

PROPER USE GUIDELINES

Cumulative trauma disorders can result from the prolonged use of manually powered hand tools. Hand tools are intended for occasional use and low-volume applications. A wide selection of powered application equipment is available for extended-use production operations. The SDE-SA hand tool is a commercial-grade tool. Product crimped with this tool meets the wire barrel crimp height requirement for hand tools in the appropriate 114 application specification, but might not comply with other feature parameters of the specification.

Figure 1: MATE-AX Hand Tool Assemblies



- 1** Inner Ferrule Tool
- 2** Center Contact Tool
- 3** Outer Contact Tool

Table 1: MATE-AX hand tool kits

Crimping tool	Tool description	Cable	Terminal part numbers	Strip length
2335290-1	Inner Ferrule Tool (RTK031)	RTK031	2298126-1	Refer to TE Specification 114-94413
2335290-2	Inner Ferrule Tool (RG174 with foil)	RG174 with foil	2298509-1	
2335290-3	Inner Ferrule Tool (RG174 without foil)	RG174 without foil		
2335280-1	Center Contact Tool (RTK031)	RTK031	2298121-1 (Socket) 2298125-1 (Pin)	
2335280-2	Center Contact Tool (RG174)	RG174	2298496-1 (Socket) 2298508-1 (Pin)	
2335300-1	Outer Contact Tool (RTK031)	RTK031	2298116-1 (Socket) 2298123-1 (Pin)	N/A
2335300-2	Outer Contact Tool (RG174)	RG174	2298494-1 (Socket) 2298506-1 (Pin)	

1. INTRODUCTION

MATE-AX Hand Tool Assemblies are the tools shown in Figure 1. Each tool consists of the SDE-SA Frame Assembly 9-1478240-0 (instruction sheet [408-8851](#)) and a die assembly. These tools are used to crimp the terminal part numbers listed in Table 1.



NOTE

Dimensions in this instruction sheet are in millimeters with [inches in brackets]. Figures are for reference only and are not drawn to scale.

Read these instructions thoroughly before crimping connectors.

2. DESCRIPTION

The tool frame features two jaws, a handle, a ratchet adjustment wheel, and an emergency ratchet release. The die set consists of a crimper (upper die) and an anvil (lower die). The tool frame holds a die assembly with one or more crimping chambers (Figure 2). Die retaining pins and die retaining screws are used to secure the dies in the tool frame.

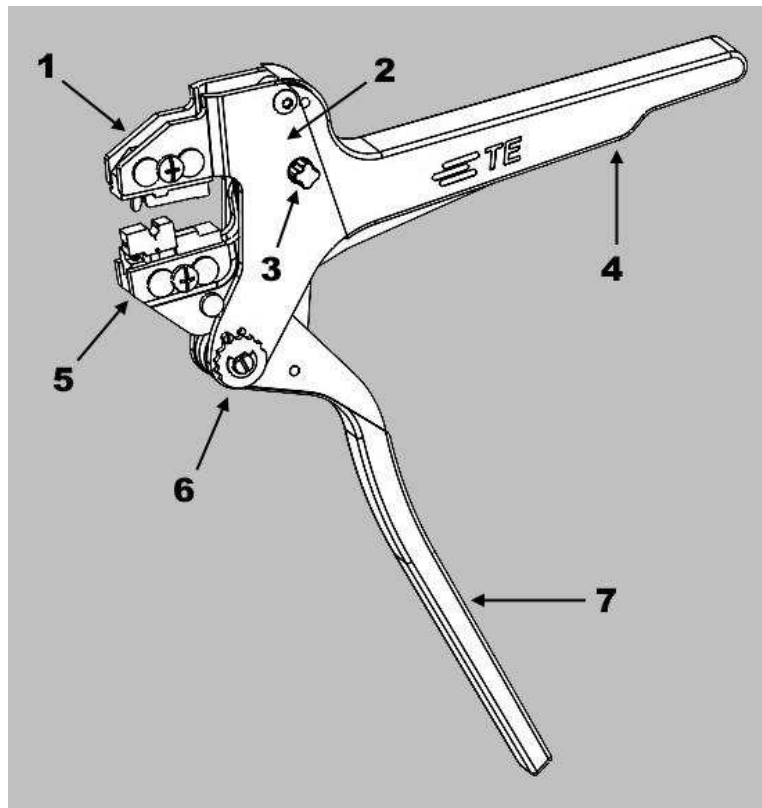
The tool features a ratchet and an adjustment wheel with a range of settings. The ratchet ensures that the tool has completed the cycle and does not release until the handles have been **fully** closed, unless the emergency ratchet release is rotated to manually release the ratchet. The adjustment wheel controls the amount of handle pressure exerted on the dies during the crimping procedure.



CAUTION

*The dies bottom before the ratchet releases. This feature ensures maximum tensile performance of the crimp. **Do not** re-adjust the ratchet unless you have verified that the crimp height is incorrect (see section 6, ADJUSTING THE RATCHET).*

Figure 2: Tool frame



- | | |
|-----------------------------|----------------------------|
| 1 Stationary jaw | 5 Moving jaw |
| 2 Back of tool | 6 Ratchet adjustment wheel |
| 3 Emergency ratchet release | 7 Moving handle |
| 4 Stationary handle | |

3. INSTALLING AND REMOVING THE DIE SET AND LOCATOR ASSEMBLY

1. Open the tool handles and remove the two die retaining screws from the tool jaws.
2. Place the wire anvil and insulation anvil so that their chamfered sides and the marked surfaces face outward when mounted in the moving jaw of the tool frame.
3. Insert the two die retaining pins.
4. Insert the short die retaining screw through the jaw and through the anvil dies. Tighten the screw just enough to hold the die in place. Do not tighten the screw completely.
5. Place the wire crimper and insulation crimper so that the chamfered sides and the marked surface face outward when mounted in the stationary jaw of the tool frame.
6. Insert the two die retaining pins.
7. Insert the long die retaining screw through the jaw and through the crimper dies. Tighten the screw just enough to hold the die in place. Do not tighten the screw completely.
8. Carefully close the tool handles, making sure the anvil and crimper align properly. Continue closing the tool handles until the ratchet in the tool frame has engaged sufficiently to hold the anvil and crimper in place. Tighten both die retaining screws.
9. Place the locator assembly over the end of the long screw and position the locator assembly against the side of the tool jaw.
10. Place the nut onto the end of the long screw and tighten the nut enough to hold the locator assembly in place, while still allowing the locator blade to slide up and down.
11. To disassemble, close the tool handles until the ratchet releases. Remove the nut, the locator assembly, the two die retaining screws, and the four die retaining pins. Slide the anvil and crimper out of the tool jaws.

**NOTE**

The ratchet release has detents with audible clicks as the handles are closed. The ratchet releases on the sixth click.

4. CRIMPING

4.1. Inner ferrule tools

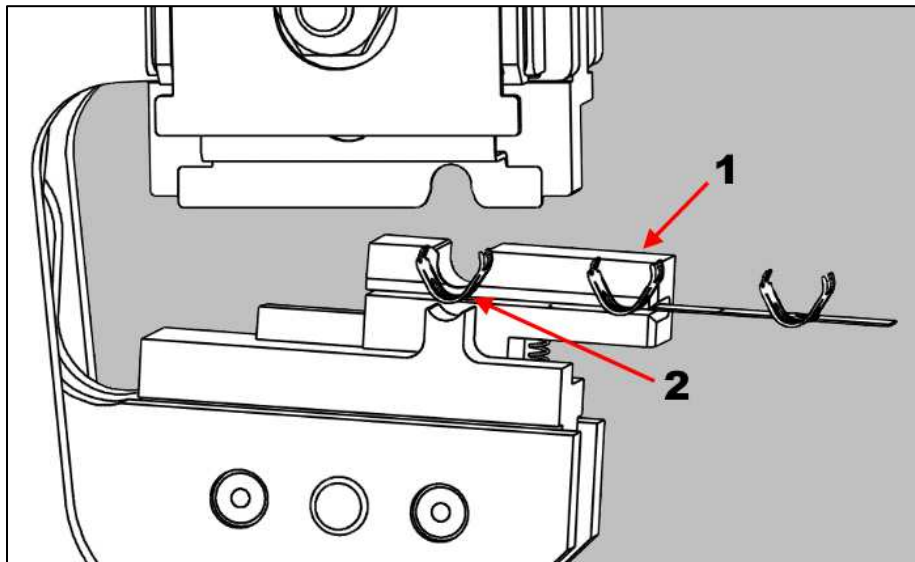


NOTE

The tool is provided with a crimp adjustment feature. Initially, the crimp height should be verified as specified in Figure 9. Refer to Section 5, *INSPECTING THE CRIMP HEIGHT*, and Section 6, *ADJUSTING THE RATCHET*, to verify crimp height before using the tool to crimp contacts and wire sizes.

1. Refer to Table 1 and select the cable of the specified size for the application.
2. Strip the cable jacket to the specified length in TE Specification [114-94413](#). **Do not nick or cut braid strands.**
3. Select the applicable contact and identify the appropriate crimp tool according to the cable type.
4. Hold the tool so that the back (wire side) is facing you. Squeeze the tool handles together and allow them to open fully.
5. Insert a section of strip product in the floating shear and advance to center the ferrule over the anvil. The floating shear has a ball detent to assist positioning the ferrule (Figure 3).

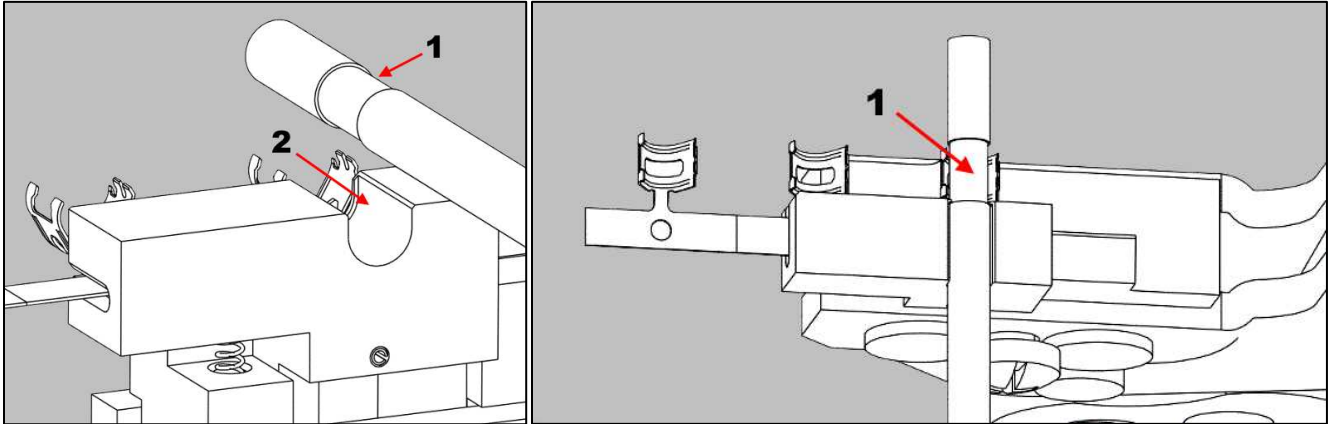
Figure 3: Centering the ferrule



- 1 Floating shear
- 2 Ball detent

6. Position the stripped cable (see TE Specification [114-94413](#) Section 5.1 Step 1 for cable preparation) in the floating shear and seat the face of the stripped jacket against the locating surface in the floating shear (Figure 4).

Figure 4: Positioning the cable (upper tooling removed for clarity)



- 1 Stripped portion of cable
- 2 Floating shear locating surface

7. While holding the cable in place, fully cycle the tool until the ratchet releases and allows the handles to fully open.



CAUTION

Make sure that both sides of the wire barrel are started evenly into the crimping section. **Do not** attempt to crimp an improperly positioned contact.

8. Remove the crimper ferrule and inspect according to TE Specification [114-94413](#) Section 4.1.2 for crimp height and position. See also Table 2.

Table 2: Crimp height specifications for inner ferrule tools

Hand tool	Ferrule	Cable type	Crimp height
2335290-1	2298126-1	RTK031	2.80±0.04
2335290-2	2298509-1	RG174 with foil	2.20±0.03
2335290-3		RG174 without foil	2.15±0.03

4.2. Center contact tools

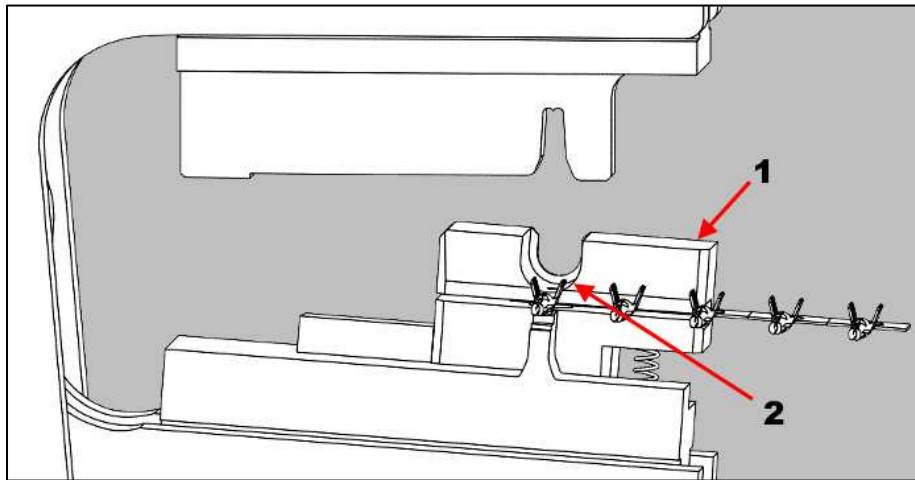


NOTE

The tool is provided with a crimp adjustment feature. Initially, the crimp height should be verified as specified in Figure 9. Refer to Section 5, *INSPECTING THE CRIMP HEIGHT*, and Section 6, *ADJUSTING THE RATCHET*, to verify crimp height before using the tool to crimp contacts and wire sizes.

1. Hold the tool so that the back (wire side) is facing you. Squeeze the tool handles together and allow them to open fully.
2. Insert a section of strip product in the floating shear and advance to center the ferrule over the anvil. The floating shear has a ball detent to assist positioning the ferrule (Figure 5).

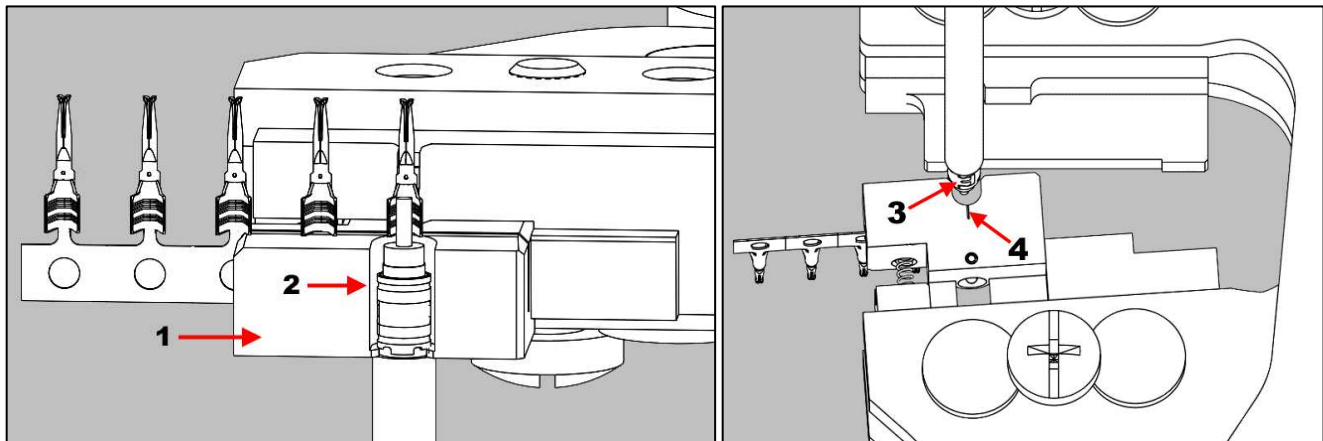
Figure 5: Centering the ferrule



- 1 Floating shear
- 2 Ball detent

3. Position the prepared cable (see TE Specification [114-94413](#) Section 5.3 Step 3 for cable preparation) with the crimped ferrule in the floating shear placing the gap of the ferrule to the outer insulation in the locating feature of the floating shear. Align the seam in the ferrule with the mark on the floating shear as shown in Figure 6.

Figure 6: Positioning the cable (upper tooling and braid fold removed for clarity)



- 1 Floating shear
- 2 Floating shear locating surface
- 3 Seam in the ferrule
- 4 Mark on the floating shear

4. While holding the cable in place, fully cycle the tool until the ratchet releases and allows the handles to fully open.


CAUTION

Make sure that both sides of the wire barrel are started evenly into the crimping section. **Do not** attempt to crimp an improperly positioned contact.

5. Remove the crimper contact and inspect according to TE Specification [114-94413](#) Section 4.1.1 for crimp height and position. See also Table 3.

Table 3: Crimp height specifications for center contact tools

Hand tool	Ferrule	Cable type	Crimp height
2335280-1	2298121-1 (socket) 2298125-1 (pin)	RTK031	0.69±0.03
2335280-2	2298496-1 (socket) 2298508-1 (pin)	RG174	0.53±0.02

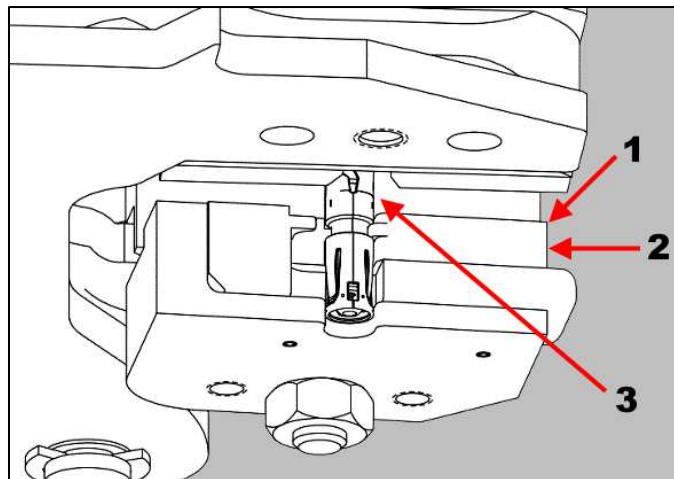
4.3. Outer contact tools


NOTE

The tool is provided with a crimp adjustment feature. Initially, the crimp height should be verified as specified in Figure 9. Refer to Section 5, *INSPECTING THE CRIMP HEIGHT*, and Section 6, *ADJUSTING THE RATCHET*, to verify crimp height before using the tool to crimp contacts and wire sizes.

1. Hold the tool so that the back (wire side) is facing you. Squeeze the tool handles together and allow them to open fully.
2. Insert the prepared cable into the outer contact sub-assembly. See TE Specification [114-94413](#) section 5.5 Step 5.
3. Open the terminal lock and position the contact sub-assembly as shown in Figure 7.

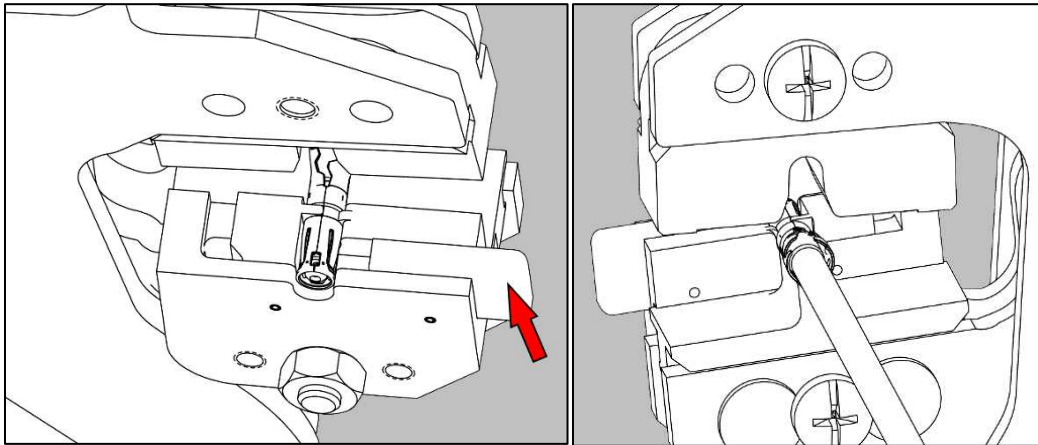
Figure 7: Positioning the contact sub-assembly



- 1 Open terminal lock
- 2 Push to open
- 3 Position outer contact

4. Release the terminal lock (Figure 8) to fix the sub-assembly in place.

Figure 8: Releasing the terminal lock



5. Fully cycle the tool until the ratchet releases and allows the handles to fully open.



CAUTION

Make sure that both sides of the wire barrel are started evenly into the crimping section. **Do not** attempt to crimp an improperly positioned contact.

6. Remove the crimper contact and inspect according to TE Specification [114-94413](#) section 4.1.3 for crimp height. See also Table 4.

Table 4: Crimp height specifications for outer contact tools

Hand tool	Ferrule	Cable type	Crimp height
2335300-1	2298116-1 (socket) 2298123-1 (pin)	RTK031	3.55±0.04
2335300-2	2298494-1 (socket) 2298506-1 (pin)	RG174	3.00±0.03

5. INSPECTING THE CRIMP HEIGHT

Crimp height inspection is performed using a micrometer with a modified anvil, commonly referred to as a crimp-height comparator. TE Connectivity does not manufacture or market crimp height comparators. Detailed information on obtaining and using crimp-height comparators can be found in Instruction Sheet [408-7424](#).

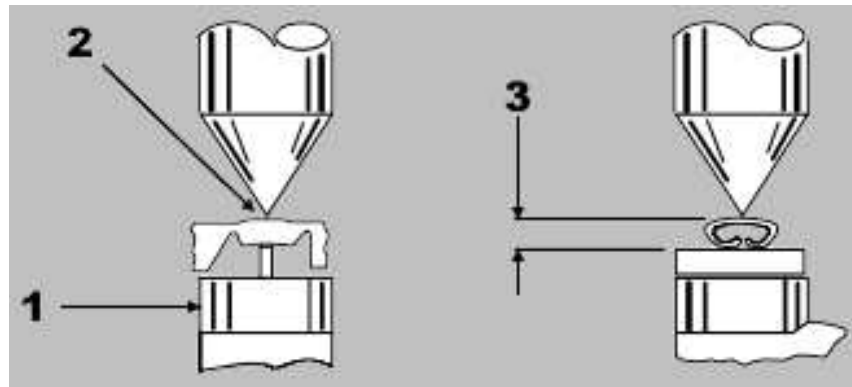
1. Refer to Table 1 and select a wire (maximum size) for each crimp section listed.
2. Refer to Section 4, CRIMPING, and crimp the contacts accordingly.
3. Using a crimp height comparator, measure the wire barrel crimp height listed in Table 2, Table 3, or Table 4.
 - If the crimp height conforms to that shown in the table, the tool is considered dimensionally correct.
 - If not, the tool must be adjusted. Refer to Section 6, ADJUSTING THE RATCHET.



CAUTION

Do not use damaged product. If a damaged contact is evident, replace it. Do not re-terminate contacts.

Figure 9: Crimp height



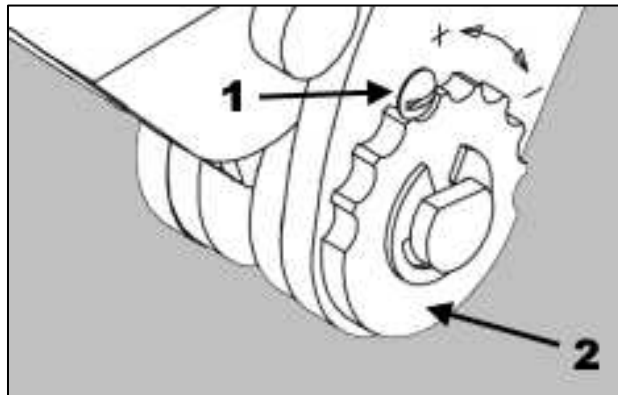
- 1 Modified anvil
- 2 Position point on center of wire barrel opposite seam
- 3 Crimp height (see **Error! Reference source not found.**)

6. ADJUSTING THE RATCHET

The ratchet is preset prior to shipment, but it is important to verify the crimp height using a micrometer or caliper. Use and wear can cause the tool to go out of adjustment. Inspect the crimp height and adjust the ratchet, if necessary, on a regular basis. Refer to Figure 10 and proceed as follows:

- If the crimp height is larger than recommended, remove the ratchet wheel adjustment screw and rotate the adjustment wheel counterclockwise (+) to a higher setting. Reinstall the screw. Repeat as required.
- If the crimp height is smaller than recommended, remove the ratchet wheel adjustment screw and rotate the adjustment wheel clockwise (-) to a lower setting. Reinstall the screw. Repeat as required.
- If the crimp height cannot be made to conform to the recommended crimp height, replace the tool or die set. See Section 8, REPLACEMENT AND REPAIR.

Figure 10: Ratchet adjustment



- 1 Adjustment screw
2 Ratchet adjustment wheel

7. MAINTENANCE AND INSPECTION

7.1. Maintenance

- Remove dust, moisture, and other contaminants with a clean soft brush or soft lint-free cloth. **Do not** use objects that could damage the dies or tool.
- When the tool is not in use, keep the handles closed to prevent objects from becoming lodged in the dies. Store the tool in a clean, dry area.
- Remove all lubrication and accumulated film by immersing the dies in a suitable commercial degreaser.

7.2. Visual inspection

- Inspect the tool and dies on a regular basis to ensure that they have not become worn or damaged.
- Make sure that the die retaining screws are properly secured.
- Inspect the crimping chambers of the die assembly for flattened, chipped, worn, or broken areas. If damage or abnormal wear is evident, replace the dies. Refer to Section 8, REPLACEMENT AND REPAIR.

8. REPLACEMENT AND REPAIR

If the dies are damaged or worn excessively, they must be replaced. Order dies through your TE representative. You can also order parts by any of the following methods:

- Go to TE.com and click the **Shop TE** link at the top of the page.
- Call 800-522-6752.
- Write to:

CUSTOMER SERVICE (038-035)
TE CONNECTIVITY CORPORATION
PO BOX 3608
HARRISBURG PA 17105-3608

For customer repair services, call 800-522-6752.

9. REVISION SUMMARY

Revisions to this instruction sheet include:

Initial release