

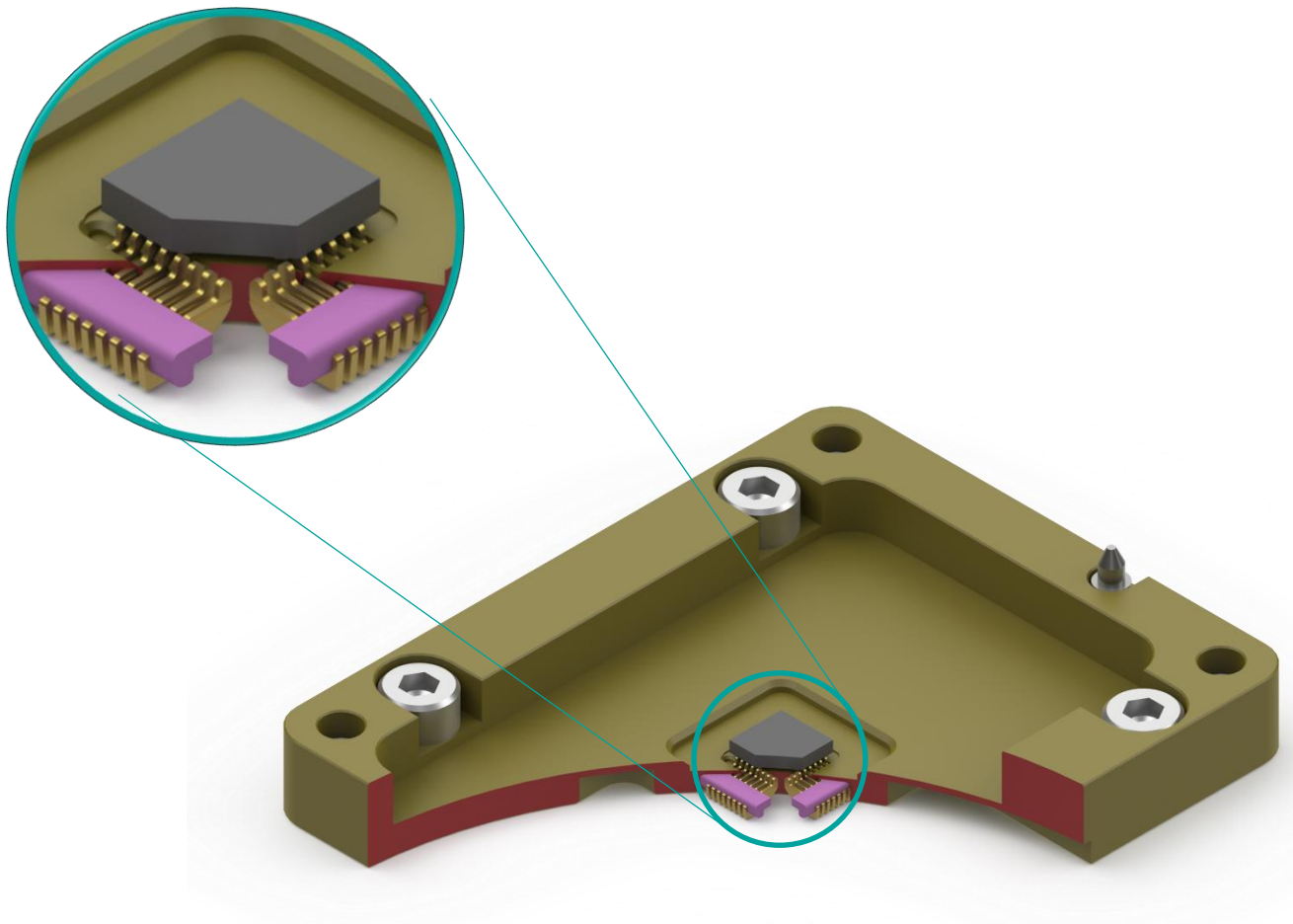


Ironwood
ELECTRONICS
A **HEICO** COMPANY



ATE PicoRaptor 2

Maintenance & Inspection Guide



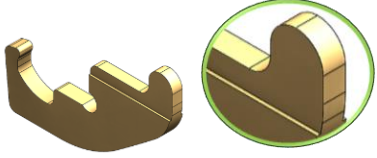
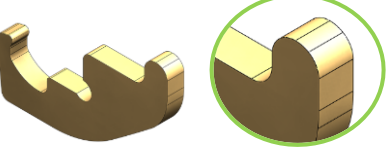
NO.	CONTENT	PAGE
1	Type of Pin & Elastomer	
	a. Perimeter Pin	4
	b. Ground Pin	4
	c. Elastomer	4
2	ATE PicoRaptor 2 Pin's Specifications	5
3	Ground's Specifications	
	a. PicoRaptor 2 Pin	6
	b. PicoRaptor 2 Short Pin	6
	c. Hinged Contact Insert (HCI)	6
	d. Bell Contact (BC)	7
	e. Ground Block	7
	f. Ground Block with Pins	7
4	Recommended Maintenance Tools	8
5	Torque Range Value	9
6	Full Socket & Manual Actuator Overview	10
7	Socket Components Identification	11
8	ATE PicoRaptor 2 Socket Assembly and Components Replacement	
	a. ATE PicoRaptor 2 Socket	
	i. ATE PicoRaptor 2 Socket Assembly	12-13
	ii. ATE PicoRaptor 2 Elastomer Replacement	14-16
	iii. ATE PicoRaptor 2 Pin Replacement	17-18
	iv. ATE PicoRaptor 2 Socket Replacement	19-20
	b. ATE PicoRaptor 2 Socket with PicoRaptor 2 Ground Pin	
	i. ATE PicoRaptor 2 Socket Assembly – PicoRaptor 2 Ground Pin	21-22
	ii. ATE PicoRaptor 2 Socket Replacement – PicoRaptor 2 Ground Pin & Elastomer	23-24
	c. ATE PicoRaptor 2 Socket with Hinged Contact Insert (HCI) Ground Pin	
	i. ATE PicoRaptor 2 Socket Assembly – HCI Ground Pin	25-26
	ii. ATE PicoRaptor 2 Socket Replacement – HCI Ground Pin & Elastomer	27
	d. ATE PicoRaptor 2 Socket with Bell Contact (BC) Ground Pin	
	i. ATE PicoRaptor 2 Socket Assembly – BC Ground Pin	28-29
	ii. ATE PicoRaptor 2 Socket Replacement – BC Ground Pin & Elastomer	29-30
	e. ATE PicoRaptor 2 Socket with Ground Block	
	i. ATE PicoRaptor 2 Socket Assembly – Ground Block	31
	ii. ATE PicoRaptor 2 Socket Replacement – Ground Block	32
	f. ATE PicoRaptor 2 Socket with Ground Block with Ground Pin	
	i. ATE PicoRaptor 2 Socket Assembly – Ground Block with Ground Pin	33-34
	ii. ATE PicoRaptor 2 Socket Replacement – Ground Block with Ground Pin & Elastomer	34-35
9	Elastomer Inspection after Installation	36
10	Contact Pin Alignment after Installation	37
11	On Site Socket Component Inspection	
	a. Load Board Inspection	38
	b. Socket Inspection	39
	c. Pin Inspection	40
	d. Elastomer Inspection	41

12	Ironwood Recommended Socket Cleaning Method	
	a. Light Cleaning Method	42-43
	b. Ultrasonic Cleaning Method (For Socket & Alignment Plate Only)	44
13	DO'S & DON'TS	45
14	Company Information	45
15	Revision History	45

1. TYPE OF PINS & ELASTOMER





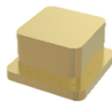

a. Perimeter Pin

There are several pins with different thickness based on design requirement. Part Number of the pins will be specify inside drawing for respective project.

Type	Pin part number	Description
PicoRaptor 2 Straight Footed Pin 	P-R100A	PicoRaptor 2 Straight Footed Pin 0.20/0.15mm Thick
	P-R101A	PicoRaptor 2 Straight Footed Pin 0.25/0.15mm Thick
PicoRaptor 2 Straight Pin 	P-R102A	PicoRaptor 2 Straight Pin 0.15 Thick
	P-R103A	PicoRaptor 2 Straight Pin 0.20 Thick
	P-R104A	PicoRaptor 2 Straight Pin 0.25 Thick
	P-R105A	PicoRaptor 2 Straight Pin 0.30 Thick
	P-R106A	PicoRaptor 2 Straight Pin 0.50 Thick

b. Ground Pin

There are several type of grounding based on design requirement. Part Number for Ground pin kindly refer to the drawing for respective project. Below are the availability design for Ground pins:

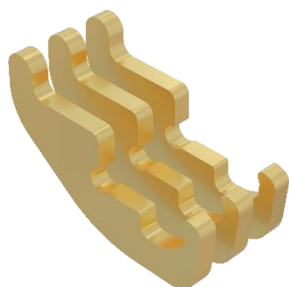
PicoRaptor 2 Pin	PicoRaptor 2 Short Pin	Hinged Contact Insert (HCI)	Bell Contact (BC)	Ground Block	Ground Block with pin
					

c. Elastomer

Different elastomer will be used for different pins. Below are the part number for elastomer

Elastomer	Description	Used in
R7126	P-Shape Elastomer for PicoRaptor 2 pin	PicoRaptor 2
R7128	Round Shape Elastomer 0.60mm Diameter Red	Hinged Contact Insert
R7129	Round Shape Elastomer 0.30mm Diameter Purple	Retaining elastomer for PicoRaptor 2
R7130	Round Shape Elastomer 0.60mm Diameter Purple	Bell Contact (BC)

2. ATE PICORAPTOR 2 PIN'S SPECIFICATIONS



Below table show mechanical & electrical specification:

MECHANICAL SPECIFICATION	PicoRaptor 2
Uncompressed Height (mm)	1.60
Compressed Height (mm)	1.40
Pin Compliance (mm)	0.20
Pin Tip Co-planarity (mm)	±0.05
Wipe Length (mm)	~0.10
Contact Force (per contact)	20~40
Temperature	-45°C to +155°C
Socket Housing Material	Torlon 5030 or Equivalent
Contact Pin Material	BeCu - NiAu

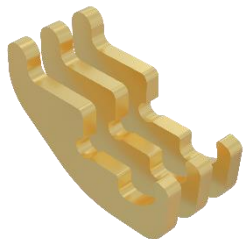
Note: Above value are based on internal laboratory testing.

ELECTRICAL SPECIFICATION	PicoRaptor 2
Self Inductance (nH)	0.76
Mutual Inductance (nH)	0.46
Ground Capacitance (pF)	0.15
Mutual Capacitance (pF)	0.11
S21 Insertion Loss (GSG)	-1dB @ 18GHz
S11 Return Loss (GSG)	-20dB @ 3GHz
S41 Far End Crosstalk (GSSG)	-20dB @ 12GHz
Contact DC Resistance (mΩ)	≤25
Current Carrying Capacity (A)	9A
Current Leakage (pA) @ 10V	≤1

Note: Above value are simulated data. PicoRaptor 2 electrical simulation based on 0.50mm pitch with 1010mils pin, CCC use 0808mils pin.

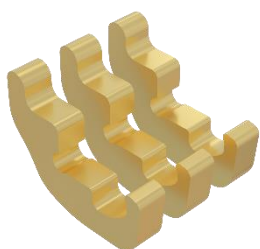
3. GROUND'S SPECIFICATION

a. *PicoRaptor 2 Pin*



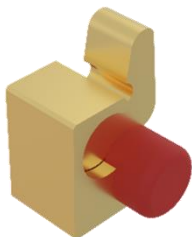
Part Number and specification are same for PicoRaptor 2 pin.

b. *PicoRaptor 2 Short Pin*

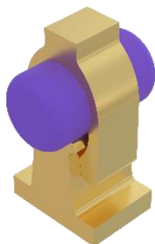


Specification are same with PicoRaptor 2.

c. *Hinged Contact Insert (HCI)*



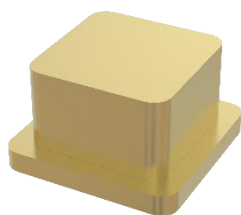
MECHANICAL SPECIFICATION	Hinged Contact Insert (HCI)
Uncompressed Height (mm)	1.60
Compressed Height (mm)	1.40
Pin Compliance (mm)	0.20
Contact Force (per contact)	35~50g
Temperature	-45°C to +155°C
Contact Pin Material	BeCu - NiAu

d. Bell Contact (BC)

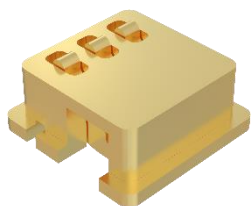
MECHANICAL SPECIFICATION	Bell Contact (BC)
Uncompressed Height (mm)	1.55
Compressed Height (mm)	1.40
Pin Compliance (mm)	0.15
Contact Force (per contact)	~80g
Temperature	-45°C to +155°C
Contact Pin Material	BeCu - NiAu

e. Ground Block

Size and shape based on design.








**f. Ground Block with Pins**

Size and shape based on design.



Note: This is for general reference only, final design will be provided based on requirement.

4. RECOMMENDED MAINTENANCE TOOL

NO.	TOOL	IMAGE
1	<p>Tweezer</p> <p><i>Purpose:</i> <i>Pin replacement.</i></p>	
2	<p>Plastic spudger</p> <p><i>Purpose:</i> <i>Remove Cartridge / Housing.</i></p>	
3	<p>MS-121 Vacuum Pick-Up Tool</p> <p><i>Purpose:</i> <i>Used in manual testing, to pick up the device into socket/from socket.</i></p>	
4	<p>Magnifier / Microscope</p> <p><i>Purpose:</i> <i>For inspection (i.e. imprint).</i></p>	
5	<p>8PK-022 Seven (7) Pieces Miniature L Shaped Hex Key Set (Metric & Inch)</p> <p><i>Purpose:</i> <i>For socket installation (i.e. fix onto the paddle board).</i></p>	
6	<p>Screwdriver with flat head and Philips head (M1, M1.6, M2, M2.5, M3, #2-56, #4-40 etc.)</p> <p><i>Purpose:</i> <i>For socket installation (i.e. fix onto the paddle board).</i></p>	
7	<p>Energizer AA Torch Batteries – X215 – Energizer</p> <p><i>Purpose:</i> <i>For inspection.</i></p>	

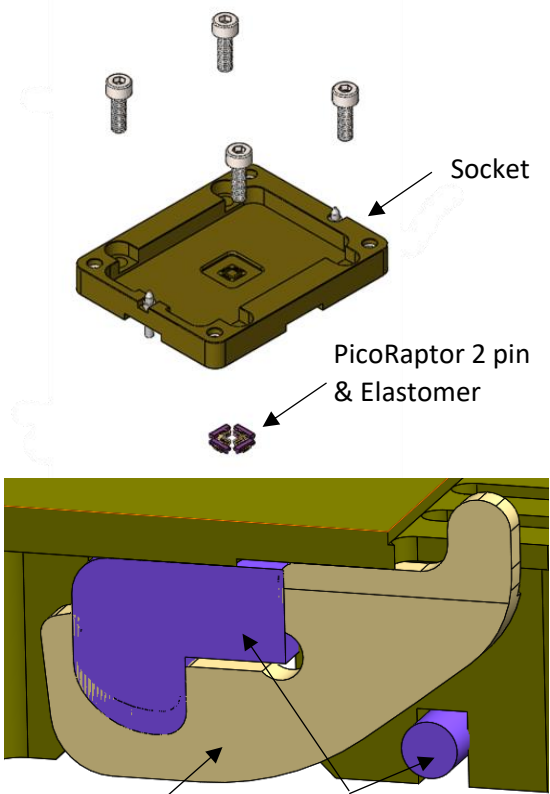
5. TORQUE RANGE VALUE

SCREW SIZE	TORQUE VALUES	
	in-lb	Nm
M1 x 0.25	0.22	0.0195
M1.4 x 0.3	0.4	0.04
M1.6 x 0.35	0.6	0.06
M2 x 0.40	1.3	0.15
M2.5 x 0.45	2.5	0.28
M3 x 0.5	4.5	0.51
M4 x 0.7	8.0	0.90
#0-80	1.0	0.11
#2-56	2.0	0.23
#4-40	5.0	0.56

6. FULL SOCKET & MANUAL ACTUATOR OVERVIEW


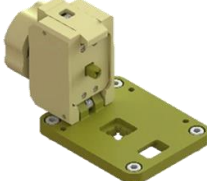

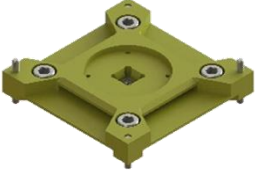


The overview of the ATE PicoRaptor 2 Socket, Single Latch Z-Actuated Manual Actuator and Double Latch Z-Actuated Manual Actuator provides a general idea of the PicoRaptor 2 Socket Configuration.

a. Socket

ATE PicoRaptor 2 Model	Standard Components
<p>Socket Components</p>  <p>Socket</p> <p>PicoRaptor 2 pin & Elastomer</p> <p>PicoRaptor 2 pin</p> <p>Elastomer</p>	<p>The socket consists of 3 main components:</p> <ol style="list-style-type: none"> i. Alignment Plate (<i>if applicable</i>); <i>Purpose: to guide the package on the target spot in order to achieve ultimate test performance.</i> ii. Socket; iii. Elastomer; iv. Pico Raptor 2 pin <p>The Alignment Plate will come together with the socket, unless existing handler already has alignment feature.</p> <p>Contactors will come with pins inside as one set.</p> <p><i>Note: The images used in this document is for illustration purposes only.</i></p>

b. Type of Manual Actuator (MA)

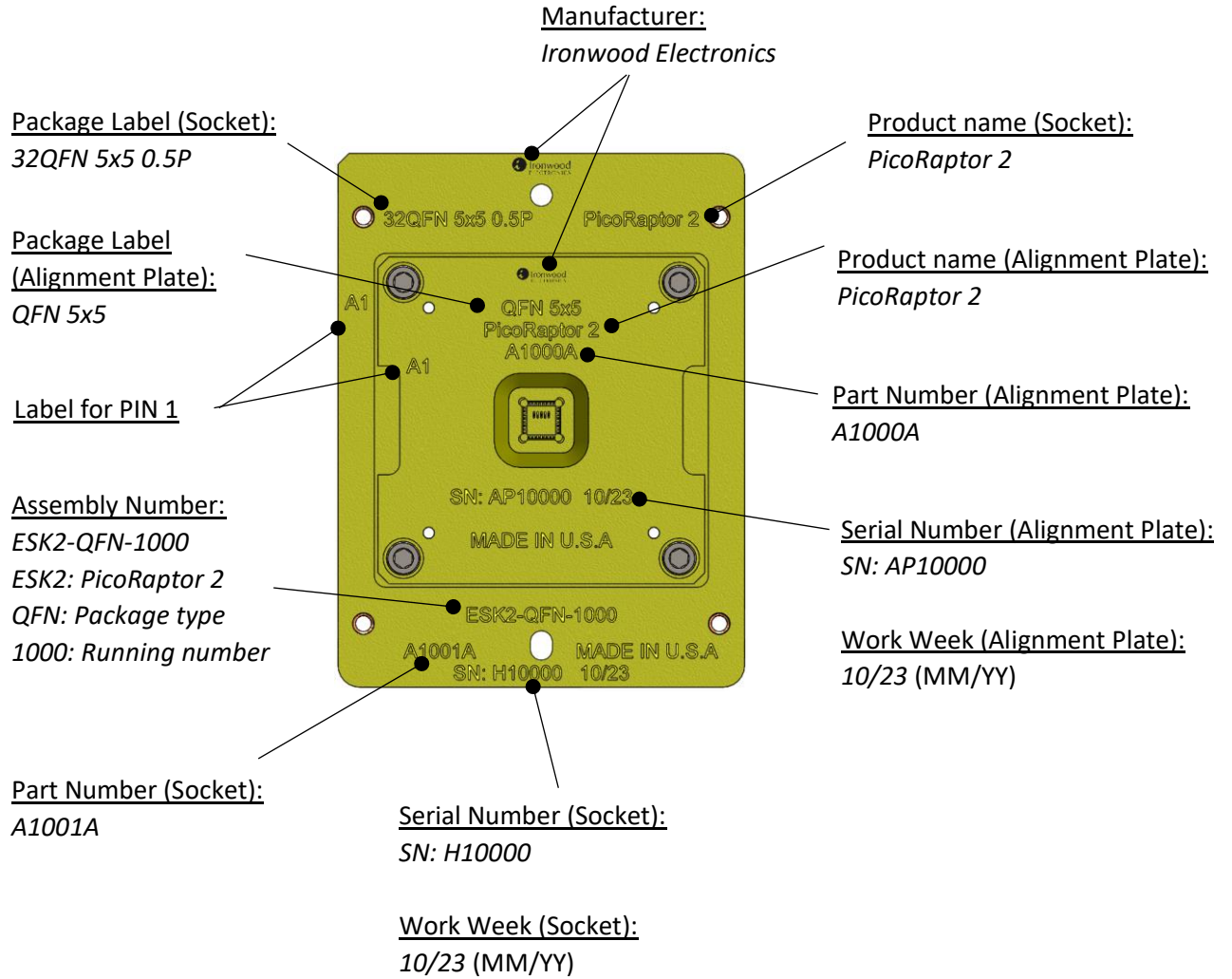
Manual Actuator (MA) is used for manual test application. MA has few types of design:

Socket	Single Latch Z-Actuated Manual Actuator	Socket and Single Latch Z-Actuated Manual Actuator
		
Socket	Double Latch Z-Actuated Manual Actuator	Socket and Double Latch Z-Actuated Manual Actuator
		

Note: Z-Actuated MA has knob and it is a spring loaded MA too.

7. SOCKET COMPONENTS IDENTIFICATION

The information on the product allows the identification of the Socket and Manual Actuator for order or tracking reference.



8. ATE PicoRaptor 2 Socket Assembly and Components Replacement

a. ATE PicoRaptor 2 Socket

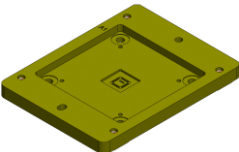
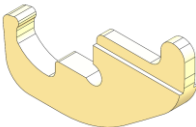
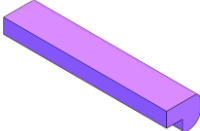
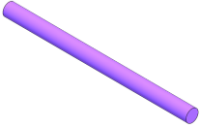
i. ATE PicoRaptor 2 Socket Assembly

Step 1:

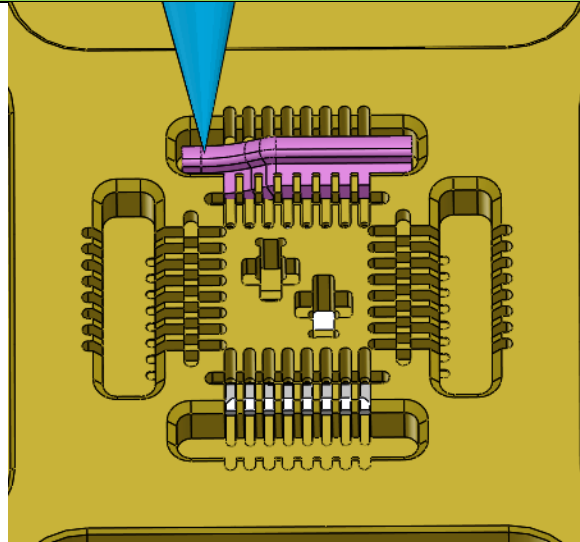
Tools required:

- Screwdriver / Allen Key
- Tweezer
- Plastic spudger

Prepare items below:

Socket Housing	PicoRaptor 2 Pin	P-Shaped Elastomer	Retaining Elastomer
			

Step 2:

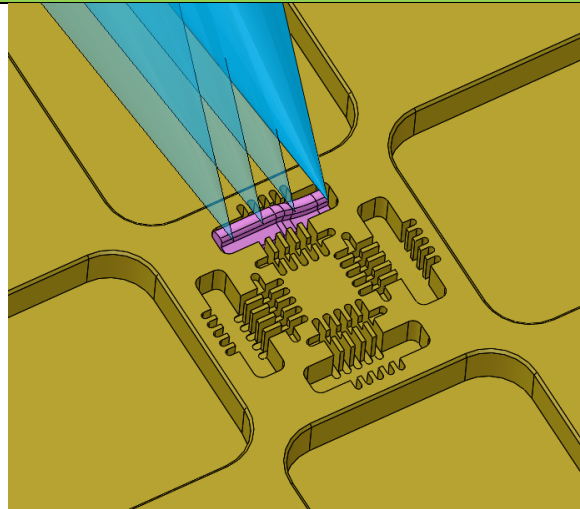


Clean the new elastomer with IPA solution to ensure the elastomer is free from particles and debris.

Use a plastic spudger to insert the elastomer into the elastomer slot.

Note: The bulging side of the elastomer should face outwards from the socket.

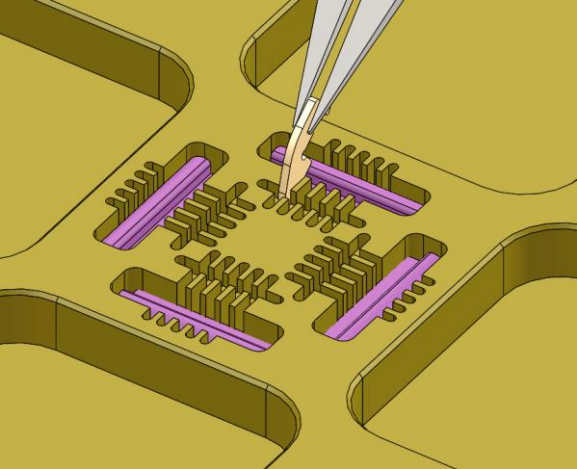
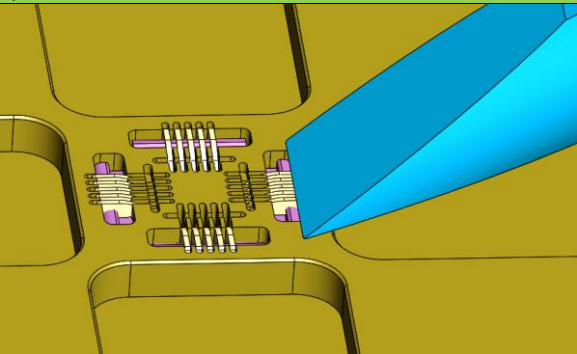
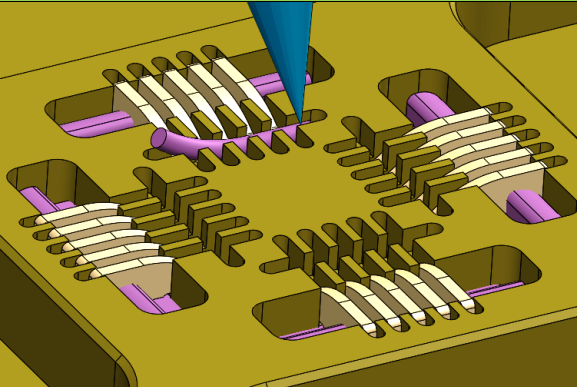
Step 3:



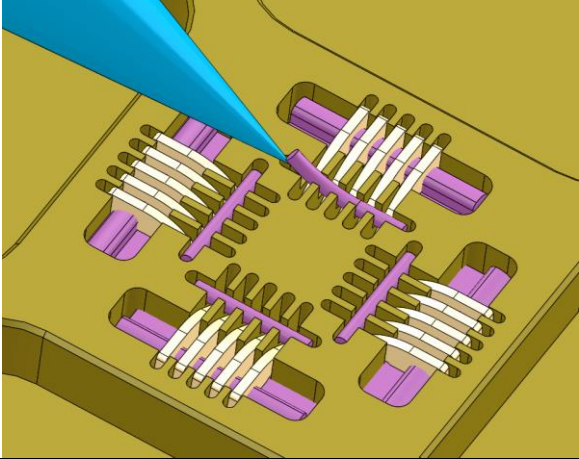
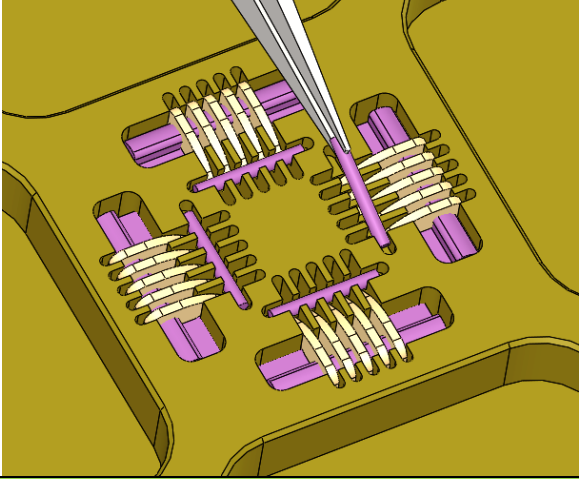
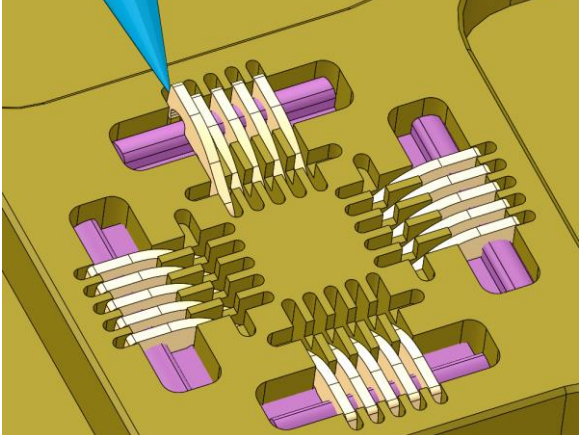
Ensure that the elastomer sits perfectly in the elastomer slot by pushing down on the elastomer with the plastic spudger.

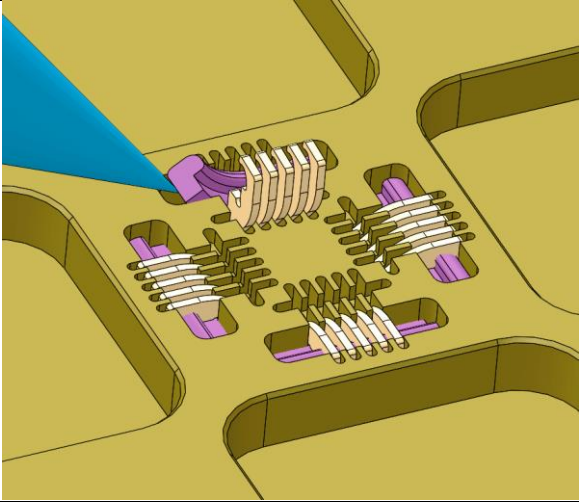
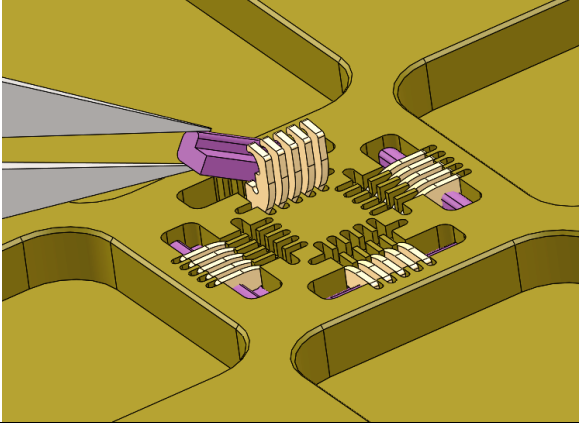
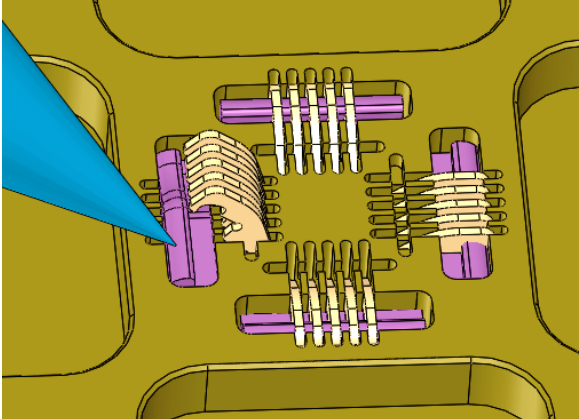
Repeat steps 2 to 3 for all the elastomers.

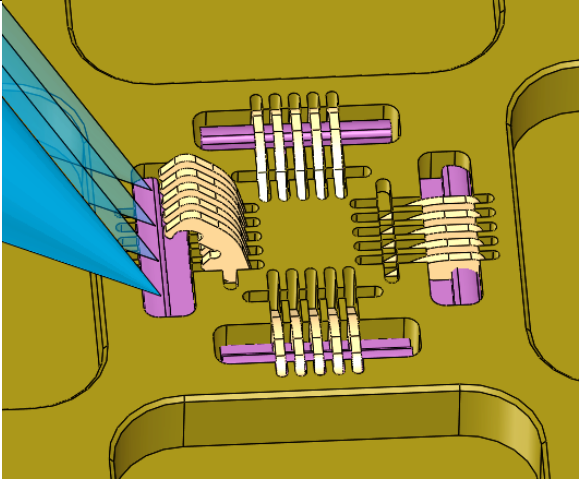
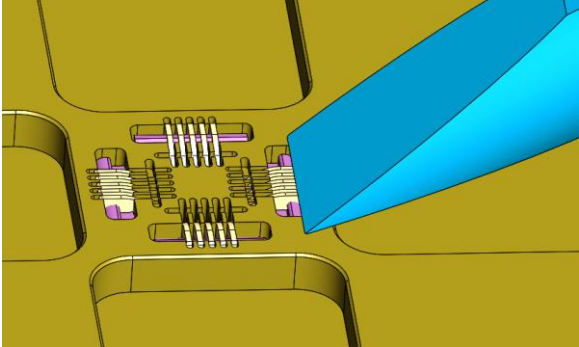
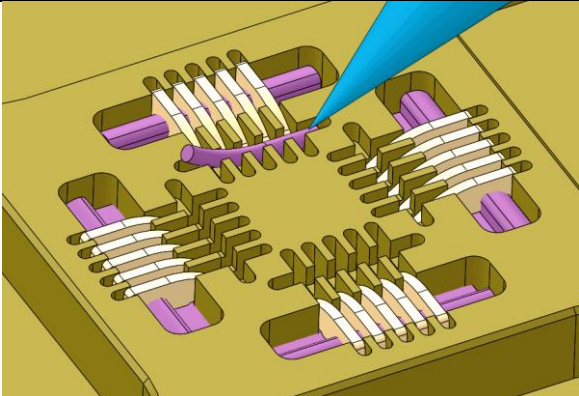
Precaution: Make sure that the elastomer is not twisted or bulging.

Step 4:	
	<p>Hold the contact pin in the correct orientation by using a pair of tweezers and insert the contact pin into the pin slot.</p> <p><i>Note: Pin tip should be facing inside towards the center of the socket.</i></p>
Step 5:	
	<p>Once all the pins are installed, press down on all the contact pins with the plastic spudger to ensure that the pins are sitting firmly with the elastomer.</p>
Step 6:	
	<p>Place the retention elastomer and slug it into the slot until it is seated firmly in the slot.</p> <p>Repeat this step for all the retention elastomers.</p>

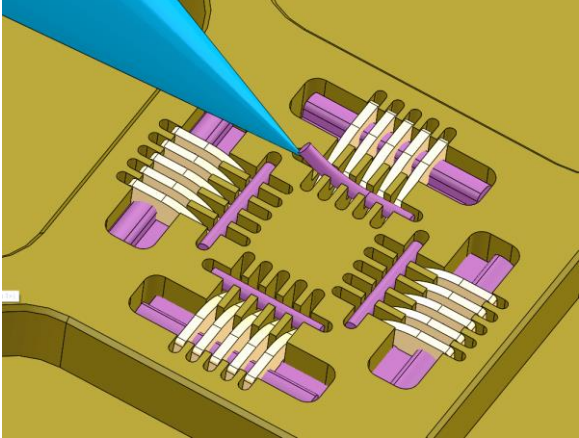
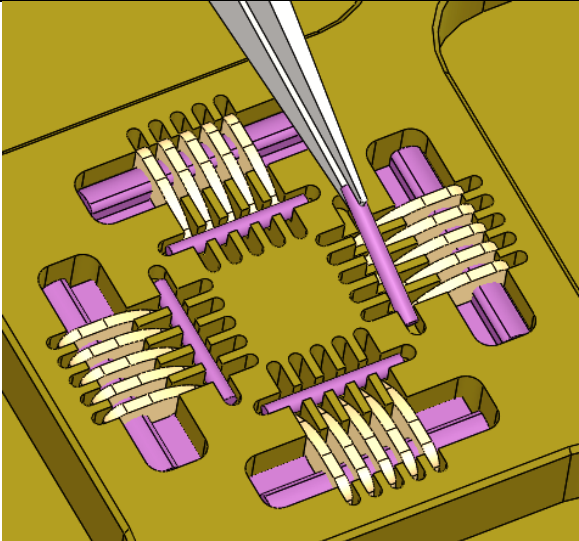
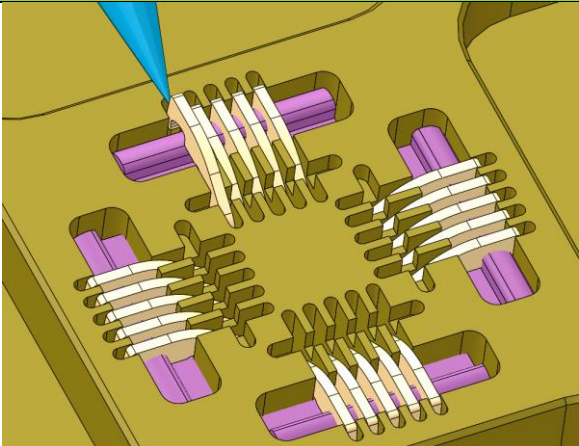
ii. ATE PicoRaptor 2 Elastomer Replacement

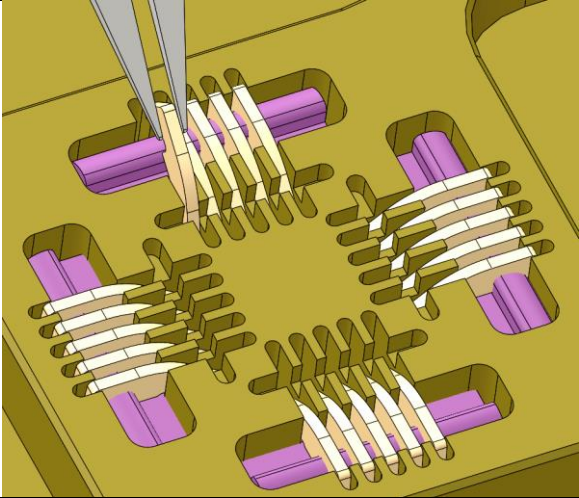
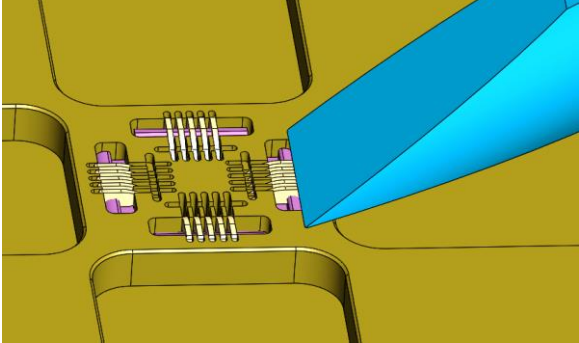
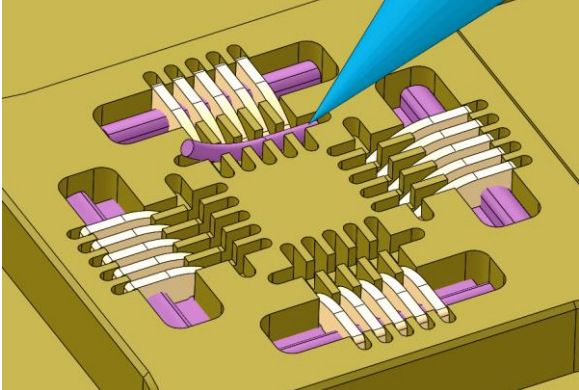
Step 1: 	Use the plastic spudger to lift up the retention elastomer end from the elastomer slot.
Step 2: 	Remove the retention elastomer with a pair of tweezers. Repeat steps 1 & 2 for all retaining elastomers.
Step 3: 	Carefully remove the pin tail from the pin slot with a plastic spudger.

<p>Step 4:</p> 	<p>Use the plastic spudger to carefully lift up the elastomer end from the elastomer slot.</p>
<p>Step 5:</p> 	<p>Remove the elastomer with a pair of tweezers.</p>
<p>Step 6:</p> 	<p>Insert a new elastomer into the elastomer slot with the plastic spudger.</p> <p><i>Note: The bulging side of the elastomer should face outwards from the socket.</i></p>

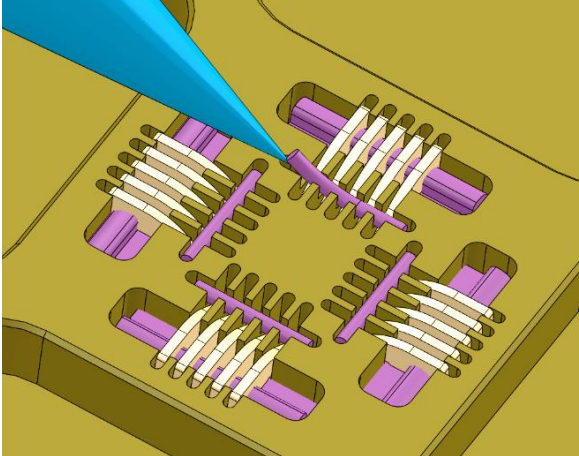
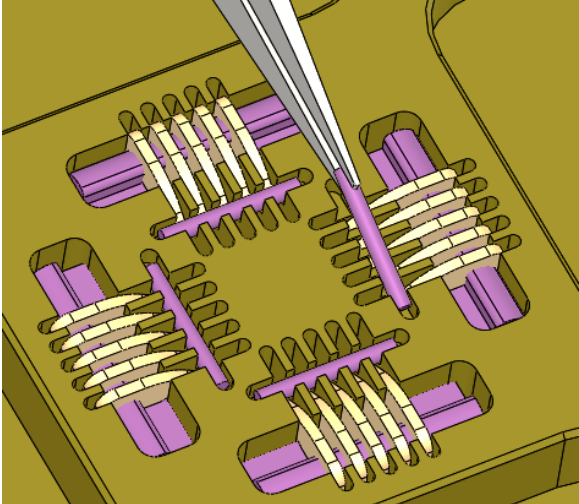
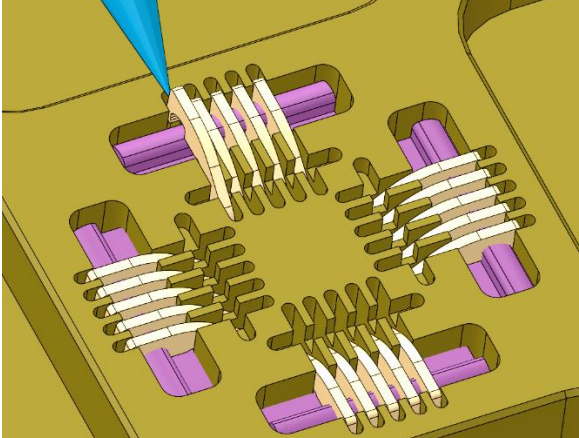
<p>Step 7:</p> 	<p>Ensure that the elastomer sits perfectly in the elastomer slot by pushing down on the elastomer with the plastic spudger.</p> <p><i>Precaution: Make sure that the elastomer is not twisted or bulging.</i></p>
<p>Step 8:</p> 	<p>Once the elastomer is installed, press down on all the contact pins with the plastic spudger to ensure that the pins are sitting firmly with the elastomer.</p>
<p>Step 9:</p> 	<p>Place the new retention elastomer and slug it into the slot until it is seated firmly in the slot.</p> <p>Repeat this step for all the retention elastomers.</p>

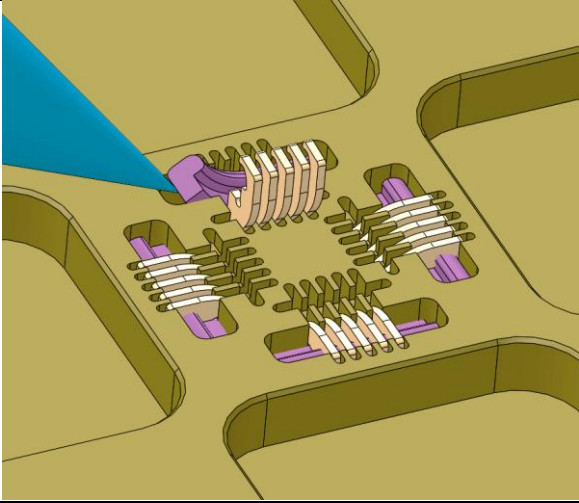
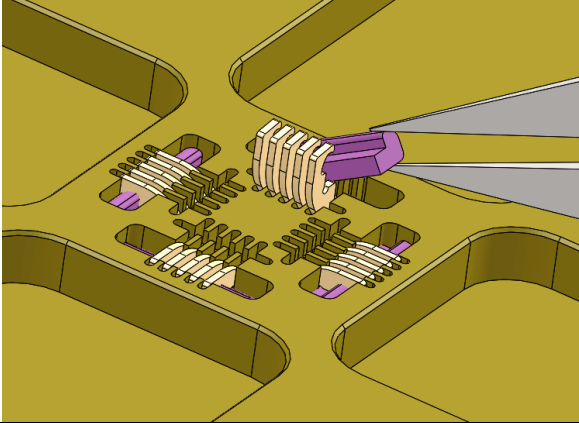
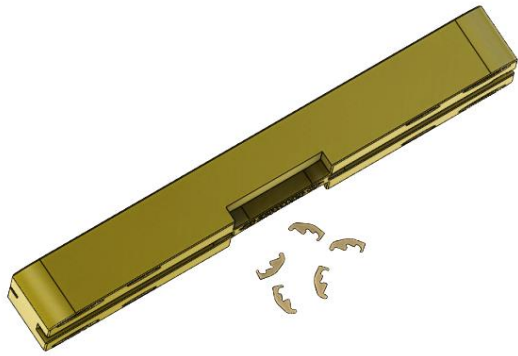
iii. ATE PicoRaptor 2 Pin Replacement

<p>Step 1:</p> 	<p>Use the plastic spudger to lift up the retention elastomer end from the elastomer slot.</p>
<p>Step 2:</p> 	<p>Remove the retention elastomer with a pair of tweezers.</p> <p>Repeat steps 1 & 2 for all retention elastomers.</p>
<p>Step 3:</p> 	<p>Carefully remove the pin tail from the pin slot with a plastic spudger.</p>

<p>Step 4:</p> 	<p>Use a pair of tweezers to remove the pin. Then, insert a new contact pin by holding the new pin in the correct orientation using a pair of tweezers and insert the contact pin into the pin slot.</p>
<p>Step 5:</p> 	<p>Once the pin is installed, press down on the contact pin with the plastic spudger to ensure that the pin is sitting firmly with the elastomer.</p>
<p>Step 6:</p> 	<p>Place the new retention elastomer and slug it into the slot until it is seated firmly in the slot.</p> <p>Repeat this step for all the retaining elastomers.</p>

iv. ATE PicoRaptor 2 Socket Replacement

<p>Step 1:</p> 	<p>Use the plastic spudger to lift up the retention elastomer end from the elastomer slot.</p>
<p>Step 2:</p> 	<p>Remove the retention elastomer with a pair of tweezers.</p> <p>Repeat steps 1 & 2 for all retention elastomers.</p>
<p>Step 3:</p> 	<p>Carefully remove the pin tail from the pin slot with a plastic spudger.</p>

<p>Step 4:</p> 	<p>Use the plastic spudger to carefully lift up the retention elastomer end from the elastomer slot.</p>
<p>Step 5:</p> 	<p>Remove the elastomer with a pair of tweezers.</p>
<p>Step 6:</p> 	<p>Remove the contact pins gently from the pin slot as shown to prevent damage to the slot.</p> <p>Repeat steps 1 to 5 until all the elastomers and pins are completely removed from the socket.</p>

b. ATE PicoRaptor 2 Socket with PicoRaptor 2 Ground Pin

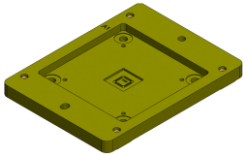
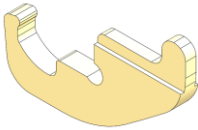
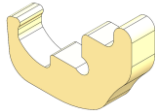
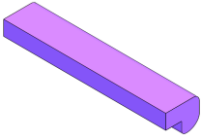
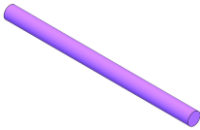
i. ATE PicoRaptor 2 Socket Assembly – PicoRaptor 2 Ground

Step 1:

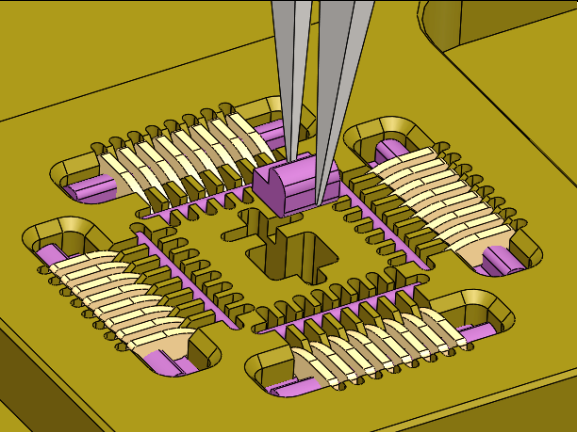
Tools required:

- Screwdriver / Allen Key
- Tweezer
- Plastic spudger

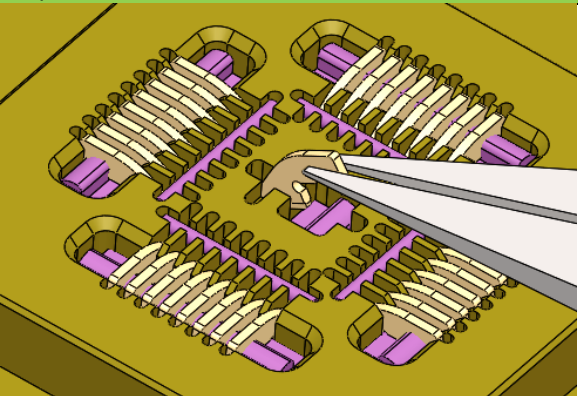
Prepare items below:

Socket Housing	PicoRaptor 2 Pin	PicoRaptor 2 Short Pin
		
P-Shaped Elastomer	Retaining Elastomer	
		

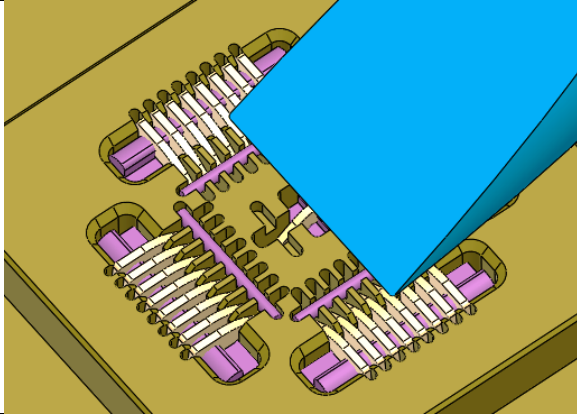
Step 2:

	<p>Slug the elastomer into the elastomer slot by using the tweezers.</p> <p><i>Note: The bulging side of the elastomer should face outwards from the socket.</i></p>
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Step 3:

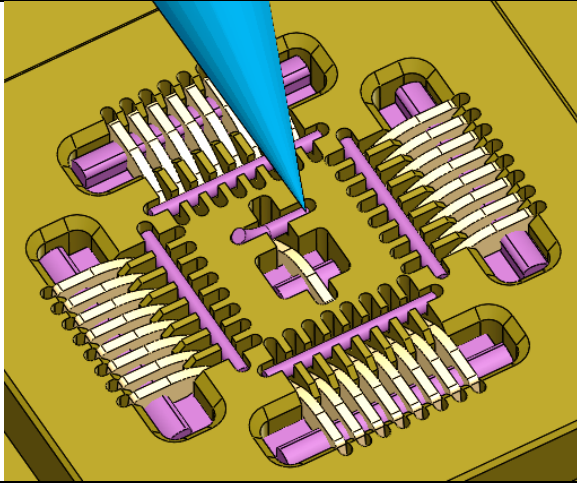
	<p>Hold the ground pin by its body firmly and place it into the pin slot using the tweezers.</p>
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Step 4:



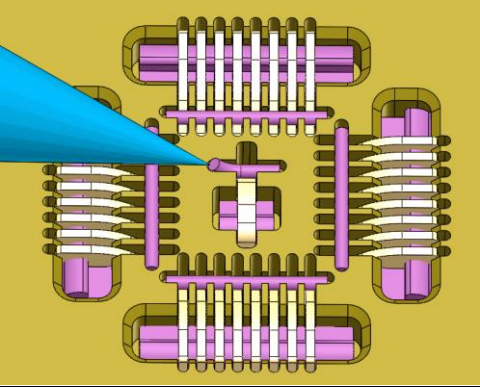
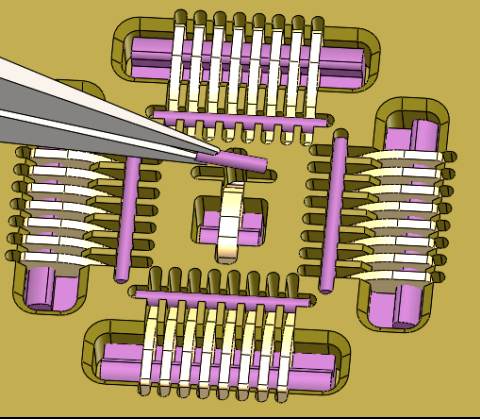
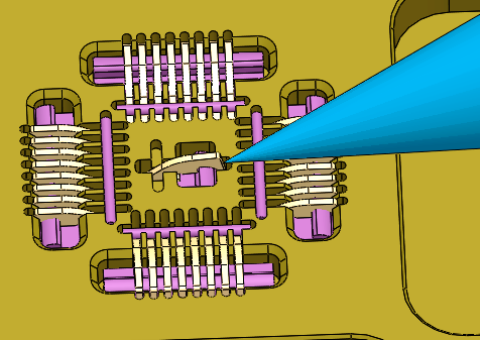
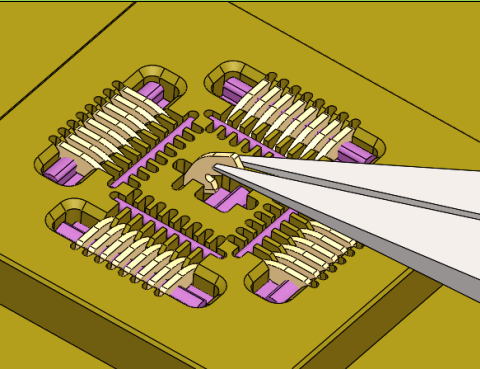
Press down on the ground pins with the plastic spudger to ensure that the pins are sitting firmly with the elastomer.

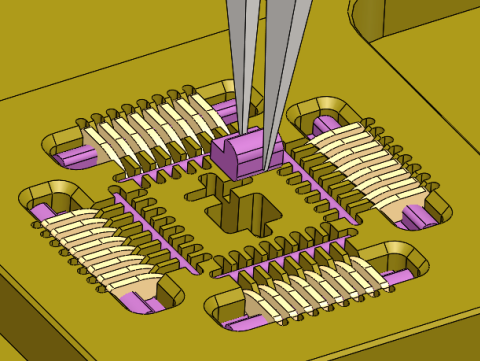
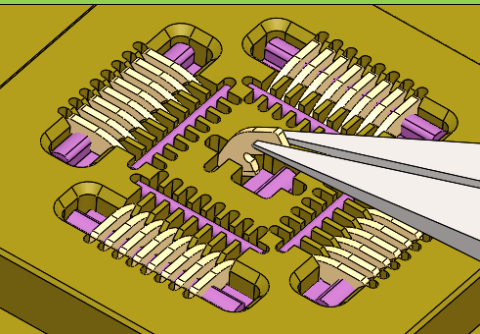
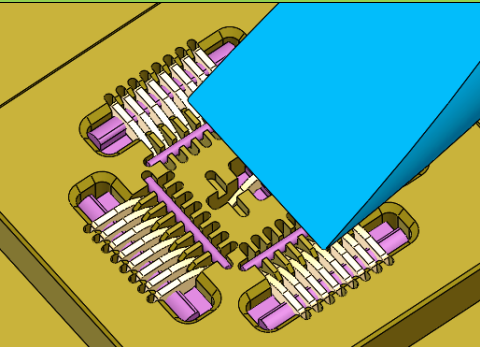
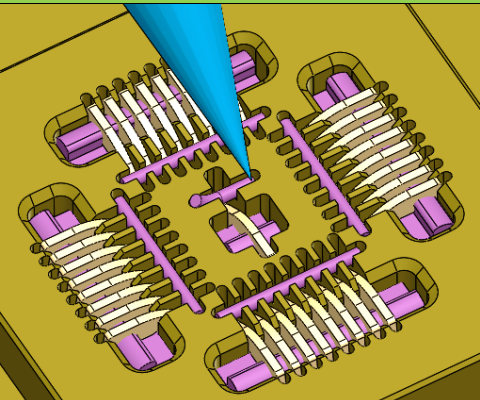
Step 5:



Place the purple retention elastomer and slug it into the slot until it is seated firmly in the slot.

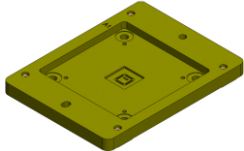
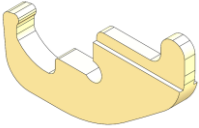
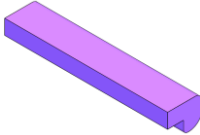
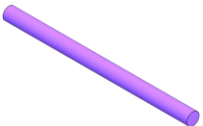
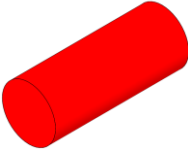
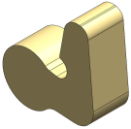

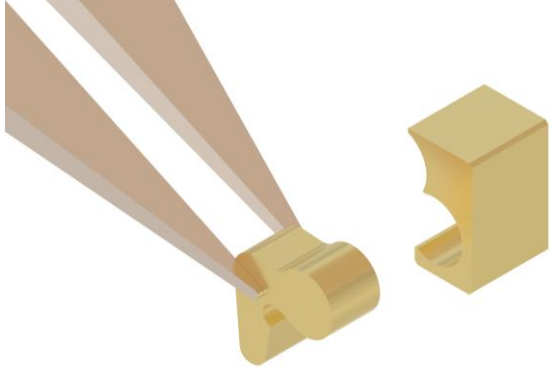
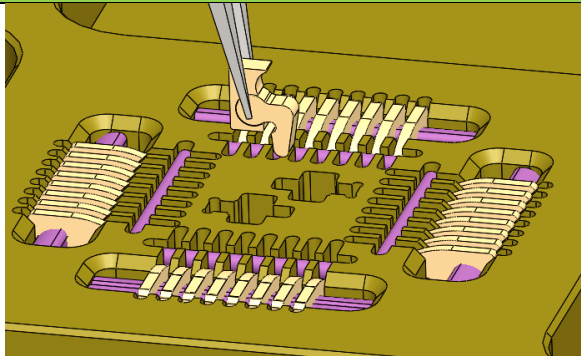
ii. ATE PicoRaptor 2 Socket Replacement – PicoRaptor 2 Ground's Pin & Elastomer

<p>Step 1:</p> 	<p>Use the plastic spudger to lift up the retention elastomer end from the elastomer slot.</p>
<p>Step 2:</p> 	<p>Remove the retention elastomer with a pair of tweezers.</p>
<p>Step 3:</p> 	<p>Carefully remove the pin tail from the pin slot with a plastic spudger.</p>
<p>Step 4:</p> 	<p>Hold the ground pin by its body firmly and place it into the pin slot using the tweezers.</p> <p>If replacing the pin, use a new ground pin.</p>

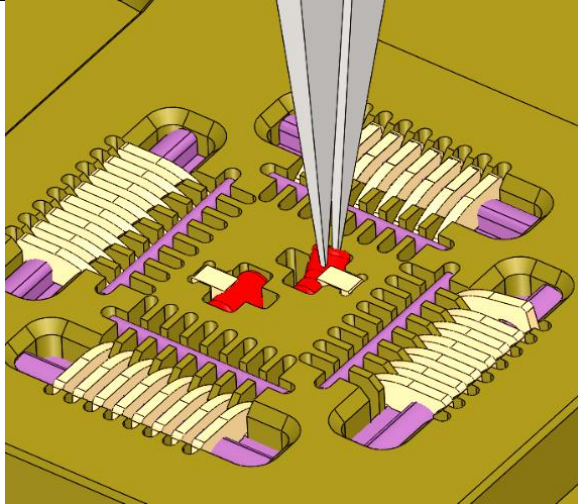
Step 5:	
	<p>If required to change the elastomer, then remove the elastomer with the tweezers and replace with new one.</p> <p><i>Note: The bulging side of the elastomer should face outwards from the socket.</i></p>
Step 6:	
	<p>Hold the ground pin by its body firmly and place it into the pin slot using the tweezers.</p>
Step 7:	
	<p>Press down on the ground pins with the plastic spudger to ensure that the pins are sitting firmly with the elastomer.</p>
Step 8:	
	<p>Place the purple retention elastomer and slug into the slot until it is seated firmly in the slot.</p>

c. ATE PicoRaptor 2 Socket with Hinged Contact Insert (HCI) Ground Pin

i. ATE PicoRaptor 2 Socket Assembly – HCI Ground Pin

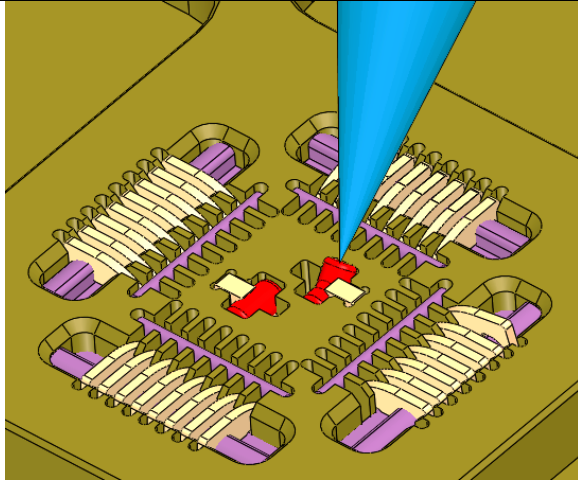
Step 1:			
<p>Tools required:</p> <ul style="list-style-type: none"> • Screwdriver / Allen Key • Tweezer • Plastic spudger <p>Prepare items below:</p>			
Socket Housing	PicoRaptor 2 Pin	P-Shaped Elastomer	Retaining Elastomer
			
HCI Elastomer	HCI Pivot	HCI Holder	
			
Step 2:			
		<p>Hold the HCI pivot firmly in the correct orientation by using the tweezers and insert it into the HCI block's opening.</p>	
Step 3:			
		<p>Insert the assembled HCI into the socket's HCI slot in the correct orientation using the tweezers.</p>	

Step 4:



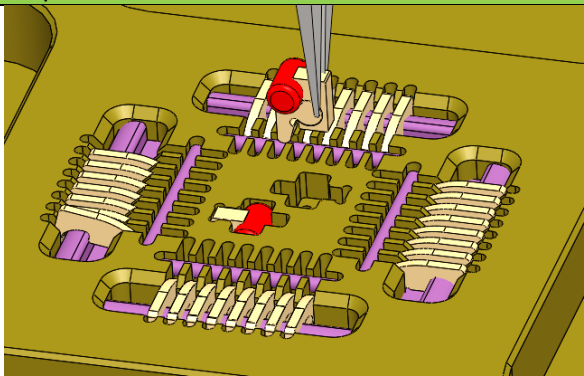
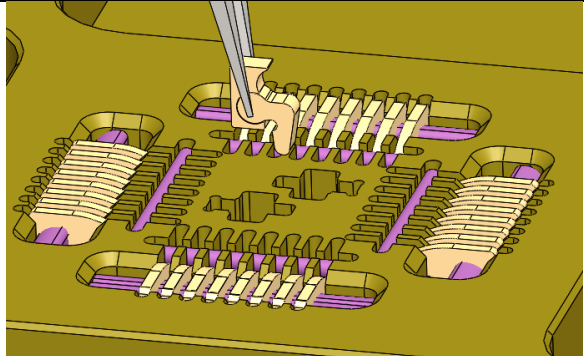
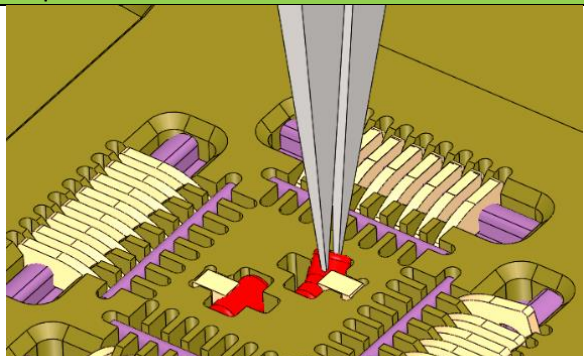
Insert the HCl elastomer into the HCl elastomer slot with the tweezers.

Step 5:



Gently push the HCl elastomer slug into its slot with the plastic spudger.

ii. ATE PicoRaptor 2 Socket Replacement – HCI Ground Pin & Elastomer

Step 1:	
	Gently remove the HCI from the housing with a pair of tweezers and take apart the HCI.
Step 2:	
	To replace HCI pin, insert new assembled HCI pin into the socket's HCI slot in the correct orientation using the tweezers.
Step 3:	
	To replace HCI elastomer, insert the new HCI elastomer into the HCI elastomer slot with the tweezers.

d. ATE PicoRaptor 2 Socket with Bell Contact (BC) Ground Pin

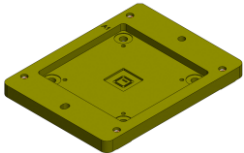
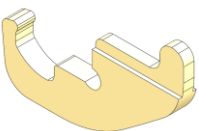
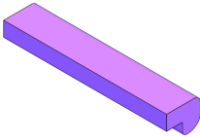
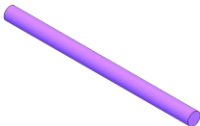
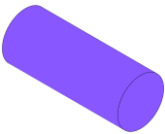
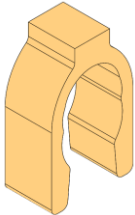
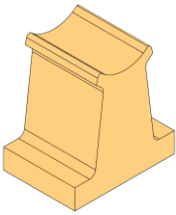
i. ATE PicoRaptor 2 Socket Assembly – BC Ground Pin

Step 1:

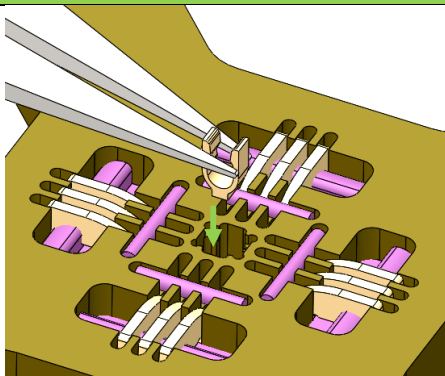
Tools required:

- Screwdriver / Allen Key
- Tweezer
- Plastic spudger

Prepare items below:

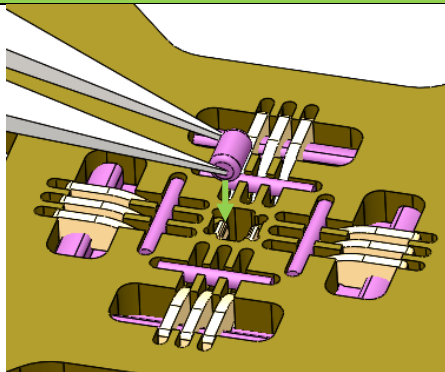
Socket Housing	PicoRaptor 2 Pin	P-Shaped Elastomer	Retaining Elastomer
			
Bell Elastomer	Bell Top	Bell Bottom	
			

Step 2:

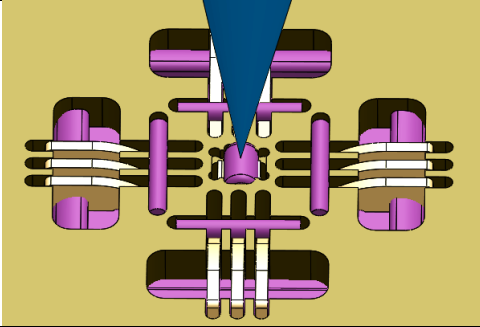
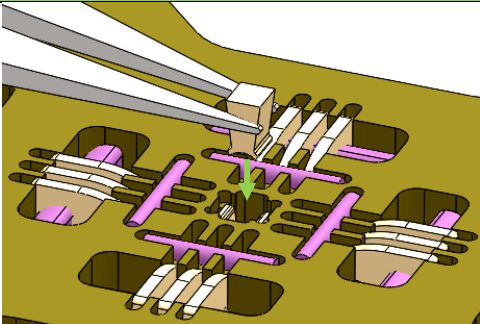


Hold the Bell Top firmly in the correct orientation with the tweezers and insert it into the socket's Bell Contact slot.

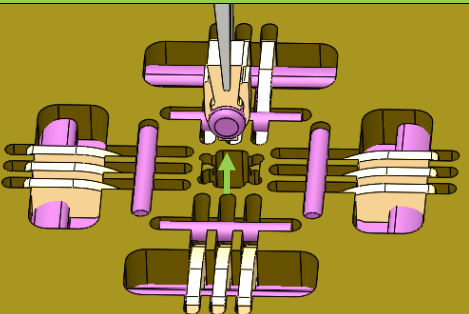
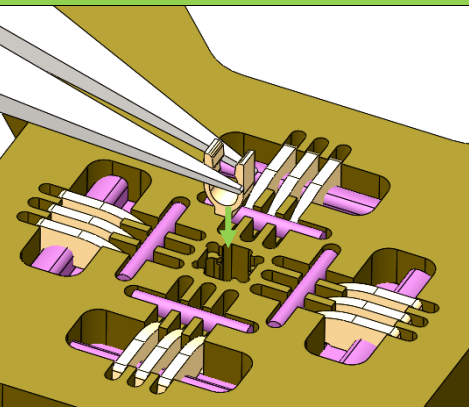
Step 3:

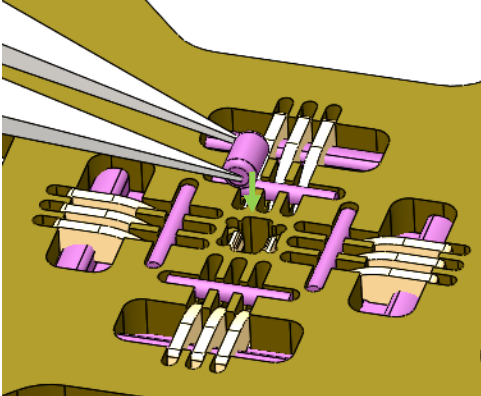
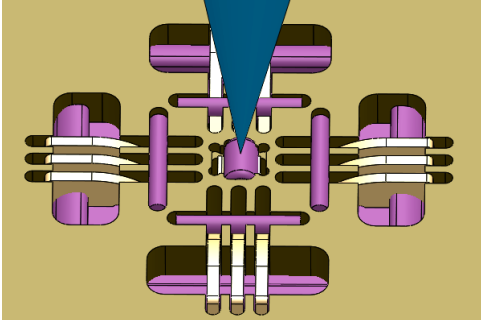
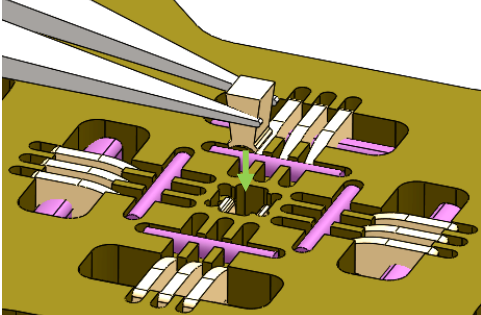


Insert the Bell elastomer into the Bell Contact's elastomer slot using the tweezers.

<p>Step 4:</p> 	<p>Gently push the Bell elastomer slug into the Bell Top opening with the plastic spudger.</p>
<p>Step 5:</p> 	<p>Insert the Bell Bottom into the socket's Bell Contact slot after the Bell elastomer with the tweezers.</p> <p>After inserting, gently press Bell Bottom using plastic spudger to make sure Bell Bottom is engaged with Bell Top properly.</p> <p><i>Note: Do not use tweezers to press pin.</i></p>

ii. ATE PicoRaptor 2 Socket Replacement – BC Ground Pin & Elastomer

<p>Step 1:</p> 	<p>Gently remove the Bell Contact from the housing using a pair of tweezers and take apart the Bell Contact.</p> <p>Change to new Bell Contact pin and elastomer.</p>
<p>Step 2:</p> 	<p>Hold the new Bell Top firmly in the correct orientation with the tweezers and insert it into the socket's Bell Contact slot.</p>

Step 3:	
	<p>Insert the new Bell elastomer into the Bell Contact's elastomer slot using the tweezers.</p>
Step 4:	
	<p>Gently push the Bell elastomer slug into the Bell Top opening with the plastic spudger.</p>
Step 5:	
	<p>Insert the Bell Bottom into the socket's Bell Contact slot after the Bell elastomer with the tweezers.</p> <p>After inserting, gently press Bell Bottom using plastic spudger to make sure Bell Bottom is engaged with Bell Top properly.</p> <p><i>Note: Do not use tweezers to press pin.</i></p>

e. ATE PicoRaptor 2 Socket with Ground Block

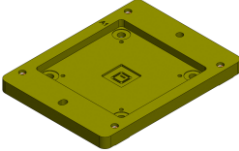
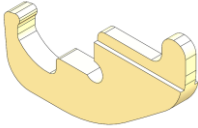
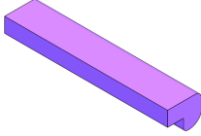
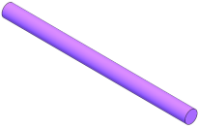
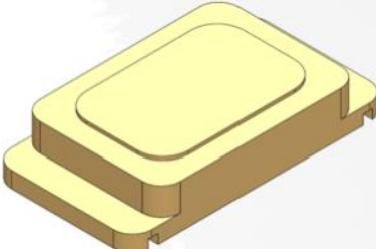
i. ATE PicoRaptor 2 Socket Assembly – Ground Block

Step 1:

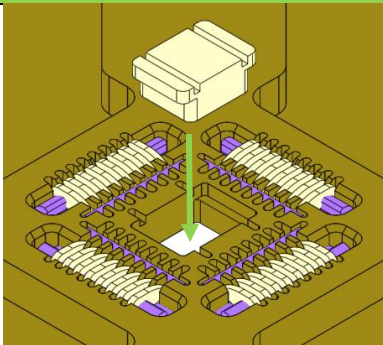
Tools required:

- Screwdriver / Allen Key
- Tweezer
- Plastic spudger

Prepare items below:

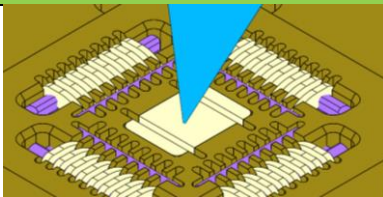
Socket Housing	PicoRaptor 2 Pin	P-Shaped Elastomer
		
Retaining Elastomer	Ground Block	
		

Step 2:



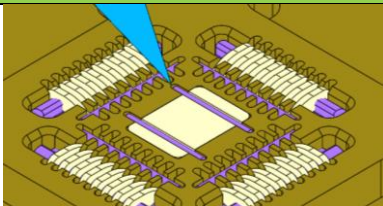
Push the ground block into housing's center hole as shown. Make sure that the ground block is inserted into the housing center hole tightly and does not fall out.

Step 3:



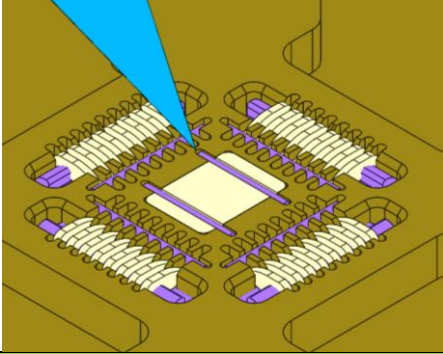
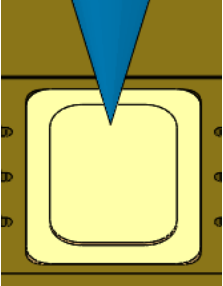
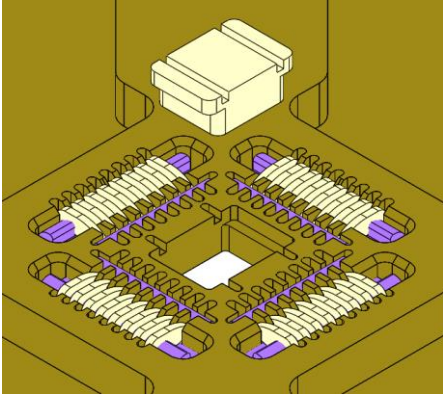
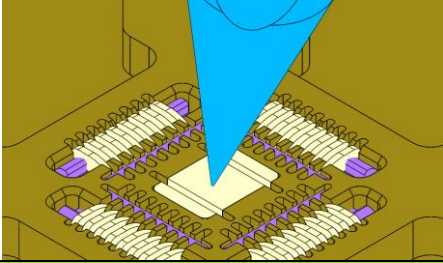
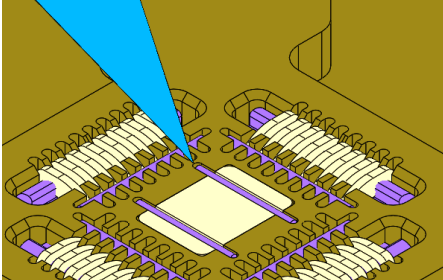
Push the ground block into housing's center hole. Make sure that the ground block is inserted firmly into the housing center hole to prevent from falling out.

Step 4:



Place the retention elastomer and slug it into the slot until it is seated firmly in the slot. Repeat this step for all the retention elastomers.

ii. ATE PicoRaptor 2 Socket Replacement – Ground Block

<p>Step 1:</p> 	<p>Use the plastic spudger to lift up the retention elastomer end from the elastomer slot.</p>
<p>Step 2:</p> 	<p>Gently push the ground block out of the housing from the top side of the socket with a plastic spudger to dislodge it.</p>
<p>Step 3:</p> 	<p>Insert new ground block into housing's center hole as shown.</p>
<p>Step 4:</p> 	<p>Push the ground block into housing's center hole. Make sure that the ground block is inserted firmly into the housing center hole to prevent from falling out.</p>
<p>Step 5:</p> 	<p>Place the retention elastomer and slug it into the slot until it is seated firmly in the slot. Repeat this step for all the retention elastomers.</p>

f. ATE PicoRaptor 2 Socket with Ground Block with Ground Pin

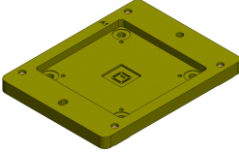
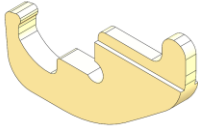
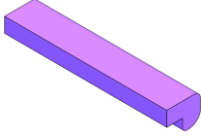
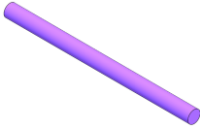
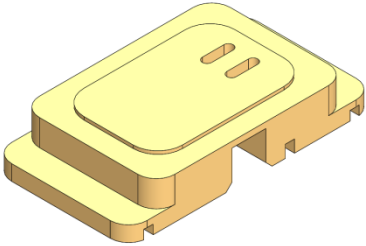
i. ATE PicoRaptor 2 Socket Assembly – Ground Block with Ground Pin

Step 1:

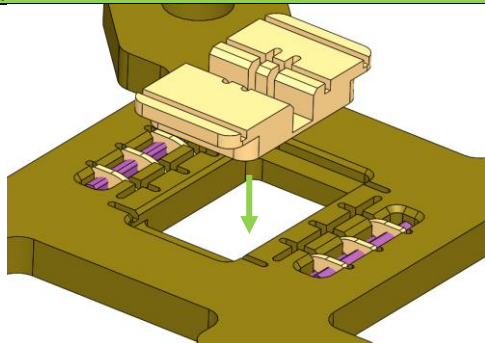
Tools required:

- Screwdriver / Allen Key
- Tweezer
- Plastic spudger

Prepare items below:

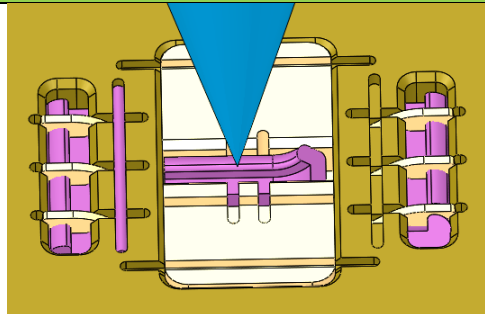
Socket Housing	PicoRaptor 2 Pin	P-Shaped Elastomer
		
Retaining Elastomer	Ground Block	
		

Step 2:



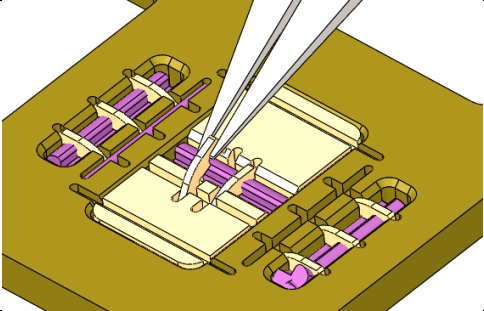
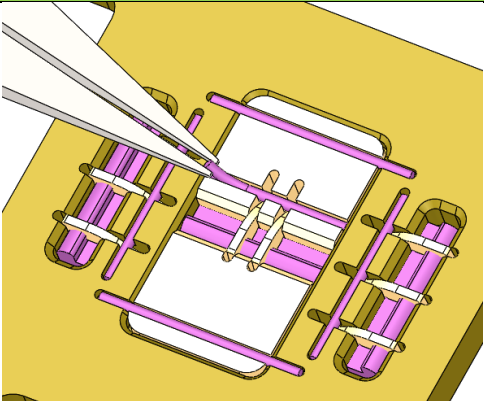
Push the ground block into housing's center hole as shown. Make sure that the ground block is inserted into the housing center hole tightly and does not fall out.

Step 3:

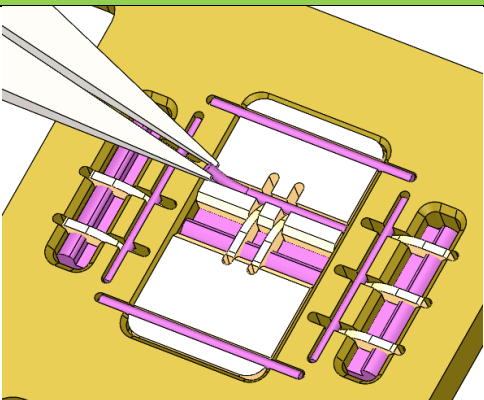
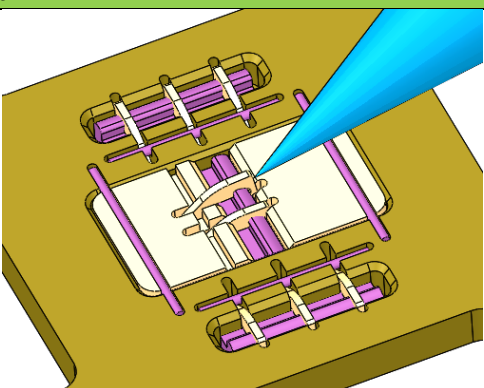


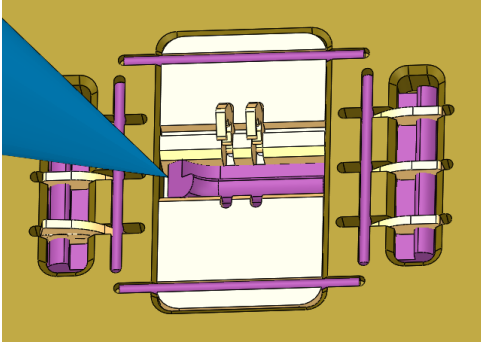
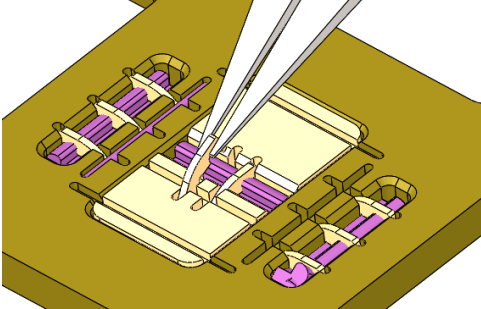
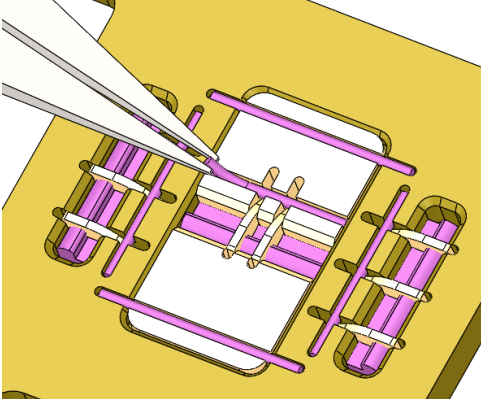
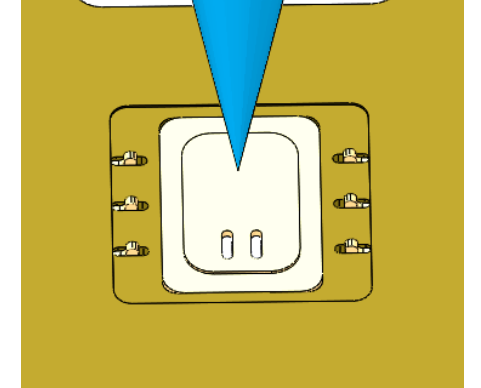
Slug in the elastomer into the elastomer slot with the plastic spudger as shown.

Note: The bulging side of the elastomer should face outwards from the socket.

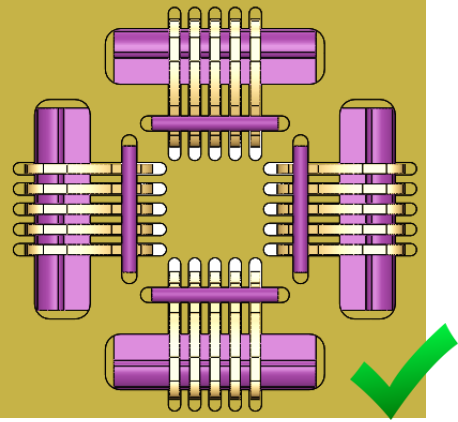
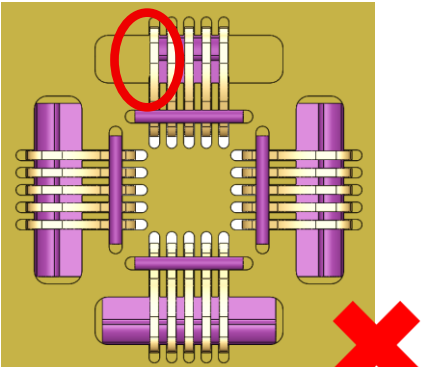
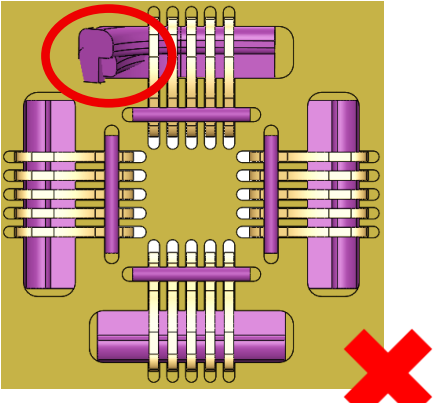
<p>Step 4:</p> 	<p>Hold the pin body firmly and place it into the pin slot using the tweezers.</p>
<p>Step 5:</p> 	<p>Place the retention elastomer and slug into the slot until it is seated firmly in the slot.</p>

ii. ATE PicoRaptor 2 Socket Replacement – Ground Block with Ground Pin & Elastomer

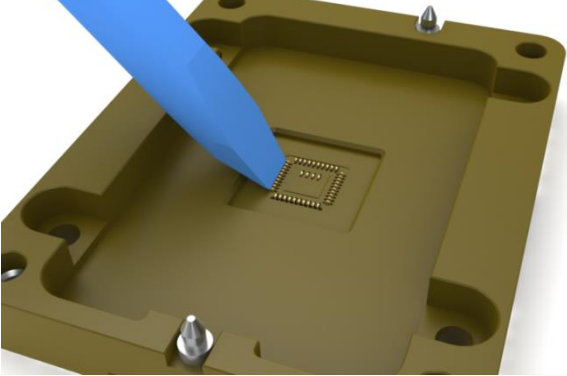
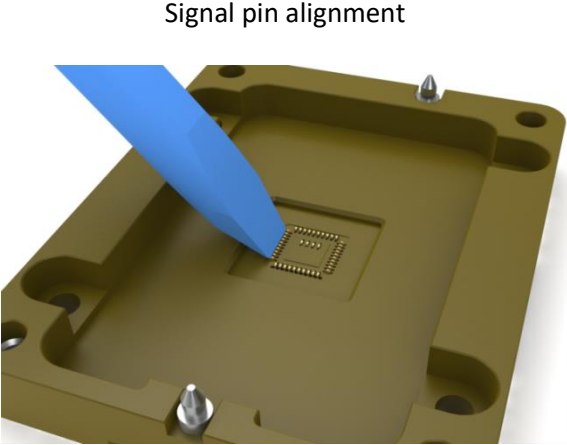
<p>Step 1:</p> 	<p>Remove the retention elastomer with a pair of tweezers.</p>
<p>Step 2:</p> 	<p>Carefully remove the pin tail from the pin slot with a plastic spudger. If a new pin is required, then replace with new pin and reinstall the retention elastomer.</p>

<p>Step 3:</p> 	<p>If you want to replace the elastomer, use the plastic spudger to carefully lift one end of the elastomer from the slot and insert new elastomer.</p> <p><i>Note: The bulging side of the elastomer should face outwards from the socket.</i></p>
<p>Step 4:</p> 	<p>Hold the pin body firmly and place it into the pin slot using the tweezers.</p>
<p>Step 5:</p> 	<p>Place the retention elastomer and slug into the slot until it is seated firmly in the slot.</p>
<p>Step 6:</p> 	<p>To replace ground block, gently push the ground block out of the housing from the top side of the socket with a plastic spudger to dislodge it. Insert new ground block follow steps mentioned in Page 31 (Section 8e – Ground Block).</p>
<p>Step 7:</p> <p>For Ground Block with HCI or Bell Contact Pin, kindly refer Page 25–27 (Section 8c – HCI) and Page 28 – 30 (Section 8d – Bell Contact) for installation and replacement procedure.</p>	

9. ELASTOMER INSPECTION AFTER INSTALLATION

Image	Description
<p>Correct</p> 	<p>Inspection Checklist for Elastomer Installation</p> <p>Inspect elastomer for any abnormality or review for the following:</p> <ul style="list-style-type: none"> • Crinkled at one end • Crinkled in the middle • Inappropriate length of elastomer <p>Typical Elastomer Installation Guidelines:</p> <ul style="list-style-type: none"> • The length of the elastomer should fit according to the length of the slot. • Both ends of the elastomer must extend beyond all the populated pins. • Make sure that the elastomers are not bunching. • Make sure that the elastomers are not twisted. <p>An ideal elastomer installation should be as the 1st illustration shown in the left column.</p>
<p>Incorrect</p> 	
	

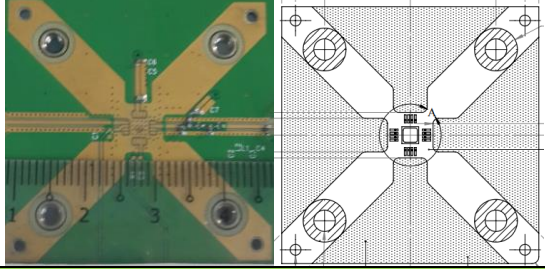
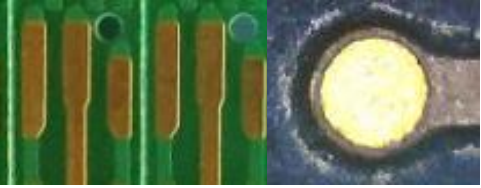
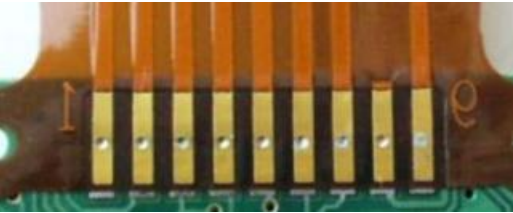

10.CONTACT PIN ALIGNMENT AFTER INSTALLATION

Image	Description
 <p>Signal pin alignment</p>	<p>Alignment of Contact Pins</p> <p>Tools required:</p> <ul style="list-style-type: none">• Plastic Spudger <p>Contact pin alignment procedure:</p> <ul style="list-style-type: none">• Align all the pins with the plastic spudger in respect to the slot direction. <p>The illustration shows the sequence of the contact pin alignment for both signal and ground pins.</p>
 <p>Ground pin alignment</p>	

11.ON SITE SOCKET COMPONENTS INSPECTION

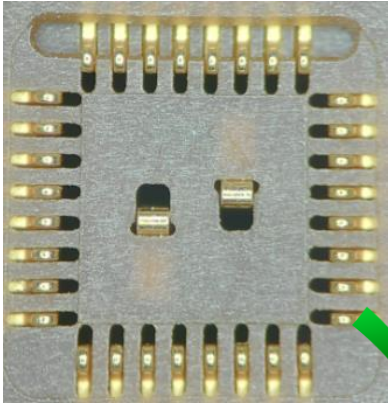
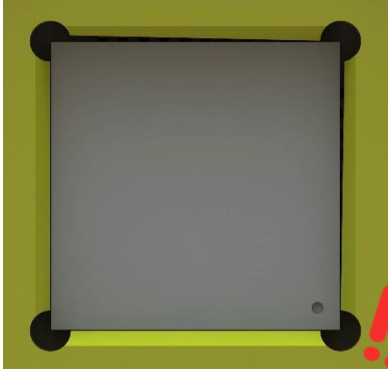
a. Load Board Inspection

Before install Socket onto Load Board, it is recommended to conduct a thorough inspection of the Load Board.

Image	Description
	<p>Verify Load Board with footprint drawing.</p>
Image	Description
<p>Good pad:</p>  <p>Nickel layer shown:</p>  <p><i>Check the depth of the wearing and resistance whether it can be used for testing.</i></p> <p>Bad pad (pad oxidized):</p> 	<p>Check the condition of the contact pad whether there is sign of wear.</p> <p>If Nickel layer, make sure it is not excessive and it is still acceptable to be used for testing. If some sensitive testing such as RF application, then signal will be affected.</p> <p>If Copper layer is exposed, then the Load Board will need to be replaced or repaired.</p>

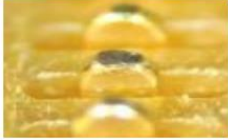
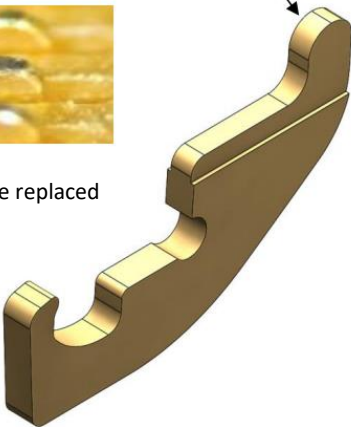
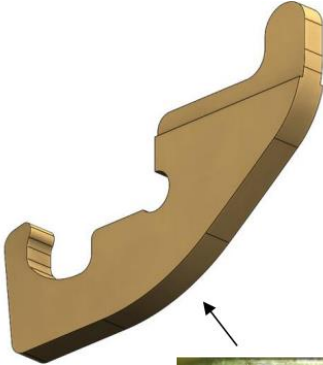
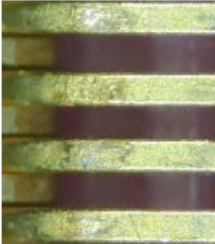
b. Socket Inspection

Use microscope to check condition of the Socket:

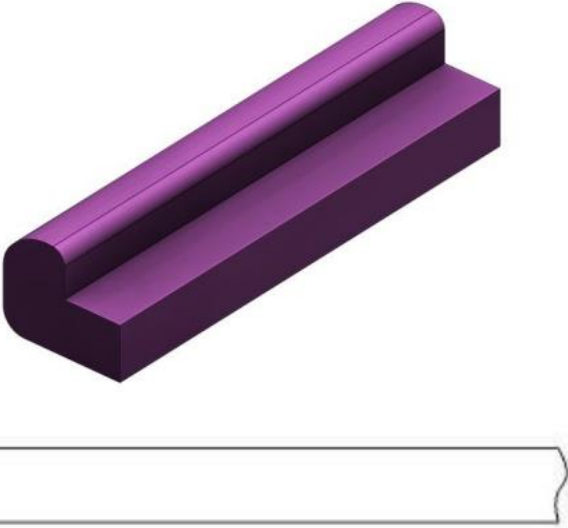
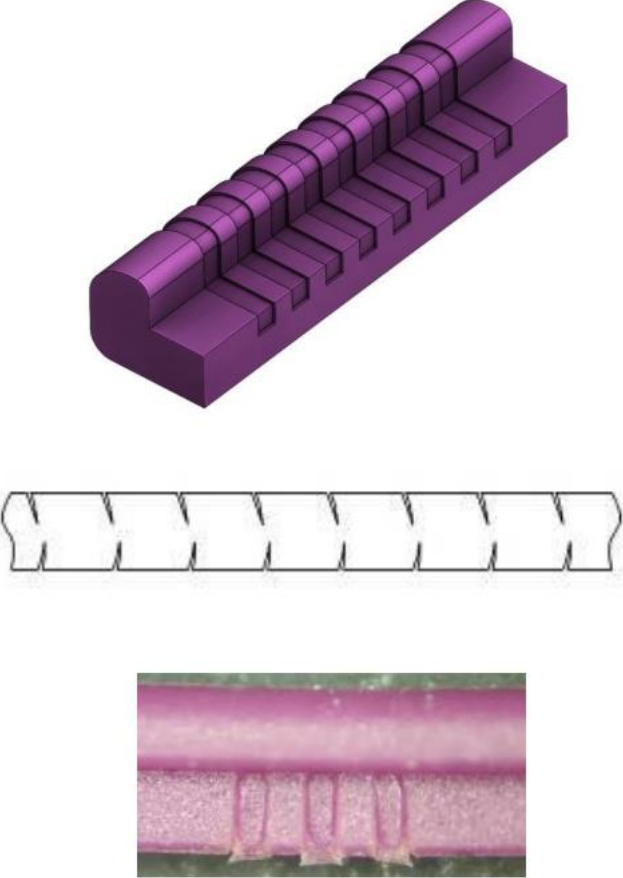
Image	Description
<p>Correct</p>  <p>No crack or chip</p>	<p>i. Crack or chipping in Socket, Alignment Plate or Ground Block. <i>Check whether the crack or chipping area affect testing. If it does, the damaged component must be replaced.</i></p>
<p>Caution</p>  <p>Wear on Alignment Plate's pocket</p>	<p>ii. Crack, chipping or missing on the pin slot's wall. <i>Check if the pin can be move left right easily, change the socket if the pin can move.</i></p> <p>iii. Excessive wear on Alignment Plate's device pocket. <i>For the wearing of Alignment Plate's pocket, perform manual testing with Manual Actuator to check device imprint. If the imprint does not appear within device pad, this indicates Alignment Plate pocket is out of specification and should be changed.</i></p>

c. Pin Inspection

Use microscope to check condition of the pin:

Image	Description
<p data-bbox="539 342 762 398">Device side: Should be replaced if worn-out</p>  <p data-bbox="296 600 531 656">Pin need to be replaced or changed</p>    <p data-bbox="555 1496 715 1525">Loadboard side:</p> <p data-bbox="555 1552 895 1641">Should be replaced if worn-out. It is advisable to replace the pin also when exposed nickel is observed.</p>	<p data-bbox="935 338 1353 398">Inspect pin for any abnormality or signs as listed below:</p> <ul data-bbox="983 409 1377 510" style="list-style-type: none"> • <i>Excessive worn-out tip</i> • <i>Worn-out on load board side</i> • <i>Imbalanced worn-out tip</i> <p data-bbox="935 555 1366 656">Imbalanced wearing at the pin tip is an indication of potential test contactor misalignment issue.</p>

d. Elastomer Inspection

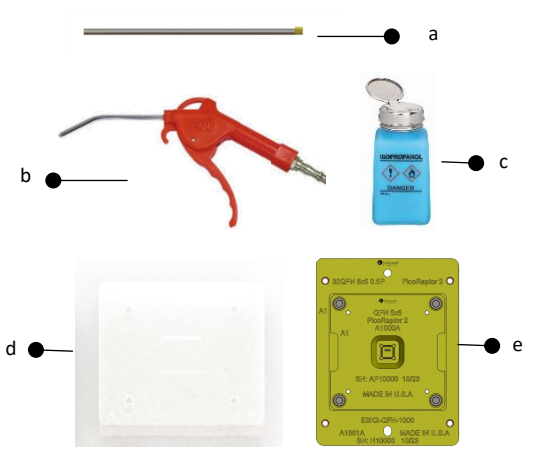
Image	Description
<p data-bbox="204 297 392 324">Good condition</p>  <p>The image shows a 3D perspective view of a purple elastomer seal in good condition. It is a rectangular block with a raised lip on one side. Below it is a 2D cross-section diagram showing a uniform, smooth profile with a consistent thickness and a rounded lip.</p>	<p data-bbox="930 297 1337 360">Abnormality on the elastomer as listed below</p> <ul data-bbox="930 371 1321 472" style="list-style-type: none"> • <i>Cuts</i> • <i>Tears</i> • <i>Deformation (Compression)</i> <p data-bbox="930 517 1385 651">All these defects will cause the socket performance to deteriorate. Hence, elastomer must always be maintained at its optimum condition.</p>
<p data-bbox="204 887 683 949">Bad condition – Need to be replaced The cut is beyond 50 micron and above.</p>  <p>The image shows a 3D perspective view of a purple elastomer seal in bad condition. The raised lip is severely worn, jagged, and uneven. Below it is a 2D cross-section diagram showing a severely irregular profile with deep, jagged cuts and a significantly reduced, uneven thickness. At the bottom of this section is a photograph of a real elastomer seal with similar wear and tear.</p> <p data-bbox="204 1865 799 1928">Compressed and worn out elastomer needs to be replaced.</p>	

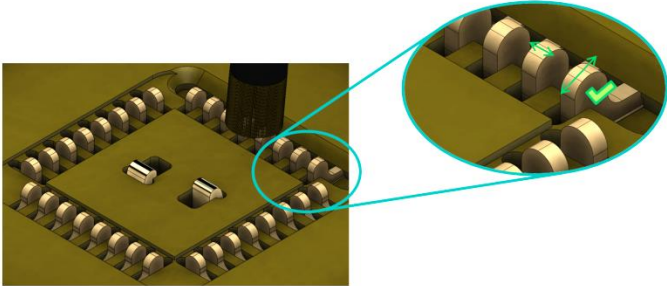
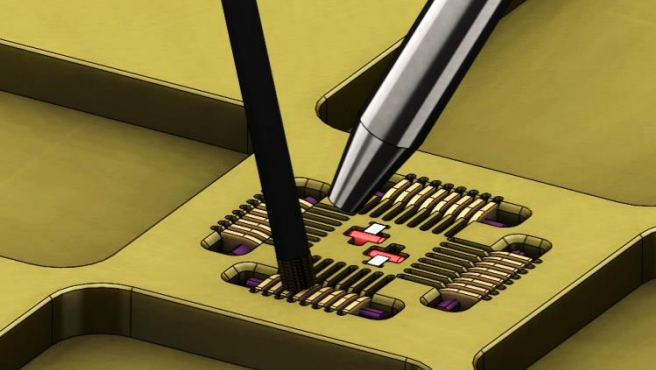

12. IRONWOOD RECOMMENDED SOCKET CLEANING METHOD

Cleaning is important to prolong lifespan of pin and elastomer which increasing testing yield. Due to different testing environment and set up, test floor must determine optimal cleaning frequency. Recommended frequency is once per shift but subject to device plating, testing environment, testing condition etc.

Even some handlers is equipped with a cleaning feature to clean on critical area, but offline inspection and cleaning need to be performed too.

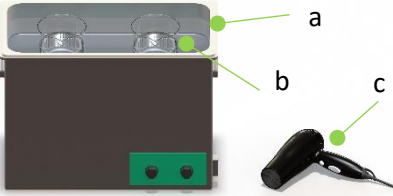
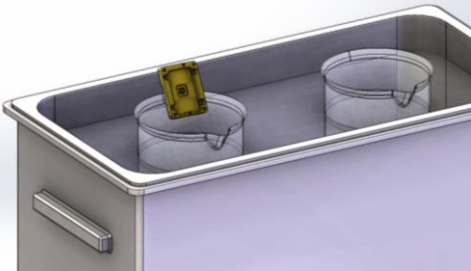
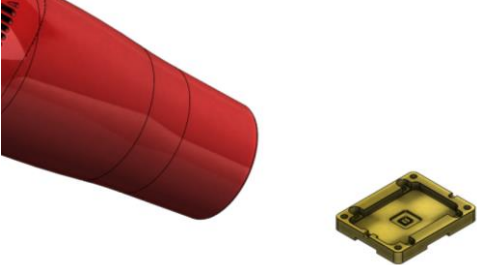
a. Light Cleaning Method

Step 1:	
	<p>Tools required:</p> <ul style="list-style-type: none"> a. Nylon brush b. Low pressure clean dry air (CDA) c. IPA cleaning solution d. Acrylic Plate e. Socket <p>Unmount the Socket from Load Board.</p>
Step 2:	
Remove Alignment Plate and put socket onto acrylic plate.	
Step 3:	
Use low pressure clean dry air (CDA) (10-20 psi) to blow away debris from socket.	
<i>Note: The CDA gun nozzle from the test socket should be distance by 10cm approx.</i>	
Step 4:	
Mildly soak the bristles of the brush with IPA solution.	
To ensure that the bristles of the brush are not drenched, dry the bristles slightly after immersing with IPA on a piece of paper or equivalent material that can absorb moisture.	

<p>Step 5:</p> 	<p>Brush the contact pins gently with the nylon brush that was mildly soaked with IPA solution.</p> <p>Use the brush mildly soaked with IPA and brush along the pin tip in the direction as shown in green color.</p>
<p>Step 6:</p> <p>Apply low pressure clean dry air (CDA) (recommended 10 to 20 psi) to dry up any excess IPA solution to avoid staining the surface of the socket.</p> <p><i>Note: The CDA gun nozzle from the test socket should be distance by 10cm approx.</i></p>	
<p>Step 7:</p> <p>Remove socket from acrylic plate and flip the socket around.</p>	
<p>Step 8:</p> 	<p>Repeat steps 3 to steps 6 for the bottom surface of the socket.</p>
<p>Step 9:</p> 	<p>Precaution:</p> <p>Ensure that no residues / contamination / debris is present after the cleaning.</p>

Note: Recommended cleaning frequency is one per shift (subjected to the incoming pad plating quality)

b. Ultrasonic Cleaning Method (For Socket and Alignment Plate only)

Step 1:	
	<p>Tools required:</p> <ul style="list-style-type: none"> a. Ultrasonic Cleaner b. Beaker c. Dryer
Step 2:	
Remove Cartridge & Alignment Plate from the socket.	
Step 3:	
	<p>Put Socket & Alignment Plate into Beaker. Then put Beaker into Ultrasonic for 10 minutes.</p>
Step 4:	
	<p>Dry the Socket & Alignment Plate with a dryer.</p>

13. DO'S & DON'TS

DO'S	DON'TS
<ul style="list-style-type: none"> • Use plastic spudger to touch pin tip and critical area • Use nylon brush or laser cleaner for pin's cleaning • Use nylon brush or ultrasonic for socket cleaning. • Use plastic spudger to remove Ground Block or Alignment Plate. 	<ul style="list-style-type: none"> • Sharp and metallic item such as screwdriver, tweezers and stainless-steel brush are NOT ALLOWED to use on the pin tip and critical area.

14. COMPANY INFORMATION



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15. REVISION HISTORY

Revision	Description	Created by	Approved by	Date
A	Initial Release	MC Chin	Andy Tjan	3 Dec 2025