Datamate Tooling
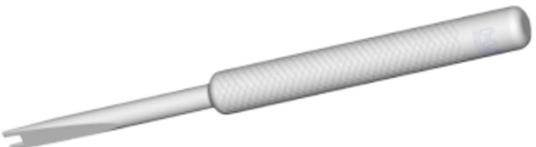
Instruction sheets (where available) can be accessed at **www.harwin.com/downloads/instructions**

HAND CRIMP TOOL

> Standard circular crimp tool BS5210-3A-300 and MIL specification M22520/2-01.
> Precision tool with ratchet mechanism and 8-indent form.
> Must be used with applicable positioner shown below.
> Instruction sheet available.

ORDER CODE	
Signal contacts, L-Tek, J-Tek & Mix-Tek	**M22520/2-01**

HAND CRIMP TOOL

> Standard circular crimp tool.
> Precision tool with ratchet mechanism and 8-indent form.
> Must be used with applicable positioner shown below.
> Instruction sheet available.

ORDER CODE	
Inner contact of Mix-Tek coax contacts	**Z80-292**

HAND CRIMP TOOL

> Standard coax crimp tool for crimping the outer sleeve of Mix-Tek coax contacts.
> Instruction sheet available.

ORDER CODE	
Outer sleeve of Mix-Tek coax contacts	**Z80-293**

POSITIONER

> Used with applicable hand crimp tool shown above.

ORDER CODE	
Female Signal Barrel Crimp, Male L-Tek Crimp	**T5747**
Male J-Tek, Mix-Tek Signal Crimp	**Z80-193**
Inner contact of Mix-Tek coax contacts	**Z80-291**

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Datamate Tooling

Instruction sheets (where available) can be accessed at **www.harwin.com/downloads/instructions**

DATAMATE

INSERTION/REMOVAL TOOL

- For inserting crimped contacts into the rear of mouldings.
- Instruction sheet available.
- Suitable for all Datamate signal Barrel crimp contacts.

ORDER CODE	
Barrel Signal crimps for L-Tek, J-Tek & Mix-Tek	**Z80-280**

REMOVAL TOOL

- To aid removal of special cable contacts from Mix-Tek connectors.

ORDER CODE	
Mix-Tek special cable connectors	**Z80-290**

SEPARATOR TOOL

- Recommended for unplugging L-Tek latched connectors (tool releases the latches prior to disengagement).
- Can also be used with unlatched and friction lock connectors.
- Suitable for all sizes.

ORDER CODE	
L-Tek	**Z80-299**

SCREWDRIVER

- Recommended for use on J-Tek board mount nuts.

ORDER CODE	
J-Tek screwdriver	**Z80-298**

E-CLIP TOOL

- For assembling E-Clips supplied with J-Tek hooded connectors.

ORDER CODE	
J-Tek E-Clips	**Z80-300**

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Datamate Tooling

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Datamate **Trıo-Tek**

Instruction sheets (where available) can be accessed at **www.harwin.com/downloads/instructions**

DATAMATE

HAND CRIMP TOOL

- ‣ 'Rigidus' crimp tool design.
- ‣ Precision parallel action crimp tool with ratchet mechanism.
- ‣ Supplied with locator and die-set – spares available.
- ‣ Instruction sheet available.

ORDER CODE

| Z80-255 |

REMOVAL TOOL

- ‣ For removal of crimped contacts from mouldings.
- ‣ Instruction sheet available.

ORDER CODE

| Z80-258 |

SPARE DIE-SET

- ‣ Spare die-set for use with hand crimp tool shown above.

ORDER CODE

| Z80-244 |

SPARE LOCATOR

- ‣ Used with hand crimp tool shown above.

ORDER CODE

| Z80-259 |

www.harwin.com

89

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Datamate Crimping

Datamate Signal Contacts: Barrel Crimps

Crimps and Tools

These instructions are applicable for the following crimp contacts:

- Female Crimp contacts **M80-01100XX, M80-01300XX, M80-01900XX, M83-01100XX, M83-01300XX**
- Male Crimp contacts **M80-04000XX, M80-04100XX, M80-19400XX, M80-19500XX**

The following tools are used (see pages 87 and 88):

- Hand Crimp Tool **M22520/2-01**
- Insertion/Removal Tool **Z80-280**
- Positioner **Z80-193** (for M80-19400XX or M80-19500XX) or **T5747** (for all others)

All tools are supplied with instruction sheets, which are available at **www.harwin.com/downloads/instructions**.
Before starting, assemble the positioner to the crimp tool (see the M22520/2-01 Instruction Sheet for details).

Crimping

- Check that your selected cable size is correct to the following table – Harwin recommend PTFE insulated equipment wire to BS 3G 210 Type A or MIL-W-16878:

Type	Wire gauge (AWG)	Typical Stranding	Crimp tool setting	Minimum pull-off force	Insulator diameter
Large Bore	22	19/0.15	6	50 Newtons	Ø1.10mm max
Small Bore	24	7/0.2	6	44 Newtons	Ø1.10mm max
Small Bore	26	7/0.15	6	25 Newtons	Ø1.10mm max
Small Bore	28	7/0.125	6	12.5 Newtons	Ø1.10mm max
Extra Small Bore	28	7/0.12	5	12.5 Newtons	Ø0.75mm max
Extra Small Bore	30	7/0.25	4	7 Newtons	Ø0.75mm max
Extra Small Bore	32	7/0.08	4	4 Newtons	Ø0.75mm max

- Cut the end of the cable to give a clean cut end. Strip the end of the cable by 2.00±0.15mm using a PTFE wire stripper, ideally with an adjustable rotating cutter. This should result in a clean edge to the insulation, and all the strands laying together neatly. If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.

- Assemble the contact onto the end of the cable – make sure all the strands are within the crimp body. The cable insulation should also go inside the crimp barrel – see Figure 1.

- Position the contact fully into the positioner, by inserting it clip-end first through the crimp tool jaws. Keep a small amount of pressure on the cable, to ensure it stays inserted in the crimp.

Fig. 1

- Squeeze the handles of the crimp tool fully together, until the ratchet releases. The handles will then return to the open position. Remove the crimped wire, and check the following:

  - Evenness of crimp indentations, no fractures or rough edges around the crimp
  - No damage to the rest of the crimp or insulation
  - Regularly check a sample to ensure the minimum pull-off force is maintained

Crimp Insertion

- Attach the correct tool piece to the handle of Z80-280 for inserting your cable size (check the instruction sheet for further advice).

- Place the crimped contact partially in the moulding – this should leave 1.5-2mm of crimp protruding from the moulding. It is important that the correct position is found (Figure 2), otherwise the retention shoulder inside the moulding will get removed when force is applied, and the crimp will not stay in the moulding (Figure 3).

- Support the face of the moulding on a solid surface (do not rest the connector on any fitted latches). Place the insertion tool around the wire and onto the back of the crimp (Figure 4). Push firmly – there will be an audible click when the socket is correctly seated.

Fig. 2 – correct

Fig. 3 – incorrect

Fig. 4

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Datamate Crimping

Datamate Signal Contacts: Datamate **Trıo-Tek**

Crimps and Tools

These instructions are applicable for the following crimp contacts:

- Female Crimp contacts **M80-25300XX, M80-25400XX, M80-28300XX, M80-28400XX** (Pages 25 and 51).

The following tools are used (see page 89):
- Hand Crimp Tool **Z80-255**   - Locator **Z80-259** (supplied with crimp tool)   - Removal Tool **Z80-258**

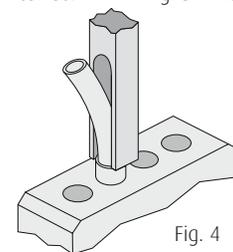All tools are supplied with instruction sheets, which are available at **www.harwin.com/downloads/instructions**.

Crimping

- Check that your selected cable size is correct to the following table – Harwin recommend PTFE insulated equipment wire to BS 3G 210 Type A:

Type	Wire gauge (AWG)	Typical Stranding	Minimum pull-off force	Insulator diameter
M80-25300XX or M80-28300XX	22	19/0.15	45 Newtons	Ø1.10mm max
	24	7/0.2	29 Newtons	Ø0.95mm max
M80-25400XX or M80-28400XX	26	7/0.15	18 Newtons	Ø0.80mm max
	28	7/0.125	9.8 Newtons	Ø0.71mm max

- Cut the end of the cable to give a clean cut end. Strip the end of the cable by 2.75±0.25mm using a PTFE wire stripper, ideally with an adjustable rotating cutter. This should result in a clean edge to the insulation, and all the strands laying together neatly. If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.

- Check the locator is assembled (see the Z80-255 Instruction Sheet for details). Ensure that the crimp tool is at the fully open position (Figure 1).

- Push the button on the back of the locator (Figure 2), which will move the locator forward between the crimp dies (Figure 3). Whilst holding the locator in the forward position, insert the crimp contact into the correct locator nest (Figure 4). The wire size is marked on the crimp die, above each location.
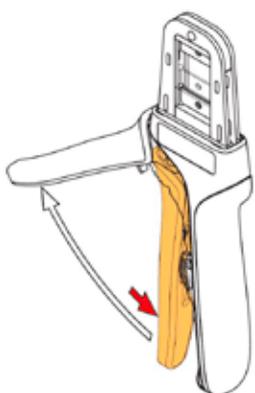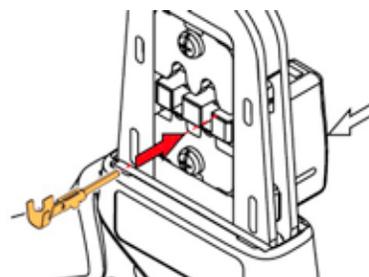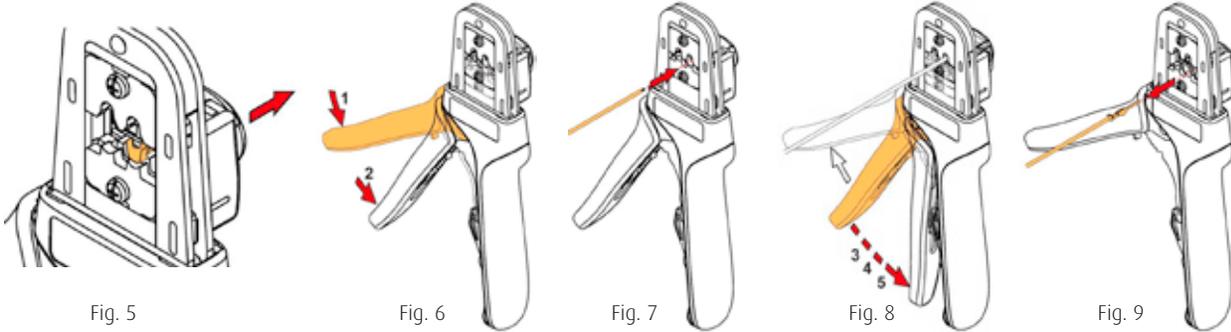
| Fig. 1 | Fig. 2 | Fig. 3 | Fig. 4 |

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Datamate Crimping

- Release the locator button, allowing the crimp contact to move back between the crimping jaws (Figure 5). Partially close the handle, until the second ratchet position engages (Figure 6). Load the stripped wire through the terminal, and against the wire stop inside the tool (Figure 7).

Fig. 5   Fig. 6   Fig. 7   Fig. 8   Fig. 9

- Whilst holding the wire against the wire stop, complete the crimp by squeezing the tool handles together through the rest of the ratchet clicks – another 3, to make 5 in total (Figure 8). The handles should then be free to open. Remove the crimped wire (Figure 9).

Crimp Insertion

- The completed crimp can now be inserted into the appropriate Trio-Tek crimp housing. Crimps are assembled into the mould with the retaining tang towards the outer edge of the housing. With thinner wires, it may be helpful to push onto the back of the crimp with the Extraction Tool Z80-258. If it is necessary to remove a crimp once assembled, please refer to the instruction sheet for the Removal Tool Z80-258.

Datamate Coax Contacts: Datamate Mix-Tek

Crimps and Tools

These instructions are applicable for the following crimp contacts:

- Female Crimp Coax contacts: straight **M80-305, M80-306, M80-307** and 90° **M80-308, M80-309** (Page 86)
- Male Crimp Coax contacts: straight **M80-315, M80-316, M80-317** and 90° **M80-318, M80-319** (Page 86)

The following tools are used (see pages 87 and 88):

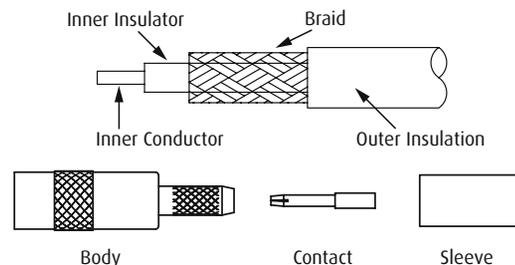- Hand Crimp Tools **Z80-292, Z80-293**   - Positioner **Z80-291**   - Removal Tool **Z80-290**

Crimping Straight Coax Contacts

- Check that your selected cable size is correct to the following table:

Type	Cable size	Cable type	Correct Hex on tool Z80-293, for crimping sleeve	Correct setting on tool Z80-292, for crimping inner contact
M80-305, M80-315	Ø2.00mm	RG 178	Small Hex	4
M80-306	Ø2.40mm	PTFE Cellular	Small Hex	4
M80-307, M80-317	Ø2.70mm	RG 174, 179, 316	Large Hex	4 (M80-307), 6 (M80-317)

- Strip the cable to the appropriate dimensions for the part being crimped (as specified on the drawing). If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.

- Identify the pieces of the coax connector to be assembled:

Inner Insulator   Braid

Inner Conductor   Outer Insulation

Body   Contact   Sleeve

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Datamate Crimping

- Slide the sleeve onto the cable, past the stripped area:

  Sleeve

- Crimp the inner contact to the end of the cable inner conductor, using the Hand Crimp Tool **Z80-292**, with the Positioner **Z80-291** assembled.

  Crimp here

- Insert the cable and crimped inner contact into the coax body from the rear. Make sure that the braid goes outside and over the rear section of the body.

  Braid

- Slide the sleeve back to the body of the coax, so that it covers the exposed braid, and touches the shoulder of the coax body. Crimp into place using the Hand Crimp Tool **Z80-293**.

  Crimp here

Crimping 90° Coax Contacts

- Check that your selected cable size is correct to the following table:

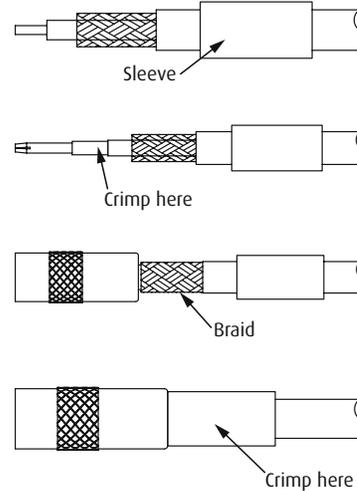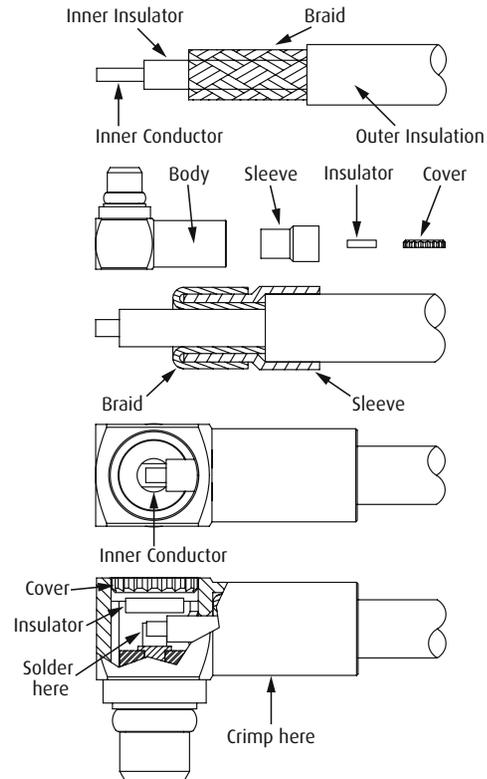| Type	Cable size	Cable type	Correct Hex on tool Z80-293, for crimping sleeve
M80-308, M80-318	Ø2.00mm	RG 178	Small Hex
M80-316	Ø2.40mm	PTFE Cellular	Small Hex
M80-309, M80-319	Ø2.70mm	RG 174, 179, 316	Large Hex

- Strip the cable to the appropriate dimensions for the part being crimped (as specified on the drawing). If the strands are disturbed, they can be re-aligned by putting a slight twist into the strand bundle.

- Identify the pieces of the coax connector to be assembled:

- Slide the sleeve onto the cable until it stops against the outer insulation. Fold the braid over the sleeve:

- Push the cable and sleeve into the body, as far as it will go. The cable inner conductor will be visible through the hole in the top of the coax body, and should go into the slot in the inner contact of the body.

- Solder the cable inner conductor to the body inner contact. When cool, place the insulator inside the top, and press the cover into place. Crimp the back end of the coax onto the insulation of the cable using the Hand Crimp Tool **Z80-293**.

Inner Insulator   Braid

Inner Conductor   Outer Insulation

Body   Sleeve   Insulator   Cover

Braid   Sleeve

Inner Conductor

Cover

Insulator

Solder here

Crimp here

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Using Datamate Jackscrews: Datamate **J-Tek**

Introduction

Jackscrews are available for all variations of Datamate J-Tek and Mix-Tek. They are often specified where the following needs may require more than the holding force of the contacts:

- To prevent disengaging of connectors under adverse conditions, where the withdrawal forces may be exceeded.
- To provide a locking feature which deters accidental disengaging by operators.
- To aid engaging, where the number of contacts is high enough to require additional force to complete the mating operation.
- To aid engaging where access to the connector is restricted.

Using M2 threaded Jackscrews

- Engage the two halves of the connector, and lightly push together until the Jackscrews touch.
- Maintaining pressure, turn one of the floating Jackscrews clockwise, until it engages with the fixed Jackscrews. Repeat with the other jackscrew.
- If high forces are encountered early on during engaging, then you may have cross-threaded the Jackscrews. Unscrew anti-clockwise, and try again. Ensure the connectors are directly in line before attempting to engage.
- Once both Jackscrews have begun to engage, ensure an even movement by applying a maximum of one turn to each jackscrew, in sequence. When the connectors have bottomed, the force required to turn the Jackscrews will suddenly increase.
- The torque force on each jackscrew should not exceed 23 cmN.
- To disengage the connectors, repeat the instructions in reverse: unscrew with an anti-clockwise movement. Ensure even movement by applying a maximum of one turn to each jackscrew, in sequence. Once the Jackscrews turn loose with no resistance, you can then easily pull apart the two connectors.

Using 101 Lok Jackscrews
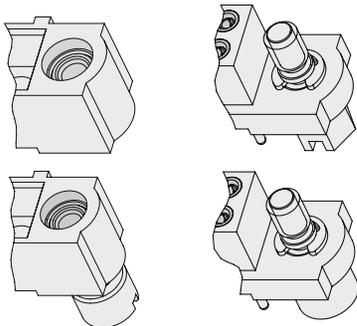
Please see Jackscrews FC and MC on pages 84 and 85.

- Before engaging, the slot on the jackscrew should be at right angles to the length of the connector.
- Push the connectors together. Once the connectors are mated, use a screwdriver to push down onto each 101Lok jackscrew until the spring is compressed. Turn the jackscrew clockwise 101 degrees, and release. The jackscrew should remain partially compressed.
- To disengage, use a screwdriver to push down onto each 101Lok jackscrew until the spring is compressed. Turn the jackscrew anti-clockwise 101 degrees, and release. The jackscrew will spring back to its uncompressed position.
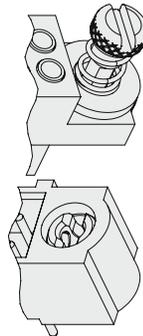
Using Board Mount

Two styles of Board Mount are used, either using a nut or a screw. Both are assembled by placing the connector in the correct position on the board, then screwing in the board fixing nut/screw on the underside of the board. Harwin recommend Slotted Screwdriver Z80-298 (page 88) for use with the slotted nuts.

- Nuts and Screws should be tightened to a torque of 21±2cmN.

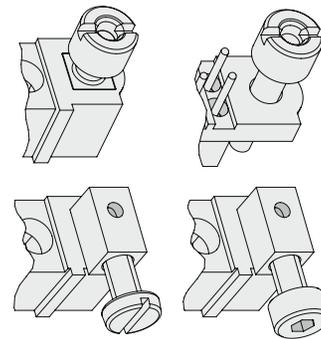### Examples of Jackscrews:

M2 Threaded Jackscrews   101 Lok Jackscrews   Board Mount Jackscrews

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