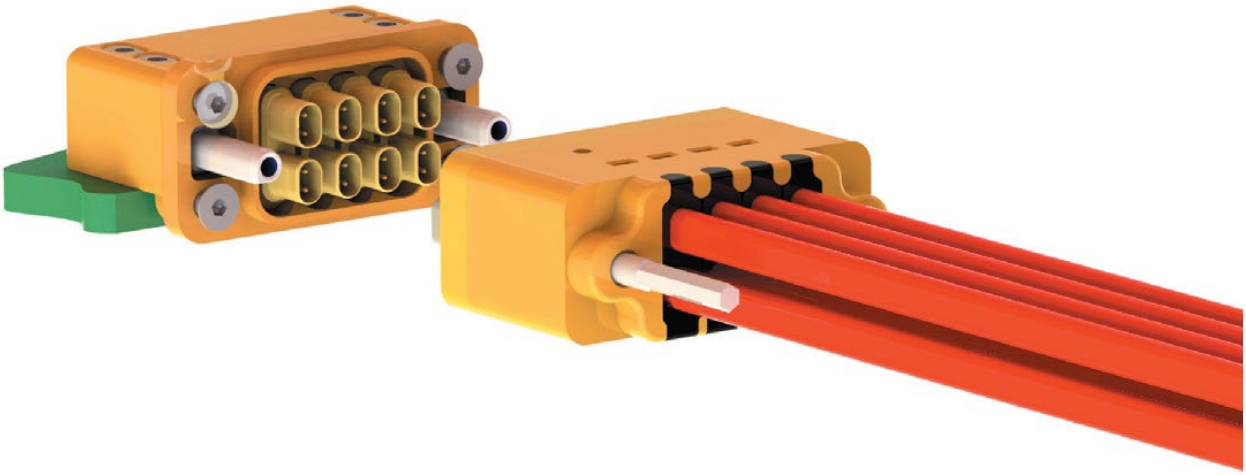
smiths interconnect

Cable Fitting Guide

NXS Series

Preparation of Cable Assemblies and Fitting to Plugs

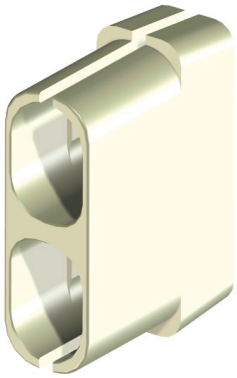


STEP 0: Retention Parts - Insulator and retainer Clip

The insulators and retainer clips are normally delivered as separately packed components in a given plug kit.

Smiths Interconnect part number	Description
HXS-0020-M	Insulator expander
HXS-0021-M	Retainer clip

The parts are available as spares under the Smiths part numbers above.



Insulator expander

Retainer clip

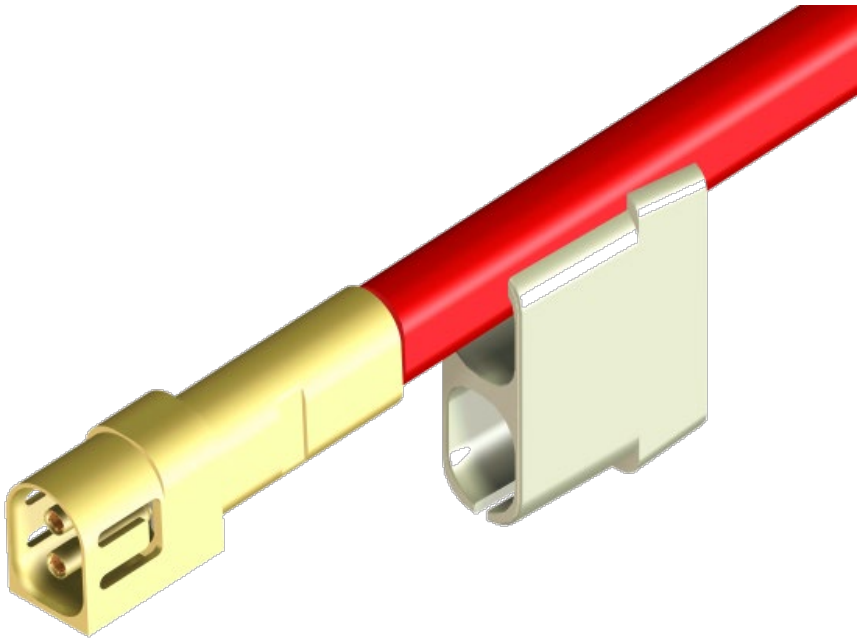
CAUTION: insulators and retainers are designed to flex under conditions of controlled handling as described below.

- **Insulator expanders:** these may be assembled to and dismantled from cables as described up to a maximum of three times, however NB: the user MUST examine these parts for any sign **of** damage or permanent distortion before the parts go through a cycle of re-use.
- **Retainer clips:** do not re-use retainer clips; they are intended for a single use only.

If in doubt, do not re-use any parts.

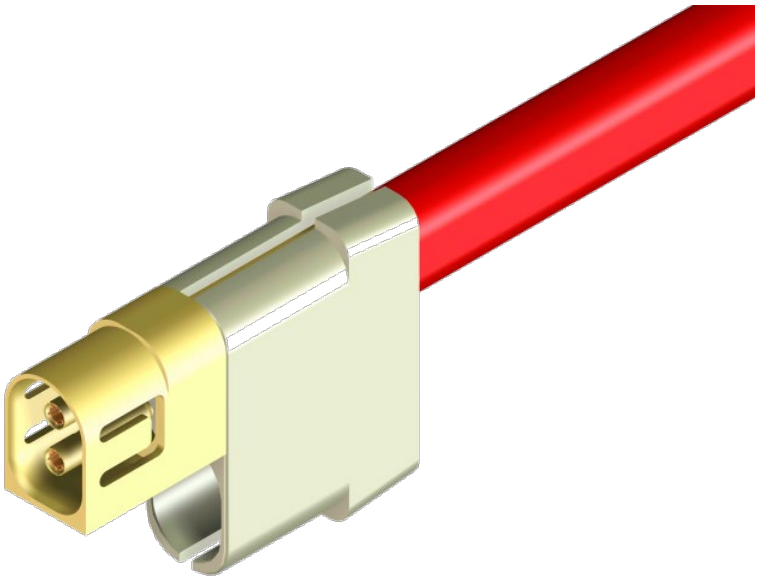
STEP 1: FIT CABLE TO INSULATOR

Take an insulator and carefully open one of the slots in the insulator to allow the jacket of the first cable to pass into the insulator cavity.



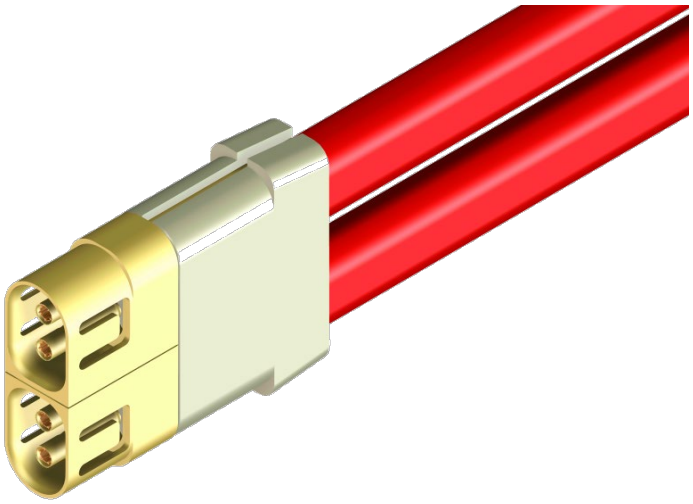
STEP 2: SLIDE CABLE INTO ITS HOME POSITION

Use gentle finger pressure to slide the cable and contact into the position illustrated below; there should be no gap at the interface between the contact and the insulator.



- **STEP 3: FIT SECOND CABLE TO INSULATOR**

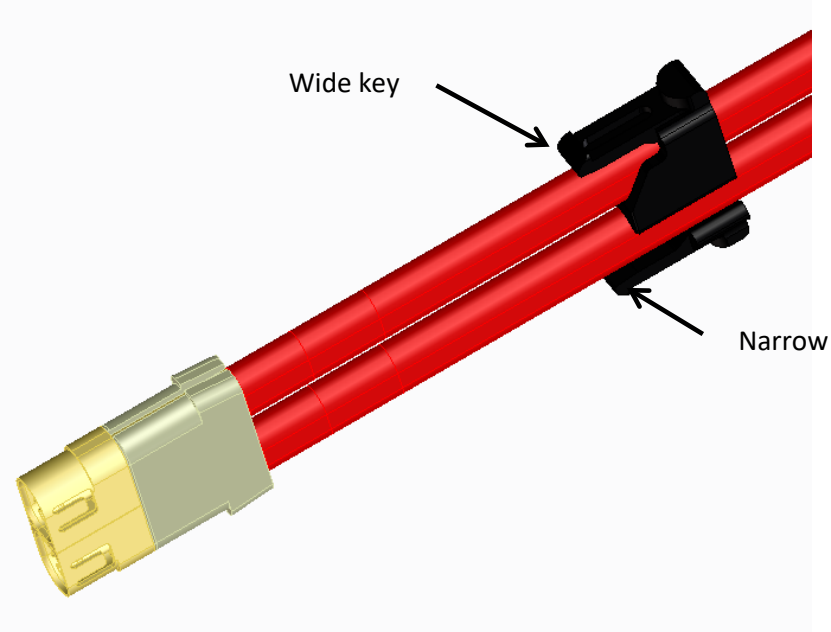
Repeat steps 1 and 2 above to fit the second cable into the insulator cavity.



STEP 4: CHECK THAT INSULATOR HAS CLOSED AROUND THE CABLE CONTACTS

Check the gap between the two faces of the slot in the insulator. If the gap measures 0,5 mm then the insulator has closed correctly around the contacts. If the gap is bigger, then carefully manipulate the cables within the insulator until the gap closes up to the correct distance. The plug cavity can be used at this step as a gauge to check that the insulator/cable sub-assembly will fit the plug during final fitting.

STEP 5: FIT RETAINER CLIP TO CABLES



Fit the retainer clip around the cable as shown. Leave the clip at a distance of 20-30 mm clear of the "back" face of the insulator.

Inspect: check that no cable is twisted or crushed at the point where it passes through the clip.

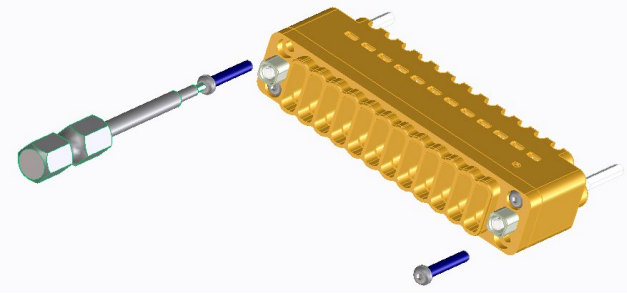
NB: observe the keying features on the clip that determine which way the cables and clip can later be inserted into the plug. Each clip has a wide key/latch end and a narrow key/latch end. These fit into the appropriate wide and narrow latch slots in the plug shell (narrow slot = channel 1).

STEP 6: FITTING CABLE ASSEMBLIES TO THE PLUG

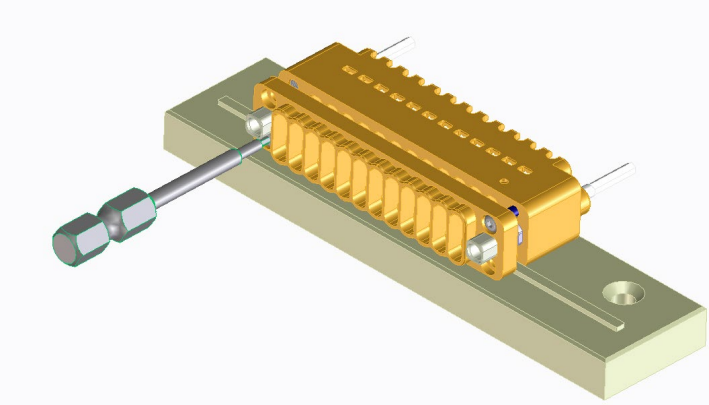
NB: some steps below make use of recommended special tools available from Smiths Interconnect. This guide assumes that the plug is not populated with cables at the start of the assembly process.

1. Take a plug and remove it from its packaging.

2. Completely remove the two diagonally opposite M2 screws that are indicated in the sketch; special hex driver H611571 is recommended for this purpose. Set aside the M2 screws for later use.

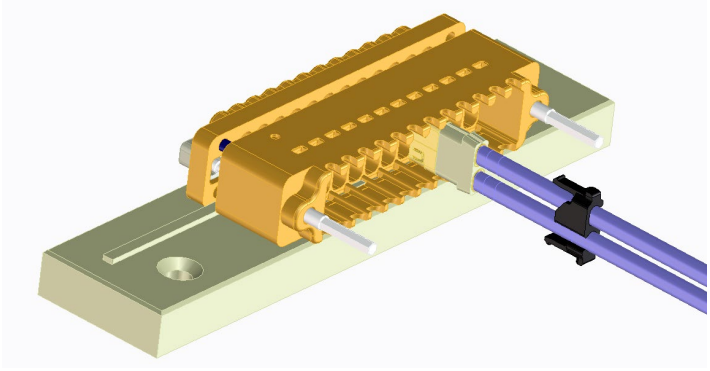


3. Use the hex driver to slacken the two remaining screws by eight turns.
NB: after slackening by eight turns, the M2 screws should still be loosely held in the body of the plug. They should not be completely removed.



4. A gap of a minimum of 2mm can now be opened up between the front half and the rear half of the plug body. For subsequent operations, the special tool base HTA-661 can be used to maintain this gap at a repeatable minimum distance. The illustration above shows a 12-way plug body located on the tool base. The 2mm gap is required to allow the contacts to be inserted and retainer clips to be fitted in later processes.

5. Take a cable/insulator/retainer sub-assembly and introduce it into its cavity in the plug body. Observe the keying features on the retainer clip and their mating features on the plug body. Ensure that the retainer clip does not obstruct the process of inserting the cable.



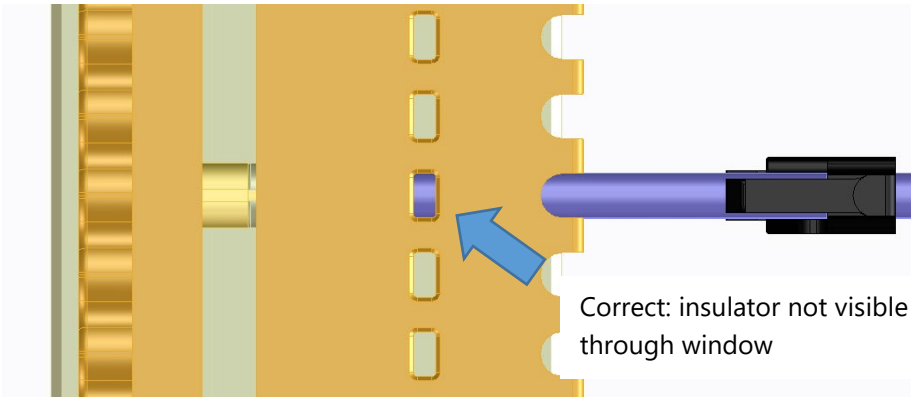
6. Continue to slide the cable assembly into its cavity until the contact is visible in the 2mm gap between the shells, and the cable meets a firm stop.

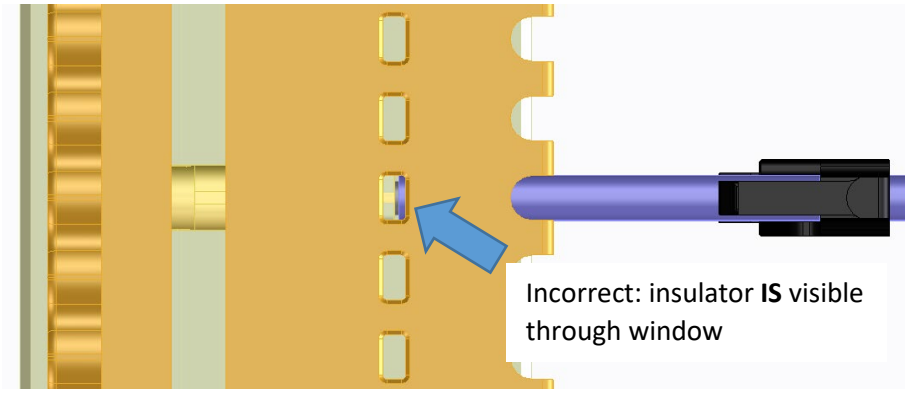
7. Repeat steps 5 and 6 for the remaining cables.

8. Once all cables are fully inserted, make a final check of the whole harness against the wiring schedule.

9. Retainer clips can now be fitted. Before attempting to fit the retainer clip, first check that the contact is fully inserted by pushing it firmly against the stop and sighting through the latch window, perpendicular to the latch body.

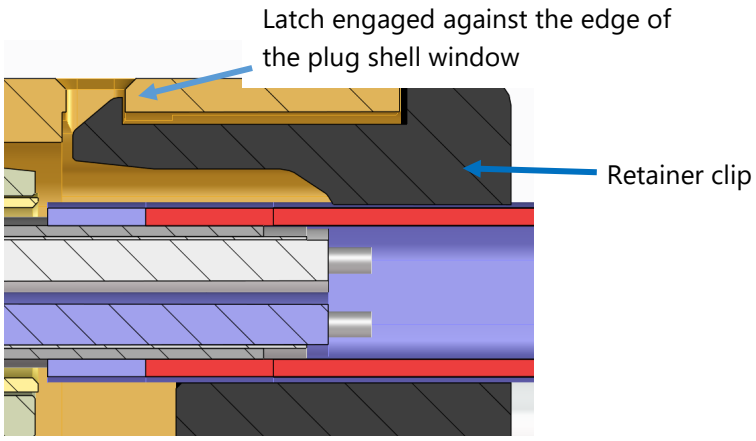
See illustrations below.
The back edge of the insulator should not be visible through the window. If the insulator is not visible, this indicates that the cable is far enough forward to allow fitting of the retainer clip. If the insulator is visible, first check that the cable assembly is not obstructed, then attempt to push the assembly further forwards (towards the mating face of the connector).





10. When the cable is in position, engage the retainer clip; the arms of the clip can be gently squeezed towards each other in order to assist their passage into the plug cavity. Avoid exerting an undue force which could break the arms of the clip.

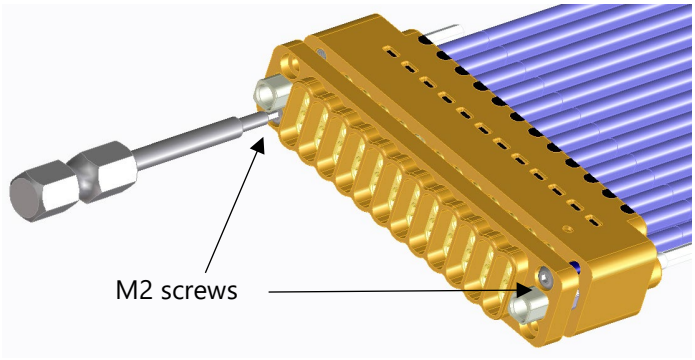
11. Push the clip all the way to its latching position. There will normally be an audible click when the latch is locked. The diagram below shows a section through the plug with the retainer clip (black) correctly latched. By inspecting through the windows on either side of the plug, the latch position can be checked. If the latch is not correctly engaged against the edge of the plug shell window, first make sure that the cable is fully forward and that the insulator is not obstructing the clip, then repeat the attempt to fit the clip. If there is any sign of damage to the clip at this stage it must be taken out and a fresh clip substituted.



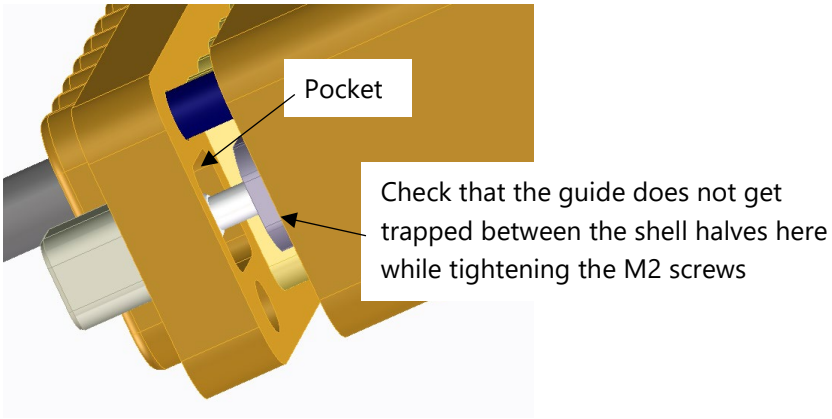
12. Repeat the steps above until the plug is fully populated with the required number of cables and all the retainer clips are correctly fitted and undamaged.

13. The plug must now be fully reassembled. To do this you will use the two diagonally opposite M2 screws that are retained in the plug shell to gradually pull the two halves of the shell together and grip the cables in place.

14. Use the special hex driver to progressively tighten the two screws, while also using finger pressure to assist in closing the gap between the front and rear halves of the plug.



15. While tightening the screws, make sure that the guides either side of the plug do not block the movement of the front half of the shell:



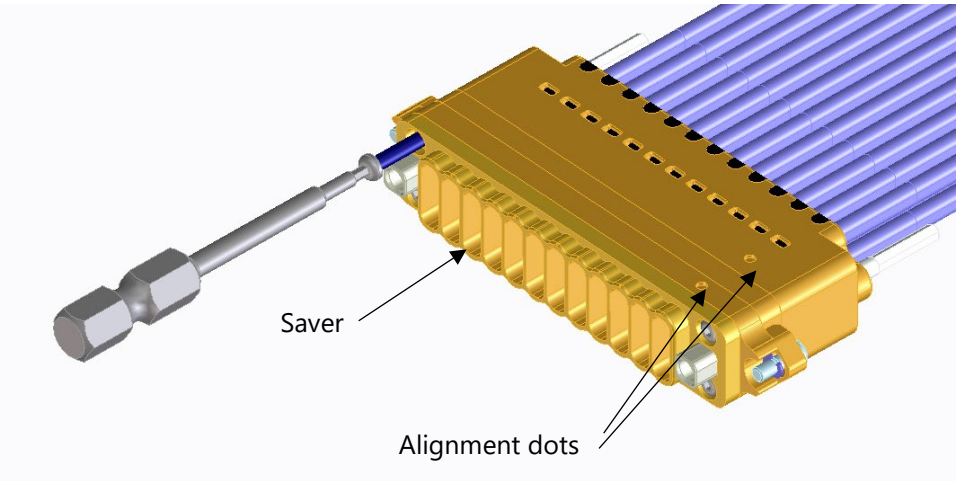
If there's a blockage, the guide can usually be rotated to align it with its pocket in the front half of the shell.

16. Continue tightening the two screws until the two halves of the plug meet flush, face to face. Using a calibrated driver, tighten the screws to the drawing-specified torque of 0,20Nm +/-3%.

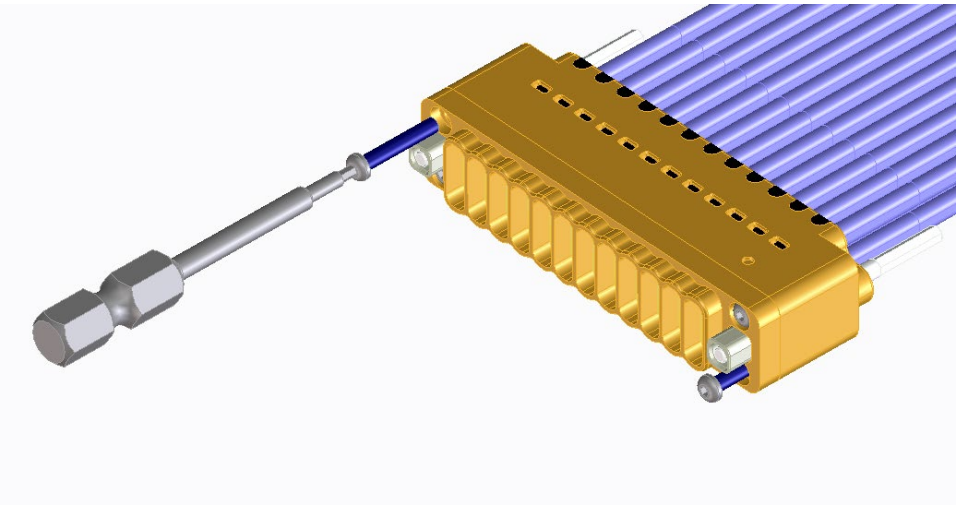
▪ STEP 7: FIT SAVERS (OPTIONAL) AND FINAL INSPECTION

If the plug/harness assembly is intended to be used with a saver then fasten the saver to the plug using the two spare M2 screws that were set aside at the earlier stage of the process. Tighten the screws to 0,15Nm +/-3%.

NB: the saver should be fitted with its alignment dot matched to the similar dot on the printed face of the plug.



If no saver is intended to be used, simply tighten the two screws back into the two free holes in the plug as shown below. Take care not to exceed the recommended maximum torque on any screw.



Before passing the assembly for further test or use inspect:

- all contacts undamaged
- all contacts in correct position

- faces of plug and saver shells meet flush with no gap >0,1mm and
- security of retainer clips

SPECIAL TOOLS

PART NO.	DESCRIPTION		
H611571	Prod Tooling	HEX Driver	Mod to 1.27mm
HTA-661	Tool	Contact Release	Fixed base
HTA-662	Tool	Contact Extractor	Manual