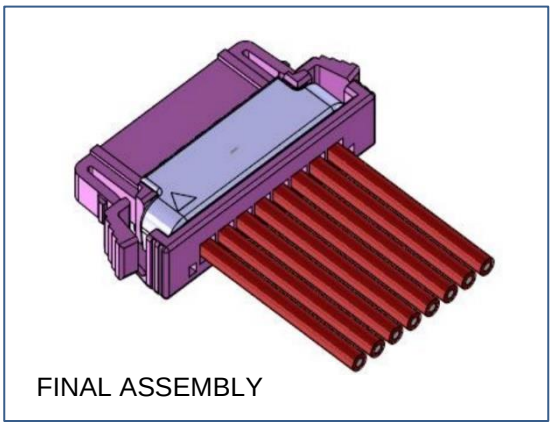
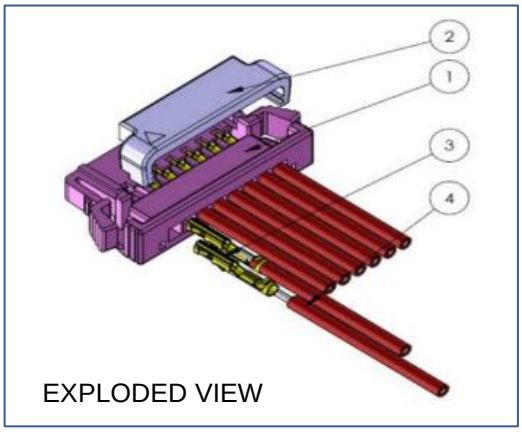
1. INTRODUCTION

This specification specifies the procedure for the assembly of the iBridge Ultra female connector and discrete wires where the Female Housing and Retainer (secondary lock) is packed in bulk separately and it is qualified as per USCAR only.

2. PART DESCRIPTION & COMPONENT DETAILS



FINAL ASSEMBLY



EXPLODED VIEW

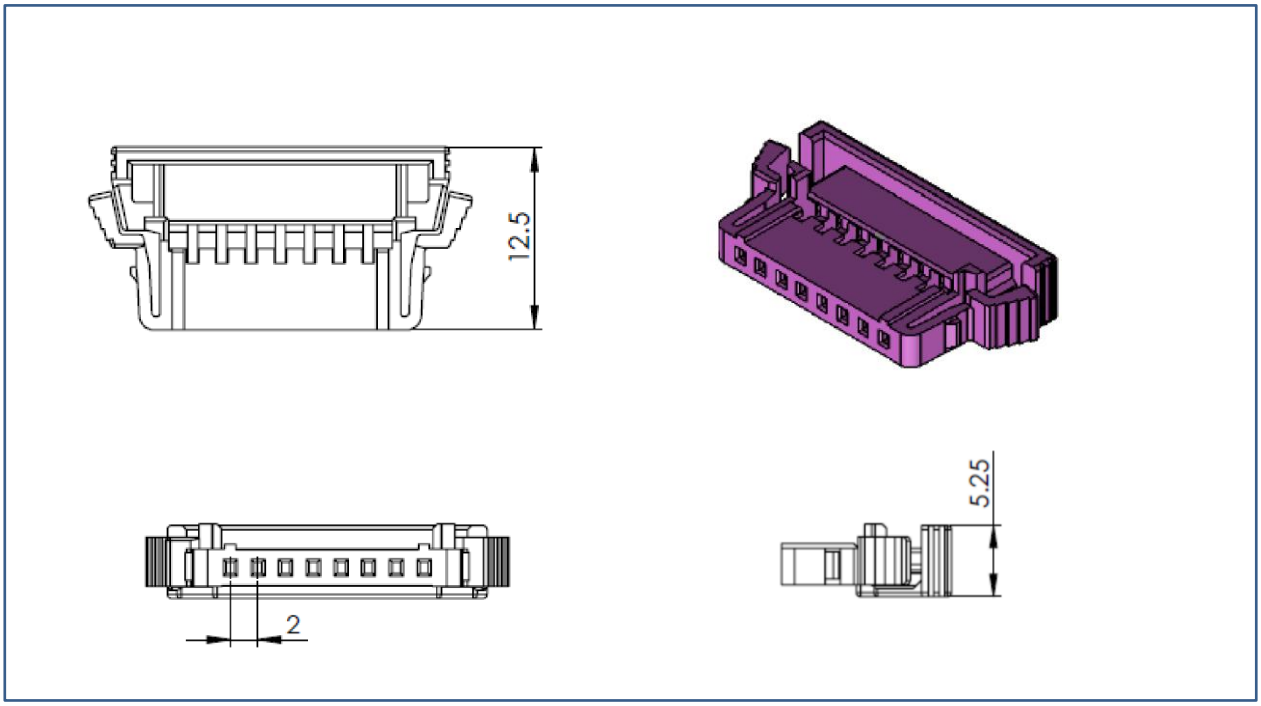
Components	Description
1	Female Housing
2	Retainer
3	Female Contact
4	Discrete Wire

2.1. Female Housing & Retainer

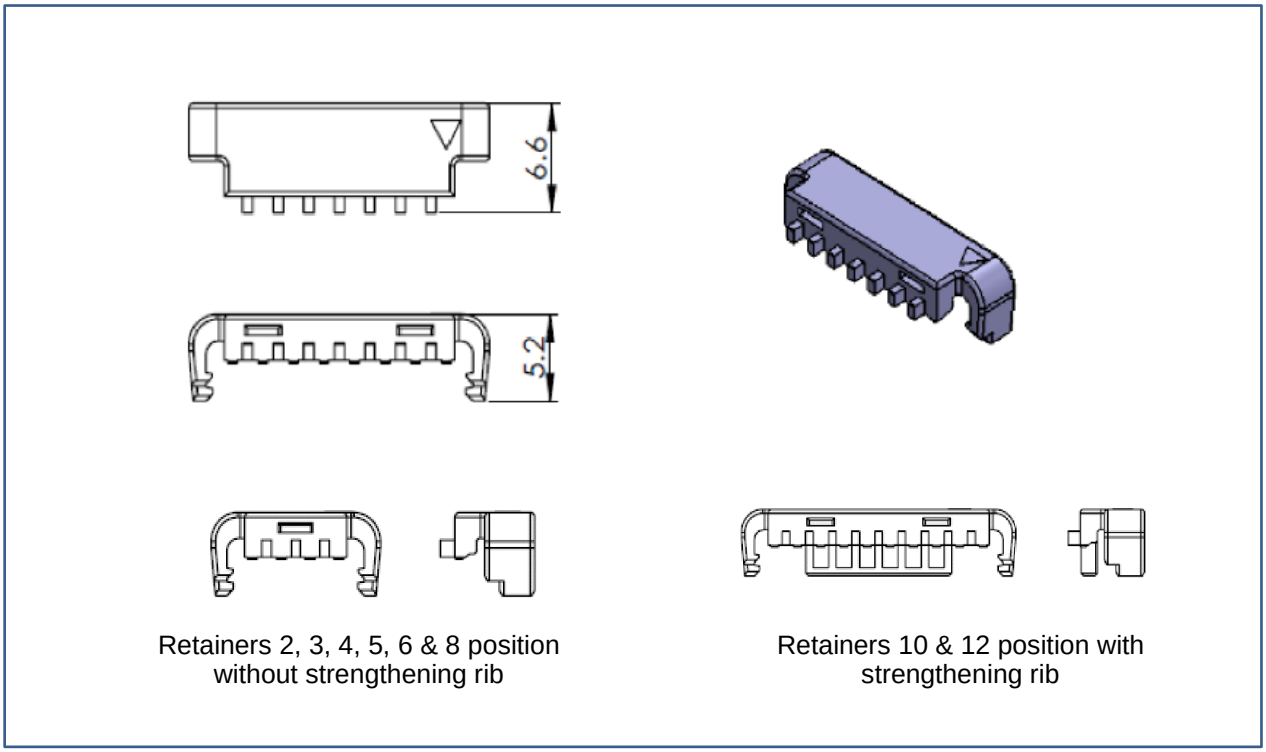
Position	Housing Part number	Retainer Part number
2	119971-E	119981-E
3	119972-E	119982-E
4	119973-E	119983-E
5	119974-E	119984-E
6	119975-E	119985-E
8	119976-E	119986-E
10	119977-E	119987-E
12	119978-E	119988-E

*The Housing and the Retainer are packaged separately in bulk

2.1.1. iBridge Ultra Female Housing :



2.1.2. iBridge Ultra Retainer

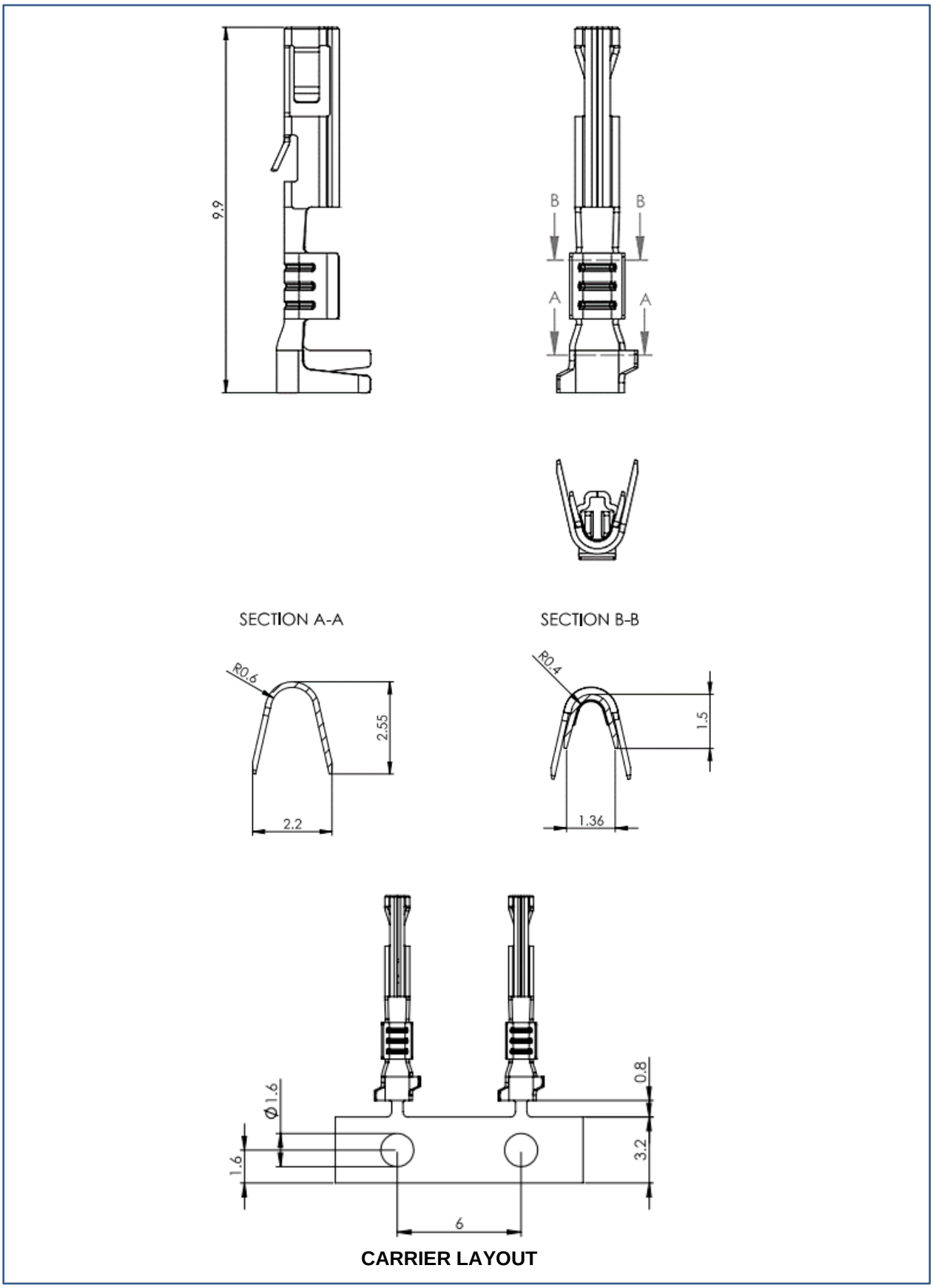


Retainers 2, 3, 4, 5, 6 & 8 position without strengthening rib

Retainers 10 & 12 position with strengthening rib

Note: All the dimensions mentioned are only for reference, Refer Customer drawings for more details.

2.2. Female Contact



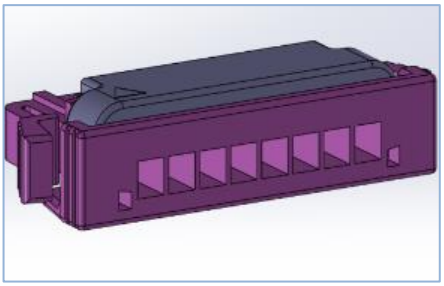
CARRIER LAYOUT

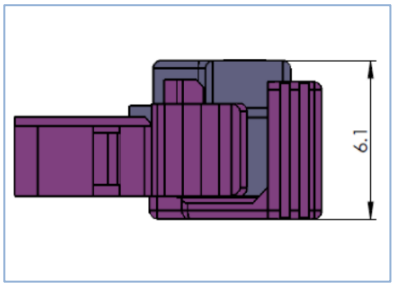
3. COMPONENT PREPARATION

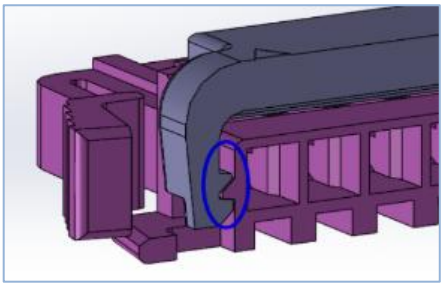
3.1. Housing & Retainer

3.1.1. The Retainer could be locked into the Housing in two positions: In the pre-locked condition & full locked condition.

Pre-Locked condition

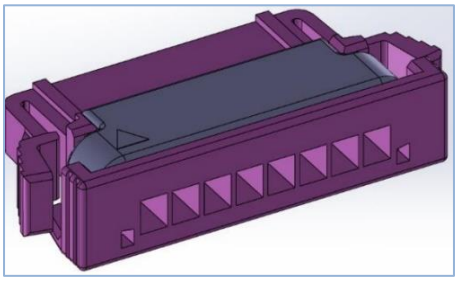


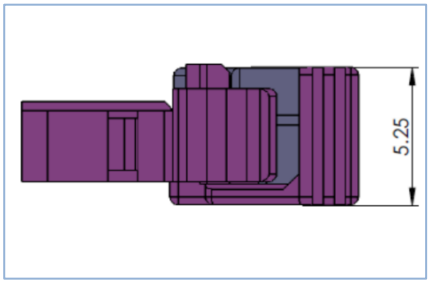


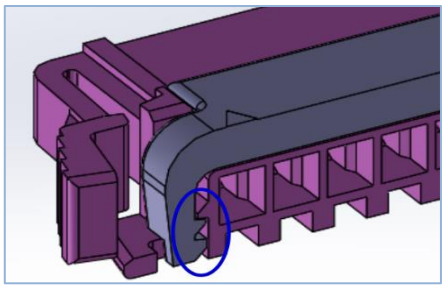


Retainer latch position in pre-locked condition

Full Locked condition

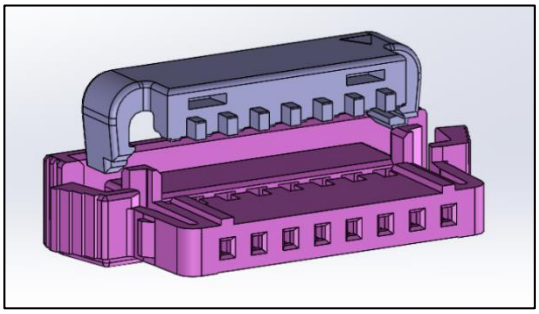


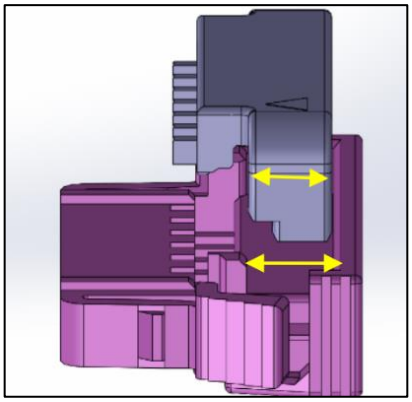


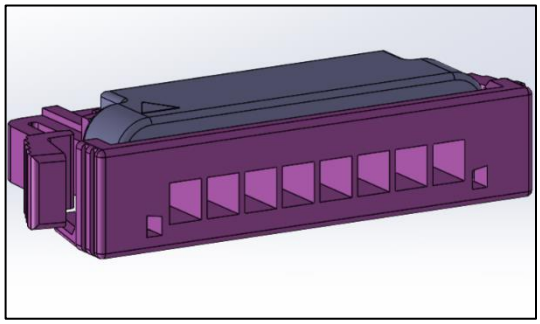


Retainer latch position in full locked condition

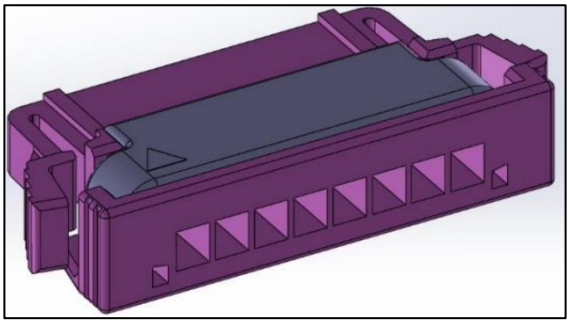
3.1.2. Assemble the Retainer as shown below to the pre-lock condition. Do not press the Retainer fully.

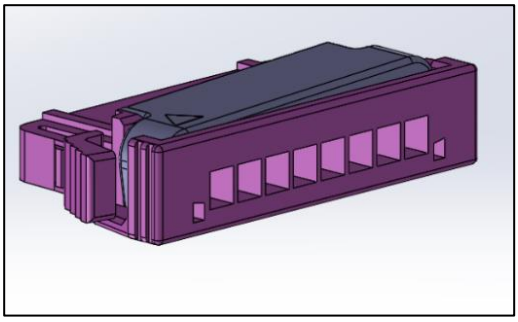






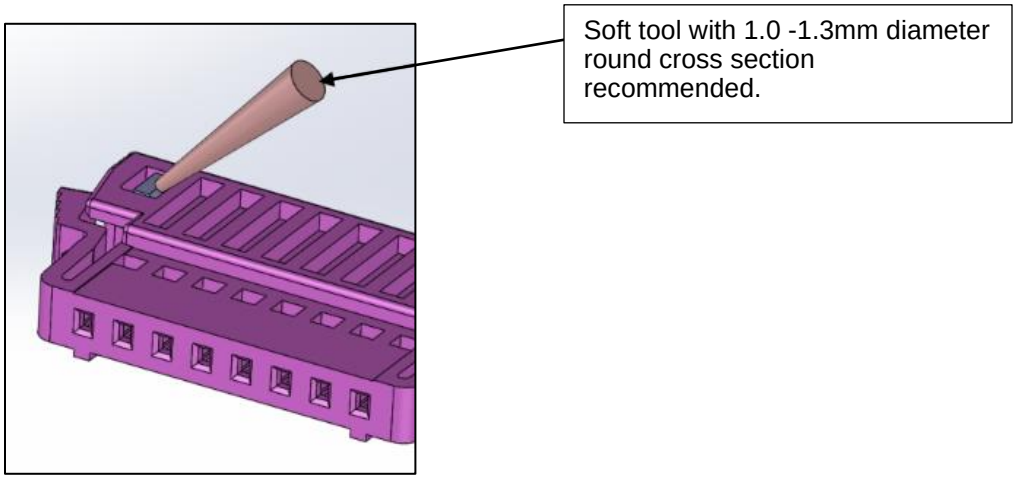
3.1.3. Errors in pressing to pre-lock condition:





3.1.4. In case the Retainer is pressed to full locked condition before inserting the contact, use a small soft tool to deflect the latch of the Retainer through the Housing window and push down it to the pre-lock condition.

Please check for any damages on the Retainer. Replace the Retainer if required.



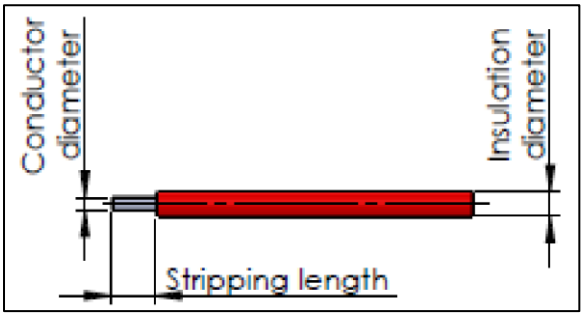
3.2. Discrete Wire

3.2.1. Wire specifications:

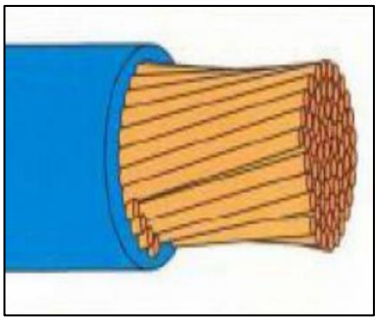
AWG 22 (≈0.35mm²) & AWG 24 (≈0.22mm²) discrete wires can be crimped with the female contacts.

The insulation diameter of the discrete wire cannot be more than 1.6mm.

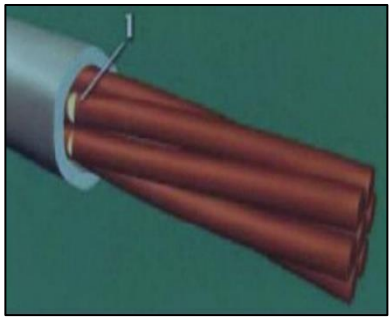
The recommended discrete wire stripping length is 2.8mm.



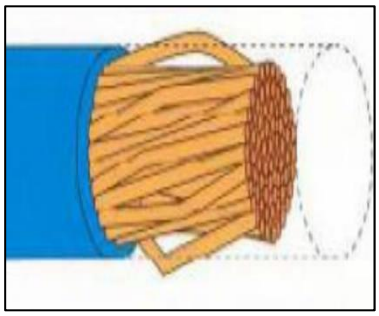
3.2.2 Common defects in wire preparation



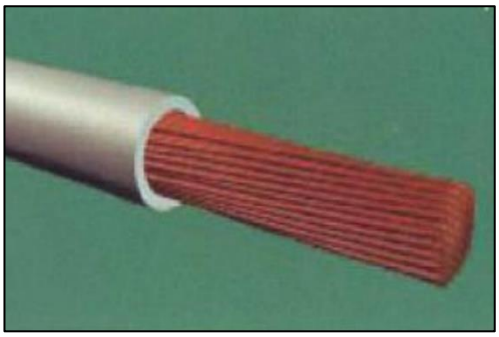
Strand damage



Strand damage



Wire separation
(Bird caging)

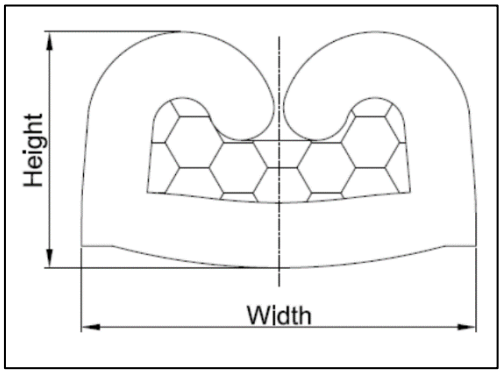


3.3. Crimping

3.3.1. Crimping should meet requirements as per USCAR-21

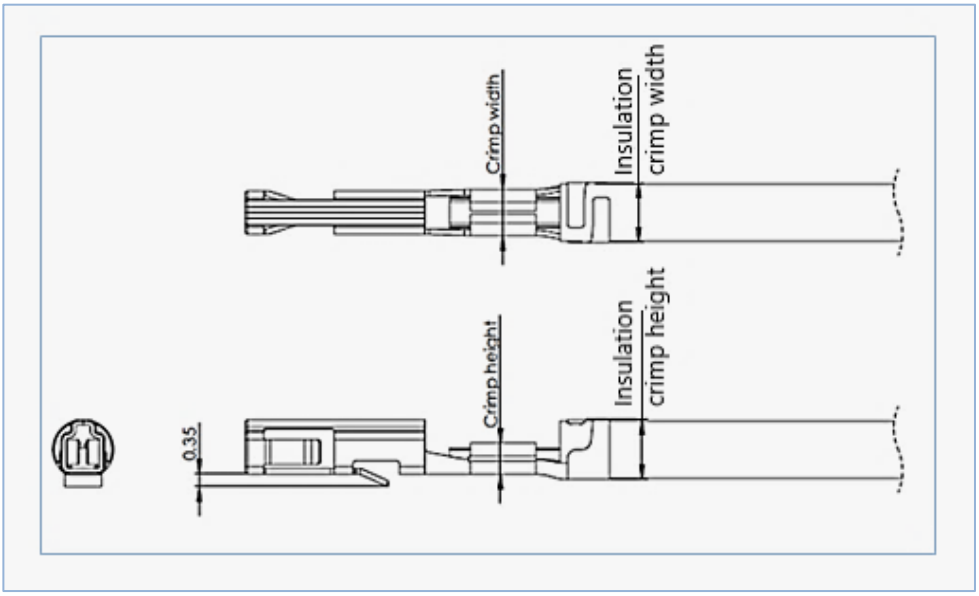
Discrete Wire pull out force

1. AWG 22: 50 N min (USCAR-21)
2. AWG 24: 28 N min (IEC 60512-16-4)



Recommended crimping dimensions.

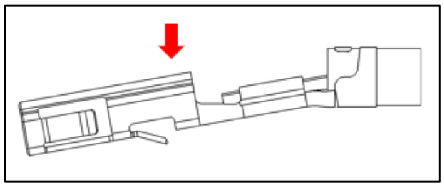
Wire Range	Crimping Height	Crimping Width	Insulation Crimp Height	Insulation Crimp Width
AWG 22	0.66 ±0.03	1.07 ±0.03	1.6 mm Ref	1.6 mm Ref
AWG 24	0.58 ±0.03	1.07 ±0.03	1.4 mm Ref	1.6 mm Ref



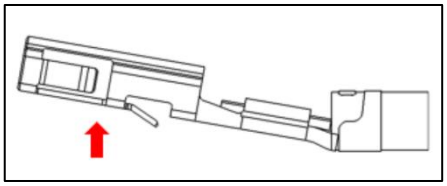
.

3.3.2. Common defects on crimping:

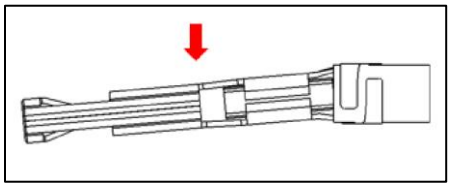
Discard the crimped contact if it is damaged.



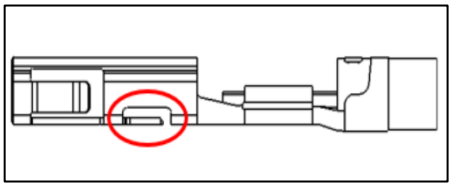
Terminal bent down



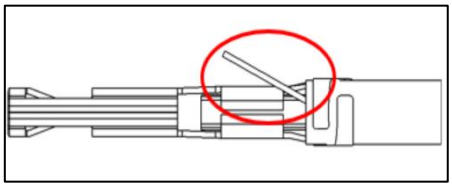
Terminal bent up



Terminal bent sideways



Primary lock lance deformed



Uncrimped conductor

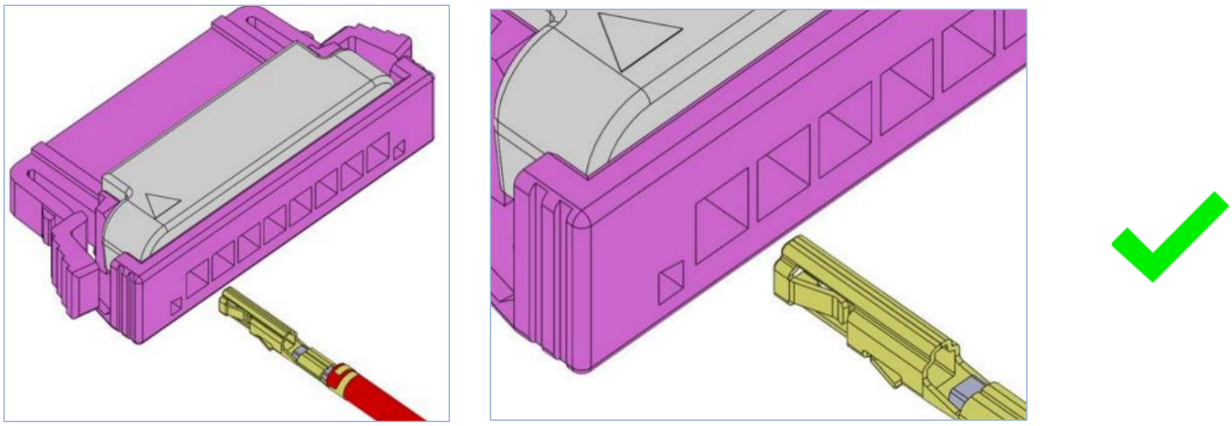
3.3.3. Crimp Hand Tool:

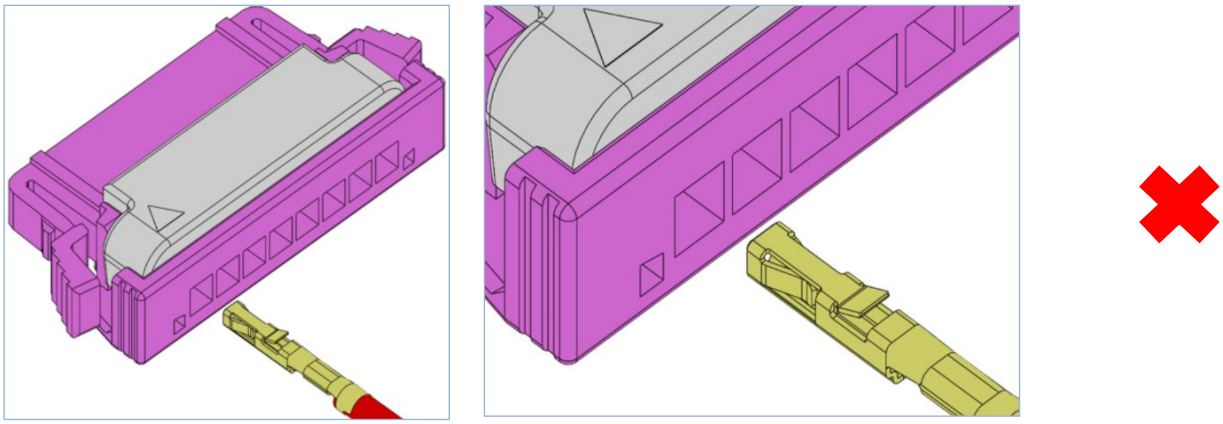
Crimp Hand tool is a significant contributor to the overall crimp termination process.

To crimp female contacts with discrete wires(22-24 AWG), SDE crimp hand tool is used which is available as fully assembled tool(PN 2450661-1), or with the frame(PN 2362810-1) and die set(PN 2450661-2) separately.

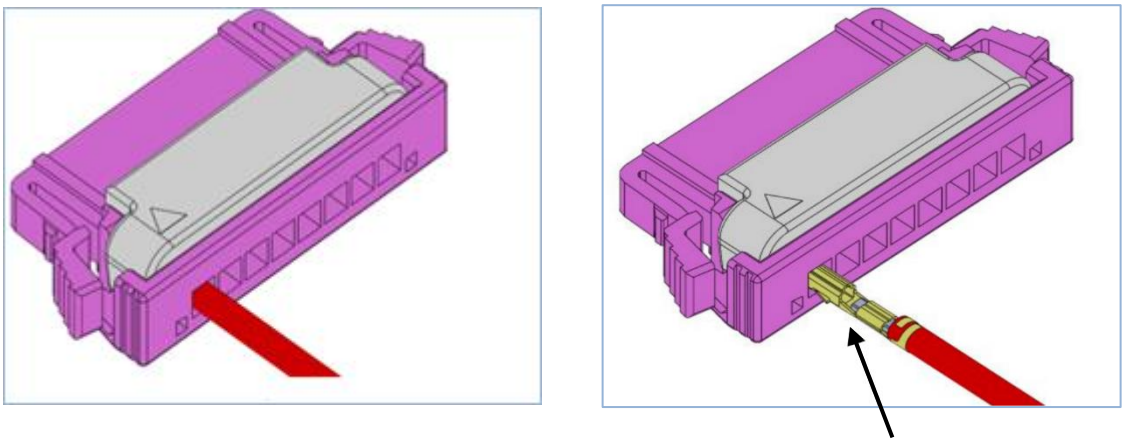
4. DISCRETE WIRE ASSEMBLY

4.1. Check the orientation of the contacts



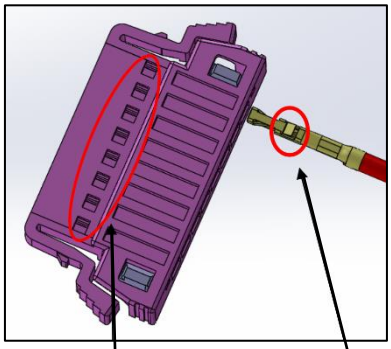


4.2. Insert the discrete wire straight into the Housing and push the contact into the Housing all the way.



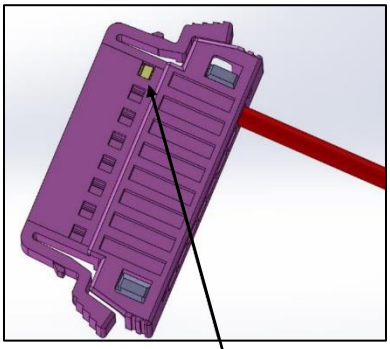
The crimped contact should be in-line to the Housing cavity for easy insertion

4.3. Check that the Contact Primary lock lance is properly engaged

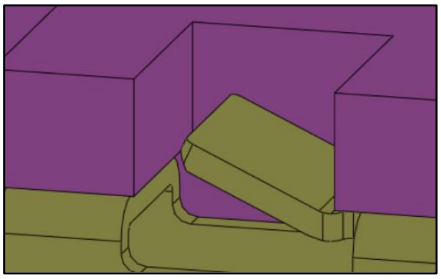


Holes for Contact lance engagement

Contact lance



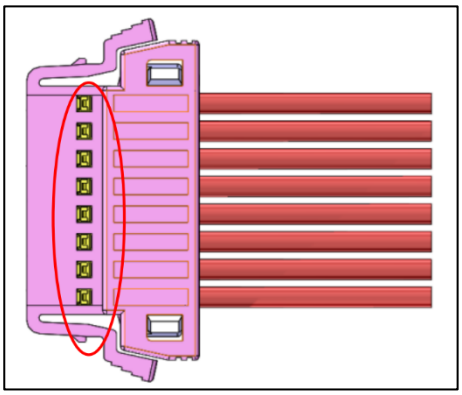
Contact lance engaged



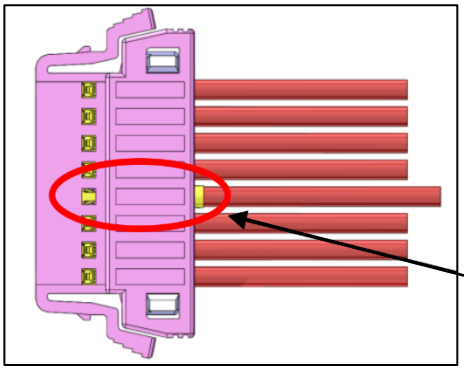
Ensure the contact lance is properly locked in the housing slot and not deformed.

4.4. Continue to assemble all the contacts in a similar way.

4.5. Before pressing the Retainer down to activate the secondary lock feature, make sure the contacts are properly inserted in the correct position as shown below

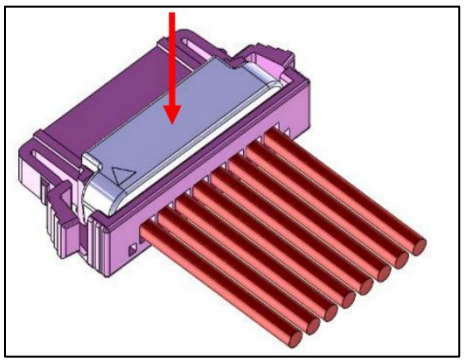


4.7. The Retainer should not be pressed down if any of the contacts are inserted wrongly or not fully inserted as shown in the figure below



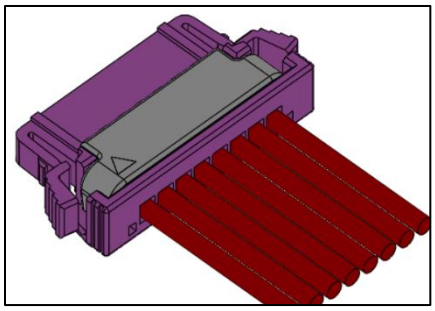
The contacts not fully inserted

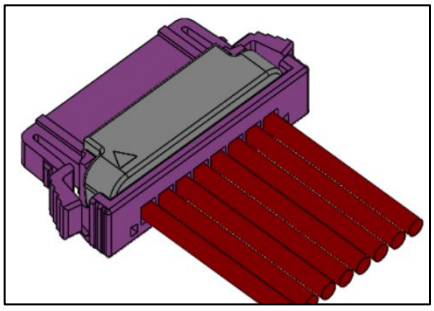
4.8. Once all the contacts are properly inserted in the correct position, press down the Retainer to activate secondary lock feature.



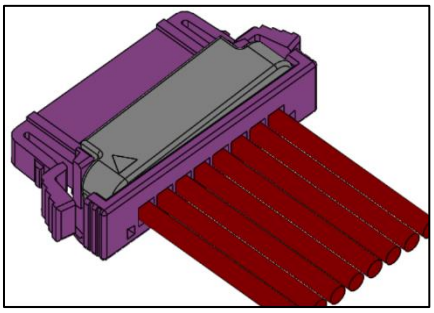
5. ASSEMBLED PART

5.1. Full locked conditions



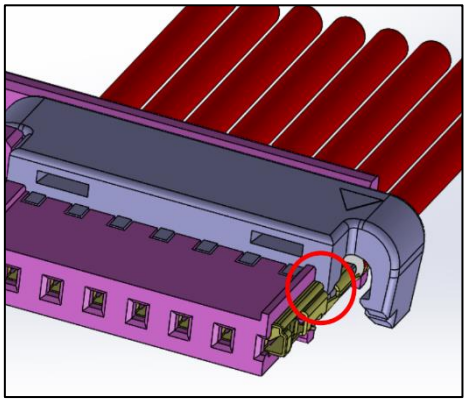


Not pressed

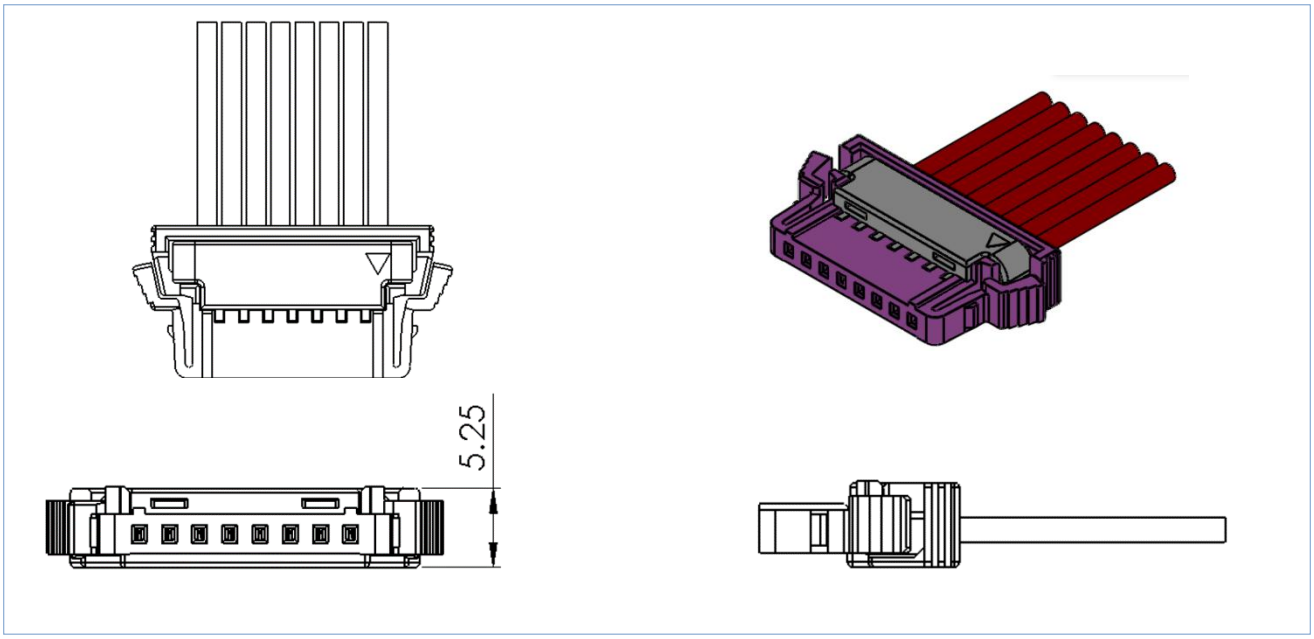


Pressed only at one end

5.2. When the Retainer is fully pressed it will lock the contact in position.

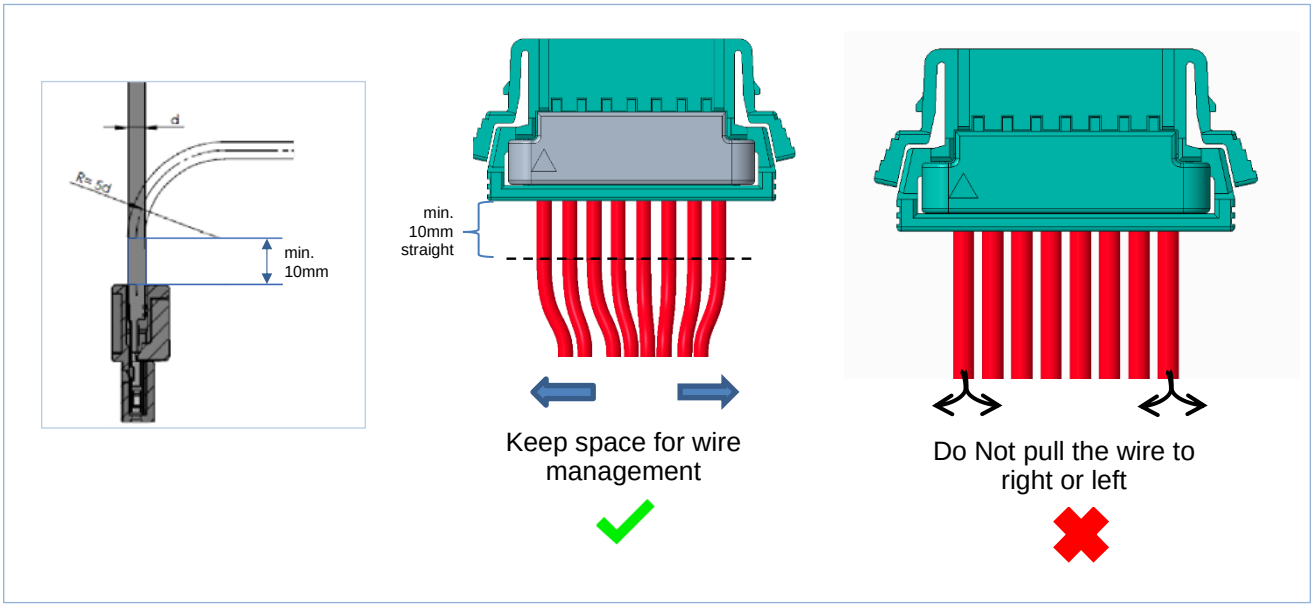


5.3. Assembly Dimensions:



5.4. Recommendation for laying of discrete wire:

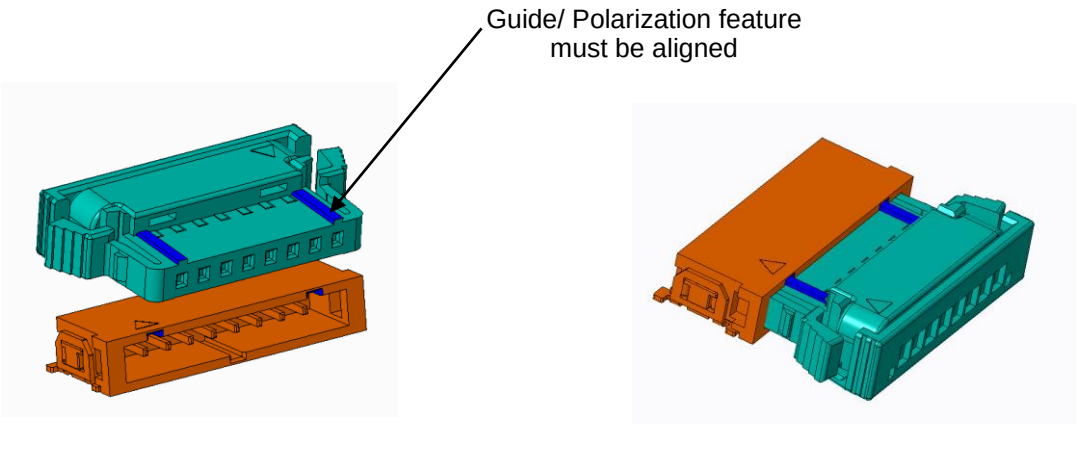
For the laying of the wire above the female connector, the recommended bending radius is 5 times the wire diameter.
Do Not Pull the wire to right or left as the connector will wiggle and contacts may get deformed due to the movement.
Keep space for wire management and it is recommended to maintain 10mm length of the wire to be straight without subjecting to any form of bends due to wire bunched with tie, wire twisting, bending or deforming.

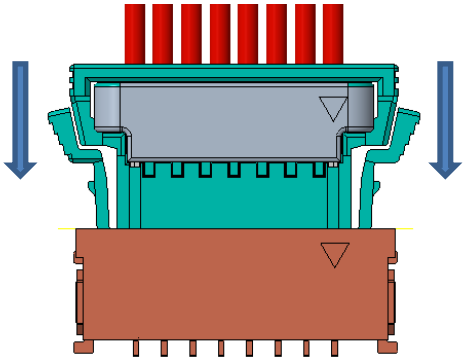


6. MATING METHOD

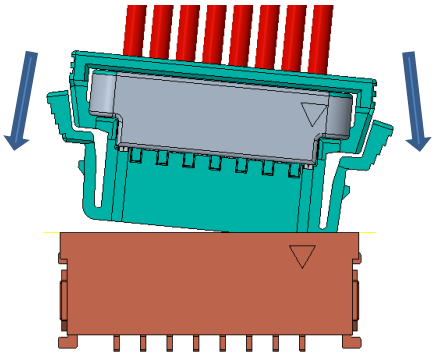
6.1. Mating and Un-mating Recommendations:

6.1.1. Mating Condition: Align with the guide or polarization feature to ensure that only axial mating occurs, angular mating is not permitted.

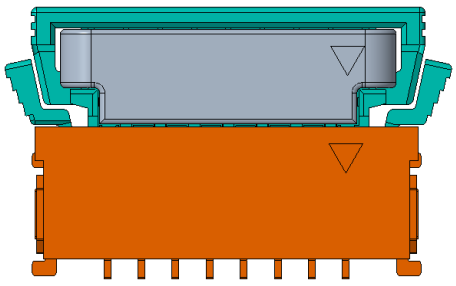




Only axial mating is allowed

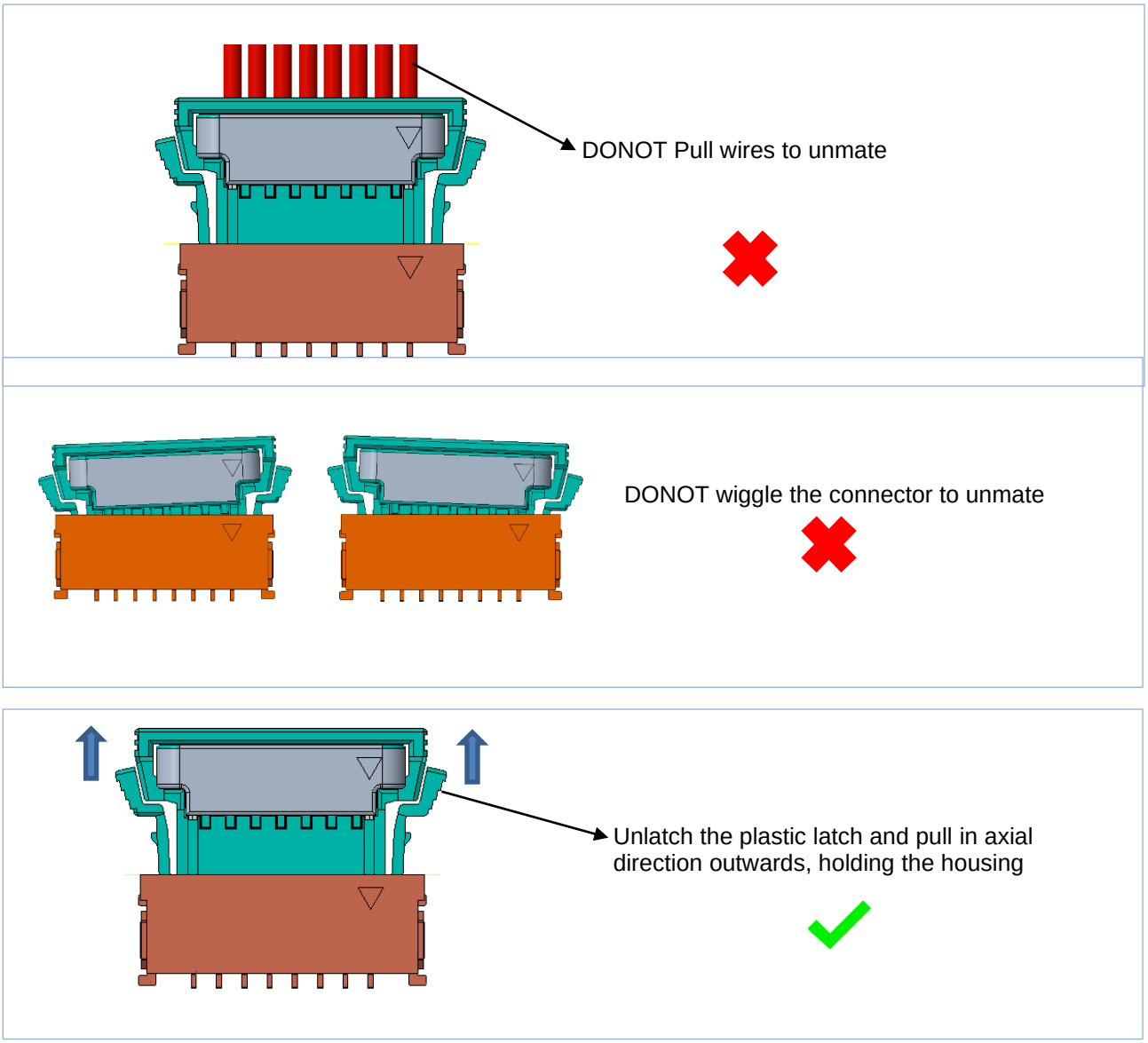


No Angular mating allowed



Full Locked condition

6.1.2. Un-mating Condition:



7. REVISION RECORD

Revision No.	Released Date	Updates	Revised by
A1	26-11-2019	Processing Specification Edition by ERNI	Ken Seng
A2	21-11-2023	1.Updated as per TE Format 2.Crimp Height/Width Updated 3.Mating and Un-Mating Recommendations added	Anusha G
A3	06-02-2024	1.Crimp Hand Tool Details Updated 2.Insulation Crimp Height/Width Updated	Anusha G