



APPLICATION SPECIFICATION

SEALED RECTAGULAR CONNECTOR (SRC) MIXED POWER ASSEMBLY



1.0 SCOPE

This Application Specification describes the SRC Mixed Power wire-to-wire connector system, provides assembly instructions, mating guidelines and service tips; Female Assemblies (85084 & 93287 Series) and Male Assemblies (85083, 93288 & 93792 Series).

2.0 PRODUCT DESCRIPTION

The Sealed Rectangular Connector (SRC) is designed to meet the need for a rugged, environmentally sealed connector system supporting power and low-level signal applications. The system is comprised of a wire-to-wire configuration and is based upon the MX150L and MX150 blade and receptacle type terminals. The design features all-in-one plug and receptacle housings with pre-assembled wire and interfacial seals with a Terminal Position Assurance (TPA) component to aid assembly.

3.0 REFERENCE DOCUMENTS

850830300 PSD	SRC Mixed Power Male Assembly Sales Drawing (Standard Rear Cover)
932880001 PSD	SRC 84 Pin Male Housing Assembly Sales Drawing (Standard Rear Cover)
932870001 PSD	SRC 84 Pin Female Receptacle Housing Assembly Sales Drawing
937921000 PSD	SRC Mixed Power Male Assembly Sales Drawing (Extended Rear Cover)
850840700 PSD	SRC Mixed Power Female Receptacle Housing Assembly Sales Drawing
934811000 PSD	SRC Conduit Interface Sales Drawing
850830010 PSP	SRC Male and Female Mixed Power Assembly Product Specification
937921000 PSK	SRC Male Assembly Packaging Specification (Extended Rear Cover)
850710010 PSK	SRC Male Blade Housing Assembly Packaging Specification
850700010 PSK	SRC Female Receptacle Housing Packaging Specification
934811000 PSK	SRC Conduit interface Packaging Specification
934811000 PSP	SRC Conduit interface Product Specification
SD-19431-***	MX150L Various Male Blade Terminal Sales Drawings

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SD-19434-***	MX150L Various Female Receptacle Terminal Sales Drawings
SD-33000-001	MX150 Male Blade Terminal Sales Drawing
SD-33012-002	MX150 Female Receptacle Terminal Sales Drawing
937320001 PSD	SRC Power Blind Cavity Plug Sales Drawing
937320001 PSK	SRC Power Blind Cavity Plug Packaging Specification
937320001 PSP	SRC Power Blind Cavity Plug Product Specification
936420010 PSD	SRC 2.5mm ² Blade Terminal Sales Drawing
936420010 PSK	SRC 2.5mm ² Blade Terminal Packaging Specification
936430010 PSD	SRC 2.5mm ² Receptacle Terminal Sales Drawing
936430010 PSK	SRC 2.5mm ² Receptacle Terminal Packaging Specification
936420010 PSP	SRC 2.5mm ² Terminal Product Specification

4.0 PROCEDURE

4.1 GENERAL REQUIREMENTS

In order to not affect sealing, wire surfaces shall be free of nicks, cuts, grooves, porosity, or indents from the insulator crimp back a minimum distance of 10mm (0.394") along the wire from the insulator crimp.

4.2 ASSEMBLY INSTRUCTIONS

This section will describe the method of assembly of the male and female SRC components.



Figure 4.1: Unloaded SRC 24+14 Mixed Power Male and Female Housing Assemblies



Figure 4.2: Mated SRC 60+6 Mixed Power Male and Female Housing Assemblies

4.2.1 TPA position

The TPA must **always** be in the pre-load position **prior** to inserting either a crimped terminal or a seal plug. (See Figure 4.3 & Figure 4.4)

After terminal insertion the TPA is closed to the fully loaded position. (See Figure 4.5 through to Figure 4.9)

The TPA must **never** be removed from the connector assembly.

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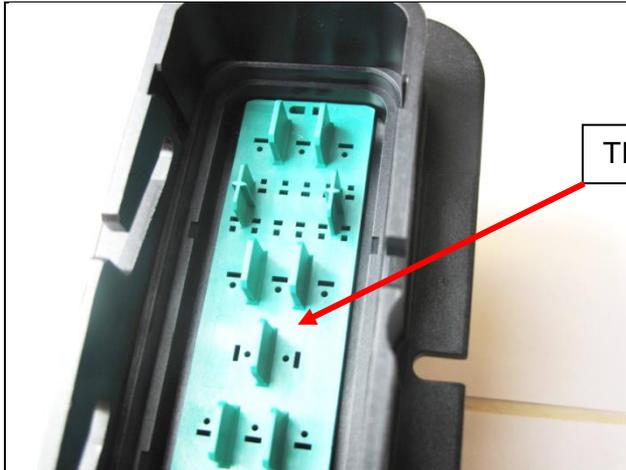


Figure 4.3: Male TPA in Pre-load Position



Figure 4.4: Female TPA in Pre-load Position

4.2.1.1 Female TPA in Pre-load and Fully-loaded Positions

Figure 4.4 through to Figure 4.7 show the difference between the Female TPA in the “Pre-load” and “Fully-loaded” positions. There is a 3mm (0.118”) displacement of the TPA as it moves from the Pre-load to the Fully-loaded position as Figure 4.5 demonstrates.

Note: the TPA or Front Seal must **never** be removed from the connector assembly.

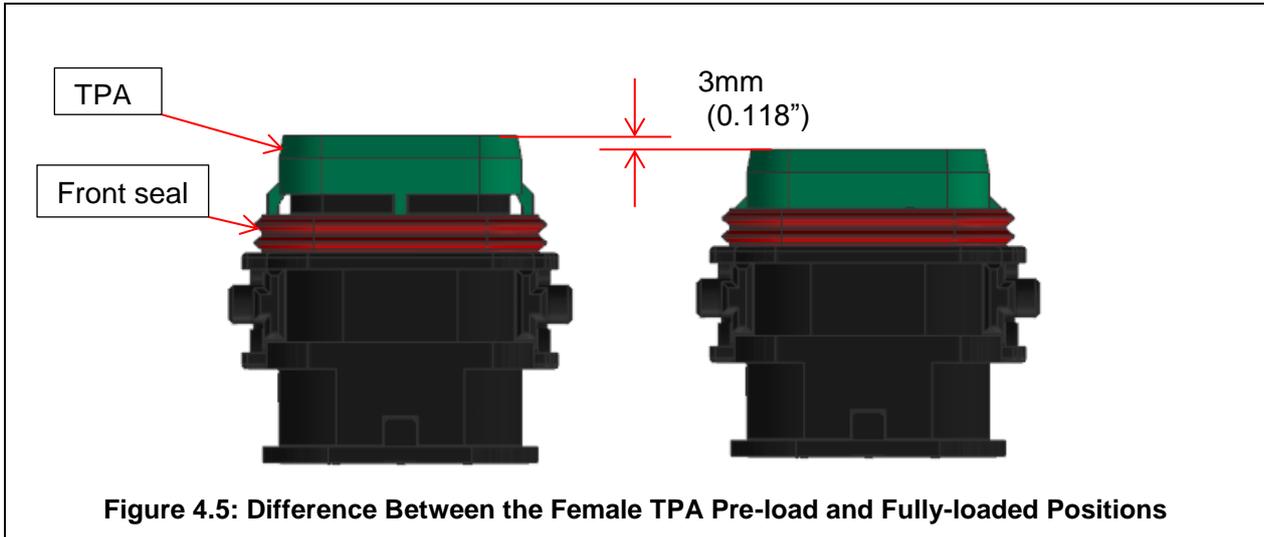


Figure 4.5: Difference Between the Female TPA Pre-load and Fully-loaded Positions

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Figure 4.6: Female TPA in Pre-load Position



Figure 4.7: Female TPA in Fully-loaded Position

4.2.1.2 Male TPA in Pre-load and Fully-loaded Positions

Figure 4.3, Figure 4.8, Figure 4.9 & Figure 4.10 display the Male TPA in the “Pre-load” and “Fully-loaded” positions. There is a 4mm (0.157”) displacement when the TPA moves from the Pre-load to the Fully-loaded position as Figure 4.8 demonstrates.

Note: the TPA must **never** be removed from the connector.

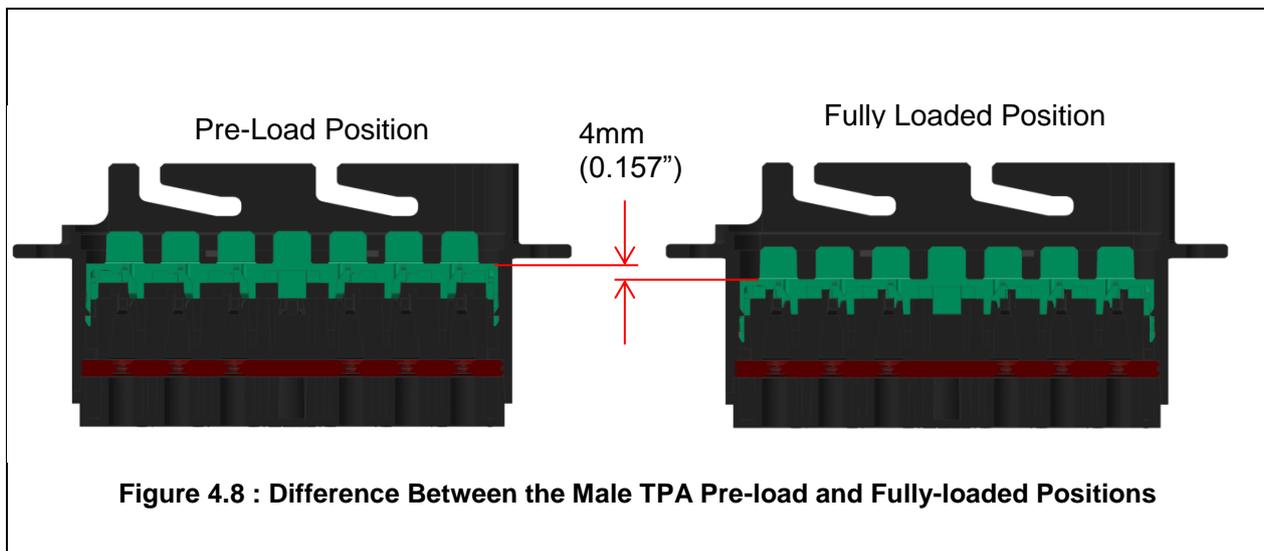


Figure 4.8 : Difference Between the Male TPA Pre-load and Fully-loaded Positions

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Figure 4.9: Male TPA in Pre-load Position

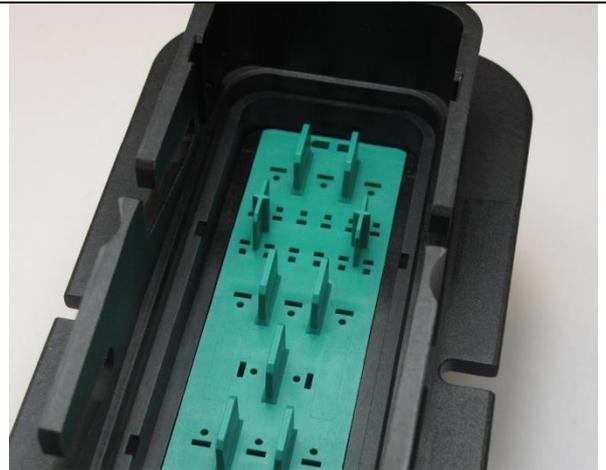


Figure 4.10: Male TPA in Fully-loaded Position

4.2.2 Terminal installation

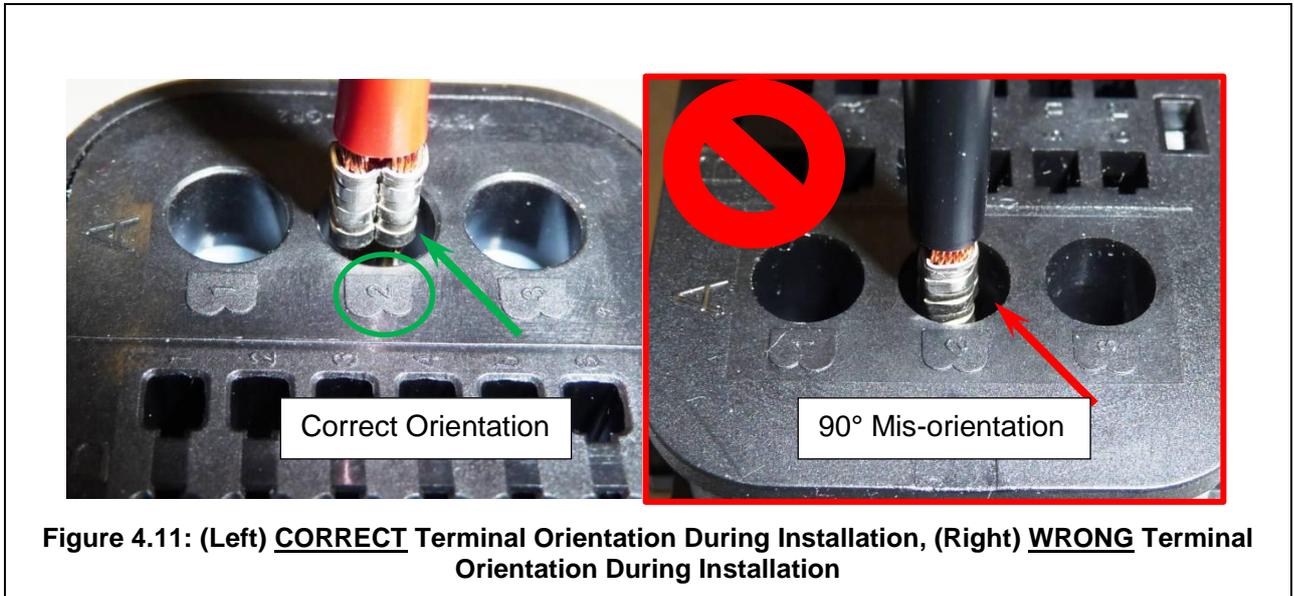


Figure 4.11: (Left) **CORRECT** Terminal Orientation During Installation, (Right) **WRONG** Terminal Orientation During Installation

With the TPA still in pre-load position (see section 4.2.1), orientate the terminal conductor crimp with the “B” on the rear cover (as shown in Figure 4.11 (Left)). Grip the wire no more than 30mm (1.181”) from the terminal insulation crimp, align terminal as demonstrated in Figure 4.11 (Left) and **push** through the appropriate circuit opening. If resistance is encountered, slowly retract the terminal and check seal cable hole centre position. Adjust the position of the terminal tip to bring it as close as possible to on-centre with the seal cable hole & then slowly re-insert. Continue inserting the terminal until it stops and locks up on the lock finger with an audible **click**. Once the audible click is heard, stop inserting the terminal and **pull** it back to meet the locking finger. Follow **Push, Click, & Pull** method of terminal installation as illustrated in Figure 4.12. To close TPA reference section 4.2.6

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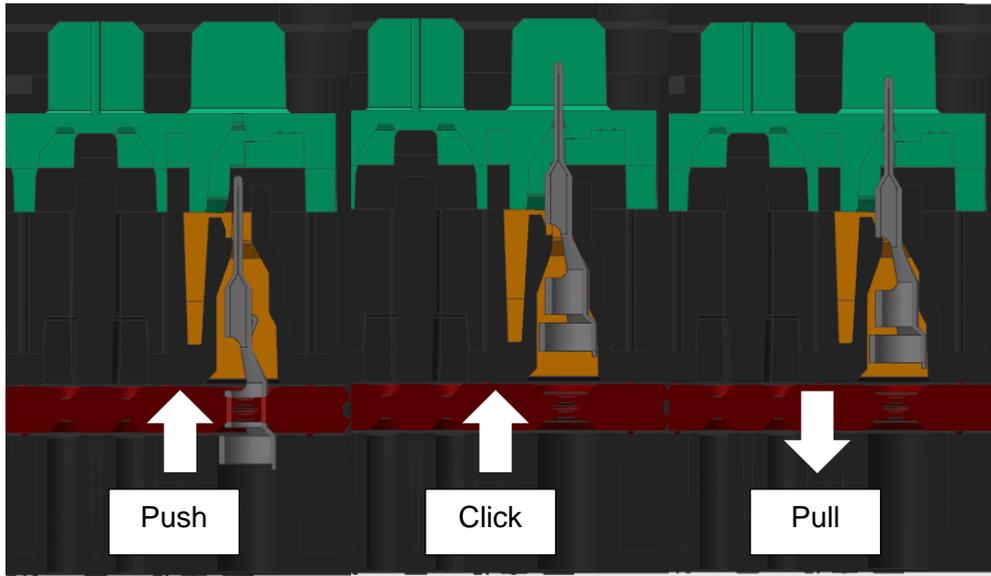


Figure 4.12 : “Push – Click – Pull” Method of Terminal Insertion (Surfaces behind the latch have been highlighted orange for reference use only)

4.2.3 Terminal polarisation

Terminals must be inserted in the correct orientation. For signal and 2.5mm² terminals there is a stand-off on one side of the terminal (see Figure 4.13 & Figure 4.14, Highlighted orange for reference only). This stand-off must be orientated correctly with the slot on the rear cover opening (see Figure 4.13 & Figure 4.14, Highlighted green for reference only).

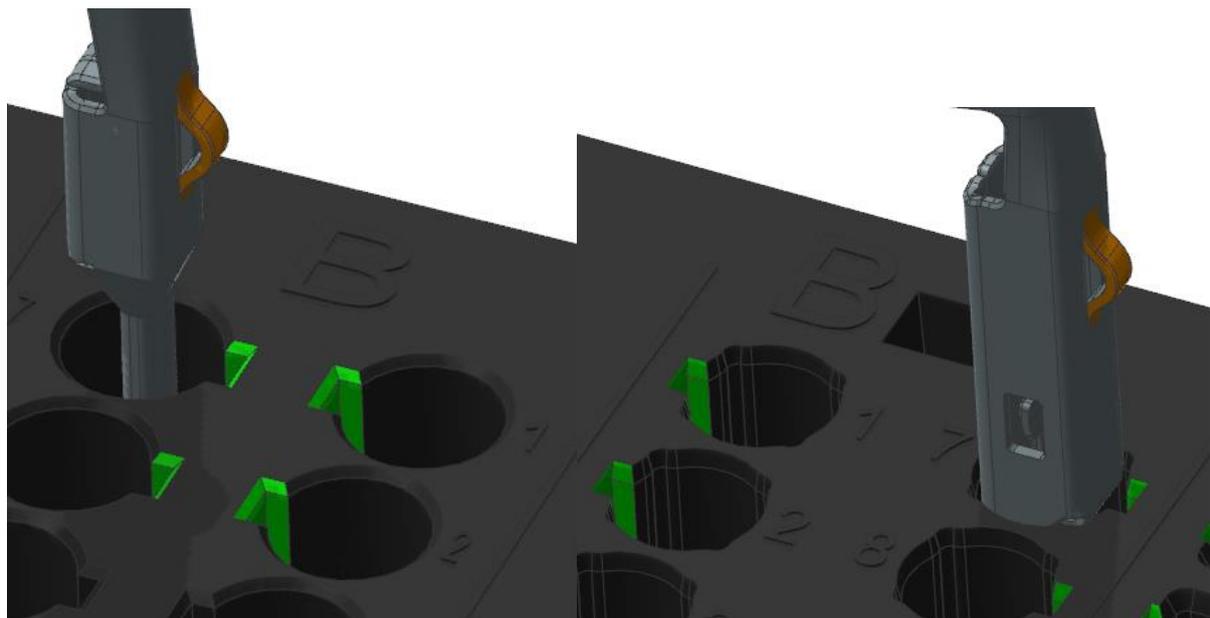


Figure 4.13: Shows polarisation features on terminals (highlighted in orange for reference only) and polarisation features on rear cover (highlighted in green for reference only) for the male/blade 2.5mm² terminal (left) & female/receptacle 2.5mm² terminal (right)

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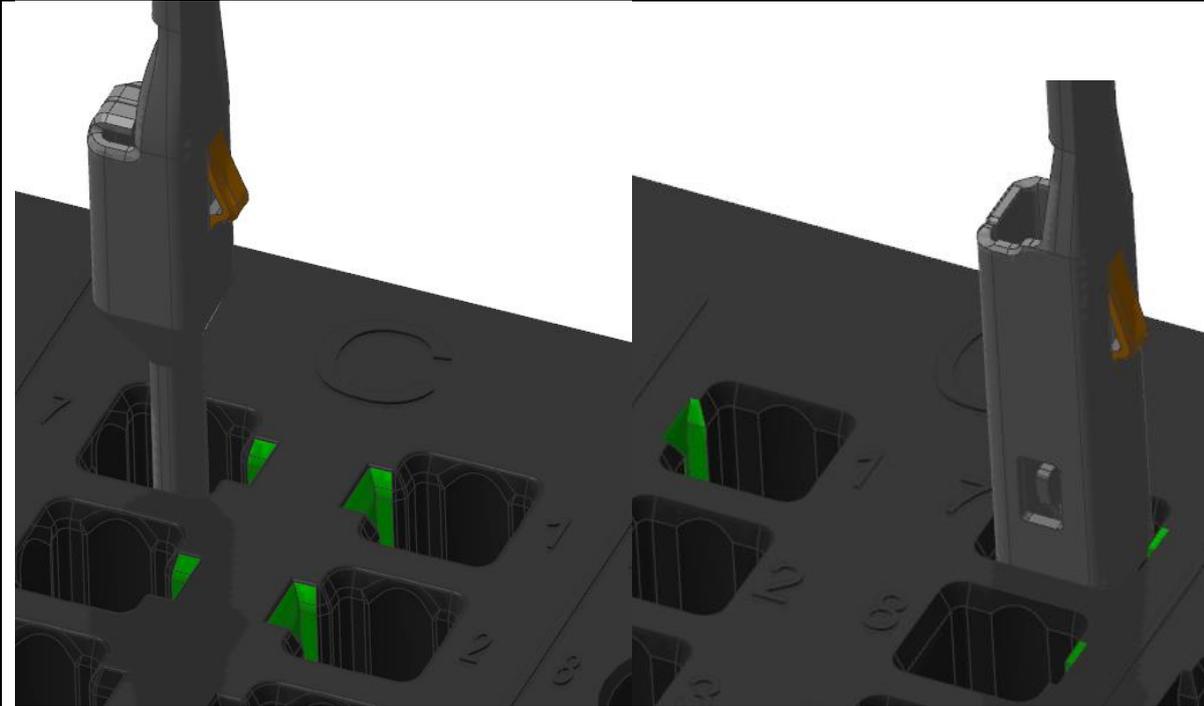


Figure 4.14: Shows polarisation features on terminals (highlighted in orange for reference only) and polarisation features on rear cover (highlighted in green for reference only) for the male/blade MX150 terminal (left) & female/receptacle MX150 terminal (right)

Note, the SRC 2.5mm² blade terminal may be inserted in the incorrect orientation, where the terminal crimp may be below the surface of the rear cover, however, it will not lock in place. If this occurs then, remove the crimped terminal by gently pulling on the cable, orientate the stand-off correctly with the slot in the rear cover and insert the terminal until it locks on the retention finger with an audible click per section 4.2.2

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Male / blade terminals must be inserted orthogonally to the back cover / back seal as shown in Figure 4.15. Terminals should not be inserted at an angle to the back cover as this may result in damage to the cable seal, compromising the connector.

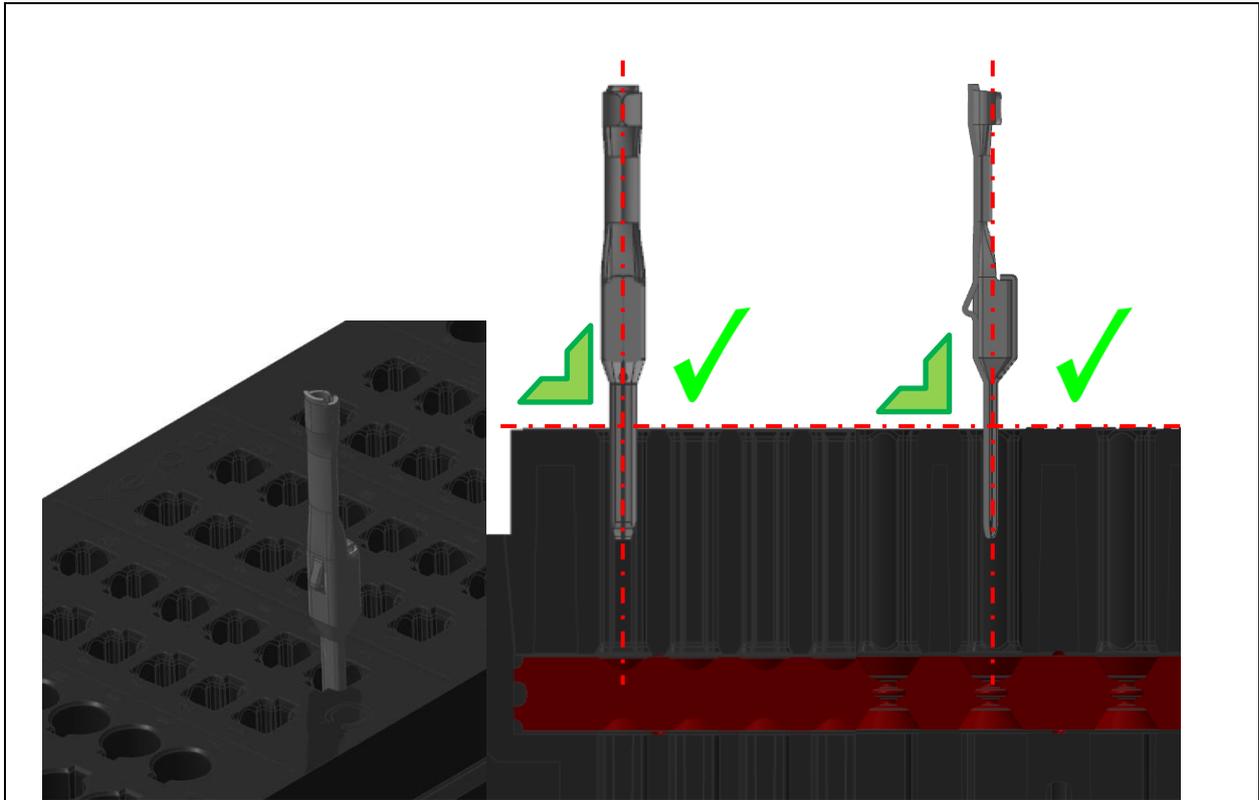


Figure 4.15: Terminals must be inserted normal to rear cover

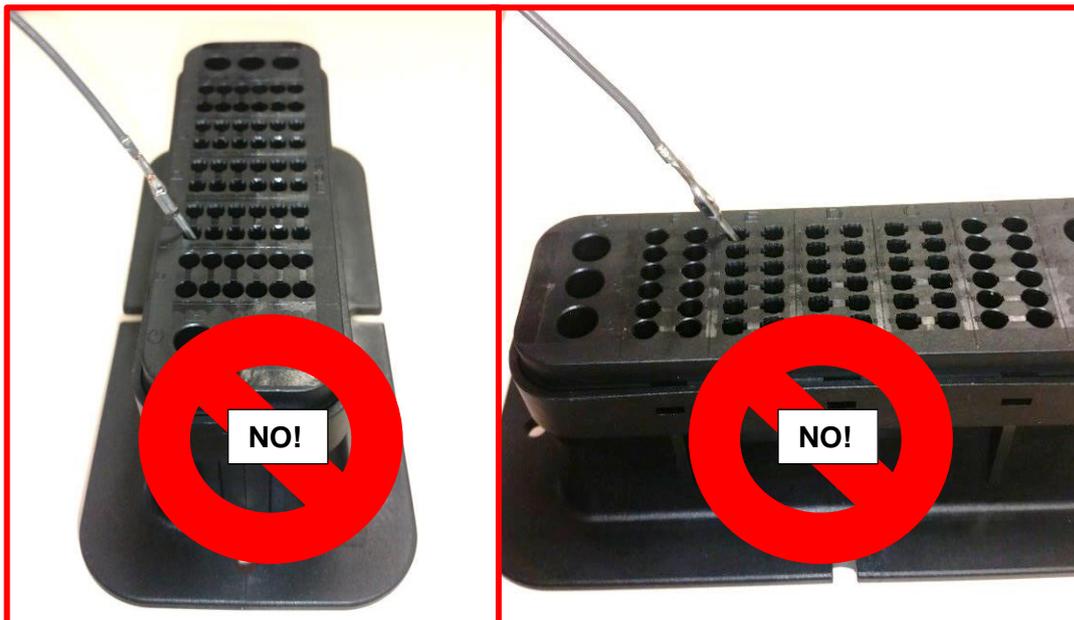


Figure 4.16: Wrong Blade / male terminal angle during insertion

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4.2.4 Blind Cavity Plug Installation – Power cavities

With TPA still in pre-load position (see section 4.2.1), orientate the blind cavity plug (see Figure 4.17 (left)) to rear of connector, and insert through appropriate circuit opening. If resistance is encountered, slowly retract the plug and check seal cable hole centre position. Adjust the position of the plug tip to bring it as close as possible to on-centre with the seal cable hole & then slowly re-insert. As with insertion of male / blade terminals, care **must** be taken to ensure that the seal plug remains orthogonal to the back cover during insertion. Continue inserting the plug until it stops and locks up on the lock finger with an audible click. Seal Plugs can be used on both Blade and Receptacle connector assemblies (see Figure 4.17 (right) & Figure 4.18). The Power blind cavity plugs are **unpolarised** (see Figure 4.19). Please see Figure 4.20 for correct insertion height of Blind cavity plug in the female assembly. To close TPA reference section 4.2.6

Note: Seal Plugs **cannot** be used in shorting bar circuits.

Power Blind cavity Seal Plug part number: 937320001 (AWG 12 to 8)

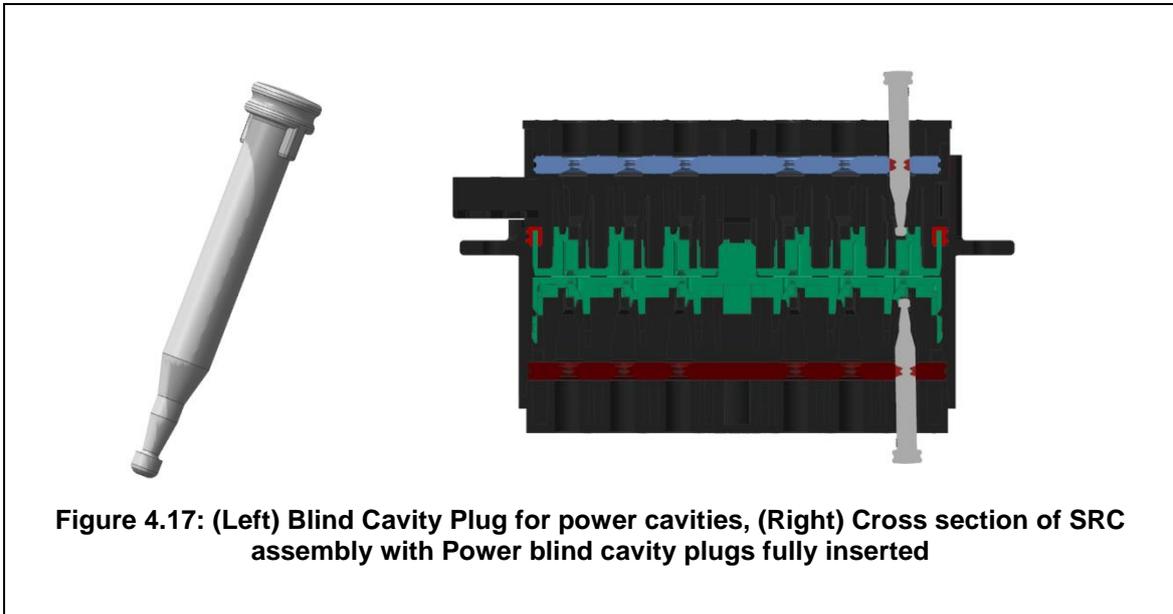


Figure 4.17: (Left) Blind Cavity Plug for power cavities, (Right) Cross section of SRC assembly with Power blind cavity plugs fully inserted

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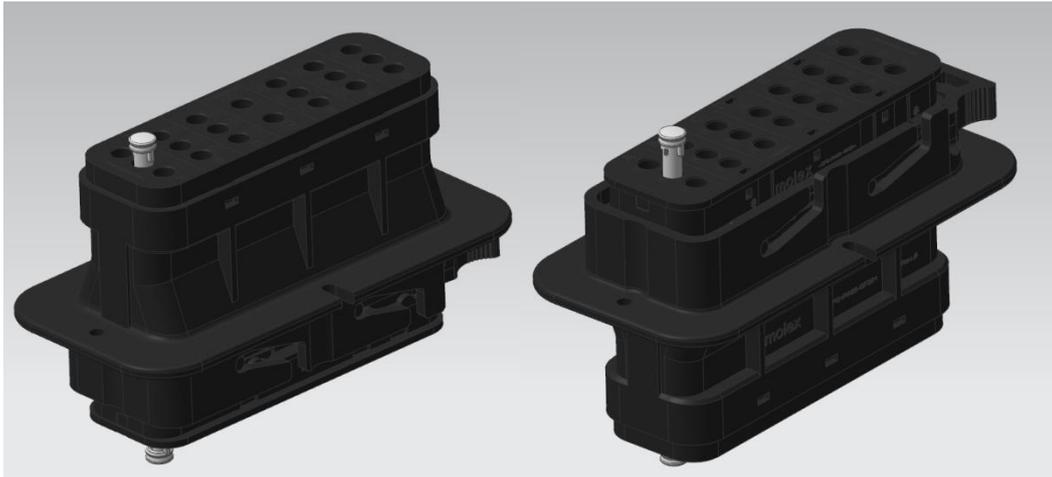


Figure 4.18: Seal Plugs Fully Inserted

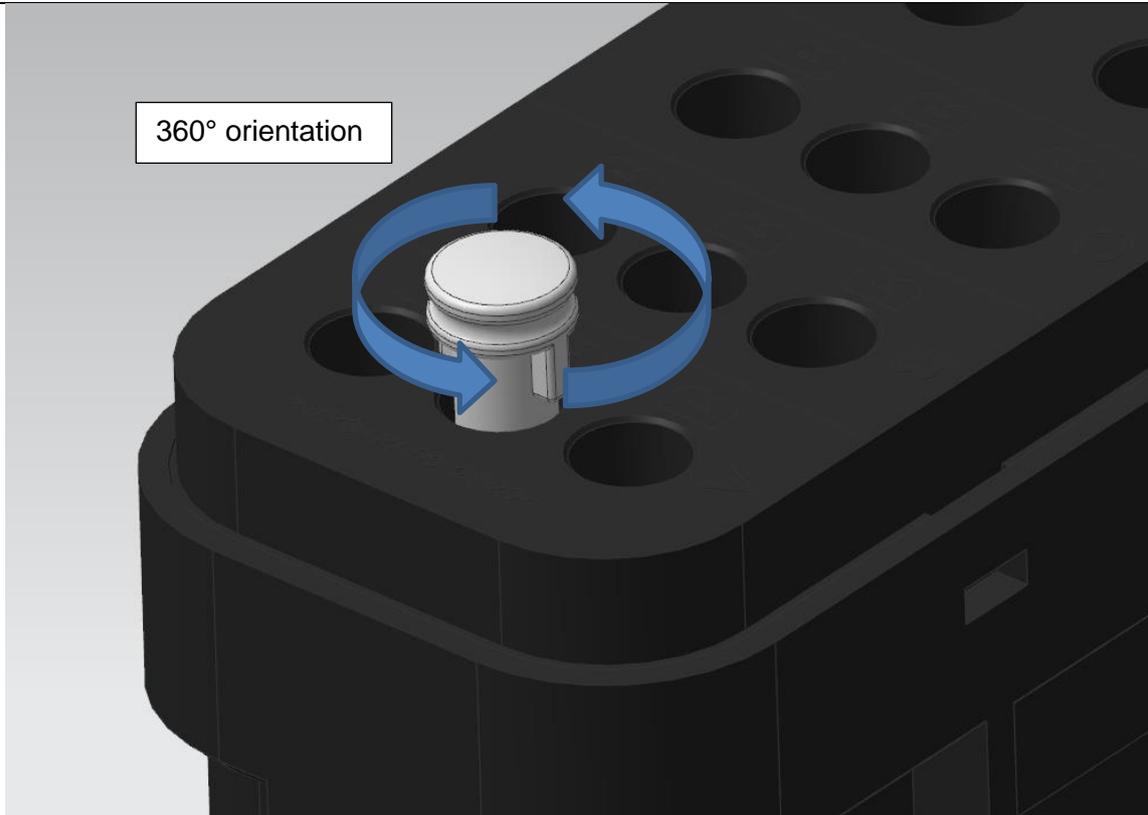


Figure 4.19: Unpolarised plug

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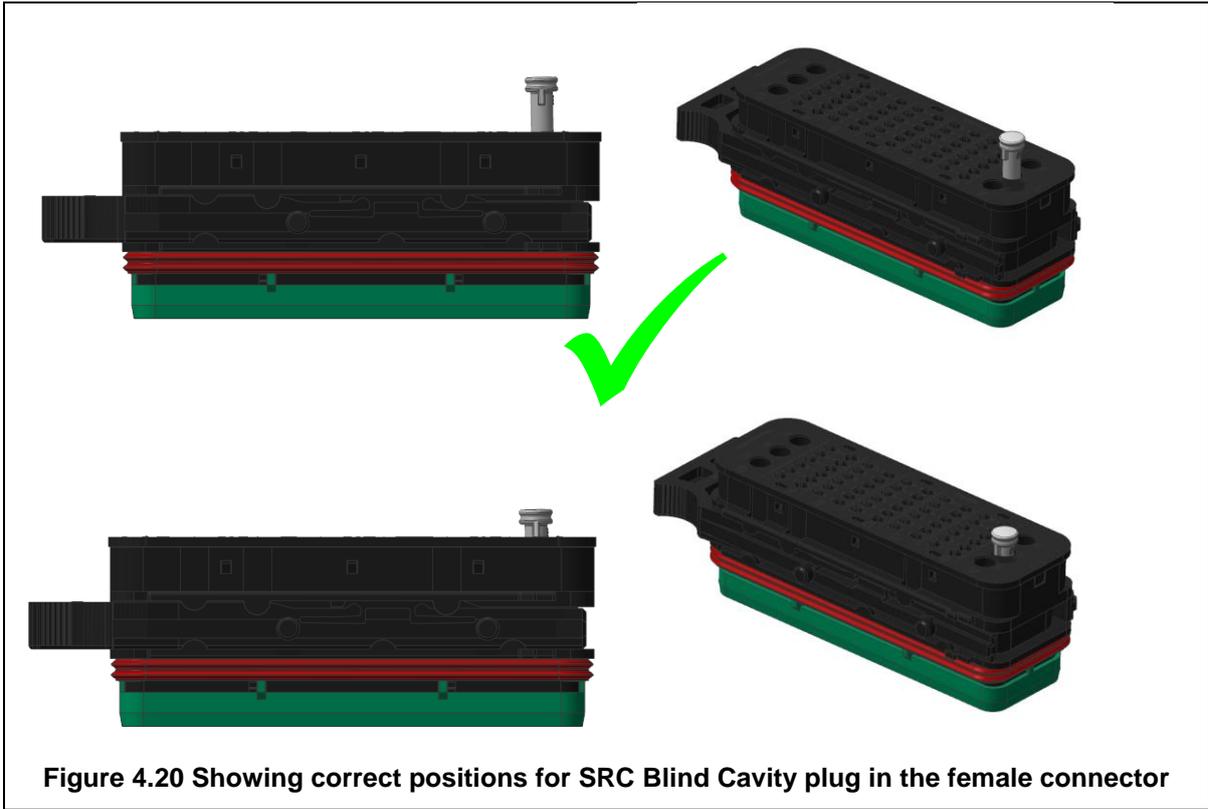


Figure 4.20 Showing correct positions for SRC Blind Cavity plug in the female connector

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4.2.5 Blind Cavity Plug Installation – Signal Cavities

With TPA still in pre-load position (see section 4.2.1), orientate seal plug to rear of connector. Align the orientation feature (see Figure 4.21 (left) & Figure 4.22, Highlighted orange for reference only) and insert through appropriate circuit opening. If resistance is encountered, slowly retract the plug and check seal cable hole centre position. Adjust the position of the plug tip to bring it as close as possible to on-centre with the seal cable hole & then slowly re-insert. As with insertion of male / blade terminals, care **must** be taken to ensure that the seal plug remains orthogonal to the back cover during insertion. Continue inserting the plug until it stops and locks up on the lock finger with an audible click. Seal plugs can be trimmed flush to avoid wire chafing (see Figure 4.25 (Left & Middle)); the decision to trim is at the discretion of the harness supplier. Seal Plugs must be installed and trimmed before wires are installed (see Figure 4.25 (Right)). Seal Plugs can be used on both Blade/Male, and Receptacle/Female connectors. See section 4.2.5.1 for instructions regarding the assembly of the MX150 blind cavity plugs into the female assembly. To close TPA reference section 4.2.6

Note: Seal Plugs **cannot** be used in shorting bar circuits.

Unused cavity Seal Plug part number: 34345-0001 (AWG 20 to 14)

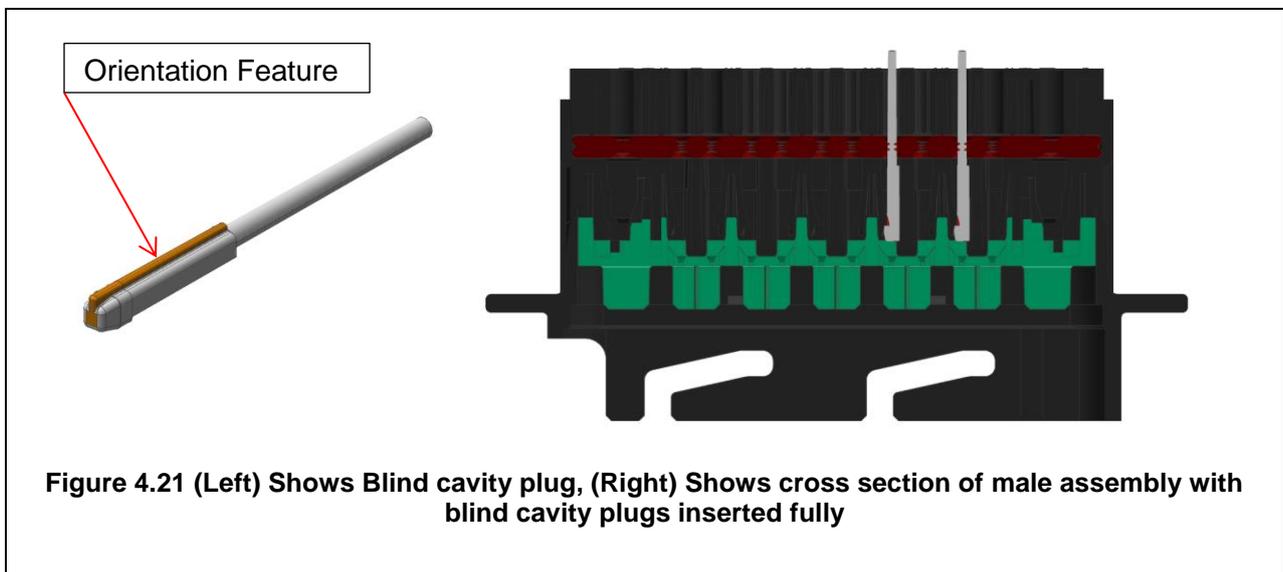


Figure 4.21 (Left) Shows Blind cavity plug, (Right) Shows cross section of male assembly with blind cavity plugs inserted fully

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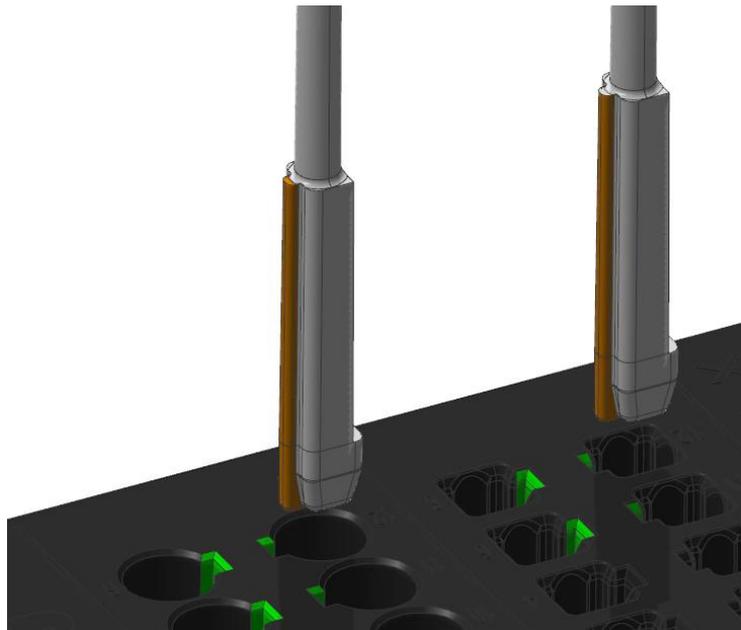


Figure 4.22 Shows how to orientate the blind cavity plug during insertion in 2.5mm² cavities (left) & signal cavities (right). The polarisation feature on the plug (highlighted orange for reference only) must be orientated correctly with the slot in the rear cover (highlighted green for reference only)



Figure 4.23: Shows the blind cavity plugs fully inserted into the male half of the SRC

See Figure 4.24 for instructions on how **NOT TO** insert the blind cavity plugs. If the seal plug is inserted into the cavity in any of the orientations shown below the product will not be sealed correctly and the entire connector will be compromised.

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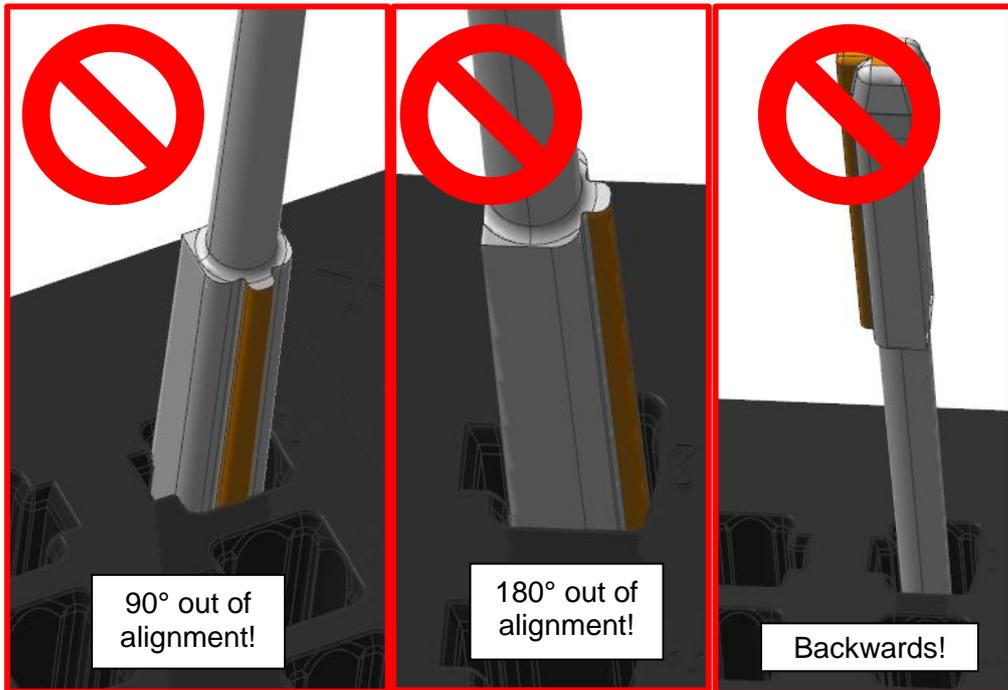


Figure 4.24 shows examples of how NOT TO insert the blind cavity plug

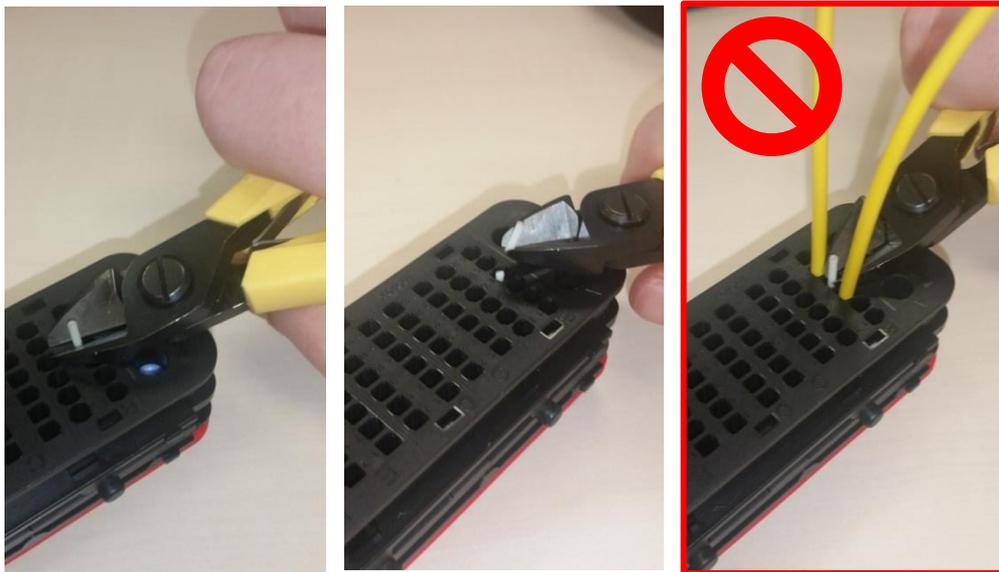


Figure 4.25: (Left & middle) show the correct method of removing the excess plug from the back of the connector, (Right) shows the WRONG way of doing this process, this method risks damaging the cables

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4.2.5.1 Special Case: Female connector assembly

See Figure 4.26 for the correct distance the MX150 plug should be inserted to. This should be inserted until the audible click is heard and then pulled back until it reaches the positive stop. Figure 4.27 shows the blind cavity plug over inserted. The MX150 plugs **must not** be left like this. Plugs must be pulled out to the position as shown in Figure 4.26 before they are trimmed flush with the rear cover (the decision to trim is at the discretion of the harness supplier)

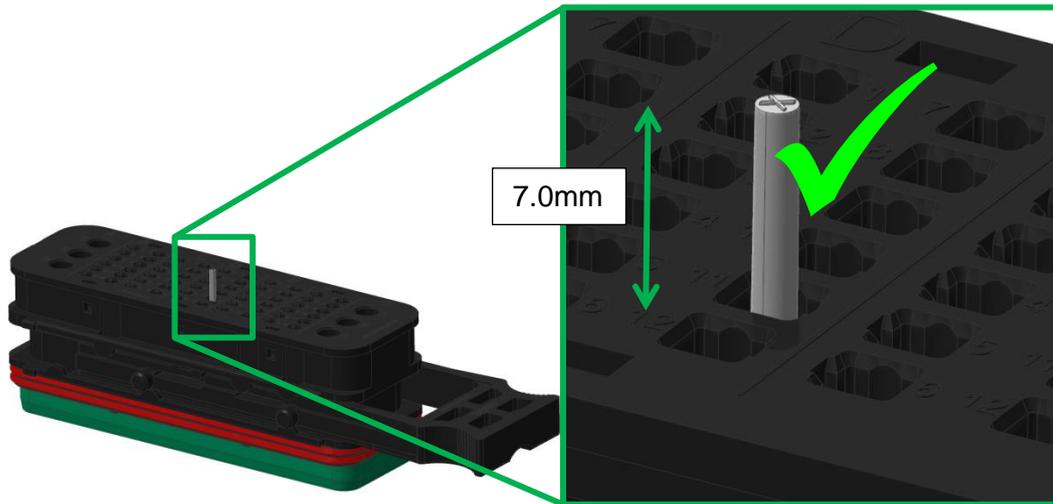


Figure 4.26 Shows MX150 signal blind cavity plug inserted to the correct depth on the female SRC connector (approximately 7.0mm of blind cavity plug protruding above rear cover)

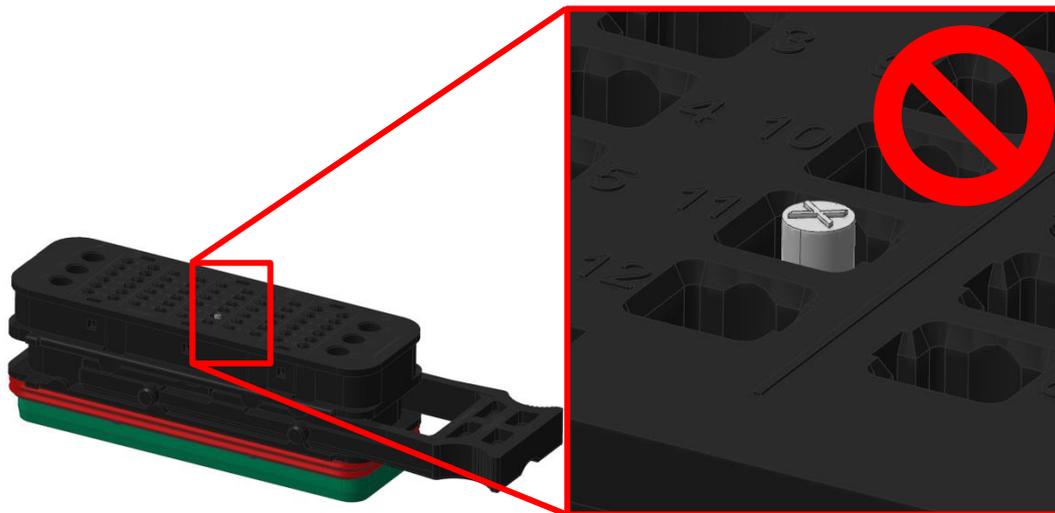


Figure 4.27 Shows the blind cavity plug over inserted into the female assembly

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4.2.6 Seating the TPA – Female/Receptacle side

With the Receptacle terminals fully installed per 4.2.2, the TPA can be seated into its fully loaded position by applying an even force to both ends until it comes to a stop (see Figure 4.28), with an audible click. If the TPA resists it may be detecting a partially installed terminal. Pull the TPA back into its pre-load position and make sure all terminals are fully installed per section 4.2.2. TPA movement distance from pre-load to fully-loaded is 3.0mm (0.118") for the female assembly (see Figure 4.5).

Note: the TPA must **never** be removed from the connector assembly.



Figure 4.28: Movement of TPA to Fully Loaded Position

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4.2.7 Seating the TPA – Male/Blade Side

Using needle nose pliers, apply even pressure to the TPA at the pressure points (see Figure 4.29 & Figure 4.30). If the TPA resists it may be detecting a partially installed terminal. Pull the TPA back into its pre-load position and make sure all terminals are fully installed per 4.2.2. Upon completion, the TPA must be put into the loaded position. TPA movement distance from the pre-load to the fully loaded position is 4.0mm (0.157") for the male assembly (see Figure 4.8).

Note: the TPA must **never** be fully removed from the connector assembly.

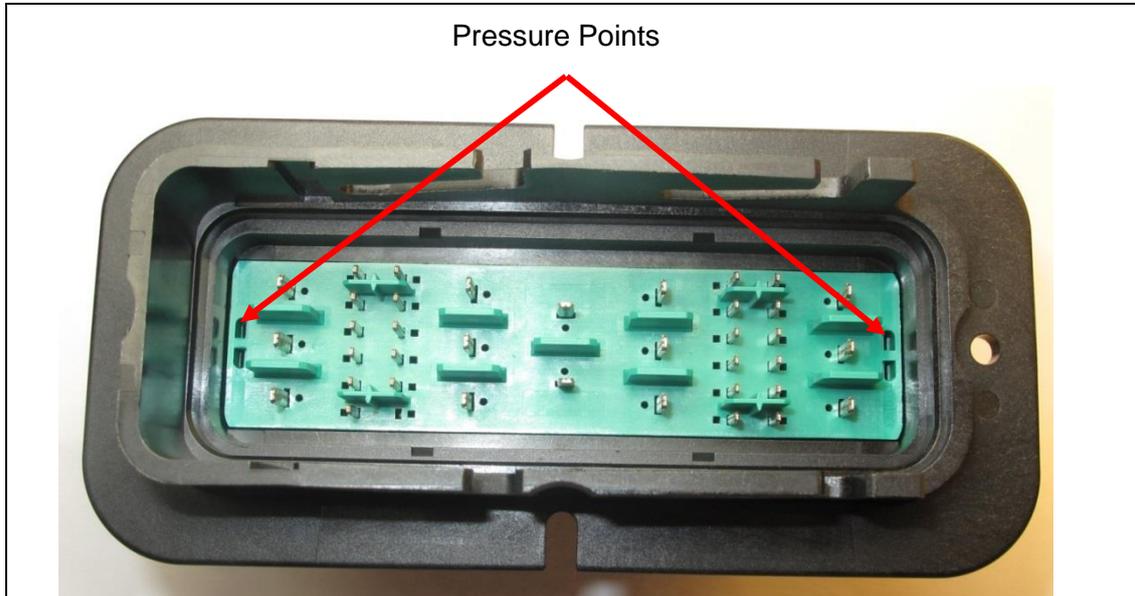


Figure 4.29: TPA Pressure Points for TPA Insertion

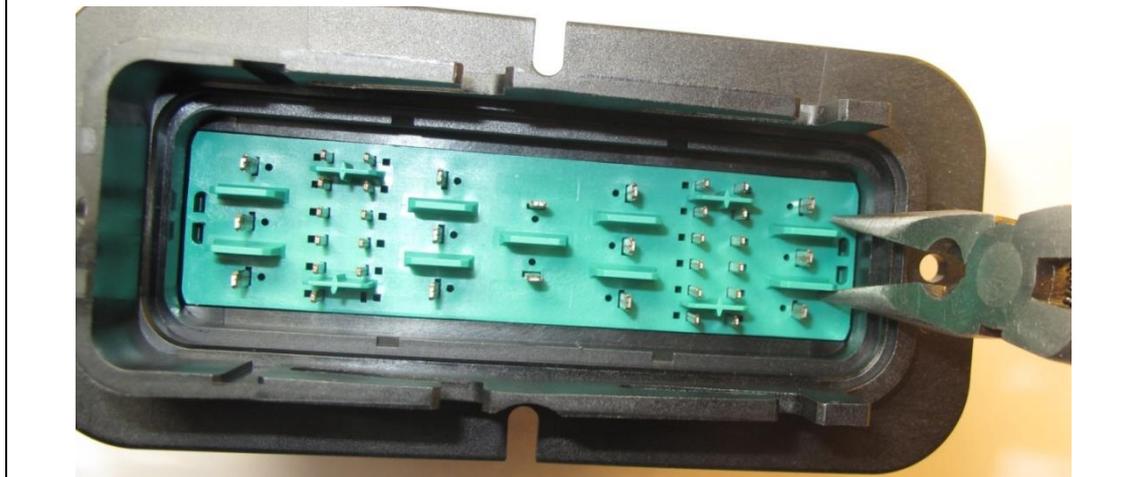


Figure 4.30: TPA Insertion with Pliers

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4.2.8 Connector Mating

There are different polarisation configurations for all SRC2 & SRC Mixed Power options to avoid cross-mating of connector assemblies (see Figure 4.31 for 0+20 example, Polarisation features highlighted orange for reference only).

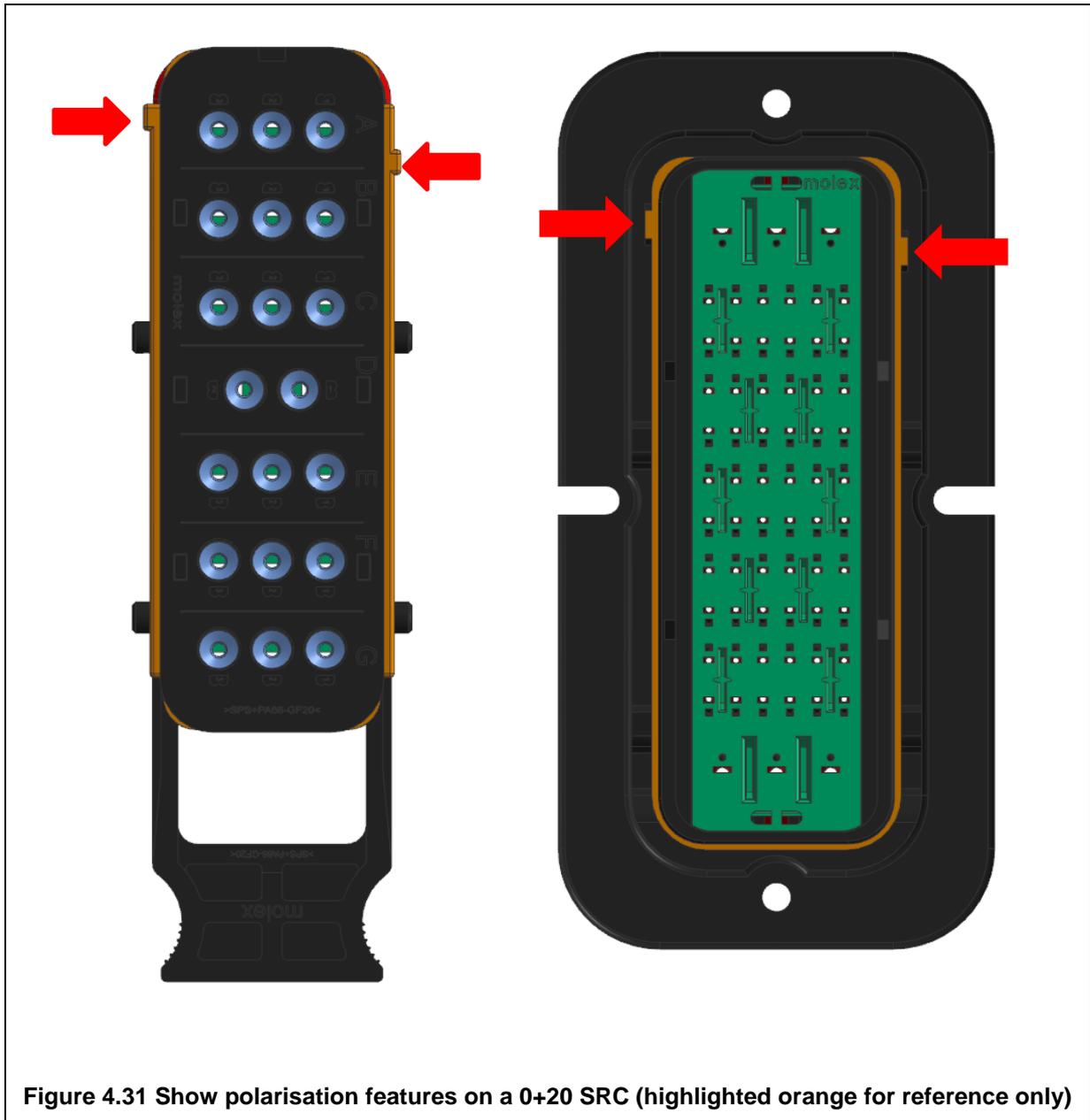
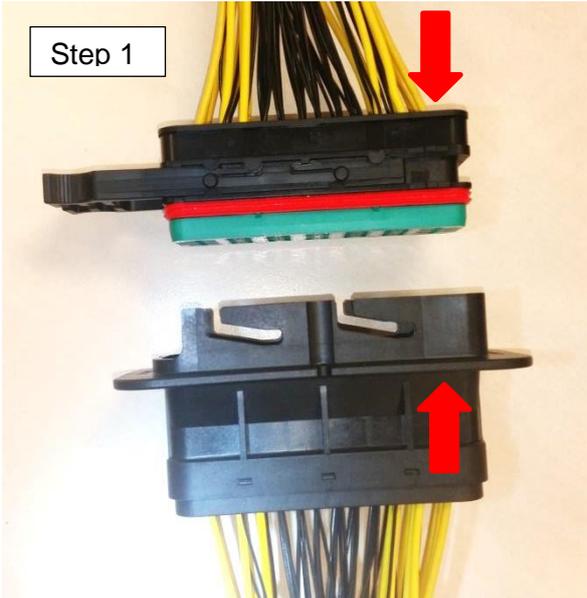


Figure 4.31 Show polarisation features on a 0+20 SRC (highlighted orange for reference only)

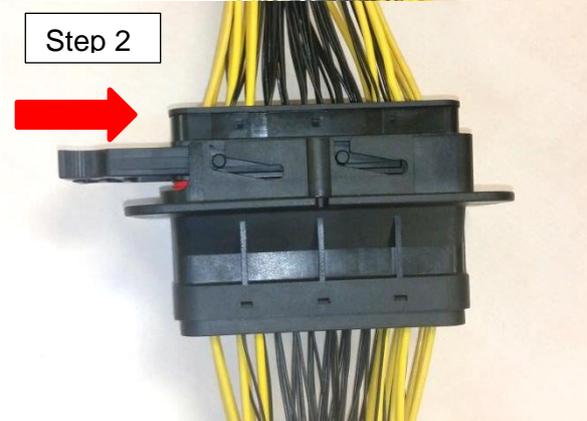
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Figure 4.32 illustrates how to mate the SRC Male and Female connector assemblies.

Step 1:
With the sliding latch fully extended, insert the female connector assembly into the male connector housing as shown.



Step 2:
Move the sliding latch to close the connectors until you here an audible click.



Step 3:
Connector closed.

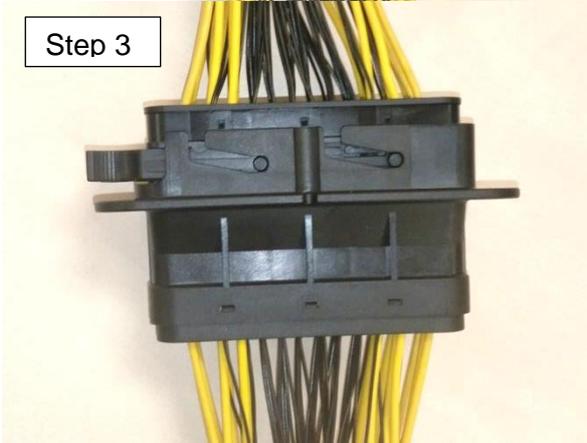


Figure 4.32 : Connector Mating Process

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Figure 4.33 illustrates how **NOT TO** assemble the two connector assemblies. If it is attempted to assemble the connectors in the way illustrated in Figure 4.33, (i.e. at an angle to each other) the terminals and/or anti-scoop features may be damaged in the process.

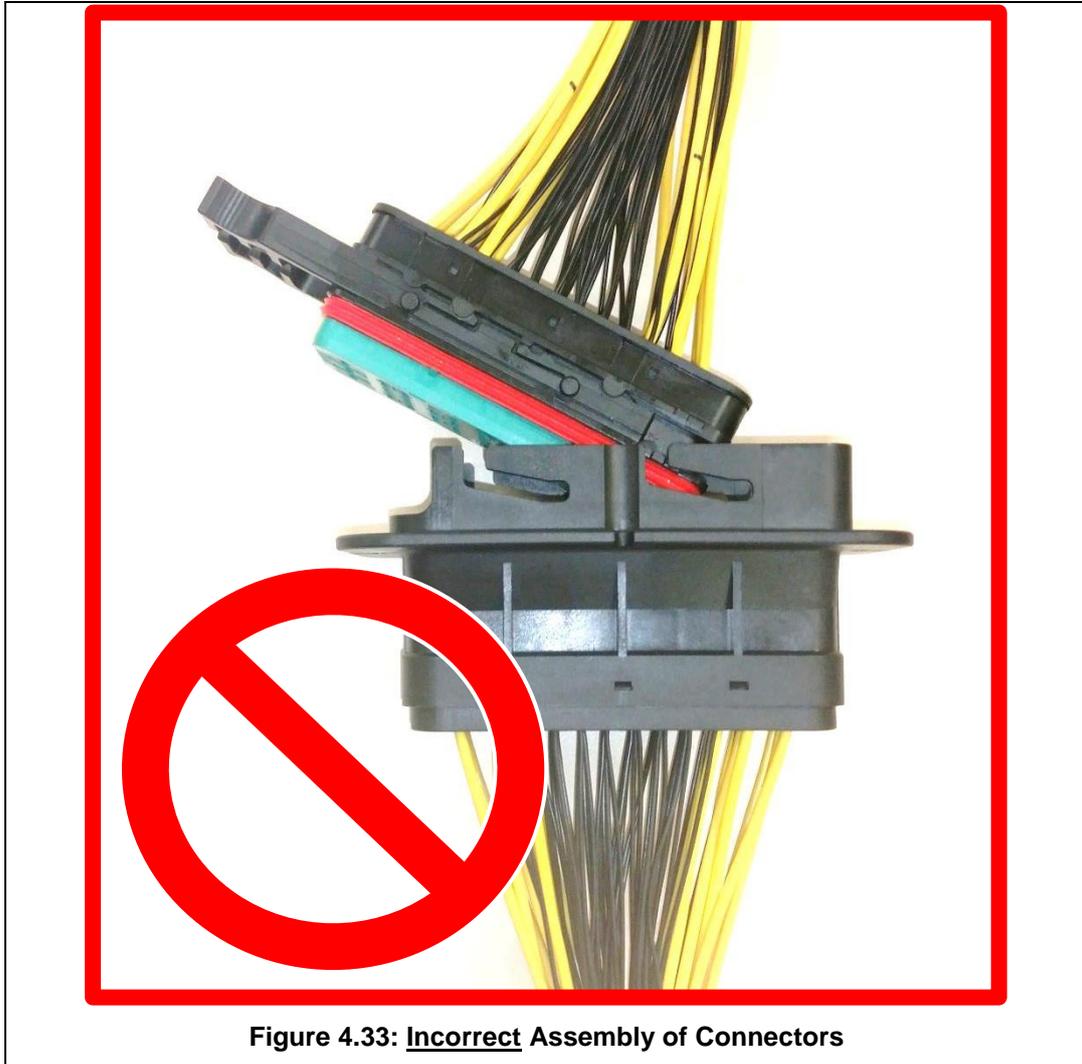


Figure 4.33: Incorrect Assembly of Connectors

The SRC2 & SRC Mixed Power Housing Assemblies (85083, 93288 & 93792 Series) have anti-scooping features to protect the terminals during any incorrect mating of the two connector housing assemblies.

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4.2.9 Conduit interface assembly onto SRC connector assemblies

The Conduit Interface is an accessory for the variety of SRC Male and Female Connector Assemblies.

There are a number of options (reference Sales drawing 934811000 PSD):

- Right, Left and Top exits or any combination thereof
- 4 different exit types (NC Sizes) to connect with the conduit size of choice: 28 NC (Male) and 28, 32 & 40 NC (Female)

A flexible lanyard is moulded as part of the Conduit Interface; this connects the two halves of the conduit cover together. The lanyard is an assembly aid and may be removed if not required.

The SRC Conduit Interface **must** be used with appropriate conduit. Molex cannot be held responsible if cables are damaged due to improper use of conduit, or if a conduit interface is used without the conduit. There are slots provided in the Conduit Interface for tie wraps to provide strain relief and additional cable management.

- Take a fully loaded SRC harness and separate cables into bundles as required for distribution around final system (left, up or right or desired combination) (see Figure 4.34 (left)).
- Apply a suitable conduit to fully enclose each bundle (see Figure 4.34 (left)); each bundle should occupy a maximum 70% fill of the internal space of the selected conduit. This will help prevent damage to cables and/or terminal connections and will allow for some expansion of the bundle if required at a later date.
- Select the appropriate conduit interface to match the conduit(s) used with the cable bundles and the interface of the SRC connector (male or female) (see Figure 4.34 (middle) & Figure 4.35 (left)). See conduit interface sales drawing for exit configurations and appropriate part numbers.
- Place one half of the conduit interface onto the connector as shown in Figure 4.34 (middle) & Figure 4.35 (left), moving each cable bundle to the appropriate exit in the conduit interface.
- **Special case for female conduit interface assembly:** (see Figure 4.36) "Side A" **MUST** be placed onto the connector first to avoid incorrect fitment of conduit interface on female connector assembly.
- At this stage cable ties may be added via the slots in the conduit interface to provide strain relief to the cables. Note: excess cable tie length should be removed.
- For the female conduit interface exit options, locate the conduit(s) in the conduit interface exits as appropriate. The moulded ribs in the conduit interface provide a locking function to maintain the conduit position
- Apply the second half of the conduit interface to the connector, enclosing all conduits. Ensure all snap-fit latches are fully mated both on the conduit interface body and on the exit ports (see Figure 4.34 (right) & Figure 4.35 (right))
- On male conduit interface exit ports, position the conduit around the exit after the conduit interface is fully closed
- Remove the moulded lanyard device by cutting off with a snips, if desired
- To remove the conduit interface, for example, a requirement to add a new cable, all snap fit latches must be disengaged and both halves separated (remove external conduits beforehand). For recommended de-latching sequence please see section 4.2.10

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Figure 4.34: (Left) A fully-assembled SRC Male Connector Assembly with conduit around the wires, (Middle) one half of the Conduit Interface assembled with a tie wrap used as strain relief on the cables and (Right) a correctly assembled conduit to a SRC Male Connector using the appropriate Conduit Interface

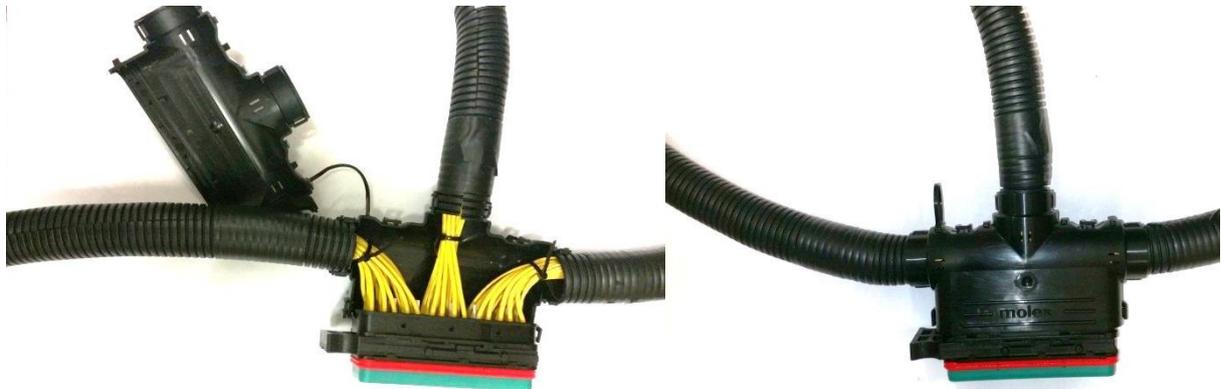


Figure 4.35: A correctly assembled conduit to a SRC Female Connector using the appropriate Conduit Interface

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For Female conduit interface only

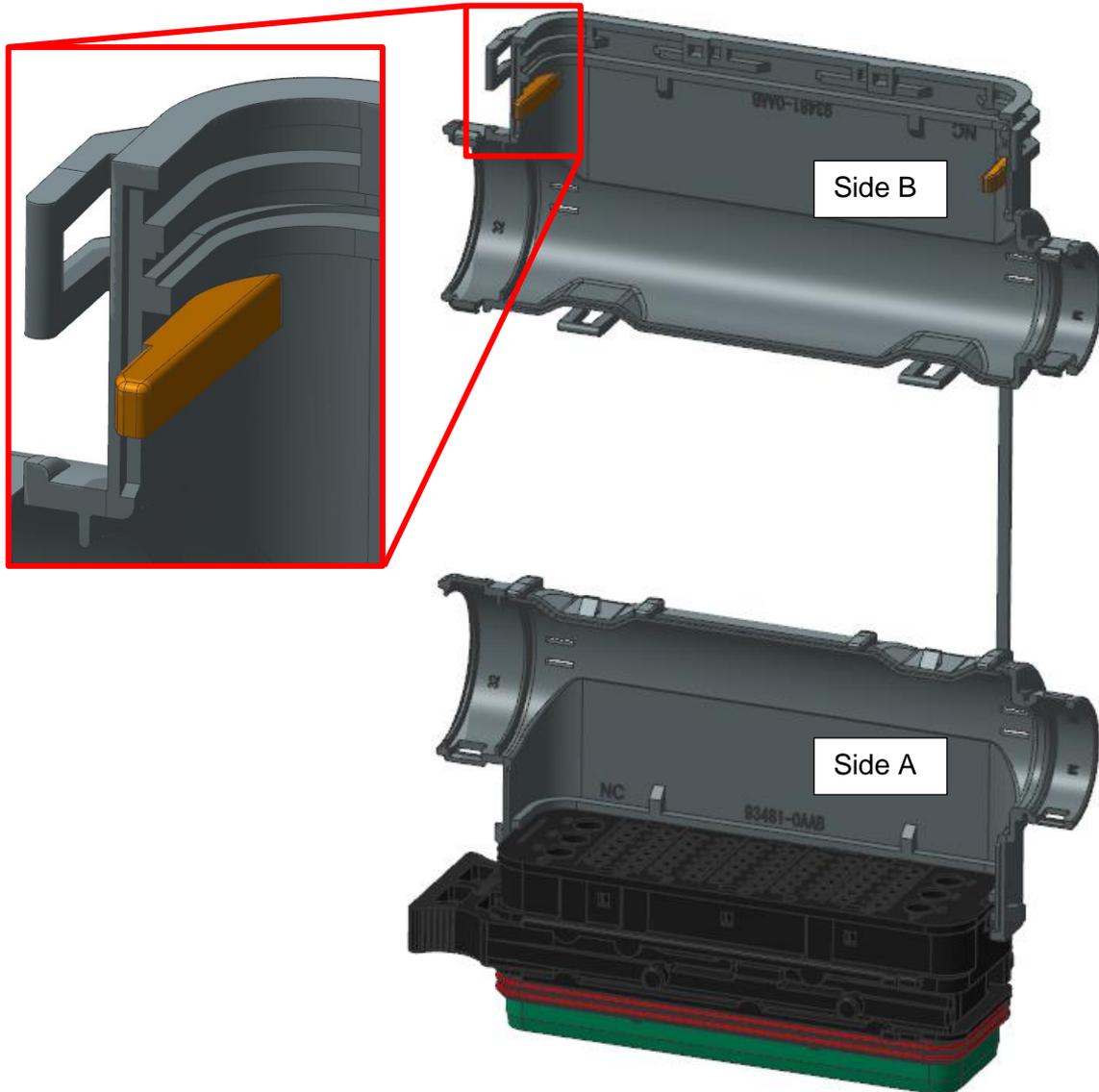


Figure 4.36: Female conduit assembly sequence onto connector (Conduit interface Grey for reference only & Anti twist tab orange for reference only)

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4.2.10 Recommended removal method

- This method is applicable to both male and female conduit interface assemblies
- Open lower side latch first
- Once this first latch is disengaged, ensure parts do not clip back together
- Work around each latch one at a time, use a flat head screw driver if needed
- Recommended latch disengage sequence shown in Figure 4.37. **Note: this sequence is reversible**

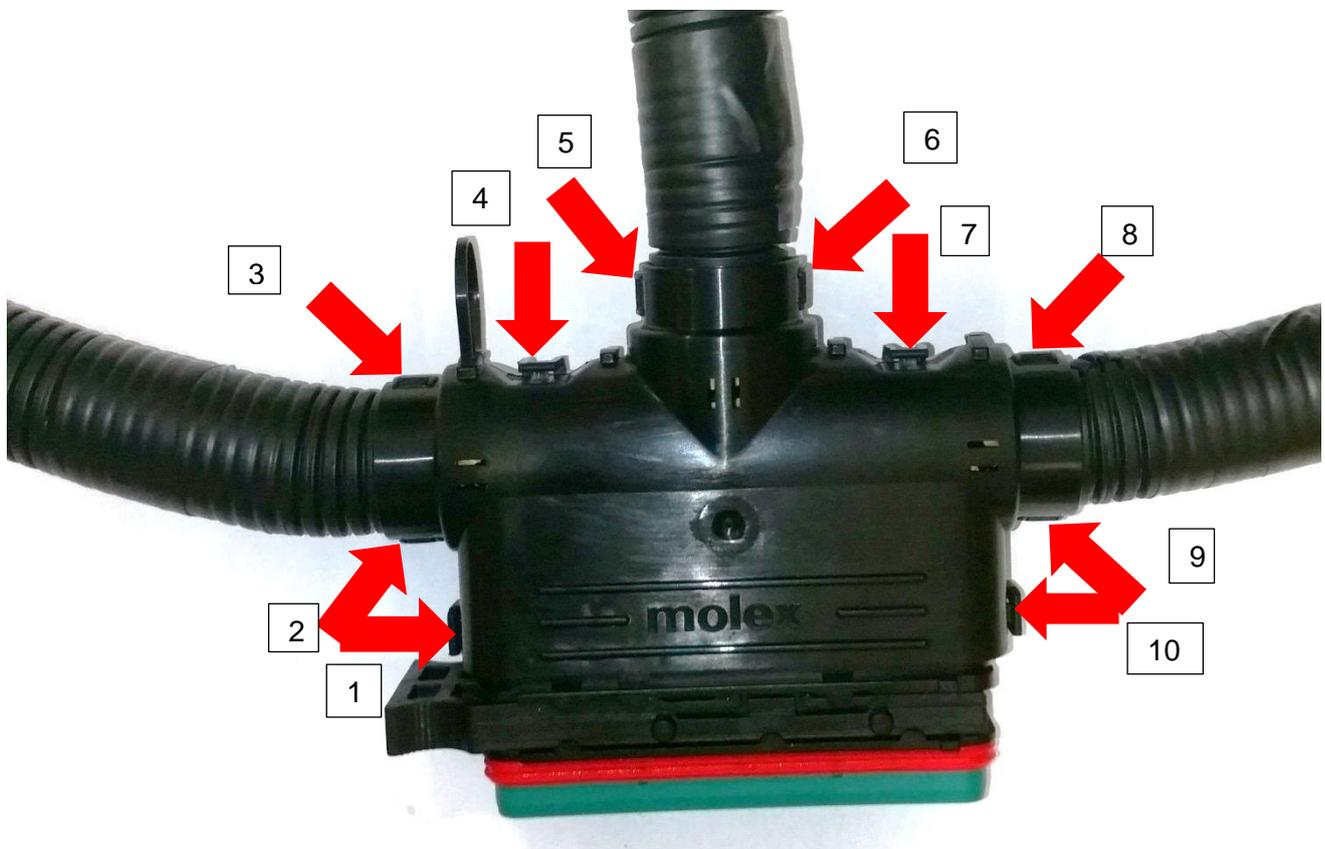


Figure 4.37: Latch Disengage Sequence

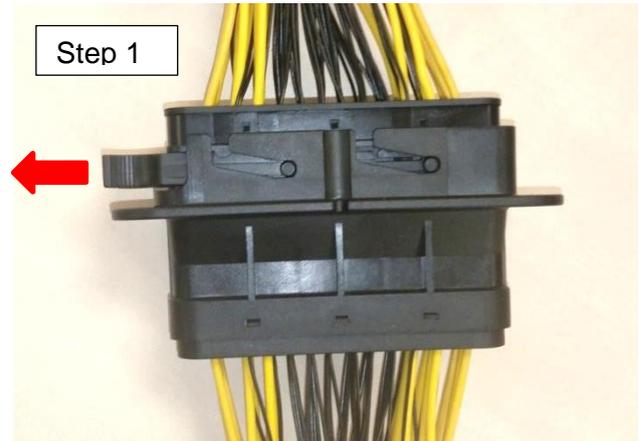
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<small>TEMPLATE FILENAME: APPLICATION_SPEC[SIZE_A4](V.1).DOC</small>			

4.3 Removal & Servicing instructions

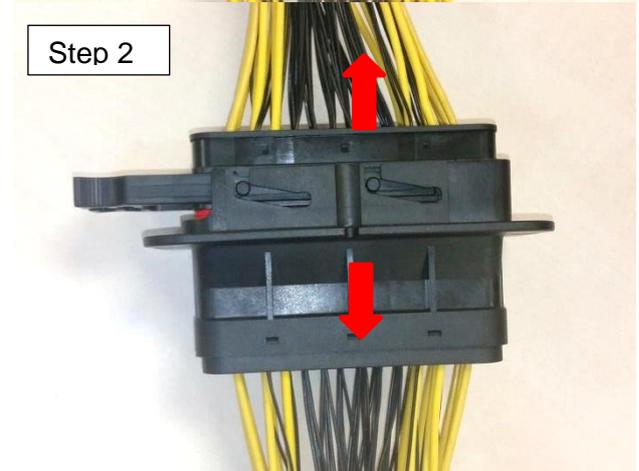
4.3.1 Connector un-mating

Figure 4.38 illustrates the method of un-mating for the overall connector assembly.

Step 1:
Pull the sliding latch out fully



Step 2:
Pull the connectors apart



Step 3:
Connector open

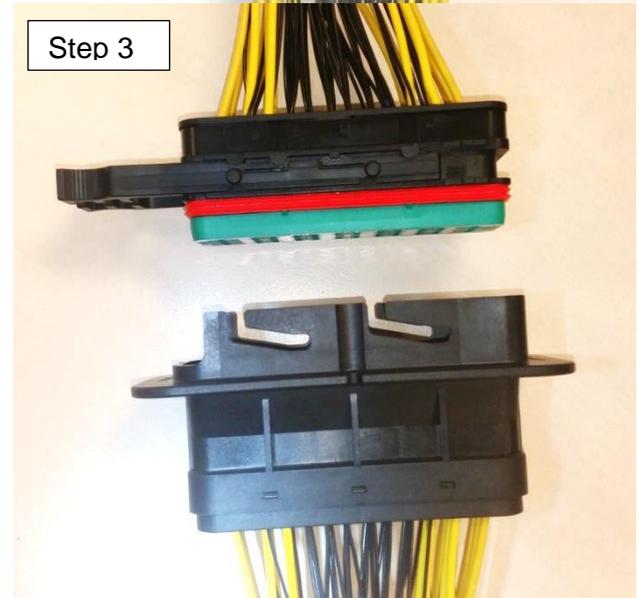


Figure 4.38: Connector Un-Mating Process

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4.3.2 TPA Servicing

Figure 4.39 illustrates how to move the TPA back to the pre-load position for the Male connector assembly.

Note: the TPA must **NEVER** be fully removed from the connector assembly.

Step 1:
Insert a small pair of needle nose pliers to the designated grab point



Grab Points

Step 2:
Pull back 4.0mm (0.157"), gently, until the TPA reaches pre-load position

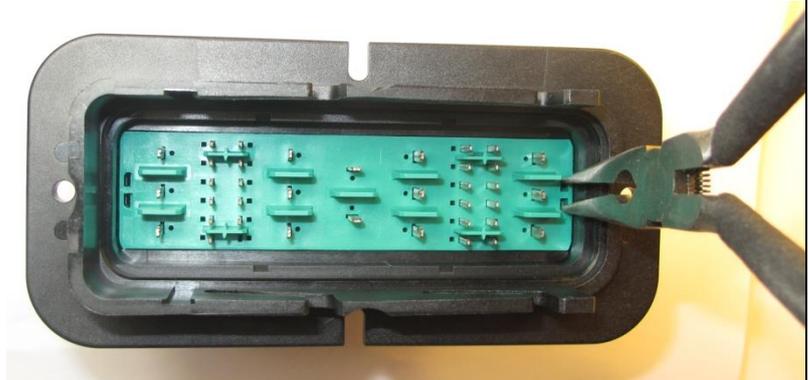


Figure 4.39: Moving the TPA on the Male Connector Assembly to the Pre-Load Position

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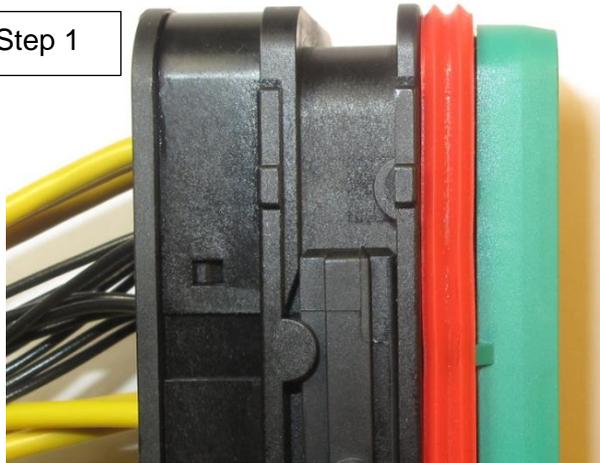
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Figure 4.40 illustrates how to move the TPA back to the pre-load position for the Female connector assembly.

Note: the TPA or Front Seal **MUST** never be removed from the connector assembly.

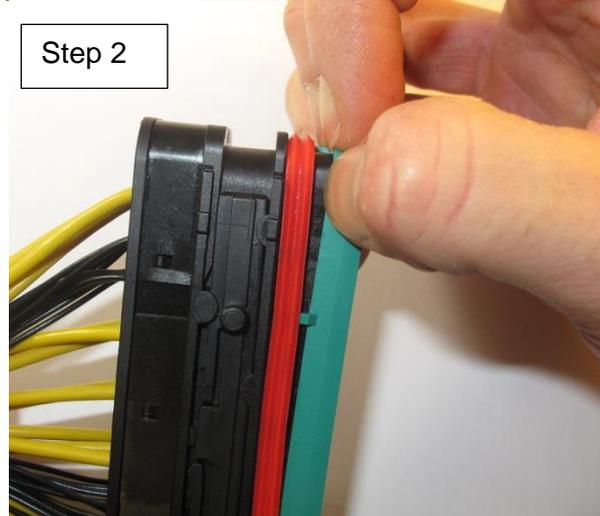
Step 1:
TPA closed

Step 1



Step 2:
Grab under the TPA and pull gently, until the TPA reaches the pre-load Position about 3 mm (0.118")

Step 2



Step 3:
TPA open

Step 3

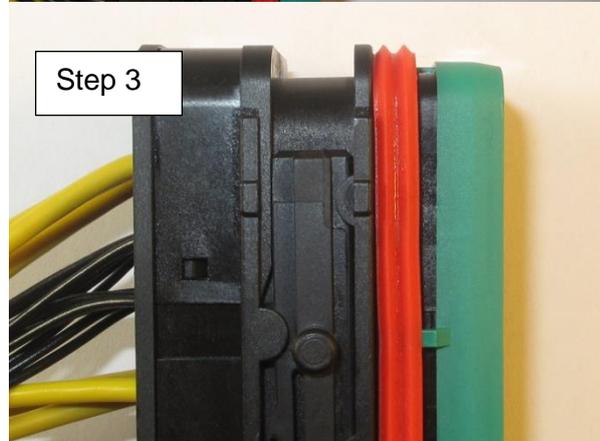


Figure 4.40: Moving the TPA on the Female Connector Assembly to the Pre-Load Position

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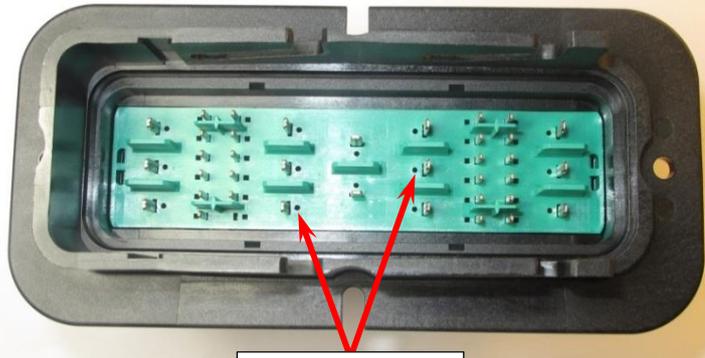
4.3.3 Terminal removal – MX150, 2.5mm² & signal Blind Cavity Plugs

Figure 4.41 illustrates the method of removal of the Female Receptacle Terminal and the Male Blade Terminal from the respective connector housing assemblies.

Note: the Service Tool must be 90° to the connector face and TPA must be in pre-load position.

Step 1:

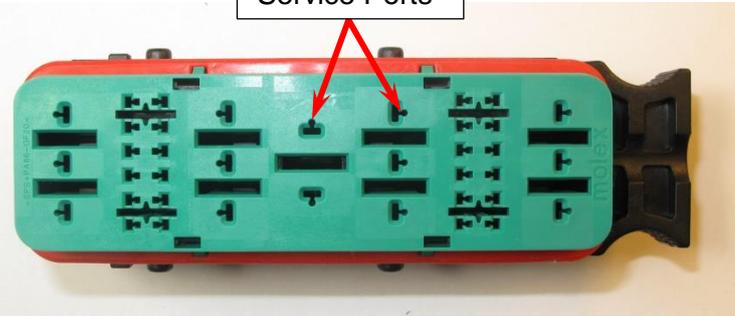
Using the Service Tool (Part Number 638131500), insert the tip into the terminal service hole adjacent to the terminal to be serviced



Service Ports

Step 2:

Push straight down and apply pressure to the release locking finger. This motion will release the locking finger, “picking” is not required on signal terminals. Cavity Seal Plugs are removed in the same manner.



Step 3:

Once the locking finger is disengaged, gently pull on the wire to release the terminal. If the terminal resists, the service tool may not be fully engaged. Push the service tool straight into the service opening to ensure that it has fully disengaged the locking finger.

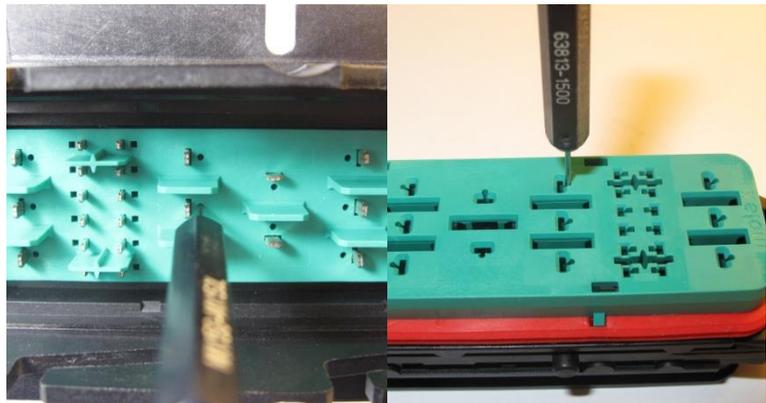


Figure 4.41: Terminal Removal Method

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Figure 4.42 illustrates the correct and incorrect methods of inserting the service tool

- Do not insert the Service Tool into the terminal opening
- Do not use excessive force, excessive force can damage the lock finger
- Do not insert the Service Tool at an angle; this may cause damage to the terminal

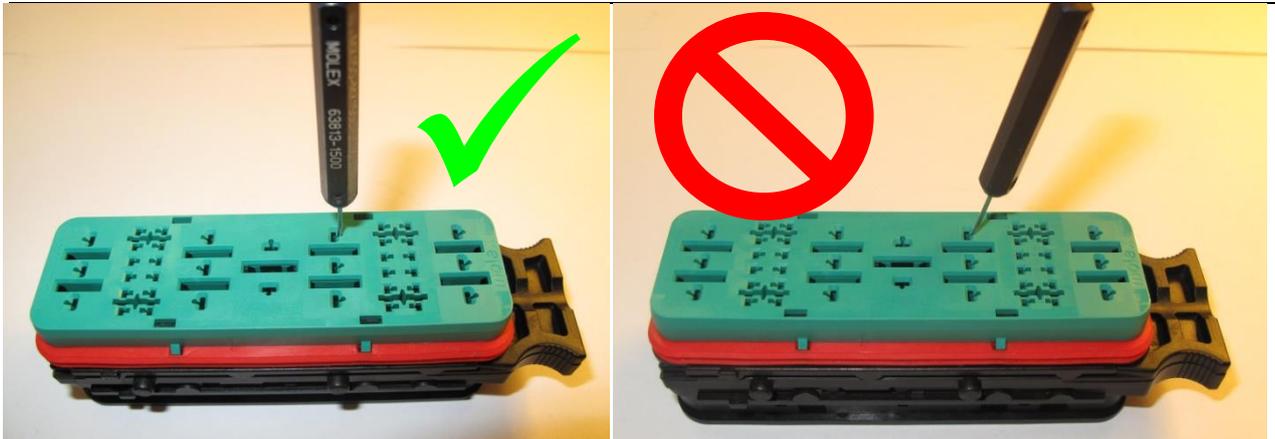


Figure 4.42: (Left) Correct Method of Inserting the Service Tool, (Right) Incorrect Method of Inserting the Service Tool

Removal of MX150 Blind cavity plug

If a blind cavity plug has inadvertently been placed in the incorrect circuit position in a male connector it can be removed using a fine needle nose pliers/tweezers/small snips. Grip the back of the blind cavity plug as shown in Figure 4.43a, then proceed with the same removal process as stated in section 4.3.3 along with applying a small pulling force on the blind cavity plug with the tool used to grip the blind cavity plug. The same process may be used to remove blind cavity plugs on the male and female assemblies which have already been snipped and need to be removed from the connector (see Figure 4.43b).

Note: be careful not to snip the blind cavity plug further or to snip neighbouring wires.

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Figure 4.43a shows a method of gripping blind cavity plug in male connector prior to it being snipped (if placed in incorrect circuit position)

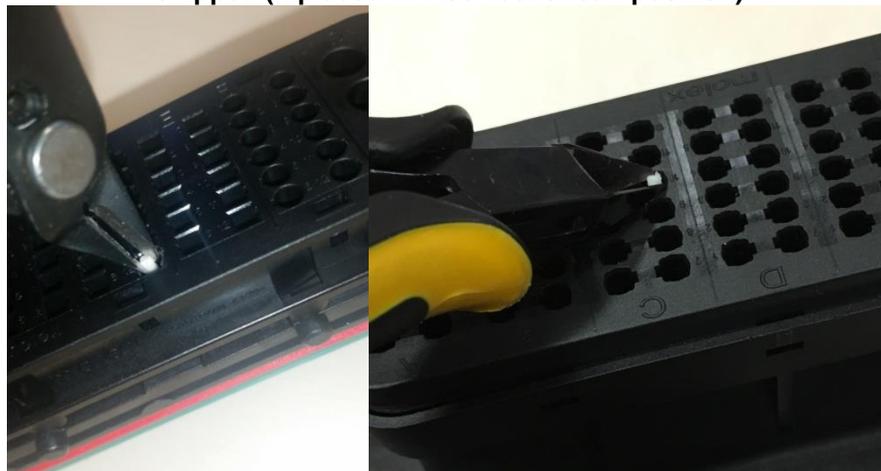


Figure 4.43b shows a method of gripping blind cavity plug after it has been snipped

4.3.4 Removal of MX150L Terminal & SRC Power Blind Cavity Plug

Figure 4.44 & Figure 4.45 illustrate the method of removal of the Female Receptacle Terminal and the Male Blade Terminal from the respective connector housing assemblies.

Note: the Service Tool must be 90° to the connector face and TPA must be in pre-load position.

- Insert the service tool as per step 1 Figure 4.41.
- Once the tool is engaged with the retention finger apply very small lateral force to the top of the tool in the direction shown in Figure 4.44 & Figure 4.45. When the tool is angled slightly, apply small pulling force to the cable and remove terminal.
- The same method should be used to remove the SRC blind cavity plugs.
- The tool **must not bend**, this implies there is too much force being applied to the tool.

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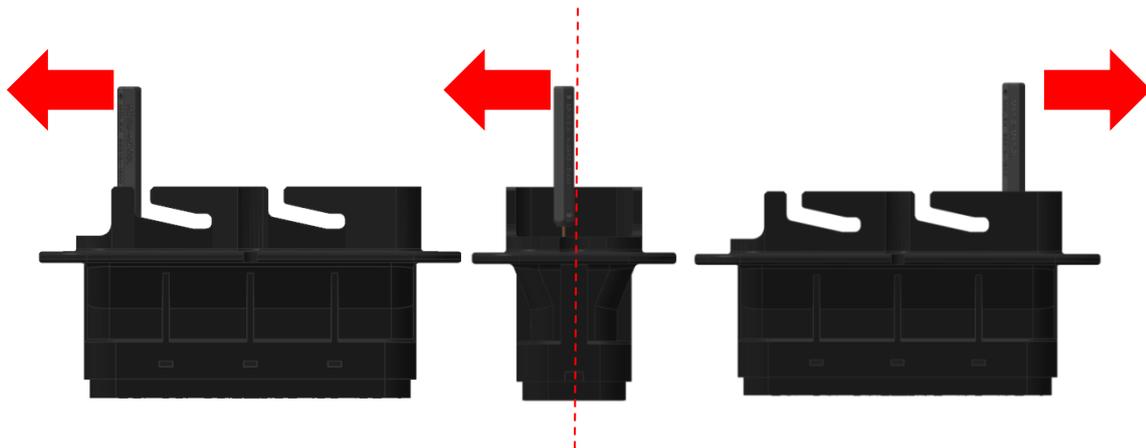


Figure 4.44 (Left) Cavities E, F & G, (Middle) Cavity D (Both cavities away from the centre line), (Right) Cavities A, B & C

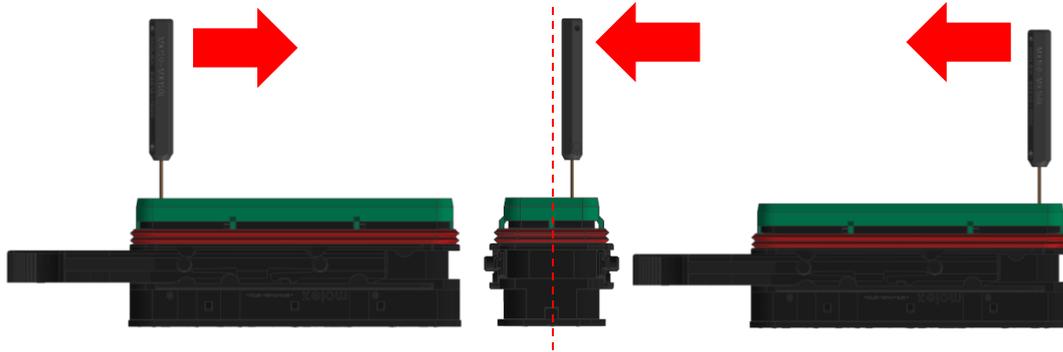


Figure 4.45 (Left) Cavities E, F & G, (Middle) Cavity D (Both cavities towards the centre line), (Right) Cavities A, B & C

4.3.5 Service tools

If a crimped terminal needs to be replaced, a new one can be hand crimped using the Molex crimp tools:

Please contact your Molex sales engineer with any crimp tooling requests

Figure 4.46 shows a Molex Terminal Service Tool (Part Number 638131500).



Figure 4.46: Molex Terminal Service Tool

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