APPLICATION SPECIFICATION

MOLEX MINI 50 0.50mm CONNECTOR SYSTEM

APPLICATION SPECIFICATION

REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
K	EC No: G2017-0044 DATE: 16/02/2017	Molex MINI 50 0.50mm Connector System Application Specification	1 of 30

DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
AS-34791-020	P. BOSQUAIN	F. PETITPIERRE	O. PLESSIS

REVISION	MODIFICATION	SHEET	DATE
D	Added 12ckt information		07/24/2013
E	Added 12 circuit option information Added CPA option information Added note concerning hinge cracking/breaking		02/05/2014
F	Added service instructions for 4 & 8 circuit connector and SMT header		05/22/2014
G	Adding 16, 20 and 24 ways		09/30/2015
H	Added Best Practices and Troubleshooting section		03/30/2016
I - J	Revision not identify by ECTR release process		
K	Added Electrical probes location	24 - 25	16/02/2017

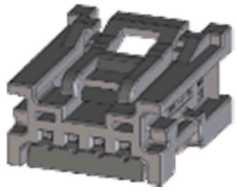
TABLE OF CONTENTS:

1.0 SCOPE This procedure applies to all part numbers in the single row series 34791, 34792, 34793, and dual row series 34824, 34825, 34826

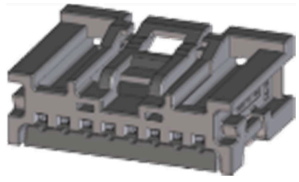
2.0 PRODUCT DESCRIPTION

- 0.50mm terminal system with 1x4, 1x8 and Dual Row 12, 16, 20 and 24 Way
- 4 polarization options for the 1x4 system and 3 polarization option for the 1x8, dual row 12, 16, 20 and 24 Way systems
- Wire range 0.08mm^2 -- 0.35mm^2 AS-34791-020
- Utilizes the Molex CTX terminal series 560023

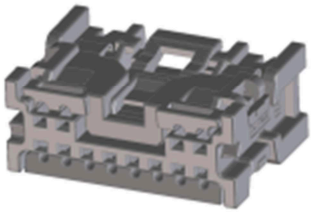
Receptacles



4 ckt

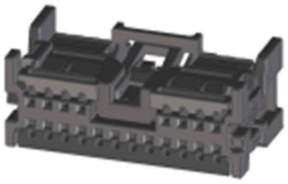


8 ckt

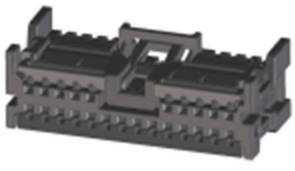


12 ckt

16 ckt

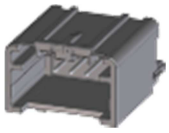


20 ckt

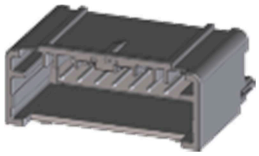


24 ckt

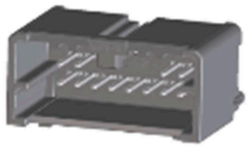
Headers



4 ckt

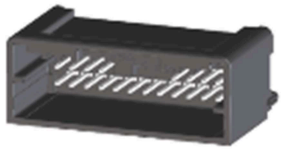


8 ckt



12 ckt

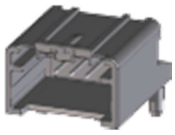
16 ckt



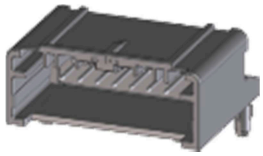
20 ckt

24 ckt

Vertical



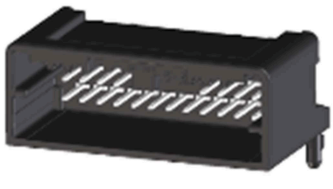
4 ckt



8 ckt

12 ckt

16 ckt



20 ckt

24 ckt

Right Angle

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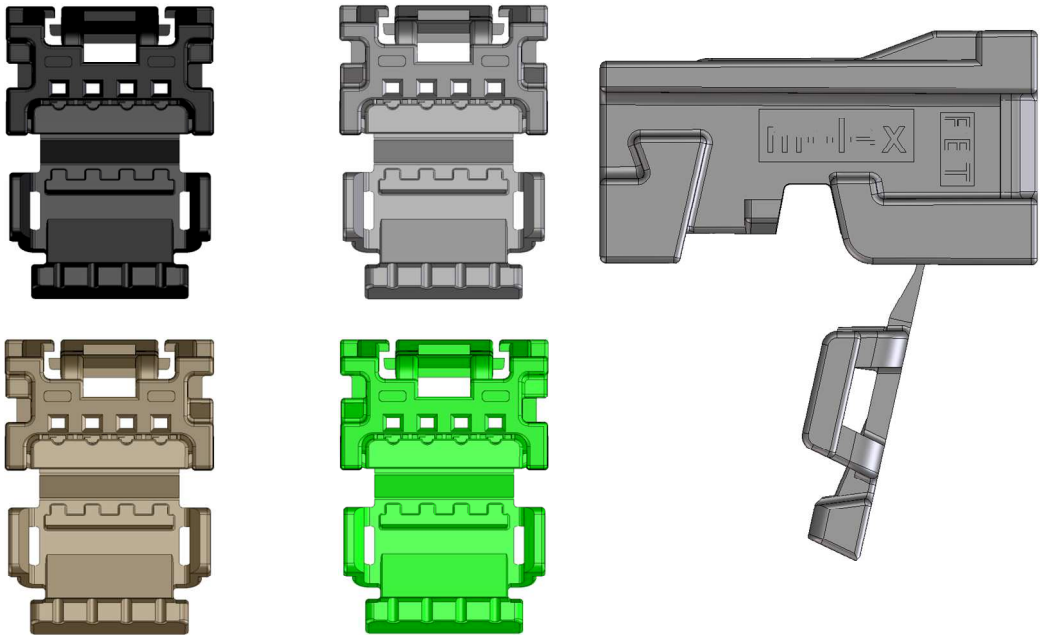
3.0 REFERENCE DOCUMENTS

Single Row Series	SD-34791-001 SD-34792-001 SD-34793-001	Packaging – Receptacle Packaging – Header	PK-31301-538 PK-31301-440
Dual Row Series	SD-34824-002 SD-34825-001 SD-34826-001	Connector Product Specification	PS-34791-020
Single/Dual Row CPA Option		SD-34824-003	
CTX50 Terminal Terminal Product Specification		SD-560023-002 PS-560023-001	

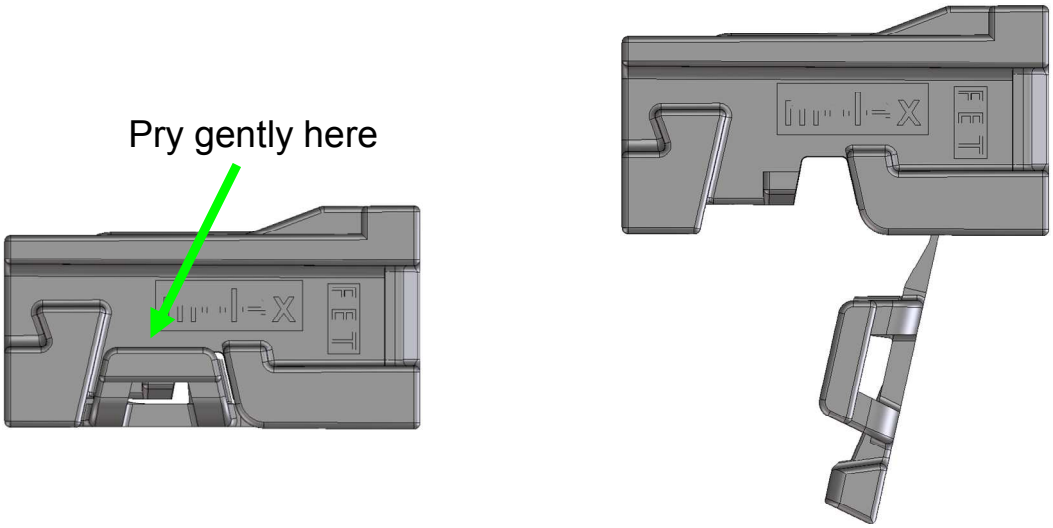
4.0 PROCEDURE

A. Connector "As Shipped"
Connector ISL shown in "as shipped" condition (open). The ISL must remain in the open position until all circuits are loaded.

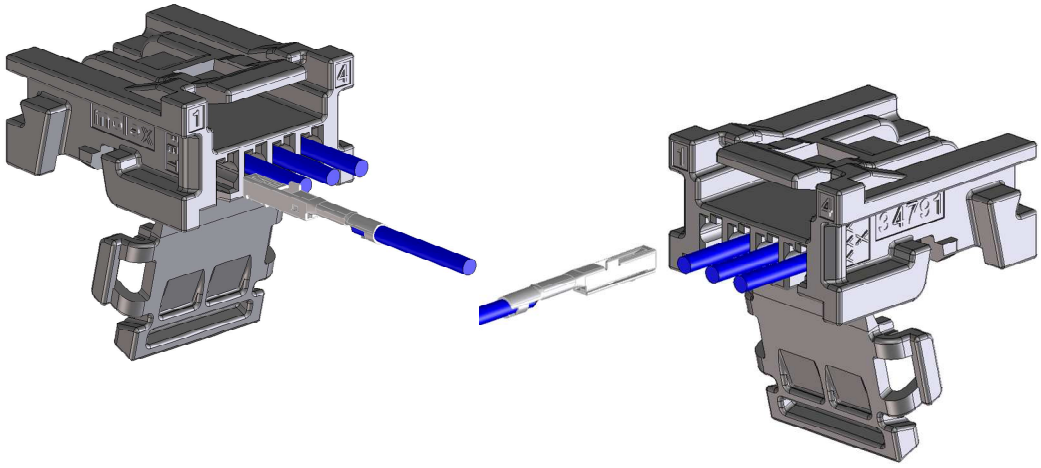


B. ISL "lift to open"
ISL must be in pre-lock position to populate the connector. If during shipping the Connector ISL moves from it's pre-lock position. Simply slide a small screwdriver (width 2-2.5mm) behind the latch on each side of the connector and pry to open the ISL

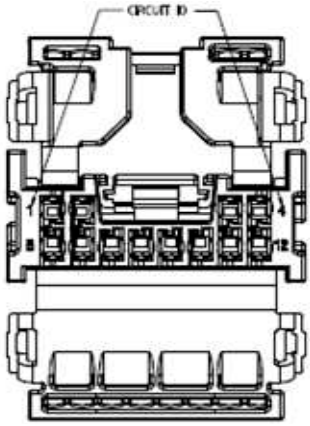
If the ISL or housing is damaged in any way do not use the connector!!!



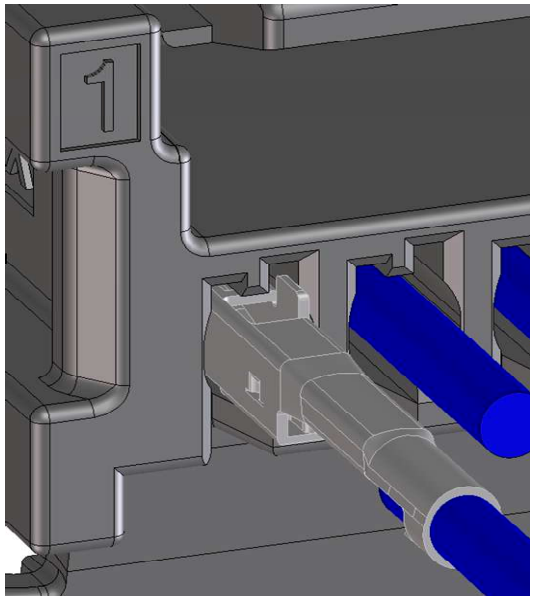
C. Terminal Installation:
With ISL still in pre-lock position, orient the terminal to the rear the of connector as shown below. Grip the wire behind the terminal insulation crimp and insert it through the appropriate circuit opening. If resistance is encountered, retract the terminal and adjust the angle of insertion. Continue inserting the terminal until it stops and locks up on the lock finger with an audible click or tactile feedback..



ISL must be in open position to populate connector



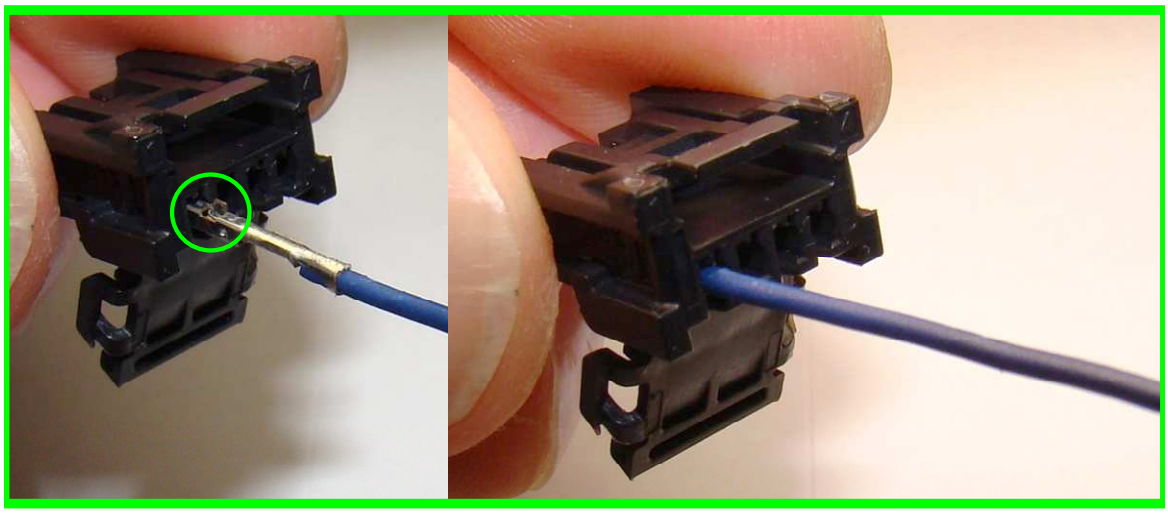
12ckt receptacle shown above
16, 20 and 24ckt receptacle has similar circuit location



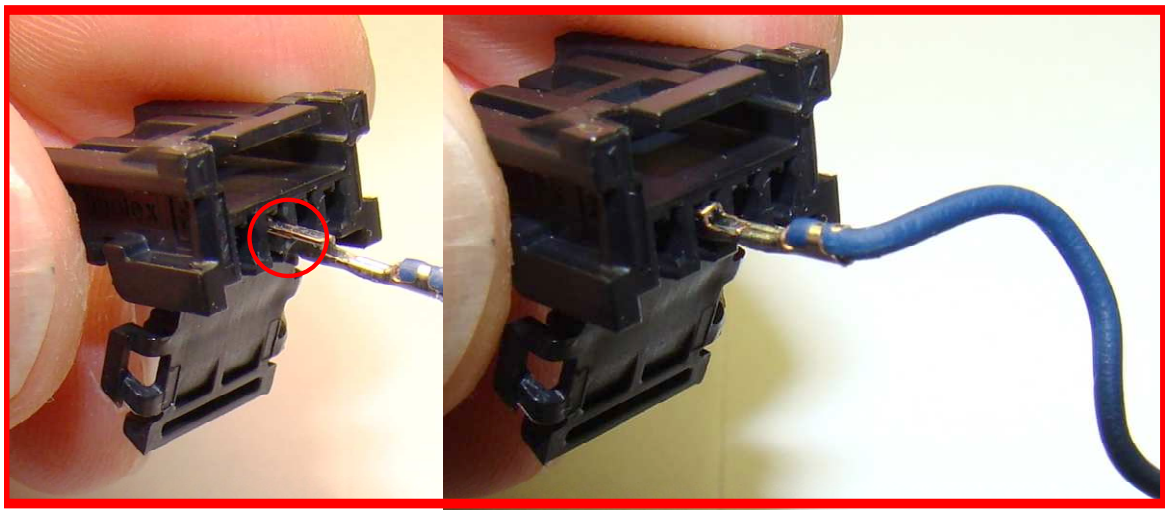
C. Terminal Installation: continued

Installing a terminal correctly will have low effort.

Improperly installing a terminal 180° will lead to a high effort and wire buckle.



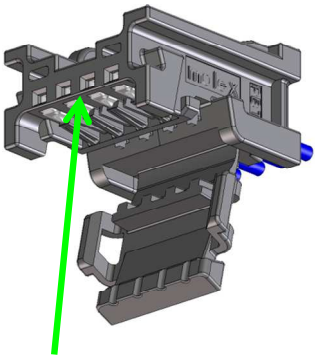
Terminal properly installed



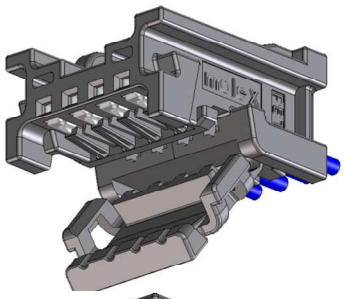
Terminal improperly inserted 180°
NOTE WIRE BUCKLE

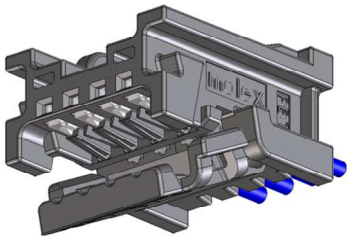
D. Closing the ISL

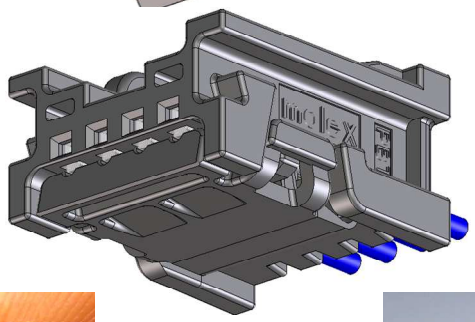
Prior to closing the ISL a visual check is recommended to confirm all terminals are fully seated and in the correct position. Once all terminals are installed close the ISL to ensure the terminals stay in position. Close the ISL by applying force to the hinged portion of the connector.



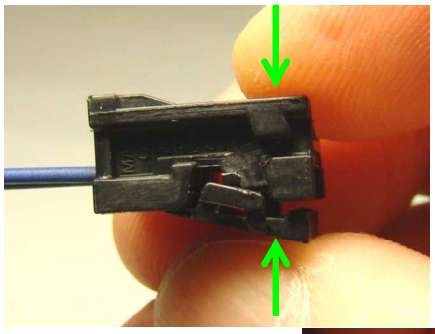
Visual check for fully seated terminals

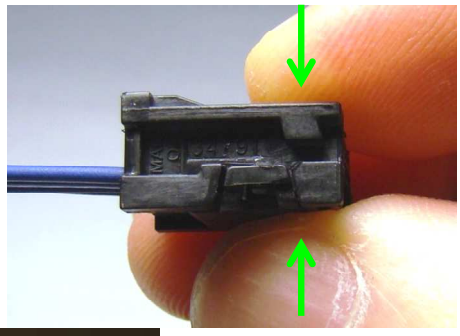


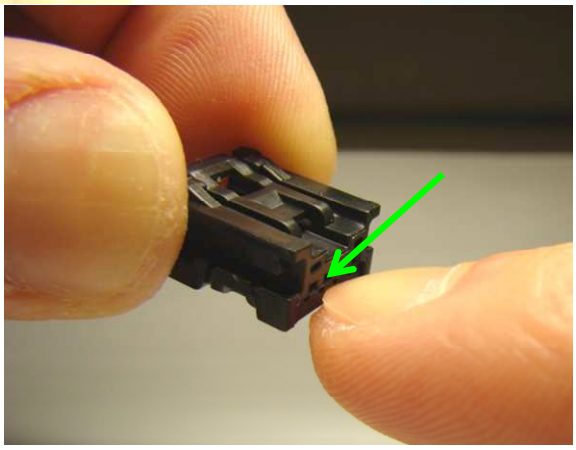




ISL in closed position

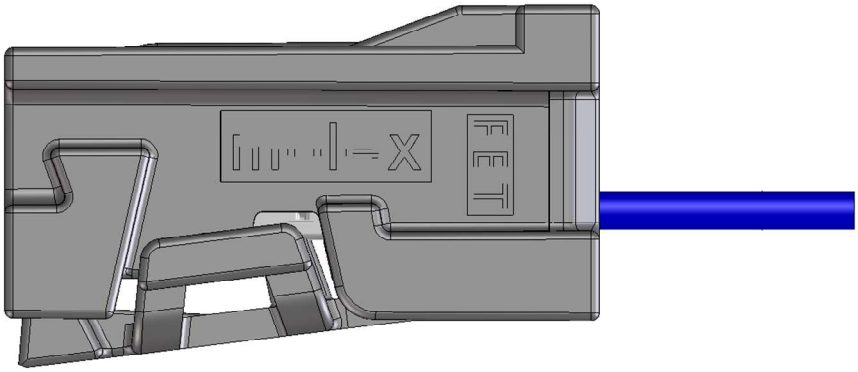






To verify the ISL is fully latched gently pull down here after closing

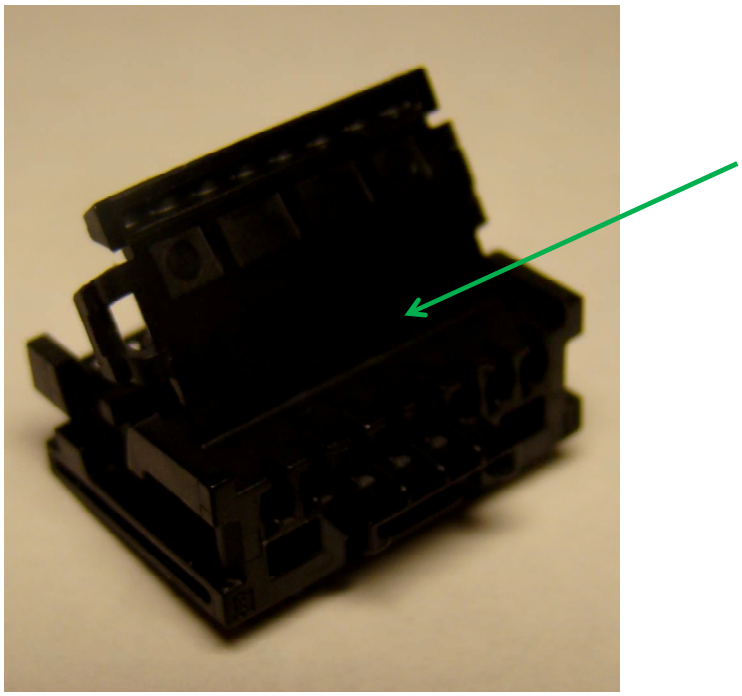
E. Detecting a partially installed terminal
The ISL will not close with a partially installed terminal. If the ISL will not close, confirm that all of the terminals are fully installed. Leaving the connector in this state will not allow the operator to mate the connector to the header.



Do not force the ISL closed ! damage to the terminal and connector ISL will occur

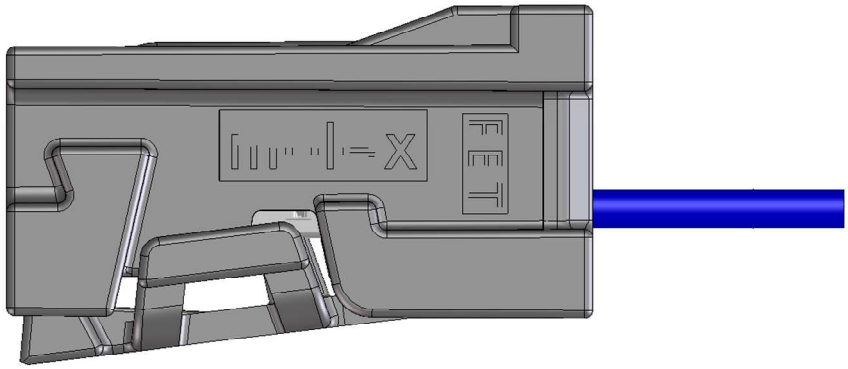
NOTE REGARDING THE ISL:

WHILE CYCLING THE HINGE THE USER MAY NOTICE STRESS LINES OR DELAMINATION. THESE DO NOT AFFECT THE FUNCTION OF THE CONNECTOR IN ANY WAY. THE ISL FUNCTIONS 100% AT ANY STATE OF THE HINGE UP TO AND INCLUDING COMPLETE SEPERATION OF THE HINGE



E. Detecting a partially installed terminal

The ISL will not close with a partially installed terminal. If the ISL will not close, confirm that all of the terminals are fully installed. Leaving the connector in this state will not allow the operator to mate the connector to the header.

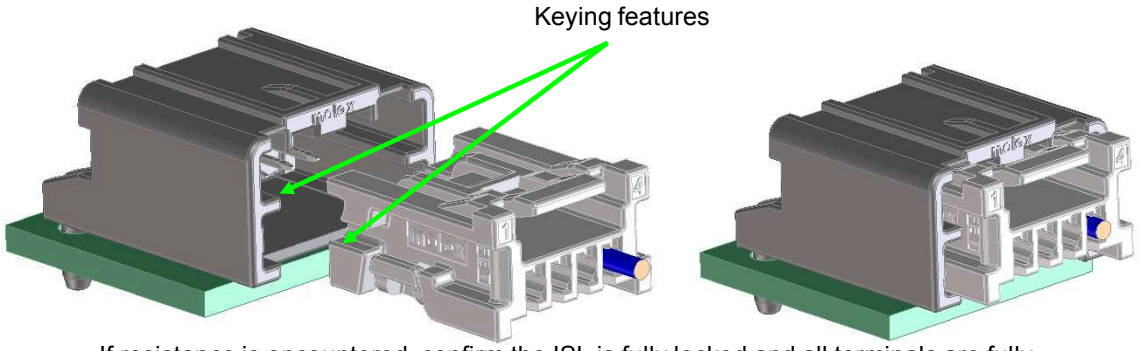


Do not force the ISL closed ! damage to the terminal and connector ISL will occur

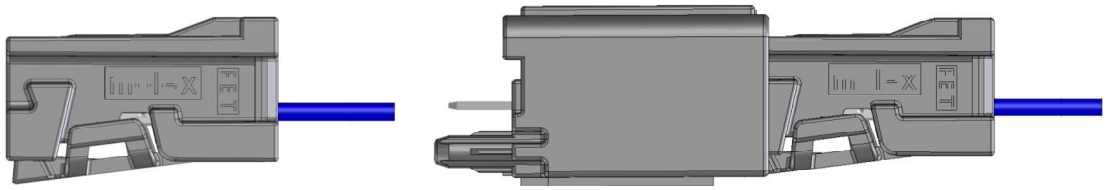
F. Connector Mating

To properly mate the connector, first note and align connector keying features, from receptacle connector to Mating header.

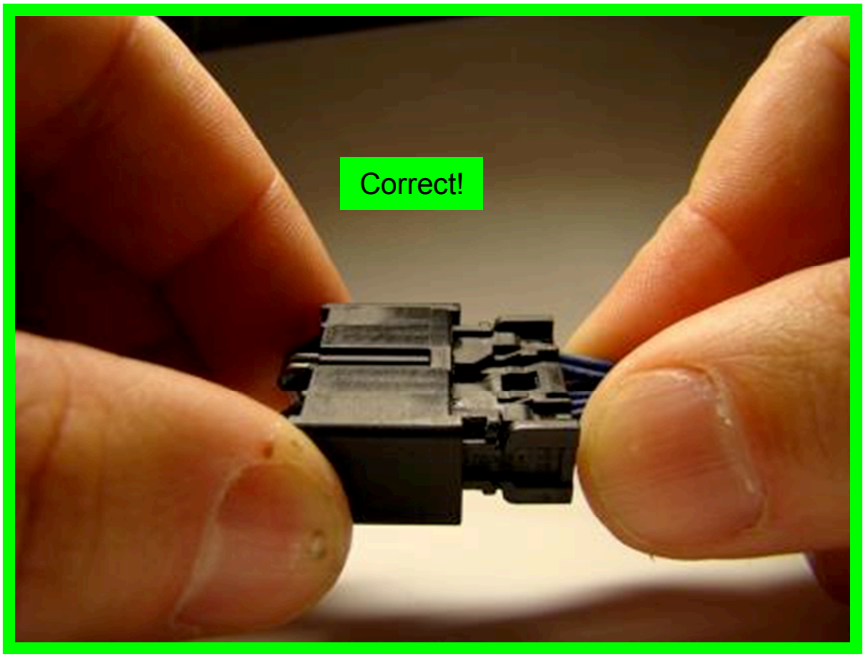
Begin sliding the receptacle connector assembly into the header assembly, and press firmly until you hear an audible click.



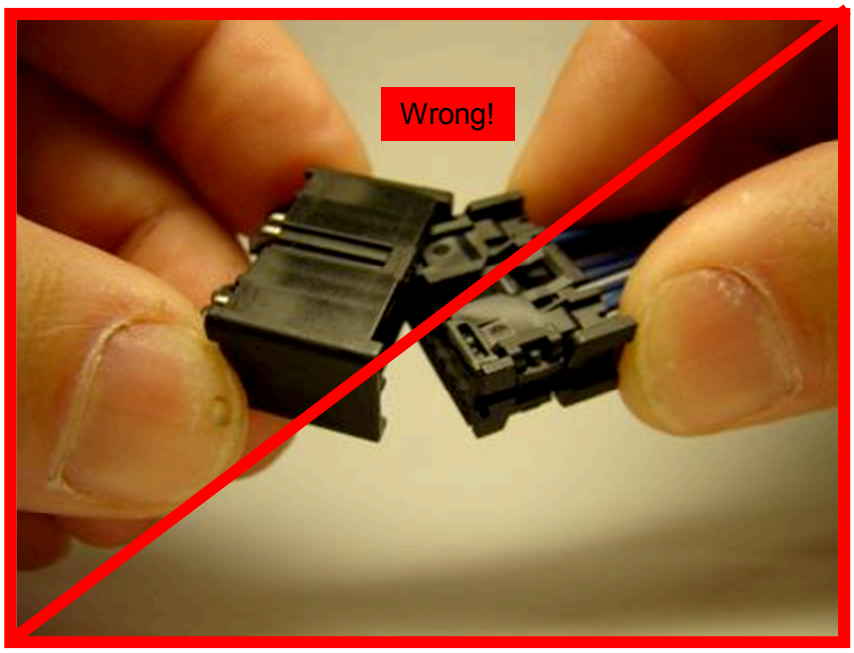
If resistance is encountered, confirm the ISL is fully locked and all terminals are fully installed. A partially installed terminal will not allow the ISL to close.

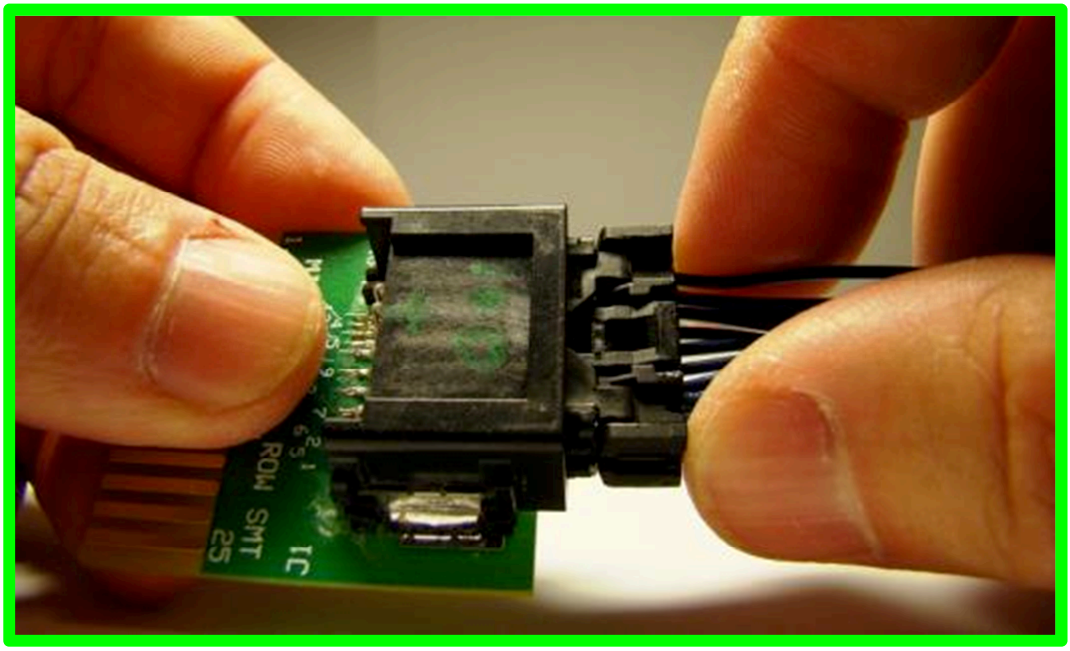


Do not force the connector! Damage to the terminal, header and connector ISL will occur!

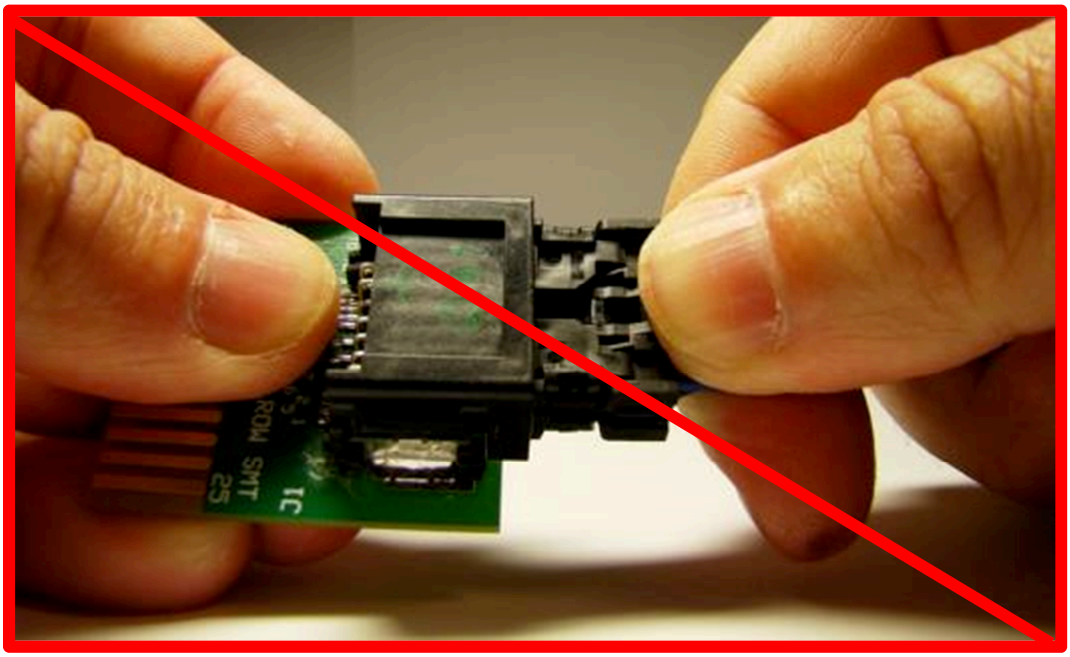


Never mate system at an angle, or with bias. This may cause damage to the header, or connector.





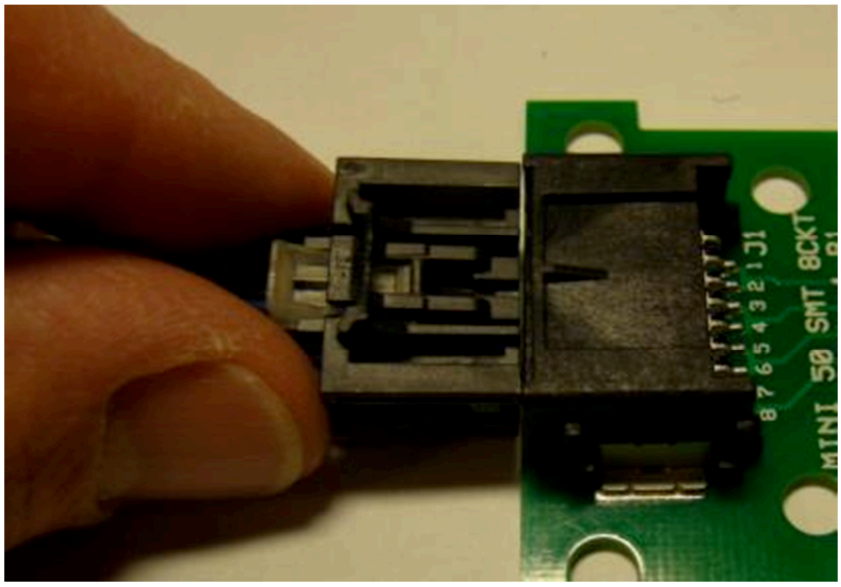
Always push on connector housing while mating. DO NOT push on latch while mating.



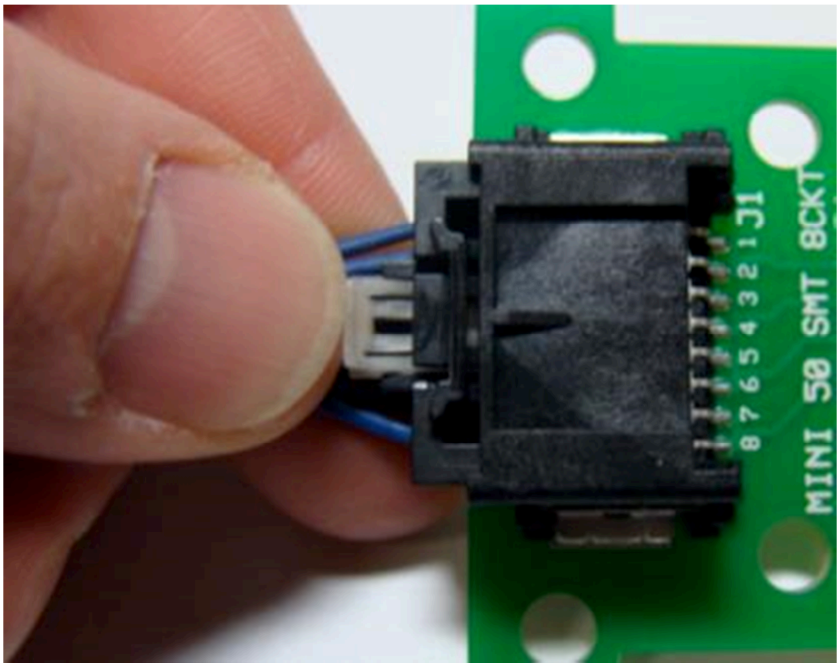
Mating the connector with a CPA

Align the connector and push evenly on the connector body to mate

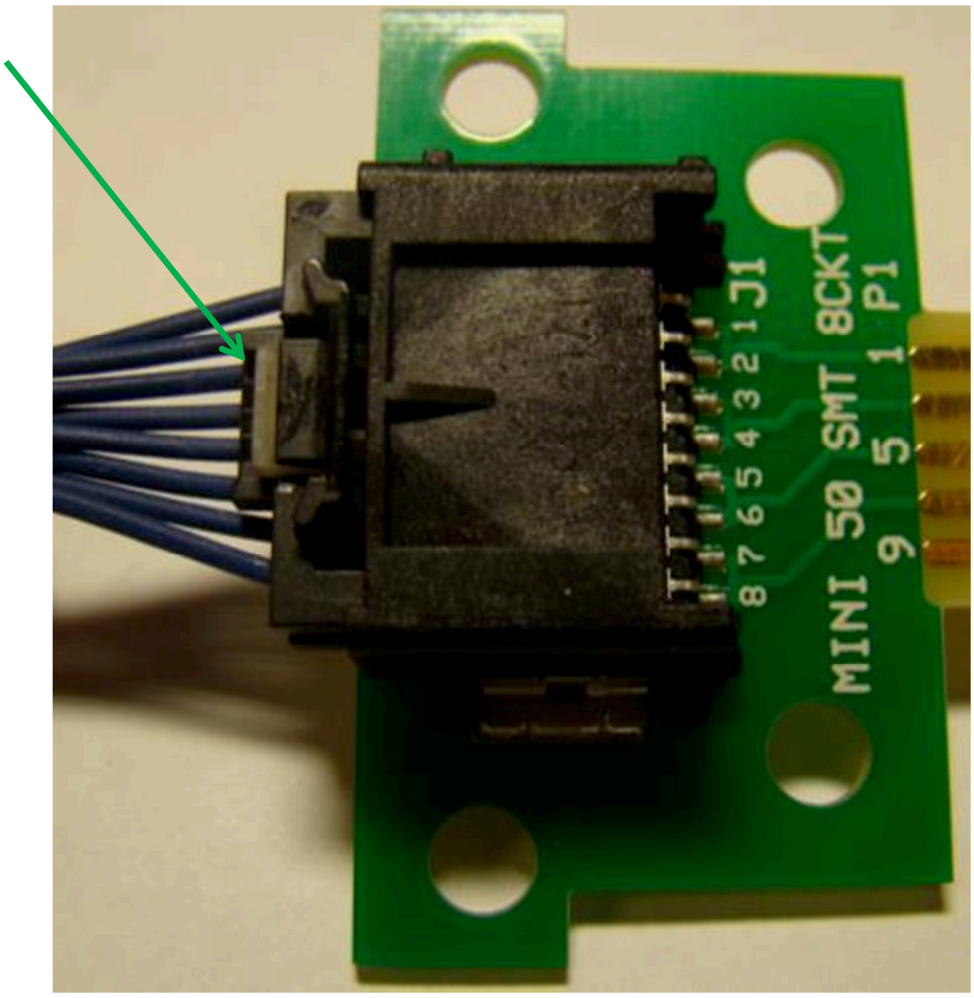
DO NOT PUSH ON THE CPA DURING THE MATING PROCESS



After mating the connector, push on the CPA to engage



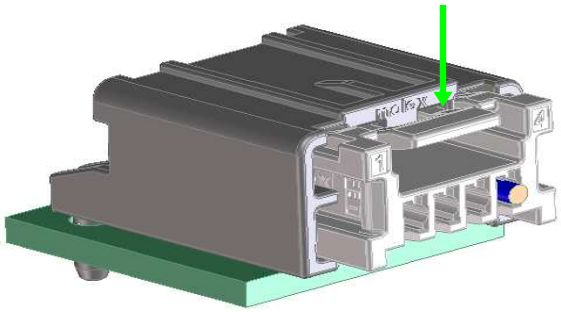
Connector with CPA in lock position



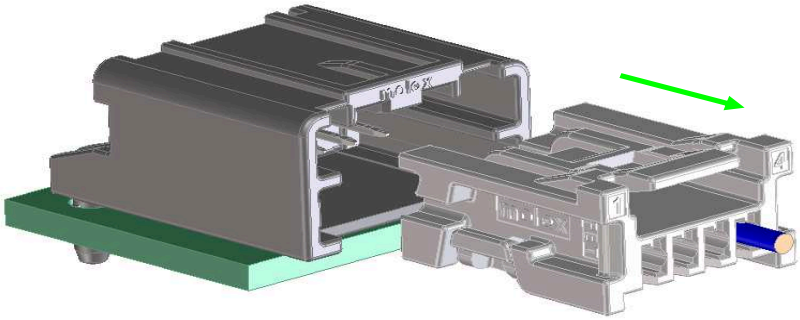
G. Un-mate procedure

To un-mate the connectors, push connector together to unload the latch system. Then depress the latch with your thumb (step1). Continue to depress the latch, and gently pull apart connector assemblies (step2).

Step 1

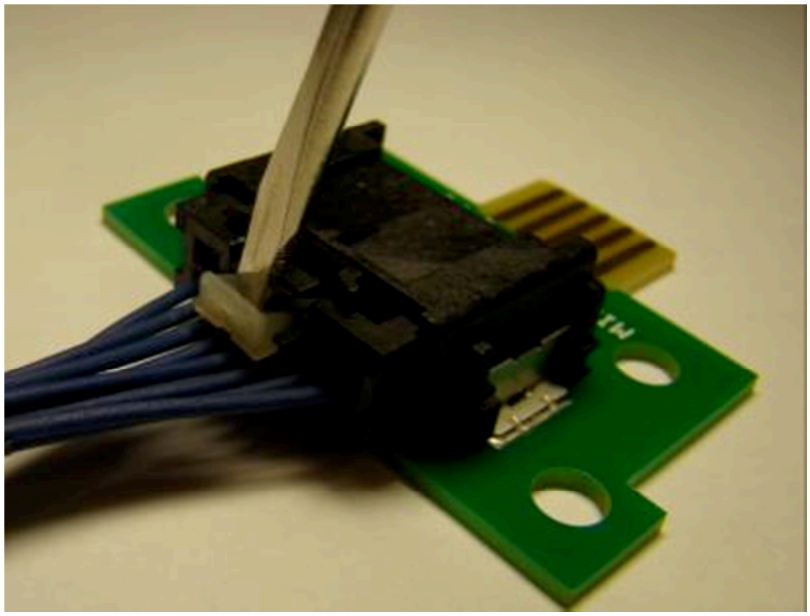


Step 2



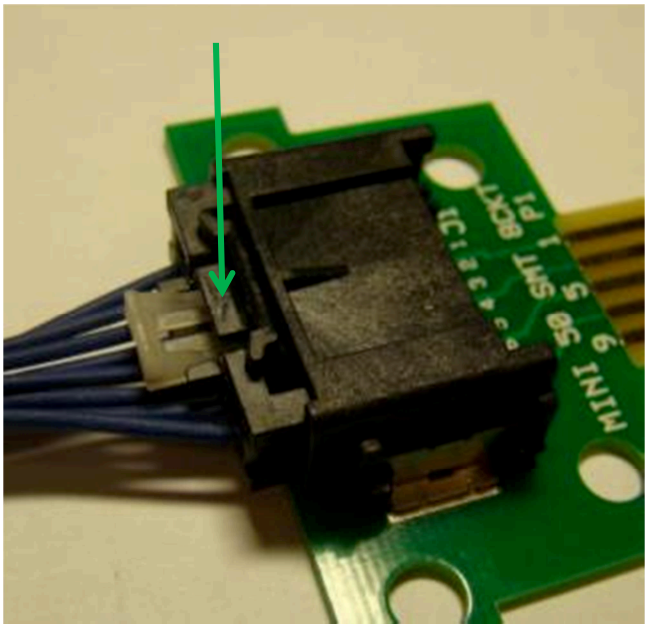
Un-mating a connector with a CPA

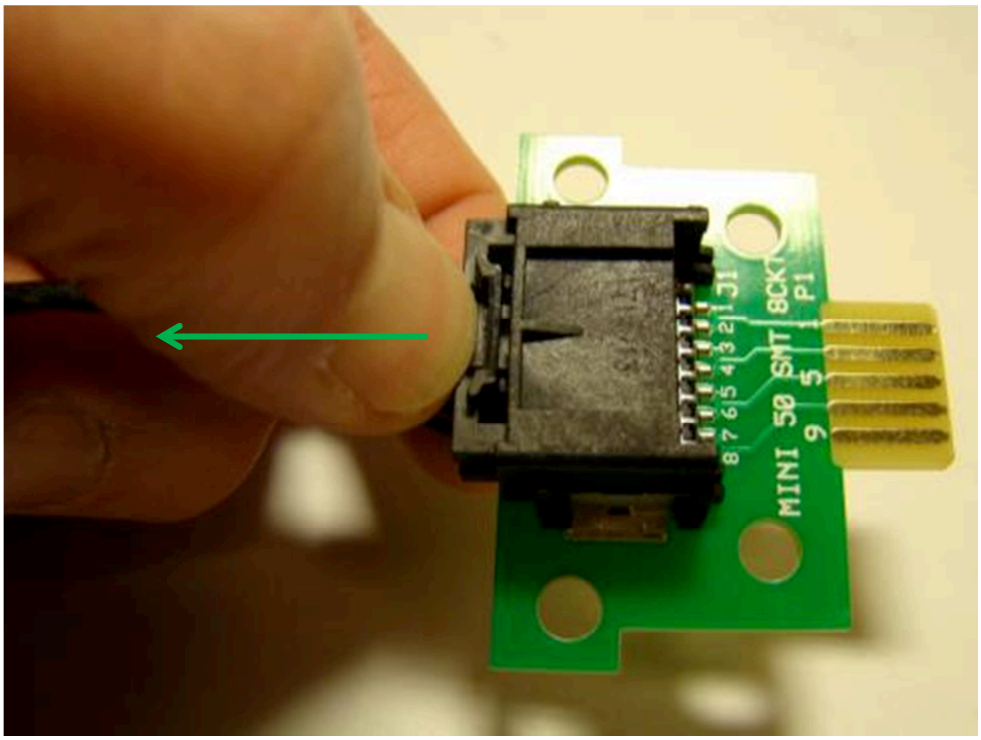
Using a small flat tip screwdriver (width 2-2.5mm), disengage the CPA

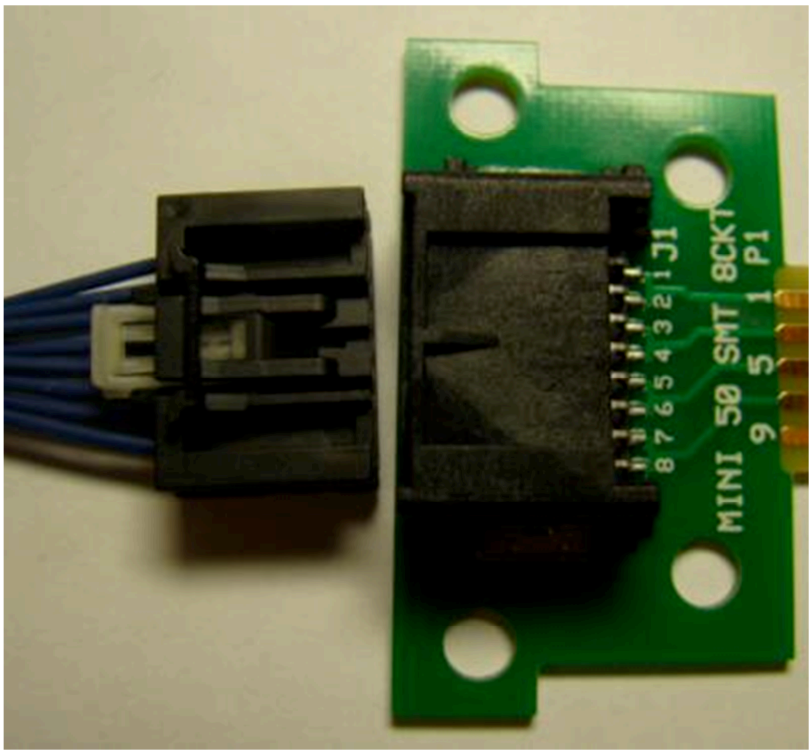


Push the connector together to unload the latch system. Depress the latch and hold.

Gently pull the connectors assemblies apart

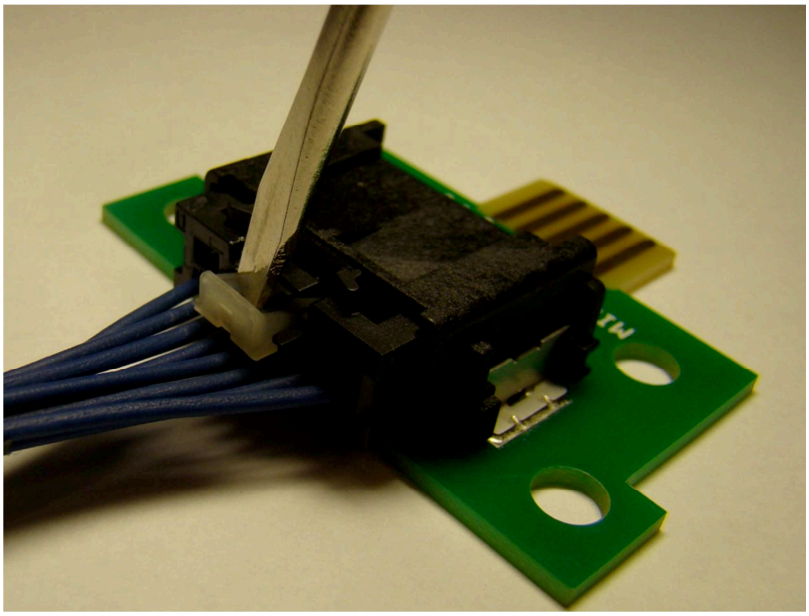



MINI 50 SMT 8CKT
9 5 1 P1
8 7 6 5 4 3 2 1 J1

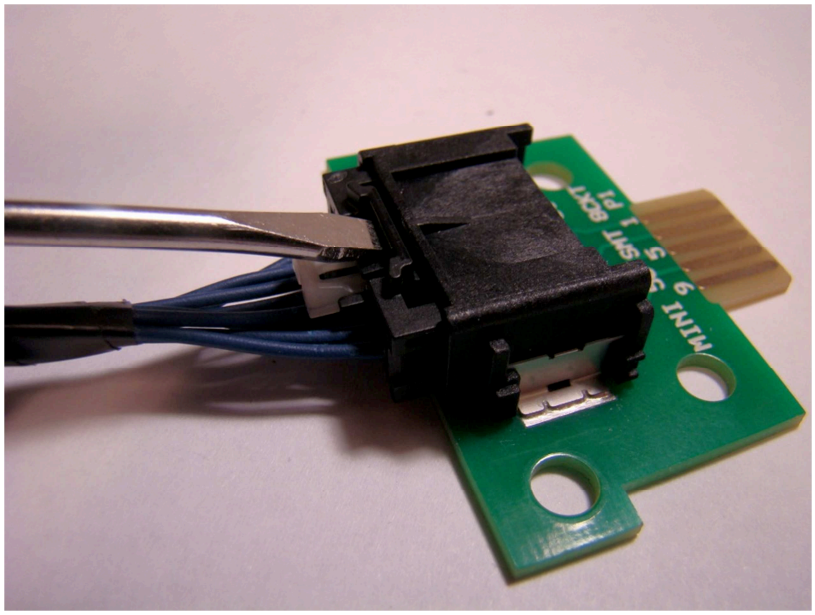

MINI 50 SMT 8CKT
9 5 1 P1
8 7 6 5 4 3 2 1 J1

If difficulty is encountered while attempting to un-mate the connector from an SMT header, the following procedure may be used

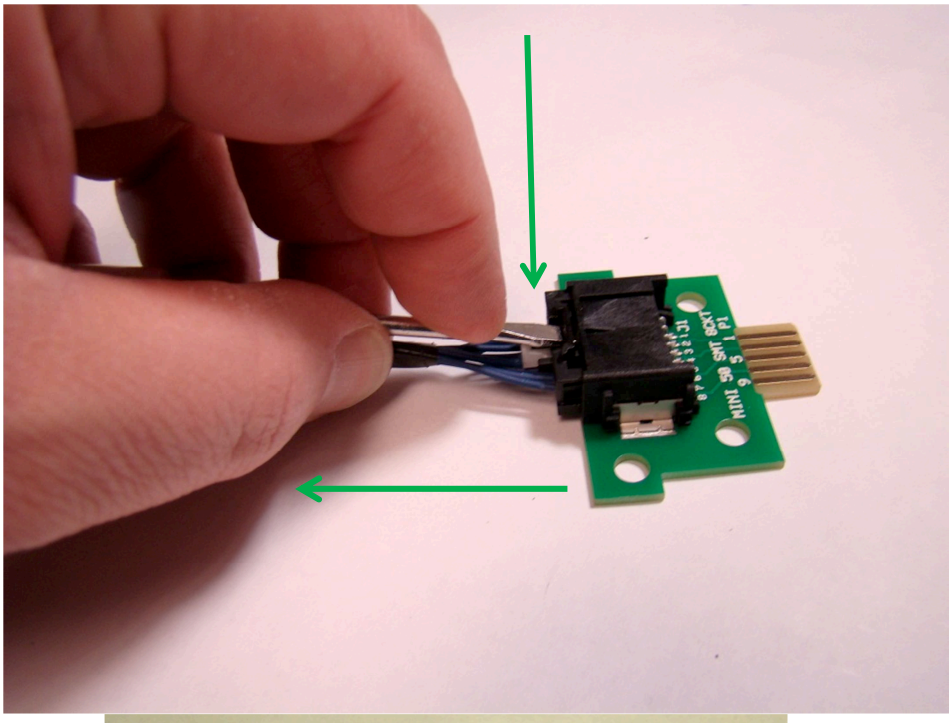
Using a small flat tip screwdriver (width 2-2.5mm), disengage the CPA

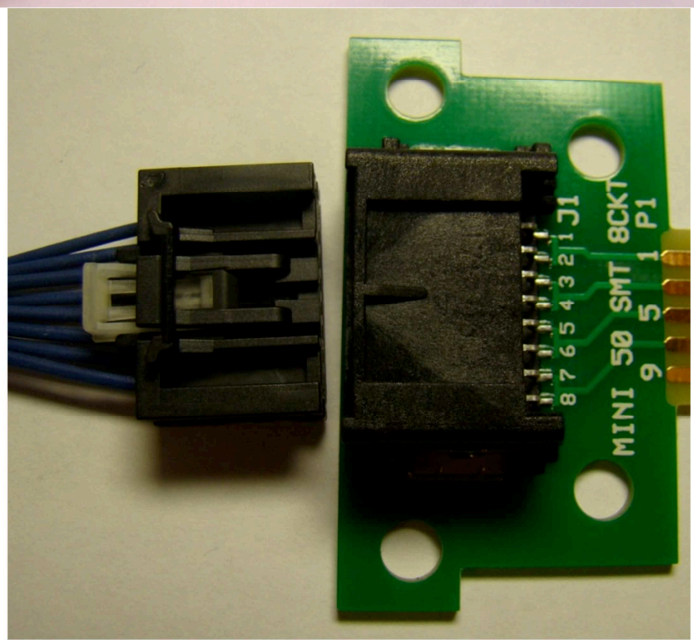


Push the connector together to unload the latch system. Insert a small flat tip screwdriver (width 2-2.5mm) between the latch and the latch cover.

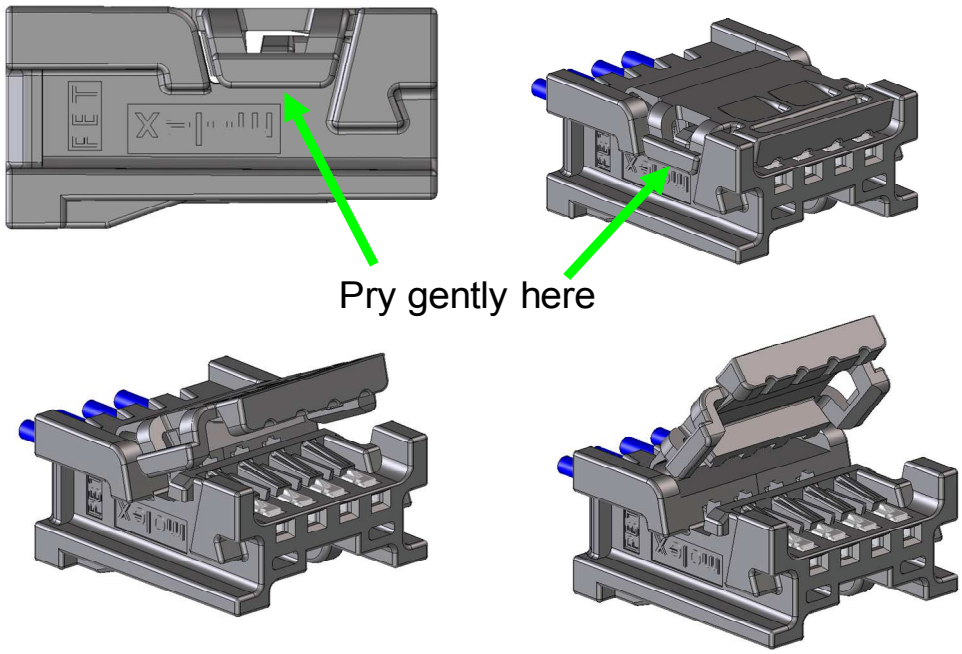


While pressing down on the latch with the screwdriver (width 2-2.5mm), gently pull on the wire bundle and the screwdriver (width 2-2.5mm) to remove the connector

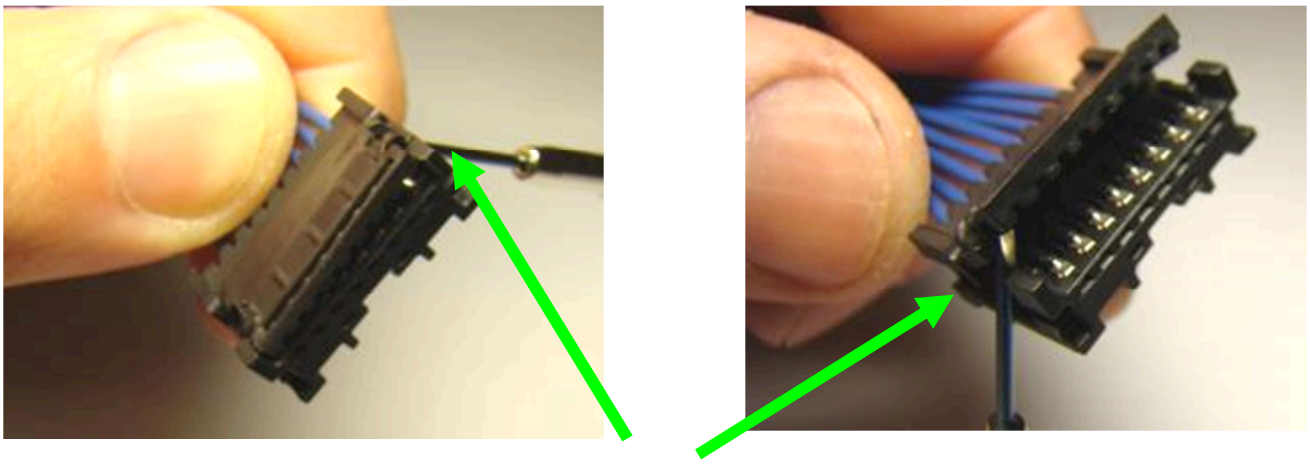




H. Opening the ISL
With a small screwdriver (width 2-2.5mm) gently pry on the ISL latch features one side at a time. Once each latch is released the ISL will open.



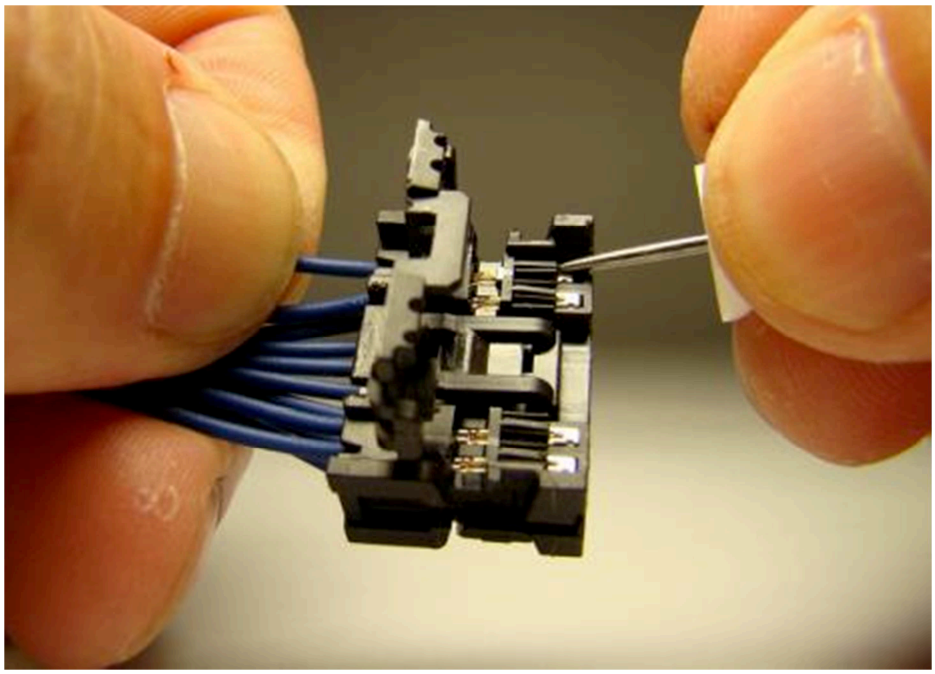
H. Opening the ISL

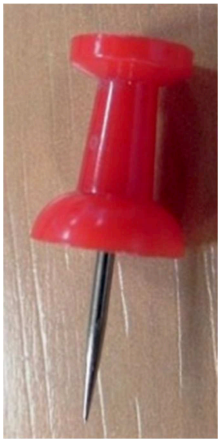


I. Terminal servicing

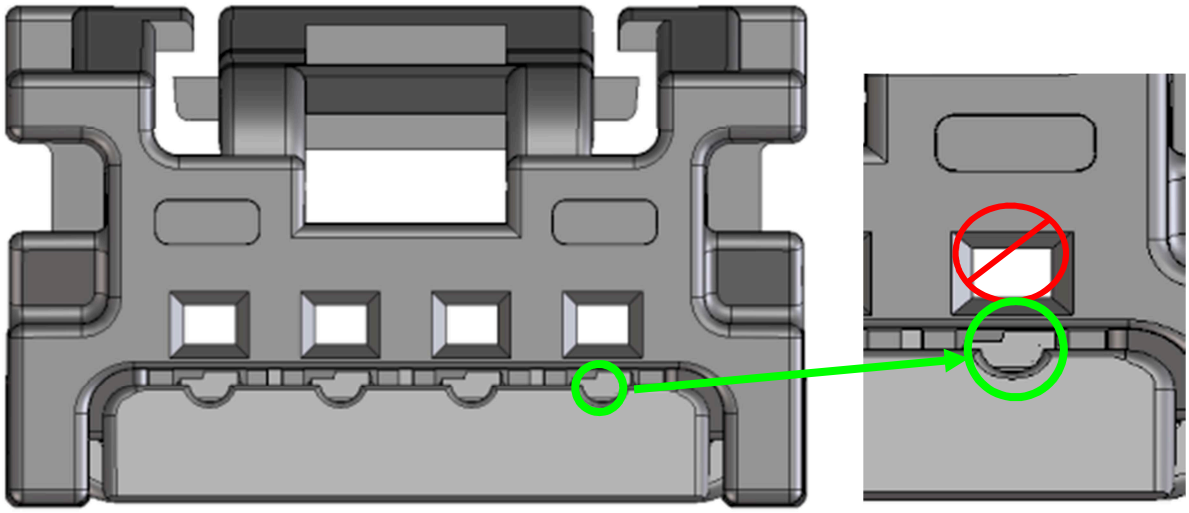
With a small thumbtack gently pry up on the terminal lock finger. Once the lock finger is released pull on the terminal to remove it from the housing. Connector housing may be damaged during servicing, Inspect the terminal, housing and lock finger for damage. Components must be replaced if damaged.

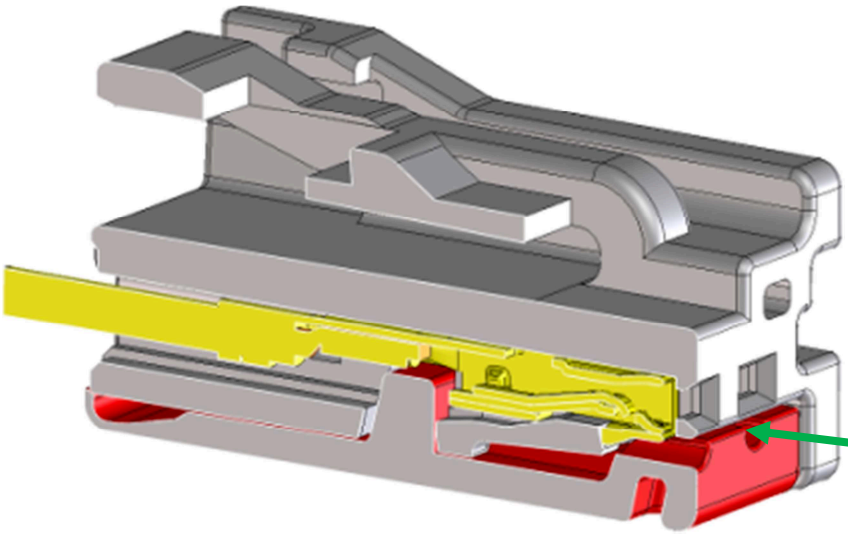
Connector housing can be serviced up to two times, then it must be replaced.





J. Electrical probing, continuity checking
The preferred method of probing; use the Probe opening for receptacle terminal to check for electrical continuity. Use a .66mm (Lone Star part number LS040-MR-719), pin or smaller equivalent to prevent damaging the terminal.



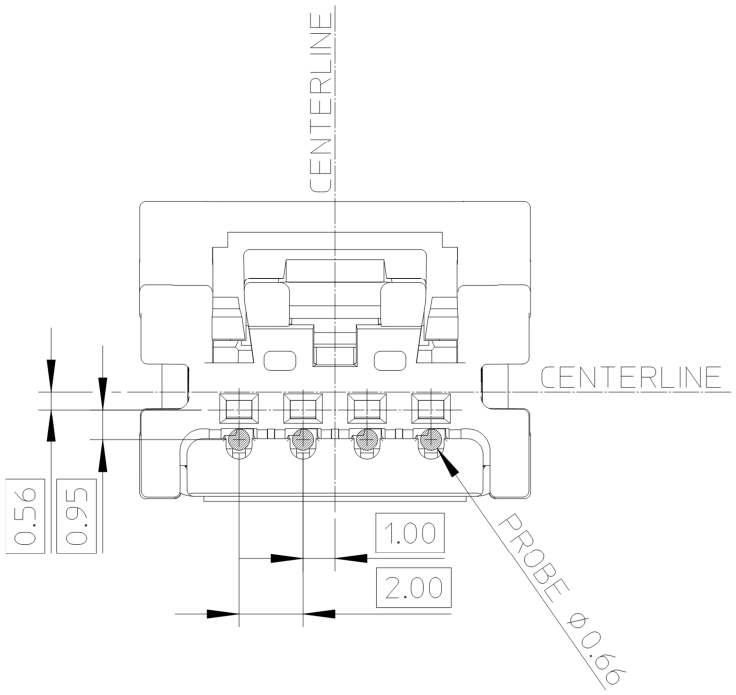


3.085mm max pogo pin
Insertion from front face

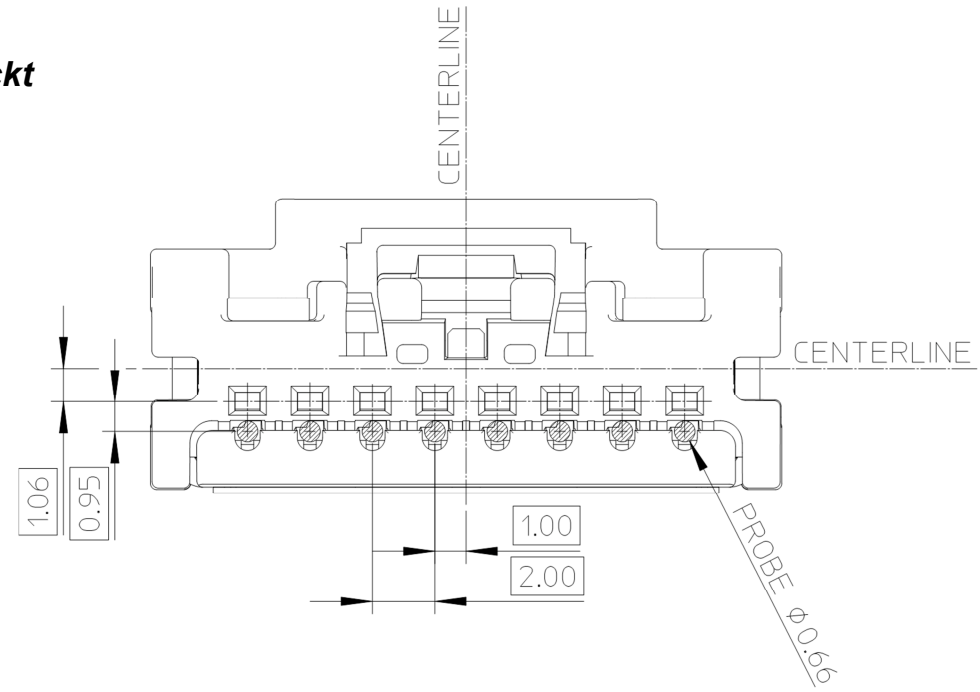
K. Electrical probes location.

Receptacles single row

4 ckt

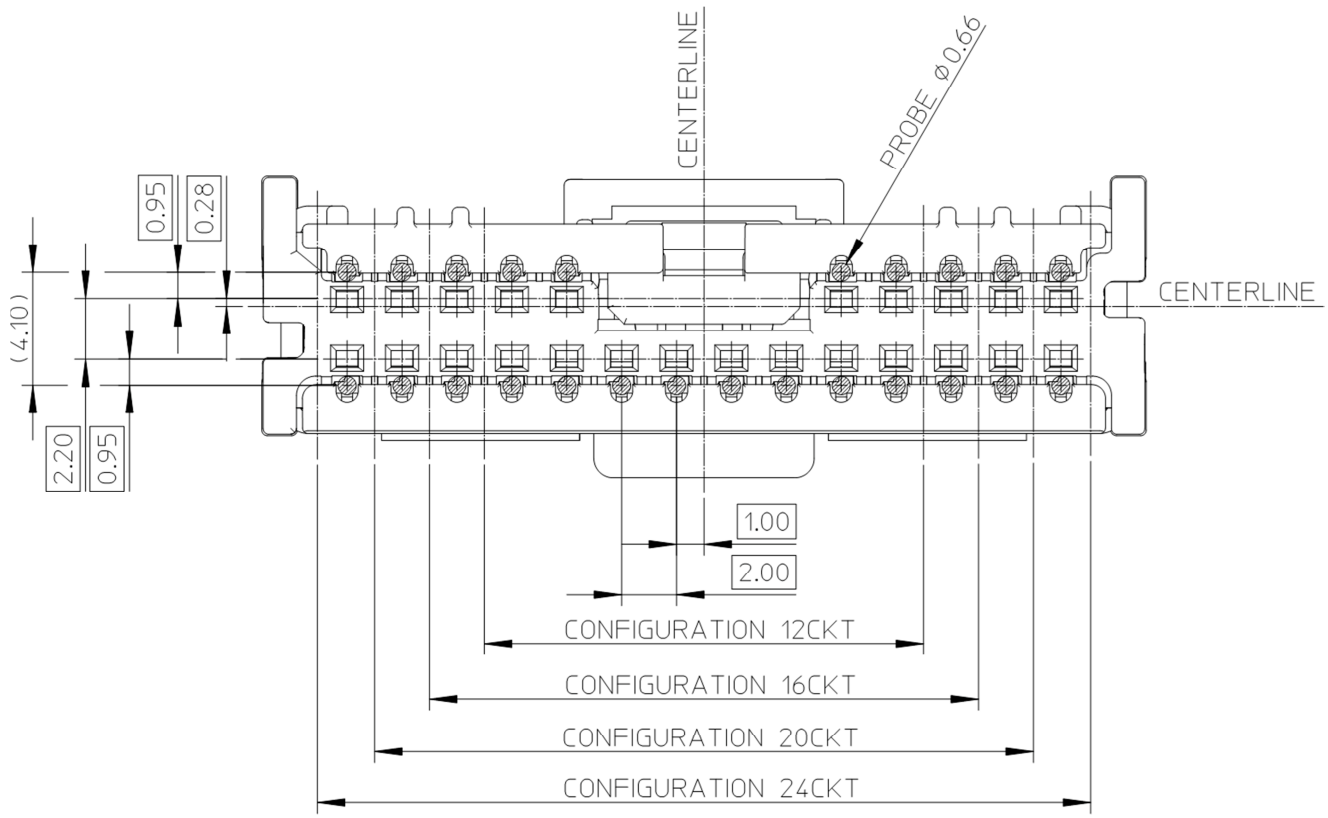


8 ckt



Receptacles double rows

12 ckt – 16 ckt – 20 ckt – 24 ckt

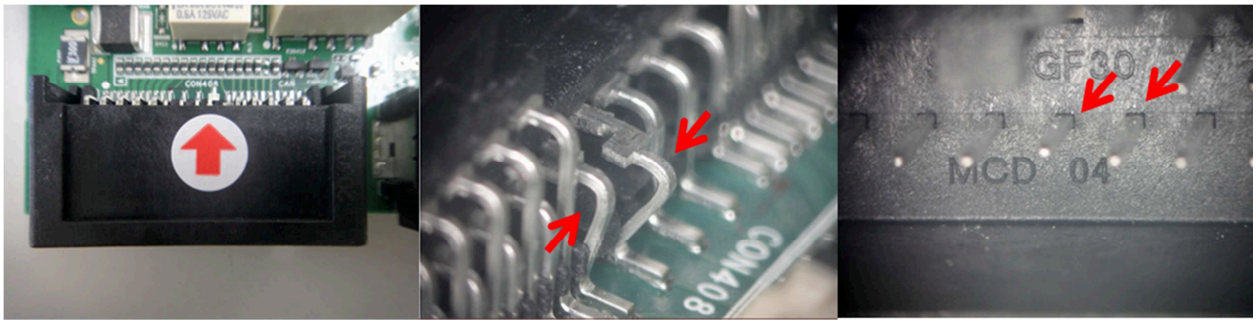


5.0 BEST PRACTICES / TROUBLESHOOTING

Steps can be taken during harness assembly that can ensure the successful product usage by the customer. Terminal crimping that is in accordance with the CTX50 terminal application specification, AS-560023-001, has been found to prevent assembly issues such as bent header pins, pushed-out header pins, ISL bowing, and terminal stubbing. Examples of good and bad terminals and issues attributed to bad terminals are shown in the following pages

A. Observed issues attributed to improperly crimped and/or bent female terminals:

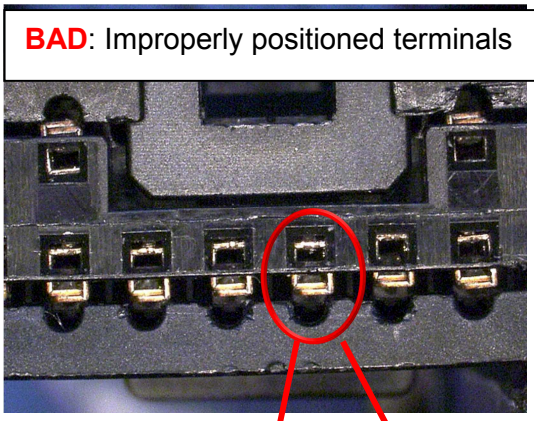
A1. Pushed-Out Header Pin:

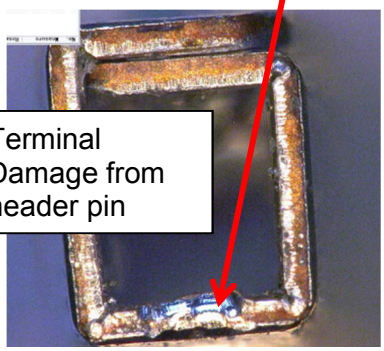


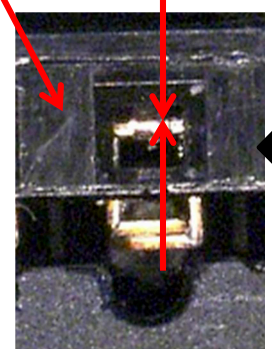
A2. ISL Bow (due to improperly crimped and/or bent terminals):

BAD Connector causing pushed-out pins, with improperly crimped and/or bent terminals:

GOOD connector with in-spec terminals:

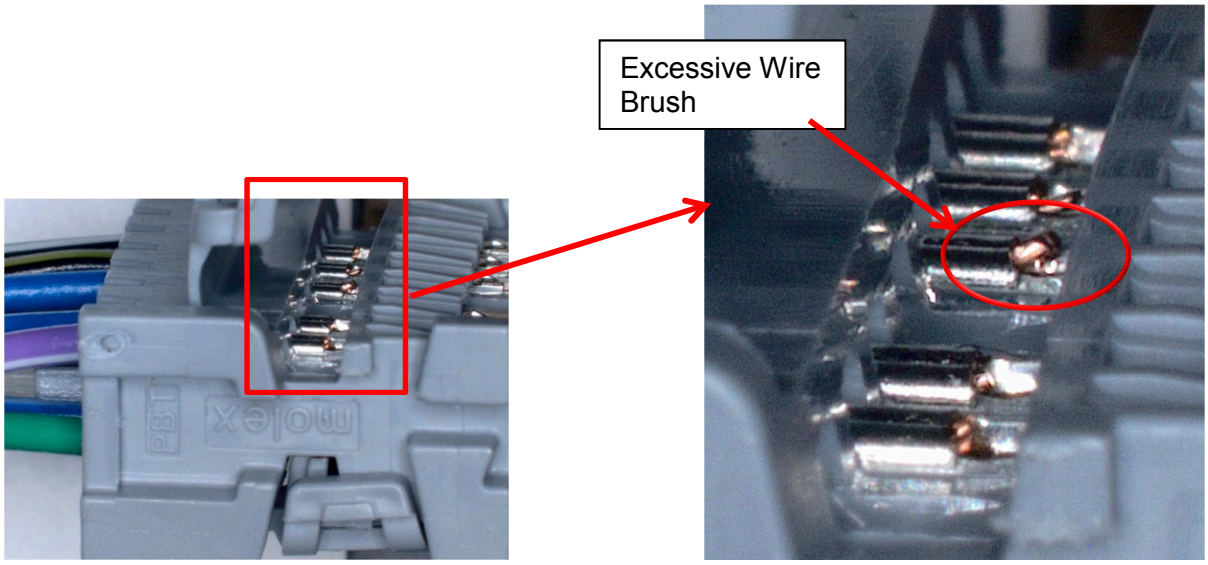




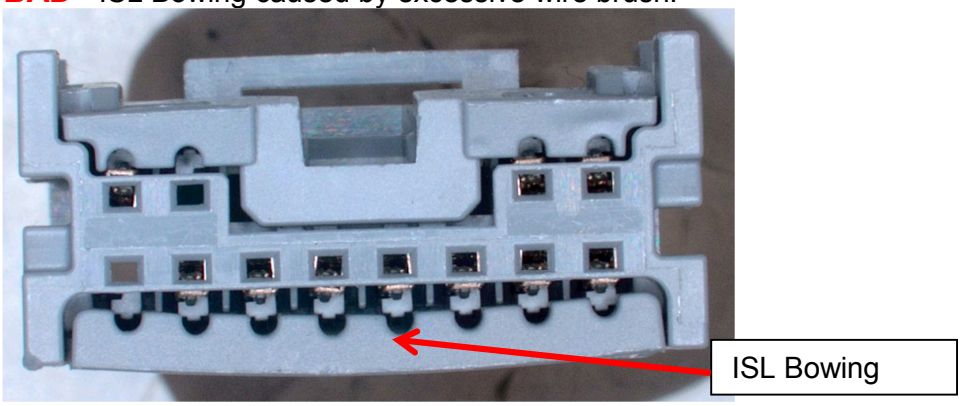


If the front edge of the terminal box can be seen through the connector cavity front window as shown in the picture below, terminal crimp dimensions shown on page 28 should be confirmed to meet AS-34791-020.

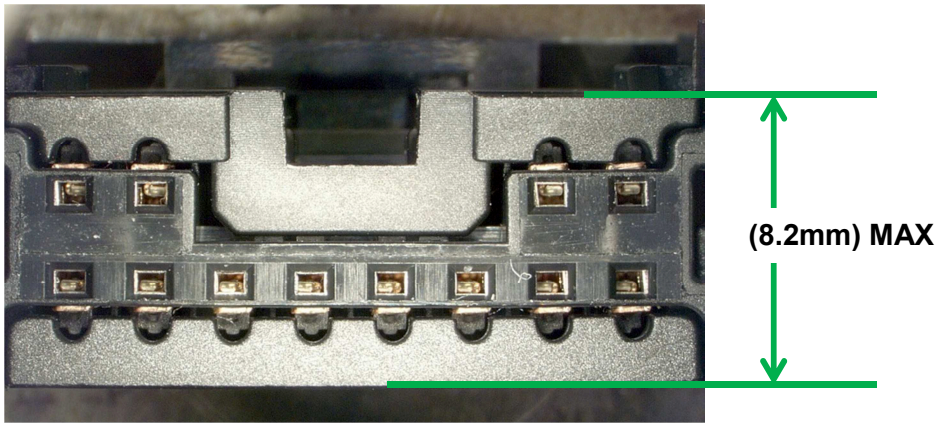
A3. Excessive Wire Brush:



BAD - ISL Bowing caused by excessive wire brush:



GOOD - Connector with in-spec terminals:



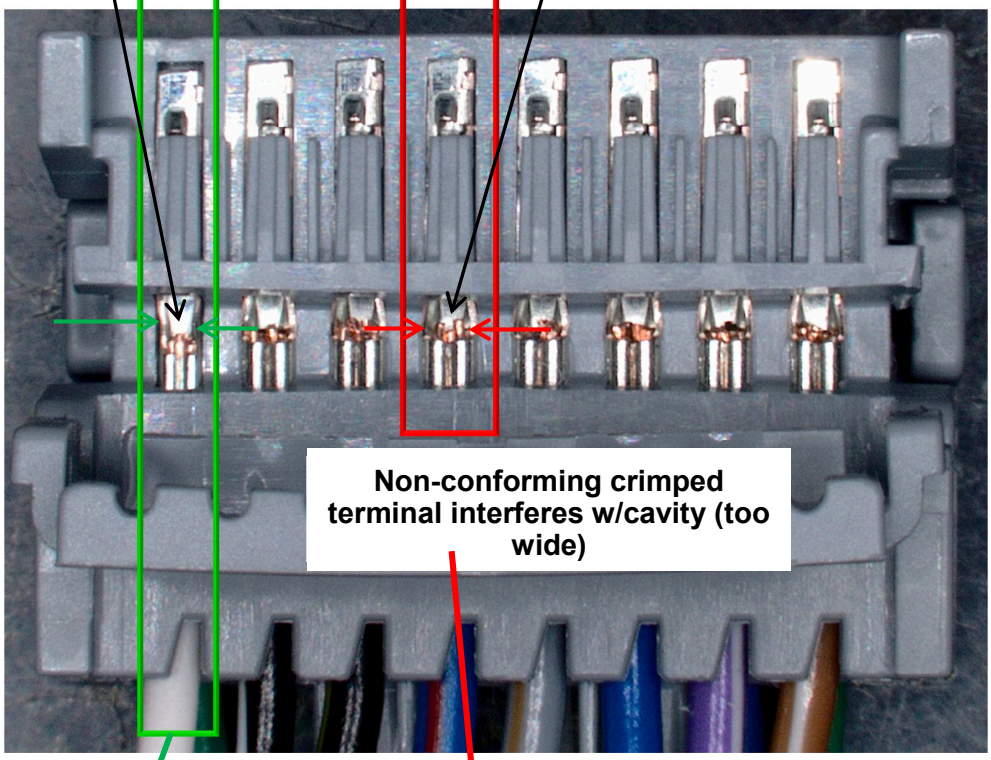
Finished harness assembly should not exceed 8.2mm Max

Excessive Wire Brush can lead to ISL Bowing by interfering with ISL when ISL is closed. ISL bowing can cause bent or pushed-out header pins.

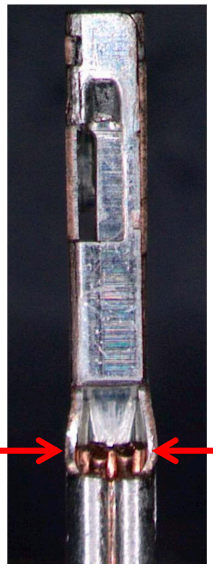
A4. Excessive Crimp Bulge:

GOOD- Molex crimped terminal – clearance w/cavity

BAD – Non-conforming crimped terminals



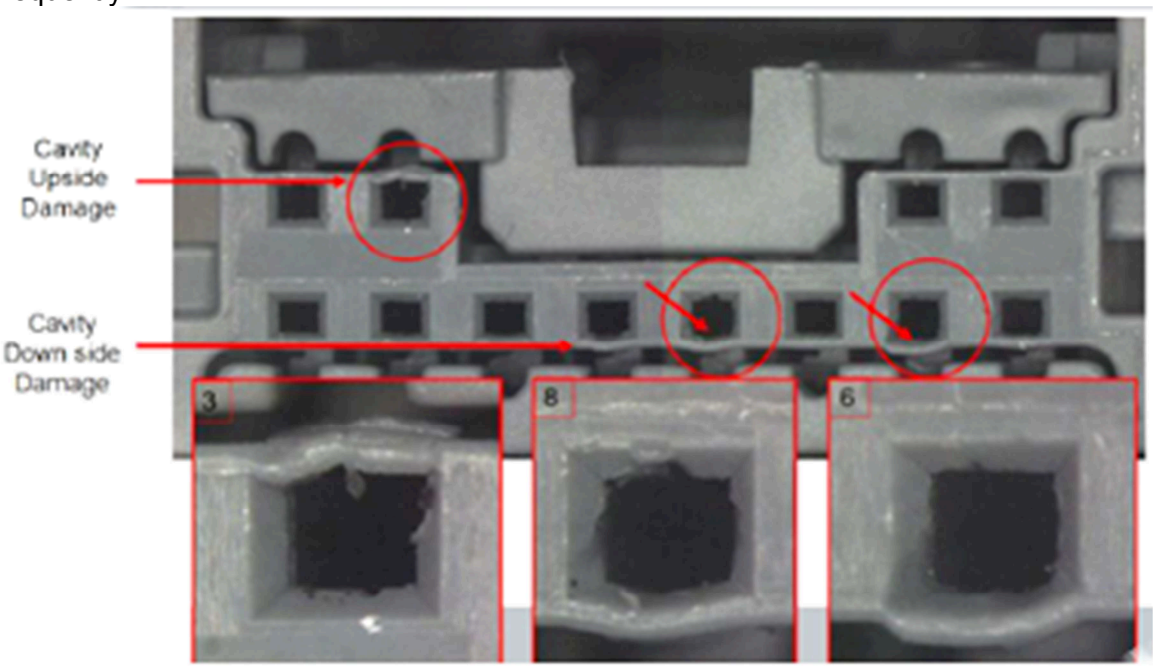
GOOD – In-spec Crimp Bulge



BAD – Excessive Crimp Bulge

Excessive crimp bulge can lead to mis-aligned, improperly positioned terminals within the connector cavity, and can contribute to ISL bowing and bent or pushed-out header pins.

A5. Test Harness Cautions:
Repetitive use of Mini50 connectors in test harnesses require monitoring of the female connector for damage to the lead-ins on the mating face of the connector. Refer to the picture below for examples of the type of damage that can occur, in which the lead-in is bent out of the way or worn out due to repetitive mating. The absence of a lead-in can cause pin stubbing against the female terminal, bent header pins, pushed-out header pins, or connector stubbing. Test connectors should be inspected and replaced frequently.



I

B. Best Practice: DIMENSIONAL VERIFICATION – Reference AS-560023-001 for complete list of requirements.

The following dimensions must be meet as stated in AS-560023-001, and are important to successful performance of the CTX50 terminal/Mini50 connection system.

- Strip length:

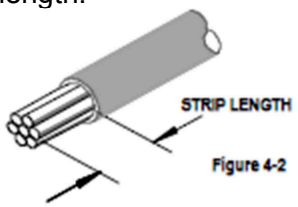
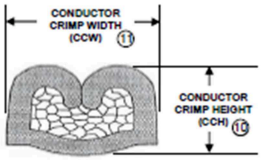
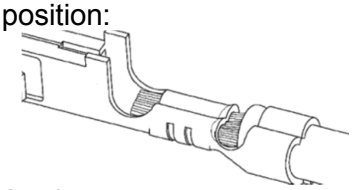


Figure 4-2

- Conductor crimping height and Width:

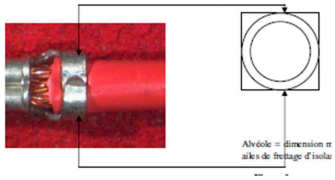


- Wire position:

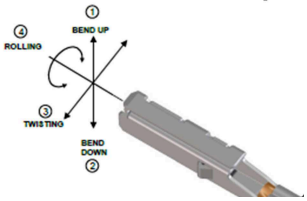


- Bell Mouth:

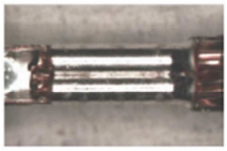
- Insulation crimping height and Width:

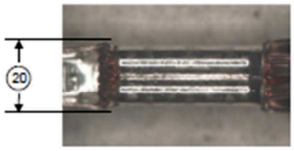


- Bend Up or Down; Twisting or Rolling:



- Bulge:


Good Crimp (No Bulge)



Bad Crimp (Bulge)

- Tooling must be in good condition