDURE/ ILLUSTRATION	TOOLS/PPE	QUALITY POINTERS
16	n/a	Clamp assembly	<div><div><div></div><div>82711-34490 (B)</div></div><div><div></div><div>82711-52090 (W)</div></div><div><div></div><div>82711-3A540 (W)</div></div><div><div></div><div>82711-48210 (B)</div></div><div><div></div><div>82711-33650 (B)</div></div><div></div></div>	<div><div>1. No wrong use of parts</div><div>2. No wrong use of tape</div><div>3. No damaged clamp</div><div>4. No wrong clamp position</div></div> <div><div>Important reminders/Note/s:</div><div>1. Please check the Clamp first before start of assembly to avoid wrong use of clamp.</div><div>2. Using steel rule, check if the band cut measurement is within the required dimension and should not exceed the allowable range (0~2mm).</div><div>3. Setting of band clamp cutter depends on the size of the COT/SV tube (Vinyl) ø5- 1~2, ø7- 3~4</div></div> <div><div></div><div><div>BANDO GUN ILLUSTRATION</div><div><div>GOOD</div><div>NG</div></div><div><div>FLAT NOSEPIECE</div><div>EXTENDED NOSEPIECE</div></div></div></div>

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7N0199-7020

Customer: TRJ

Car Model: TOYOTA-RAV4

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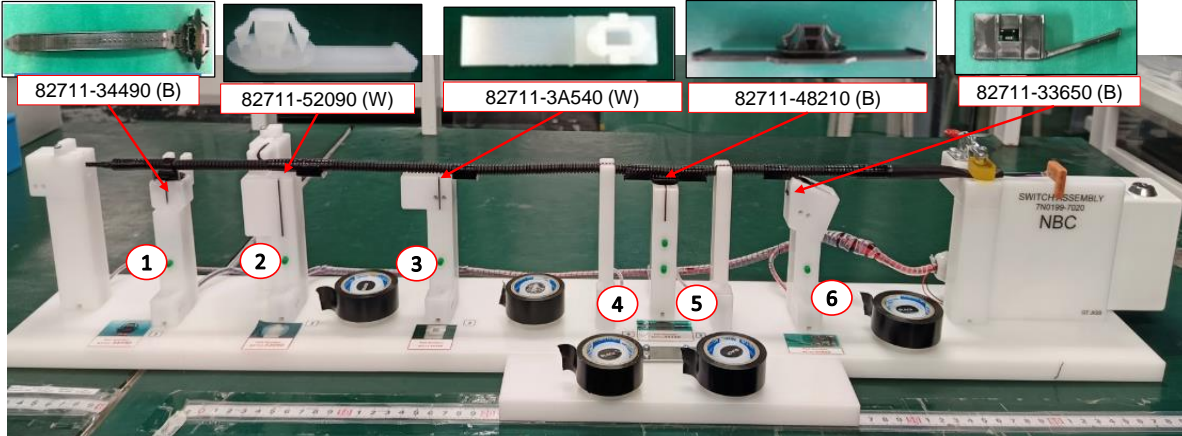
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<b>PARTS:</b>	1. Assy parts			JIG:	1. Clamp assembly jig
<b>NO.</b>	<b>PROCESS NAME</b>	<b>1 WORK PROCEDURE/ ILLUSTRATION</b>	<b>TOOLS/PPE</b>	<b>QUALITY POINTERS</b>	
16	n/a	Clamp assembly (Continuation)	 <p>1. Please check the Clamp first before start of assembly to avoid wrong use of clamp.</p> <p>3. On clamp location <b>2</b>, hold the tape then make <b>3 windings</b> of tape then cut the tape using both hands. Press the <b>SW button</b> after taping. Continue the process if the sequence light on <b>location 3</b> was <b>ON</b>.</p> <p>4. On clamp location <b>3</b>, hold the tape then make <b>3 windings</b> of tape then cut the tape using both hands. Press the <b>SW button</b> after taping. Continue the process if the sequence light on <b>location 4</b> was <b>ON</b>.</p> <p>5. On clamp location <b>4</b>, hold the tape then make <b>3 windings</b> of tape then cut the tape using both hands. Press the <b>SW button</b> after taping. Continue the process if the sequence light on <b>location 5</b> was <b>ON</b>.</p> <p>6. On clamp location <b>5</b>, hold the tape then make <b>3 windings</b> of tape then cut the tape using both hands. Press the <b>SW button</b> after taping. Continue the process if the sequence light on <b>location 6</b> was <b>ON</b>.</p> <p>7. On clamp location <b>6</b>, hold the tape then make <b>3 windings</b> of tape then cut the tape using both hands. Press the <b>SW button</b> after taping. <b>GO</b> sound will be heard.</p> <p>8. After taping, <b>CONDUCT POINT CHECKING</b> before removing the harness from jig.</p>		1. No wrong use of parts 2. No wrong use of tape 3. No damaged clamp 4. No wrong clamp position

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# WORK INSTRUCTION

## TAPING ASSEMBLY PROCESS

Effectivity Date:

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7N0199-7020

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PARTS:		1. Assy parts 2. Engineering sample		JIG:	n/a
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
17	n/a	<div>Visual/By Two's Inspection</div> <div>Assembled parts</div> <div>Engineering sample</div> <div>1. Conduct <b>alignment of harness (Engineering sample vs. Assembled parts)</b> using both hands.</div> <div>2. Check the <b>connector lock condition, insertion, terminal and taping condition.</b></div> <div>3. Check the <b>presence of clamp attachment, taping condition and band clamp cut.</b> Conduct <b>bending of parts with wing-type clamp.</b></div>			<div>1. No skip checking during inspection.</div> <div><b>ENGINEERING SAMPLE</b></div> <div><b>Important reminders/Note/s:</b></div> <div>1. <b>Using steel rule, check if the band cut measurement is within the required dimension and should not exceed the allowable range (0~2mm).</b></div> <div><b>CLAMP ILLUSTRATION</b></div> <div><b>GOOD</b> 82711-52090 (W)</div> <div><b>NG</b> 82711-12A80 (W)</div> <div><b>CONNECTOR ILLUSTRATION</b></div> <div><b>GOOD</b> 6098-3802 (W)</div> <div><b>NG</b> 6098-5668 (W)</div>

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PARTS:		1. Assy parts 2. Engineering sample		JIG:	n/a
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
17	n/a	Visual/By Two's Inspection (Continuation)	 <div>ACTUAL PRODUCT</div>		1. No skip checking during inspection.
			<div><div>5. Conduct slightly pulling (<b>UP and Down</b>) of VM tube (Sunprene) to <b>confirm the presence of tape</b>.</div><div>7. Check the <b>terminal appearance</b>. Must be <b>no deformed terminal</b></div><div>4. Check the <b>half-wrap taping and Y-taping condition</b>.</div></div>		

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**310D****/****7N0199-7020**Customer: **TRJ**

Car Model:

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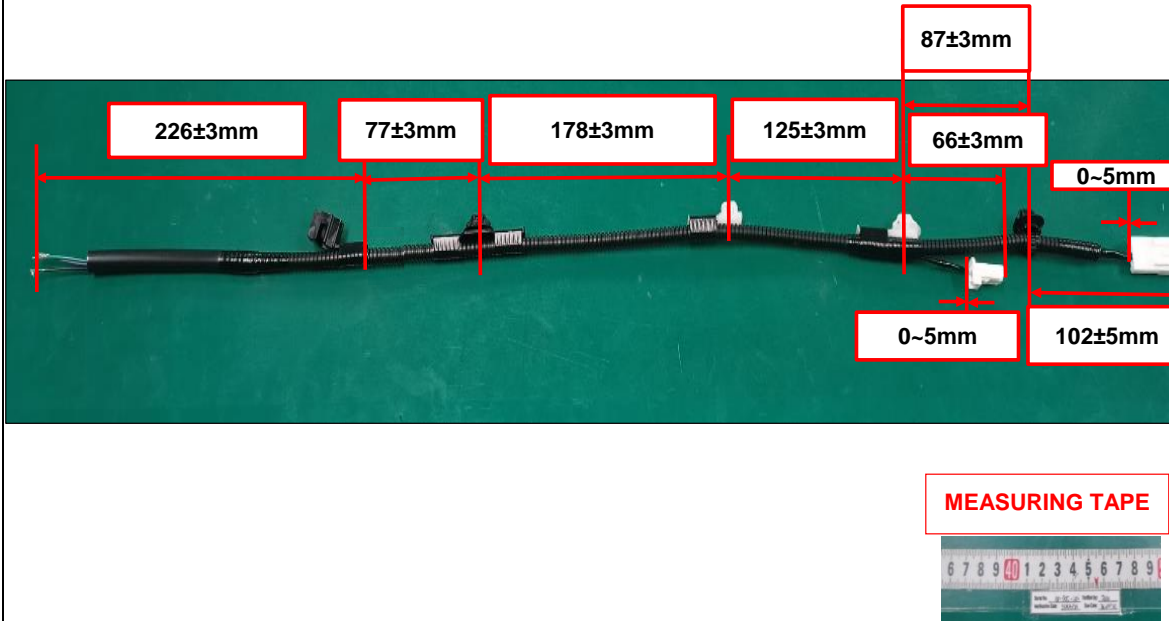
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PARTS:		n/a		JIG:	n/a
NO.	PROCESS NAME	WORK PROCEDURE/ ILLUSTRATION		TOOLS/PPE	QUALITY POINTERS
18	n/a	Measurement			1. No wrong dimension  <i>Important reminders/Note/s:</i>  1. Please use calibrated/verified measuring tape when getting the measurement. 2. For Hatsumono, Nakamono and Owarimono.

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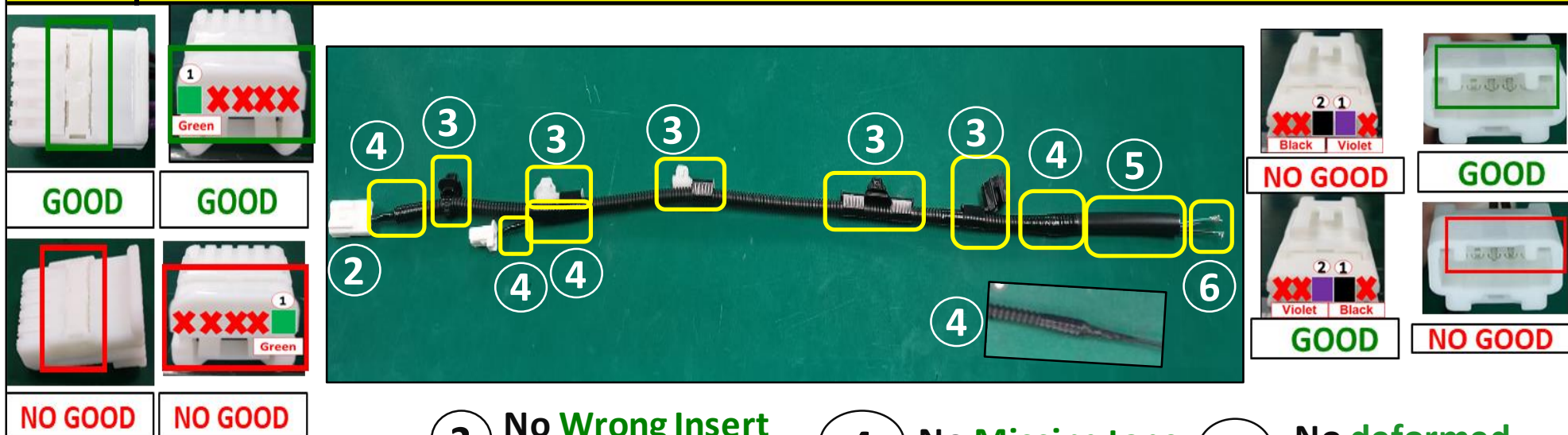
PARTS: n/a

JIG:

n/a

**QUALITY CHECKPOINTS**

n/a

**7N0199-7020**

**1 No Unlock/Halflock Connector**  
(On 2 connectors)

**2 No Wrong Insert**  
(On 2 connectors)

**3 No missing clamps**

**4 No Missing tape**

**5 No missing parts [VM tube (Sunprene) ]**

**6 No deformed terminal**

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