

HARWIN

Instruction Sheet

IS-49

Kona Contact Assembly and Removal



INTRODUCTION

These instructions cover the following stages of assembly for Kona cable connectors:

- Solder contact assembly to cable
- Crimp contact assembly to cable
- Insertion and removal of contacts within housings

See Component Specification C049XX for recommended wire specification (latest issue).

If you are using the Crimp contacts, you will need the following Harwin tools:

- ZA1-920 - Kona Straight Crimp Tool
- ZA1-921 - Kona Straight Crimp Contact Positioner

Note: Equivalent pneumatic or battery powered crimp tools can be purchased via Daniels Manufacturing Corporation (DMC). Use part numbers WA27-300BTOEP or ME300BTC respectively for pneumatic and battery. Contact positioners will still be required when using pneumatic or battery options.

CABLE PREPARATION

1. Ensure that the wire to be soldered/crimped is within the specified size for the contact. Failure to use the specified wire size will result in a poor-quality solder/crimp joint.

Contact	Wire Gauge (AWG)	Max Conductor Diameter	Max Insulation Diameter	Crimp Tool Setting	Crimp Strength
KA1-0400005	8	4.25mm	7.5mm	N/A (Solder)	N/A (Solder)
KA1-0450005				8	100N
KA1-0500005				N/A (Solder)	N/A (Solder)
KA1-1410005				N/A (Solder)	N/A (Solder)

2. Cut the end of the cable to be terminated so that there is a clean-cut end (Figure A). Strip the cable to the correct length (Figure B) using a wire stripper, preferably with an adjustable rotating cutter. This should result in all the strands lying together neatly. If the lay of the strands is disturbed, it may be re-imposed with a slight twist.

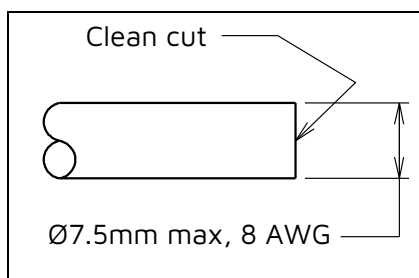


Figure A: Wire cut

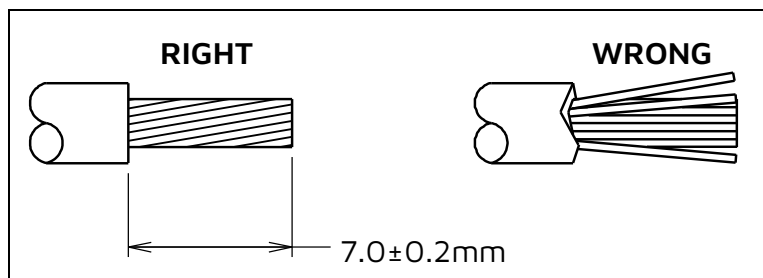


Figure B: Wire strip

CABLE ASSEMBLY TO SOLDER CONTACT

The below instruction applies to all Kona solder contacts (vertical and horizontal). Although only vertical contacts have been shown, the process is identical for horizontal options.

1. Coat the stripped portion of the wire and solder cup area in flux and apply a small amount of solder to pre-tin the wire. Ensure that the pre-tinned wire does not exceed a diameter of Ø4.50mm.
2. Secure the contact at a 45° angle and insert the wire into the solder cup ensuring the conductor is bottomed out at the base of the solder cup.

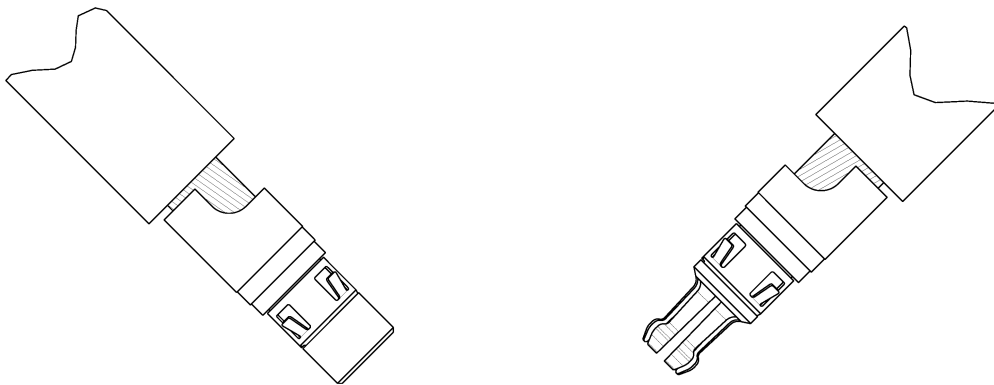


Figure C: Contact and wire assembly

3. Using a soldering iron, heat the wire and solder cup and feed solder into the open areas, allow the solder to flow into the cup until it is filled, but not overfilled.

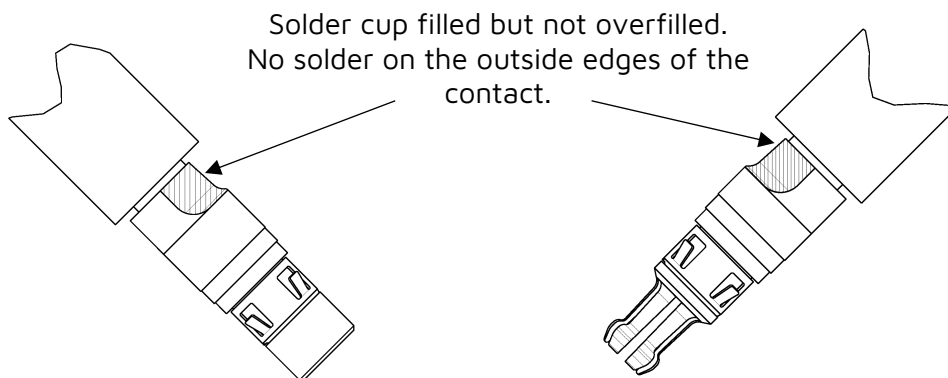


Figure D: Properly filled solder cup

4. Clean the soldered contacts with a suitable alcohol and water wash to remove solder and flux residue.

The above procedure is also applicable to horizontal Kona solder contact KA1-0500005.

CABLE ASSEMBLY TO CRIMP CONTACT

1. Using the Hex key provided with the tool, assemble the ZA1-921 contact positioner to the ZA1-920 crimp tool. A polarization pin prevents incorrect assembly.

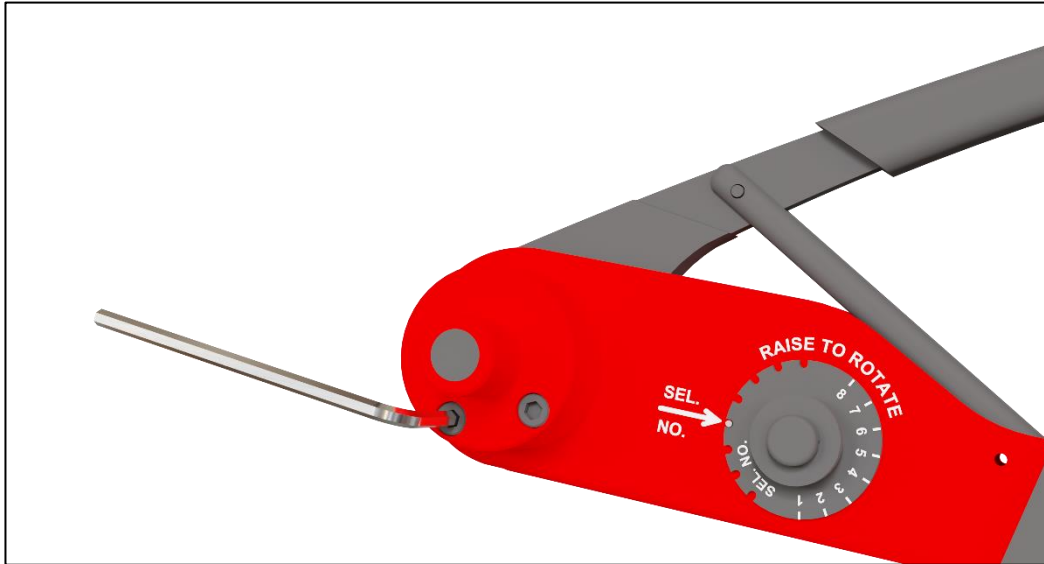


Figure E: Positioner assembled to crimp tool

2. Confirm that the tool is in the open position and free from obstruction. Place the contact in the crimp tool as shown, ensuring the contact is resting against the bottom of the hole in the positioner.

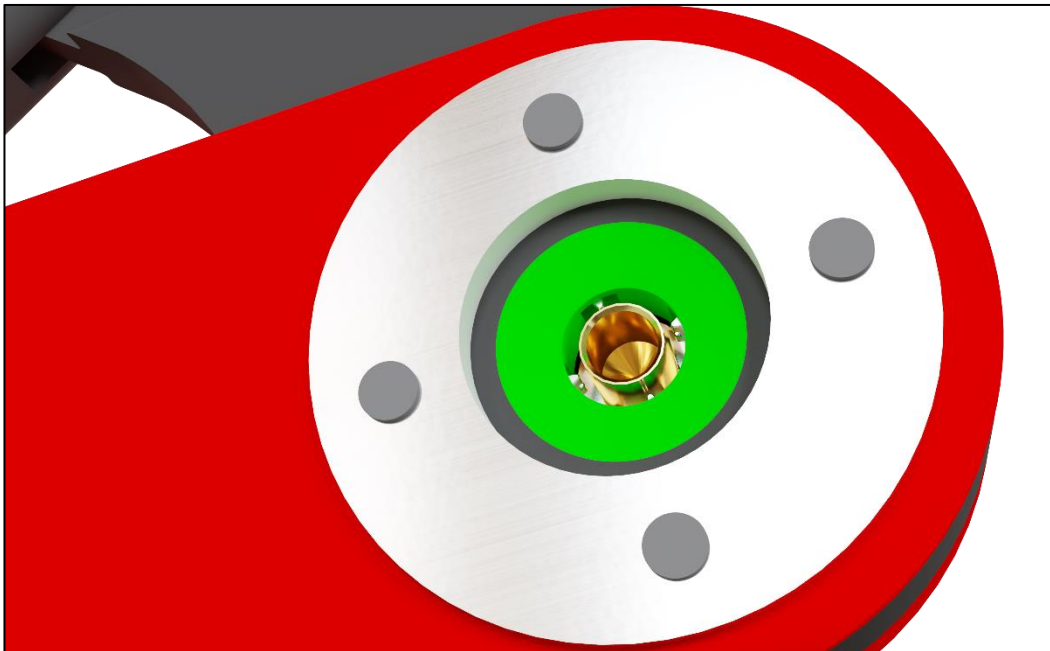


Figure F: Location of contact inside crimp tool

3. Gently place the stripped wire into the rear of the contact and push it to depth. Squeeze the handles of the crimp tool together fully, until the ratchet releases.

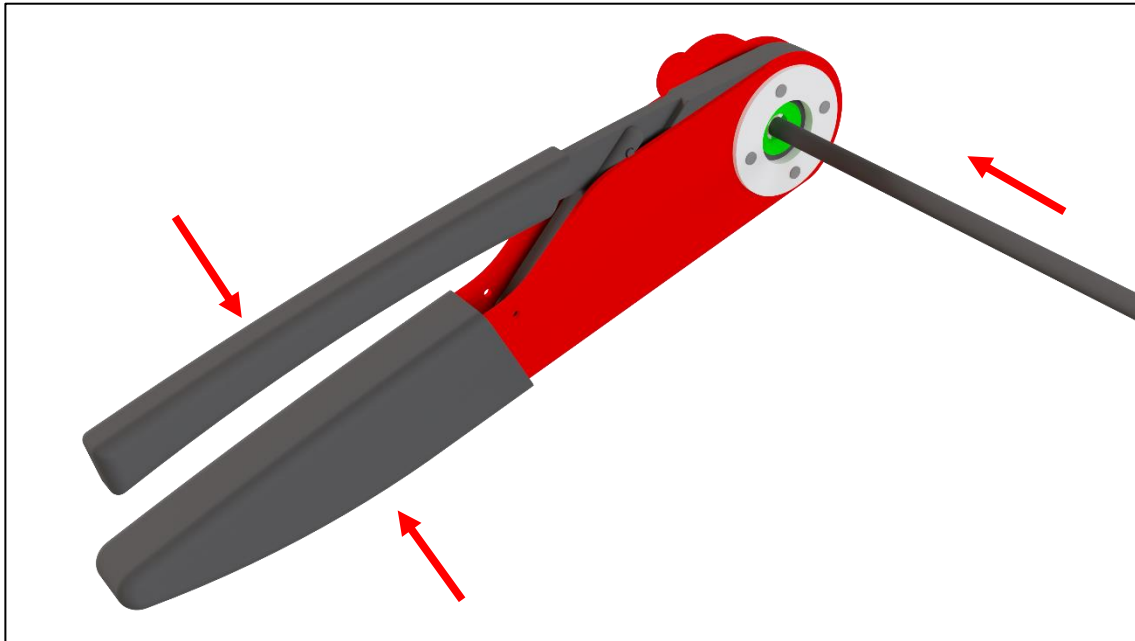


Figure G: Crimping operation

4. Once the handles have returned to the open position, the contact with the assembled wire can be removed from the tool. Crimp joints should be checked for the following:
 - Correct combination of cable, tool setting and crimp termination
 - Correct form of indents and location of crimp
 - Freedom from fracture, rough edges, or flash
 - Adequate insertion of all conductor strands in the crimp barrel
 - Absence of damage to the conductor or the insulation

CARE OF TOOL

There is virtually no maintenance required for the ZA1-920 tool. However, it is good practice to keep the indenter tips free of residual color band deposits and other debris. A small wire brush may be used for this purpose.

We strongly recommend that you:

1. **DO NOT** immerse tools in any cleaning solution.
2. **DO NOT** spray oil into tool to lubricate.
3. **DO NOT** attempt to disassemble tool or make repairs.

This is a precision crimp tool and should be handled as such.

STRAIGHT CONTACT ASSEMBLY INTO HOUSING

1. Take the wire and contact assembly and insert into the back end of the housing, ensuring that the contact square is lined up with the housing. The contact should move freely into the housing until the back of the solder cup is 0-1mm from the back of the housing, where resistance will be felt this is the 'insertion' point.

If there is resistance prior to this, withdraw the contact, and ensure the contact and collar assembly is clean and free of debris before inserting again. It is critical that excessive force is not applied to the contact before the contact is at the 'insertion' point.

Hand assembly **ONLY**, mechanical assembly will damage the contact collar assembly.

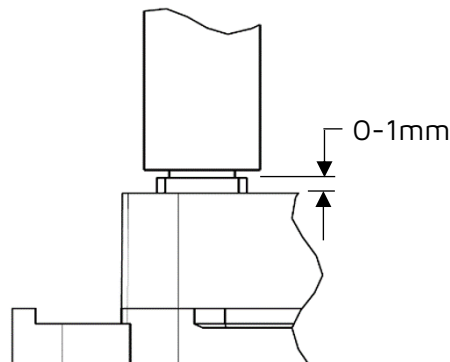


Figure H: Contact prior to proper assembly

2. Gently push on the wire until you can feel / hear that the contact collar has engaged within the housing. The back of the solder cup should sit flush with the lower inner walls of the housing once fully inserted. Contact insertion force should be below 10N.

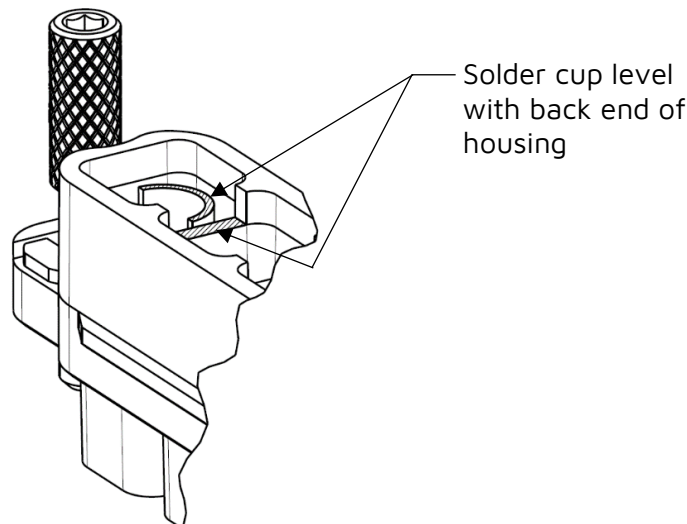


Figure I: Contact fully assembled into housing (wire hidden for clarity)

HORIZONTAL CONTACT ASSEMBLY INTO HOUSING

1. Take the wire and contact assembly and insert into the back end of the housing, ensuring that the cap isn't assembled, and the contact square is lined up with the housing. The contact should move freely into the housing until the back of the solder cup is 0-1mm from the bottom face of the housing, where resistance will be felt this is the 'insertion' point.

If there is resistance prior to this, withdraw the contact, and ensure the contact and collar assembly is clean and free of debris before inserting again. It is critical that excessive force is not applied to the contact before the contact is at the 'insertion' point.

Hand assembly **ONLY**, mechanical assembly will damage the contact collar assembly.

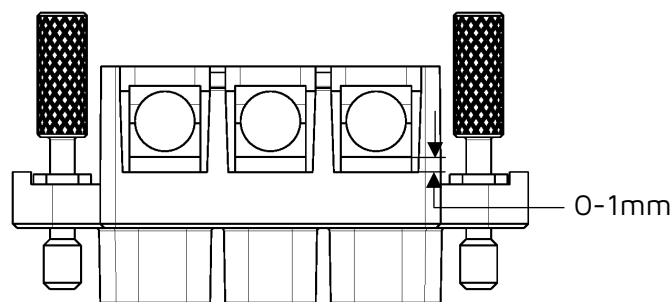


Figure J: Contact prior to proper assembly

2. Gently push on the rear of the contact until you can feel / hear that the contact collar has engaged within the housing. The back of the solder cup should sit just off of the internal bottom face once fully inserted. Contact insertion force should be below 10N.

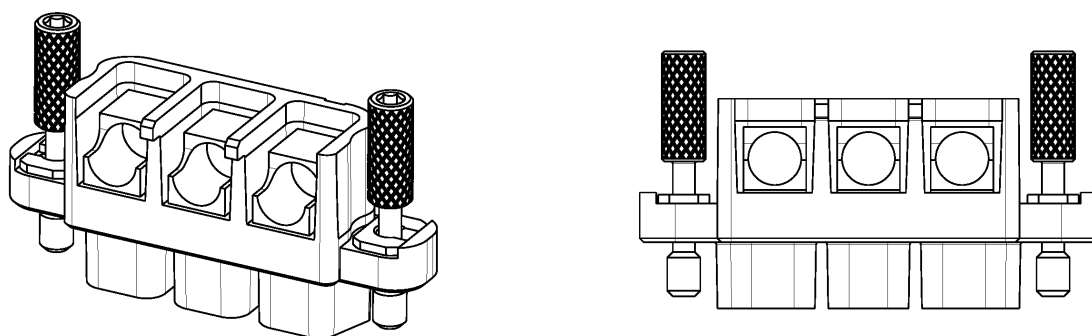


Figure K: Contact fully assembled into housing (wire hidden for clarity)

3. Attach provided KA1-510XX98 cap to the housing latches shown. This will require angling the cap so the engagement tabs are clear of the housing for now.

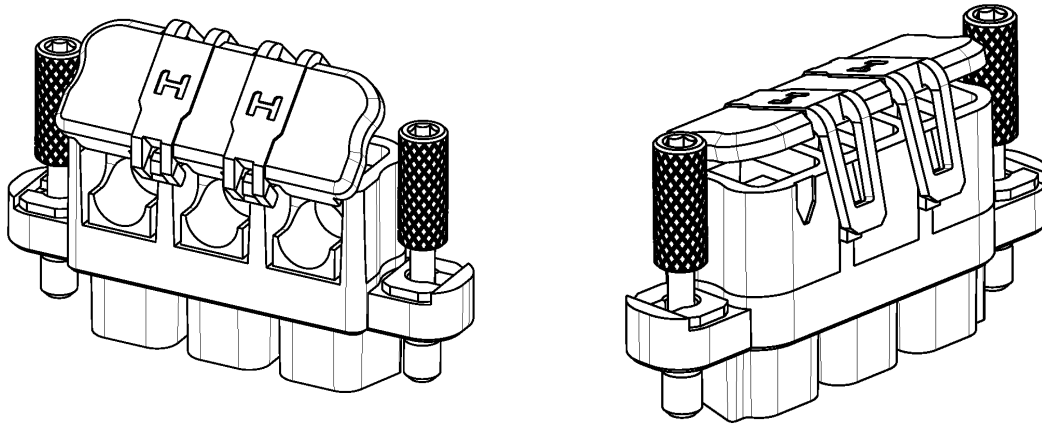


Figure L: Initial positioning of cap prior to full assembly (wire hidden for clarity)

4. Once the cap is partially in place, the back face can be pushed on until the engagement tabs locate. The resulting 'click' will mean the cap is successfully located.

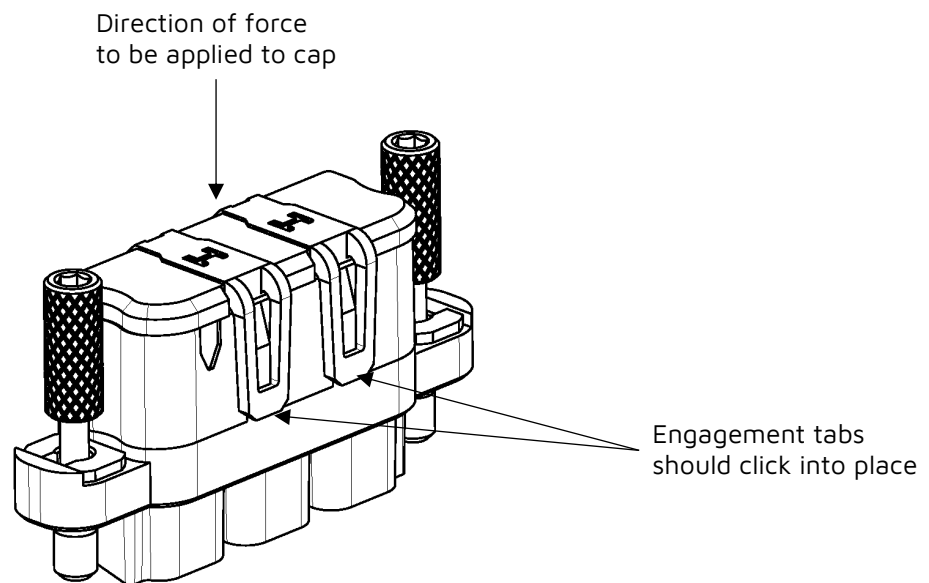


Figure M: Fully assembled cap (wire hidden for clarity)

STRAIGHT CONTACT REMOVAL FROM HOUSING

1. Insert ZA1-9040000 contact removal tool into the mating end of the cable housing, making sure the end of the tool goes over the female contact without pushing on the front edge. Push slightly on the rear of the contact while inserting the tool (this helps properly engage over the retention tabs internally).
2. Keep going until the score mark on the tool is in line with the front edge of the housing. At this point, you have disengaged the inner retention tabs, and the tool should not be pushed in any further.
3. Gently pull back on the contact – allow the tool to move slightly if required, to center itself within the housing as the contact is removed.
4. Completely remove the contact and wire from the assembly.



Figure J: Female Contact Removal

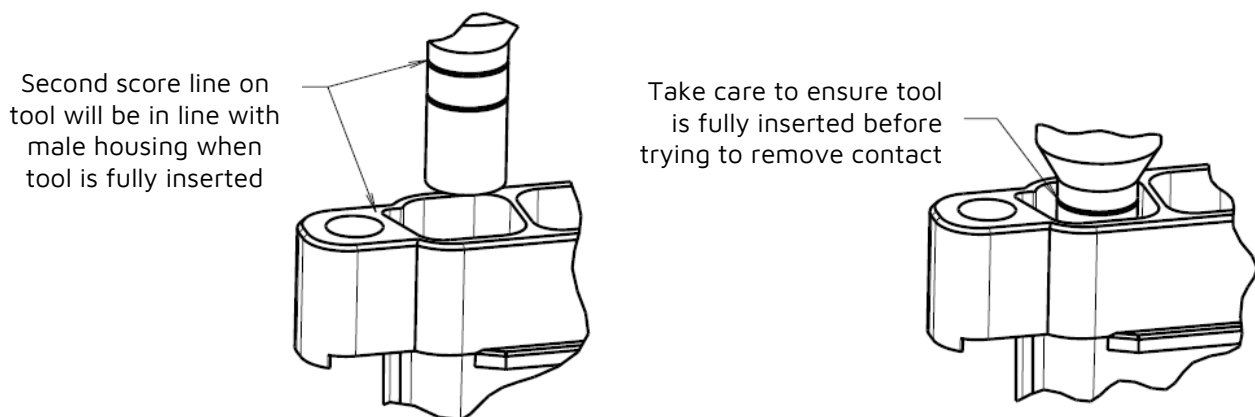


Figure K: Male Contact Removal

HORIZONTAL CONTACT REMOVAL FROM HOUSING

1. Place the horizontal cap removal tool (ZA1-9100000) against the tabs of the cap as shown in *Figure L* below. Gently push in the direction shown on the tool so the tabs release (Note: do not angle the tool other than the orientation shown, only a pushing motion is required).
2. The cap should now be released and can be removed from the housing.
3. Insert ZA1-9040000 contact removal tool into the mating end of the cable housing, making sure the end of the tool goes over the female contact without pushing on the front edge. Push slightly on the rear of the contact while inserting the tool (this helps properly engage over the retention tabs internally).
4. Keep going until the score mark on the tool is in line with the front edge of the housing. At this point, you have disengaged the inner retention tabs, and the tool should not be pushed in any further.
5. Gently pull back on the contact – allow the tool to move slightly if required, to center itself within the housing as the contact is removed.
6. Completely remove the contact and wire from the assembly.

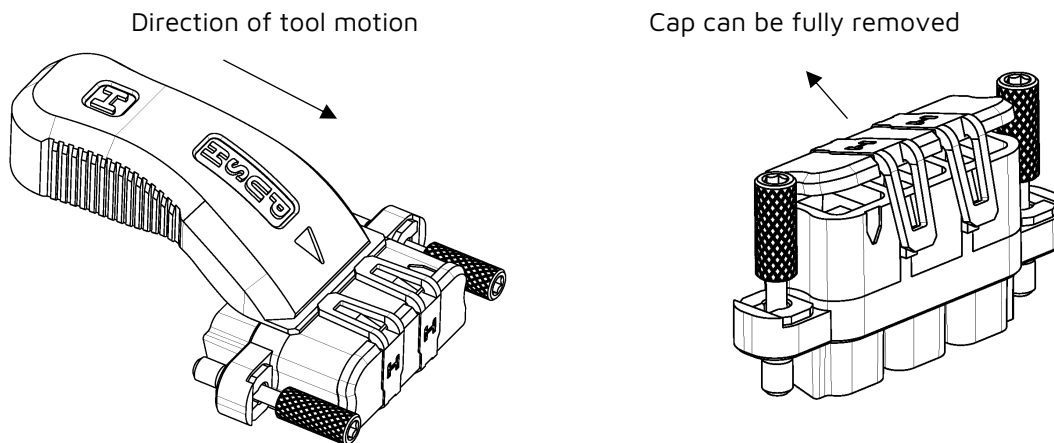


Figure L: Female Contact Removal

(see Figures J & K for ZA1-904 tooling steps to remove the contact)