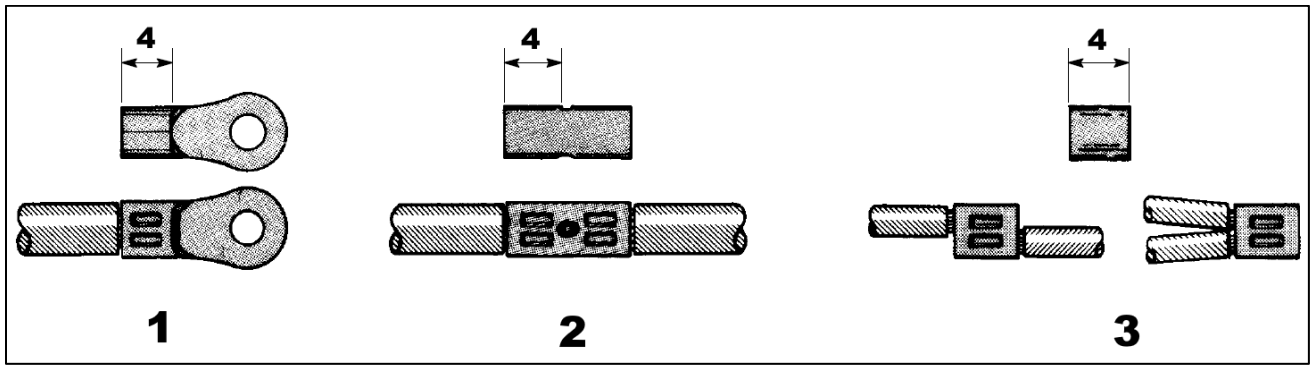
1. INTRODUCTION

This instruction sheet provides procedures for product application, maintenance, and inspection of SOLISTRAND crimping dies, which are used in crimping heads 69097, 69099, and 1752868-1. These dies are used to crimp SOLISTRAND terminals and splices onto solid or stranded copper wire in AWG sizes of 8-4/0 (see Table 1).

Figure 1: Terminals and splices



1 Terminal
2 Butt splice
3 Parallel splices
4 Wire barrel for wire strip length (see Table 1 and Table 2)

Table 1: Crimping specifications

Wire size AWG	Die set numbers for crimping head 69097		Die set numbers for crimping heads 69099 and 1752868-1	Wire strip length for wire barrel					
				Terminal		Butt splice		Parallel splice	
	Stationary die	Moving die		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
8	46146	46145	69216*	8.33 [.328]	9.12 [.359]	10.31 [.406]	11.13 [.438]	10.31 [.406]	11.13 [.438]
6	46134	46133	69217*	9.93 [.391]	10.72 [.422]	11.91 [.469]	12.7 [.500]	11.13 [.438]	11.91 [.469]
4	46135		69218*	11.13 [.438]	11.91 [.469]	13.49 [.531]	14.27 [.562]	13.49 [.531]	14.27 [.562]
2	46136		45433*	12.7 [.500]	13.49 [.531]	15.09 [.594]	19.05 [.750]	16.66 [.656]	17.48 [.688]
1/0	46138	46137	45436*	19.05 [.750]	19.84 [.781]	17.48 [.688]	18.26 [.719]	19.05 [.750]	19.84 [.781]
2/0	—	—	45439*						
3/0	—	—	45442						
4/0	—	—	45445					19.84 [.781]	20.62 [.812]

* These dies can be used for STRATO-THERM™ heat resistant post-insulated terminals and splices.

Table 2: Dies for 90° bend terminals

Wire size AWG	Die set numbers for crimping heads 69099 and 1752868-1	Wire strip length for wire barrel	
		Minimum	Maximum
4	69218-1	11.13 [.438]	11.91 [.469]
2	45433-1	12.7 [.500]	13.49 [.531]
1/0	45436-1	19.05 [.750]	19.84 [.781]

The dies are coated with a preservative to prevent rust and corrosion. Wipe this preservative from the dies, particularly from the crimping areas. For further instructions relative to the hydraulic power unit and hydraulic crimping heads, refer to the instructions packaged with the tools or contact the Tooling Assistance Center number at the bottom of this page.

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

Reasons for reissue of this instruction sheet are provided in section 9, REVISION SUMMARY.

2. INSERTING THE DIES

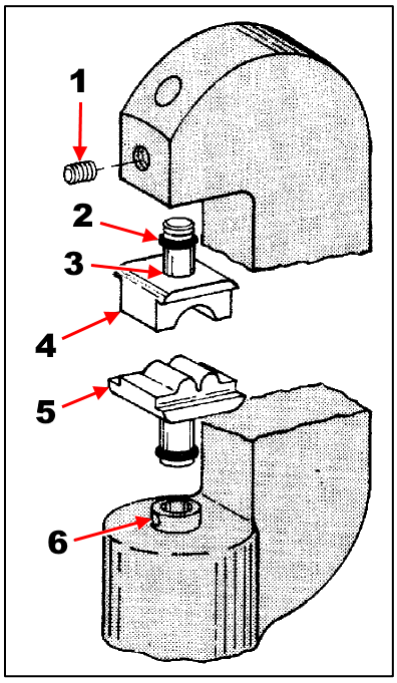
CAUTION
To avoid injury, disconnect the power unit from the power supply before changing dies.

2.1. Crimping head 69097

1. Loosen the lock screw in the top section of the crimping head (Figure 2).

NOTE
Lock screws in the top section of the crimping head and in the ram are not used when installing dies with retaining rings on shanks.

Figure 2: Crimping head 69097



1 Lock screw
2 Retaining ring
3 Shank
4 Stationary die
5 Moving die
6 Ram locking screw

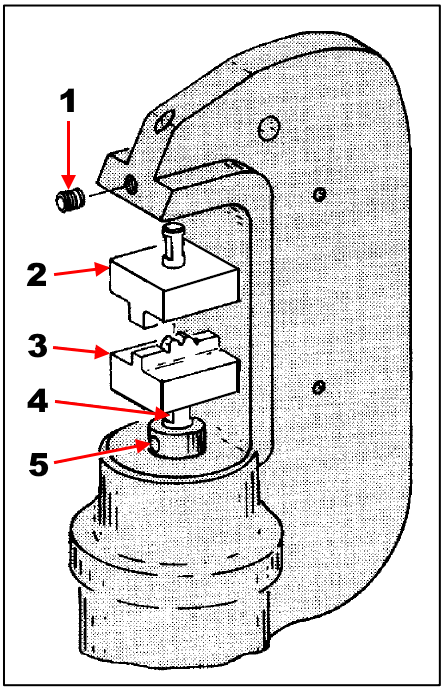
2. Insert the shank of the stationary die into the top section of the crimping head. The retaining clip holds the die in place.
3. Activate the power unit to advance the ram until the lock screw is visible.

4. Loosen the lock screw.
5. Insert the shank of the moving die into the ram well. The retaining ring holds the die in place.
6. Activate the power unit to complete the cycle and allow the ram to return to the DOWN position.

2.2. Crimping head 69099 and 1752868-1

1. Loosen the lock screw in the top section of the crimping head (Figure 3).

Figure 3: Crimping head 69099 (die set 69218 shown)



1 Lock screw
2 Stationary die
3 Moving die
4 Flat on shank faces lock screw
5 Ram locking screw

2. Insert the shank of the stationary die into the top section of the crimping head.

NOTE
*Ensure that the dies are inserted **fully** and that the flats on the shanks are facing the lock screws.*

3. Tighten the lock screw.
4. Loosen the ram lock screw.
5. Insert the shank of the moving die into the ram well.
6. Tighten the lock screw.

3. REMOVING THE DIES

Crimping head 69097: Insert the screwdriver blade under the base of the stationary and moving dies. Use a prying action to loosen and remove the dies.

Crimping heads 69099 and 1752868-1: Loosen the lock screws in the top section of the crimping head and ram. Remove the dies.

4. STRIPPING THE WIRES

Strip the wire to the dimensions listed in Table 1.

CAUTION
Do not nick or cut the conductor strands.

5. CRIMPING

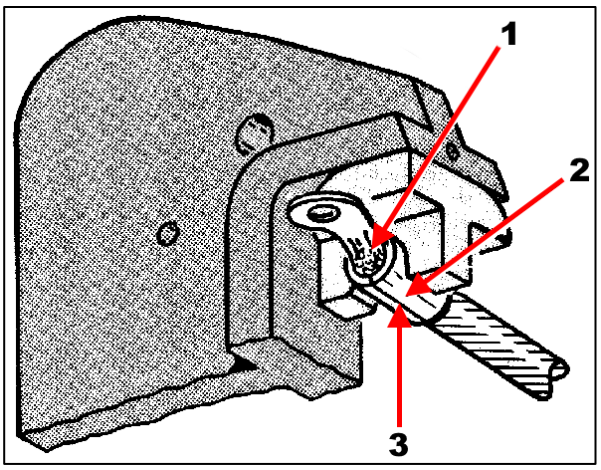
DANGER
Avoid personal injury. When operating the power unit, exercise caution while holding terminals, splices, or wire near the crimping area.

Ensure that the wire size stamped on the terminal or splice corresponds with the wire size stamped on the stationary die. Crimping head 69099 is shown in Figure 3 through Figure 6. The crimping procedure is identical when using crimping head 69097.

1. Place the terminal or splice in the stationary die as shown in Figure 4 through Figure 6. For best results, position the terminal or splice so that the brazed seam faces the moving die.
2. Activate the power unit so that the crimping die advances and holds the terminal or splice in place. Do not deform the terminal or splice barrel.
3. Insert the stripped wire all the way into the terminal or splice barrel.
4. Activate the power unit to complete the crimp.
5. To crimp the other half of the butt splice, remove and reposition the uncrimped half in the stationary die. Insert the wire and crimp the splice.
6. Refer to section 6, INSPECTING THE CRIMP for crimp inspection information.

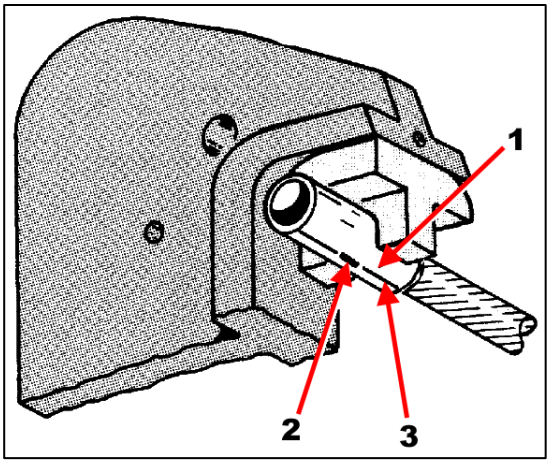
NOTE
If SOLISTRAND terminals or splices stick in the die after crimping, use a rocking motion to remove them.

Figure 4: Terminal



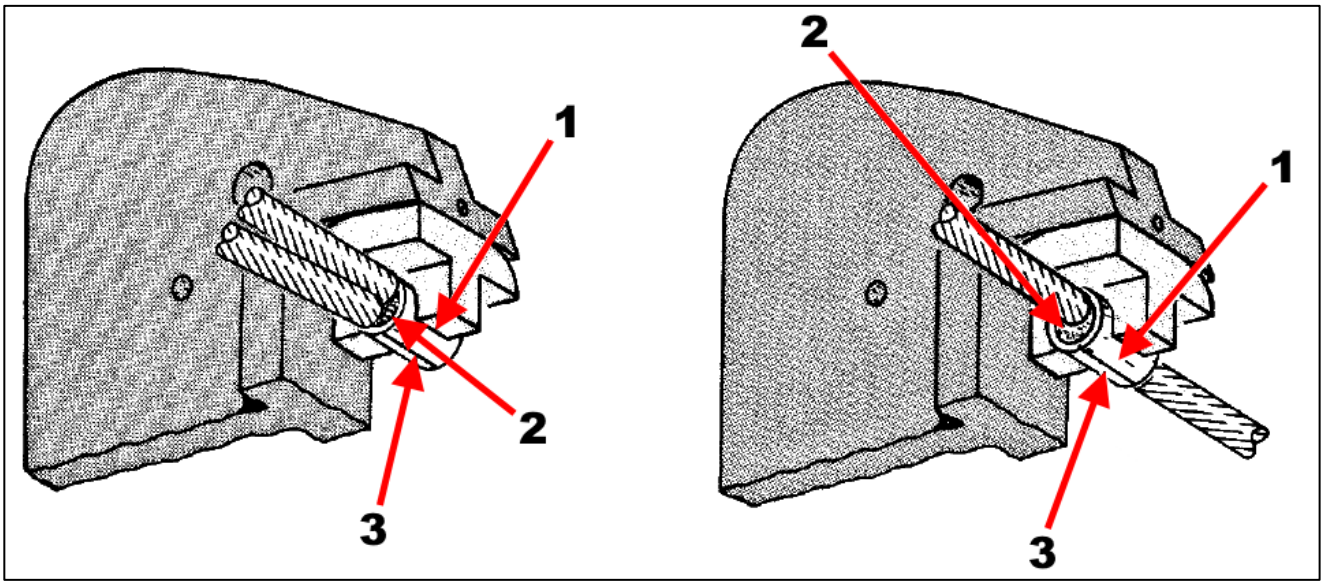
1 End of conductor is flush with (or extends slightly beyond) end of wire barrel
2 Barrel is centered in die
3 Brazed seam faces moving die

Figure 5: Butt splice



1 Half of splice is centered in die
2 End of conductor butts against splice wire stop
3 Brazed seam faces moving die

Figure 6: Parallel splice



1 Barrel is centered in die

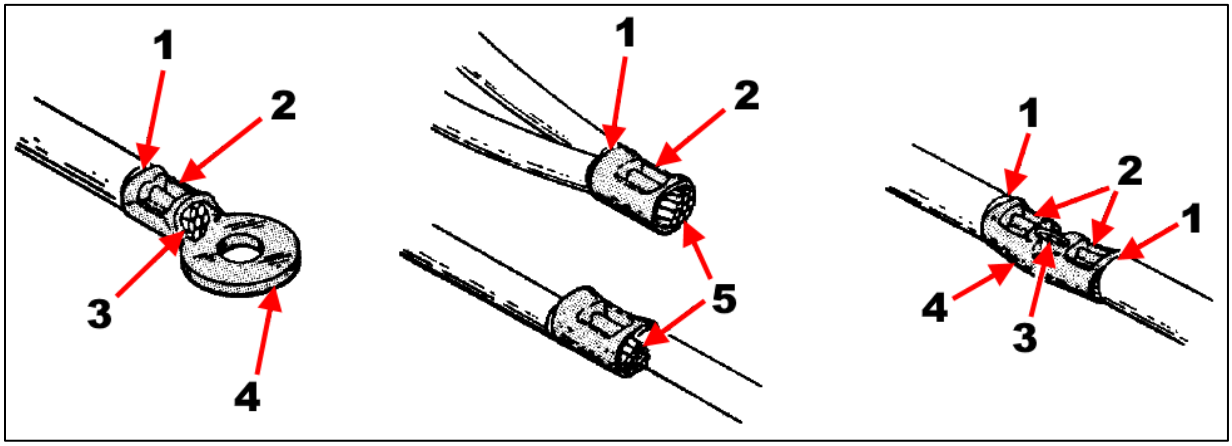
2 End of conductor is flush with **(**or extends slightly beyond**)** end of wire barrel

3 Brazed seam faces moving die

6. INSPECTING THE CRIMP

Inspect crimped terminals and splices by checking the features described in Figure 7 and Figure 8. Use only the terminals and splices that meet the conditions shown in Figure 7. Poor crimps (Figure 8) can be avoided through careful use of the instructions in sections 2 through 5, and by performing regular die maintenance as instructed in section 7, MAINTENANCE AND INSPECTION.

Figure 7: Features of a good crimp (ACCEPT)



1 Wire insulation does not enter wire barrel.

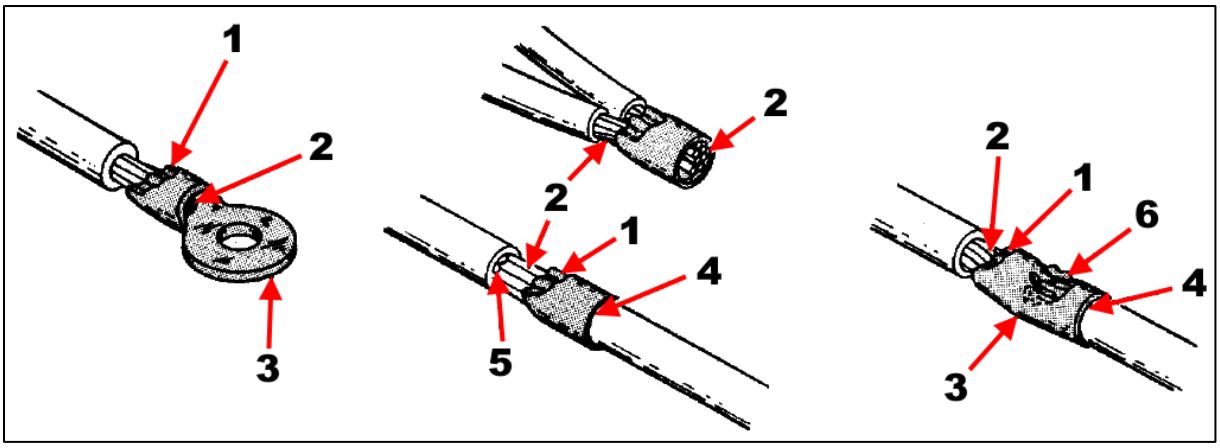
2 Crimp is centered. Crimp can be off center, but **not off the end of the wire barrel**.

3 Wire is visible through inspection hole of butt splice. Wire is flush with (or extends slightly beyond) end of terminal wire barrel.

4 AWG wire size matches wire size stamped on terminal or splice and crimping dies.

5 On parallel splice, bare wire ends are flush with (or extend slightly beyond) end of barrel.

Figure 8: Features of a poor crimp (REJECT)



1 Crimp is off end of wire barrel.

2 Wire is not inserted far enough into terminal or splice. End of wire is not visible through inspection hole of butt splice, or is not flush with (or slightly beyond) end of terminal wire barrel or parallel splice.

3 AWG wire size does not match wire size stamped on terminal or splice crimping dies.

4 Wire insulation enters barrel. **Check for incorrect strip length.**

5 Nicked or missing conductor strands.

6 Excessive flash on terminal or splice indicates wrong combination of wire, terminal, splice, or tooling.

7. MAINTENANCE AND INSPECTION

Perform a maintenance and inspection program at least once a month to ensure dependable and uniform terminations. Frequency of inspection can be adjusted to suit your requirements through experience. Frequency of inspection depends upon:

- The care, amount of use, and handling of the dies.
- The type and size of the products crimped.
- The degree of operator skill.
- The presence of abnormal amounts of dust or dirt.
- Your own established standards.

Dies can be damaged during shipment. When you receive new dies, inspect them in accordance with the following instructions.

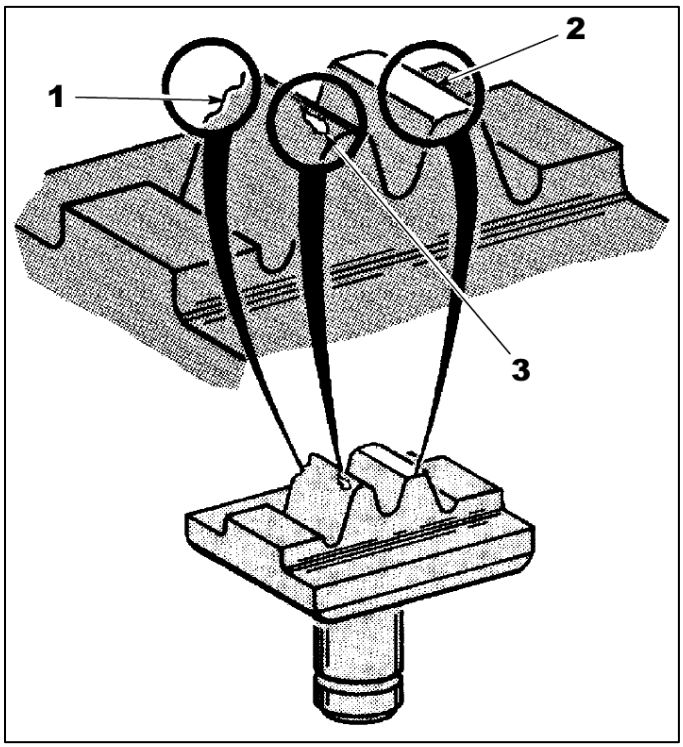
7.1. Cleaning

Do not allow deposits of dirt, grease, and foreign matter to accumulate on the die closure surfaces or the bottoming surfaces of the dies. These deposits can prevent the dies from bottoming fully and cause excessive wear in the die closure surfaces, affecting the quality of the crimp. Wipe the dies clean frequently with a clean cloth.

7.2. Visual inspection

Visually inspect the die closure surfaces for broken, pitted, or chipped areas (Figure 9). Even if the dies gage within permissible limits, worn or damaged die closure surfaces are objectionable and can affect the quality of the crimp.

Figure 9: Damaged die closure surfaces



1 Chipped
2 Flattened
3 Pitted

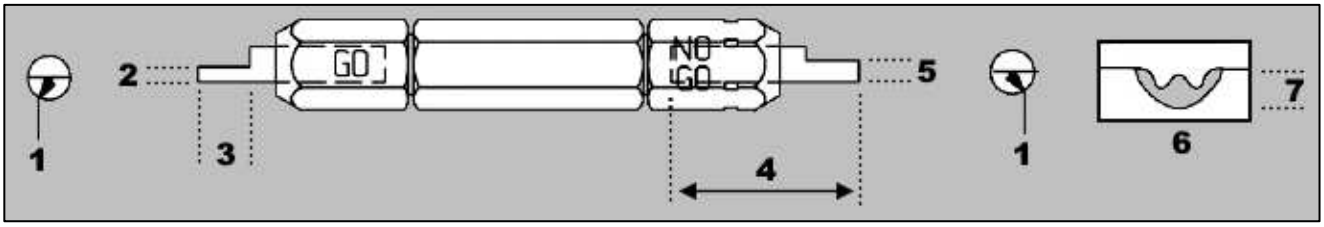
7.3. Die closure inspection

Every die set is inspected for proper die closure before packaging. Inspect the dies periodically to check the die closure for excessive wear.

A. Plug gage design

The die closure inspection uses a GO / NO GO plug gage. Figure 10 shows a recommended plug gage design. The GO / NO GO dimensions of the plug gage members are listed in Table 3.

Figure 10: Recommended plug gage design



1 Radius
2 GO dimension
3 Feature
4 Length
5 NO GO dimension
6 Die closure configuration
7 Die closure dimension

Table 3: GO / NO GO dimensions

Crimping head	Die set	Die closure dimension*		Gage member† dimension				
		GO	NO GO	GO	NO GO	Radius	Length	Feature
69097	46145 46146	2.54 [.1000]	2.692 [.1060]	2.54-2.548 [.1000-.1003]	2.690-2.692 [.1059-.1060]	3.18 [.125]	25.4 [1.000]	12.7 [.500]
	46133 46134	3.937 [.1550]	4.089 [.1610]	3.937-3.945 [.1550-.1553]	4.087-4.089 [.1609-.1610]	4.34 [.171]	25.4 [1.000]	11.10 [.437]
	46133 46135	4.724 [.1860]	4.877 [.1920]	4.724-4.732 [.1860-.1863]	4.874-4.877 [.1919-.1920]	5.54 [.218]	25.4 [1.000]	11.10 [.437]
	46133 46136	5.436 [.2140]	5.588 [.2200]	5.436-5.443 [.2140-.2143]	5.585-5.588 [.2199-.2200]	6.35 [.250]	25.4 [1.000]	11.10 [.437]
	46137 46138	5.207 [.2050]	5.359 [.2110]	5.207-5.215 [.2050-.2053]	5.357-5.359 [.2109-.2110]	6.35 [.250]	31.75 [1.500]	14.27 [.562]
69099 and 1752868-1	69216	2.54 [.1000]	2.692 [.1060]	2.54-2.548 [.1000-.1003]	2.690-2.692 [.1059-.1060]	3.18 [.125]	25.4 [1.000]	12.7 [.500]
	69217	3.150 [.1240]	3.302 [.1300]	3.150-3.157 [.1240-.1243]	3.299-3.302 [.1299-.1300]	4.34 [.171]	25.4 [1.000]	8.64 [.340]
	69218 69218-1	3.962 [.1560]	4.115 [.1620]	3.962-3.970 [.1560-.1563]	4.112-4.115 [.1619-.1620]	5.54 [.218]	25.4 [1.000]	9.91 [.390]
	45433 45433-1	4.547 [.1790]	4.699 [.1850]	4.547-4.554 [.1790-.1793]	4.696-4.699 [.1849-.1850]	6.35 [.250]	31.75 [1.500]	11.51 [.453]
	45436 45436-1	5.207 [.2050]	5.359 [.2110]	5.207-5.215 [.2050-.2053	5.357-5.359 [.2109-.2110]	7.52 [.296]	38.1 [1.500]	15.88 [.625]
	45439	5.867 [.2310]	6.020 [.2370]	5.867-5.875 [.2310-.2313]	6.017-6.020 [.2369-.2370]	8.33 [.328]	38.1 [1.500]	15.88 [.625]
	45442	6.604 [.2600]	6.756 [.2660]	6.604-6.612 [.2600-.2603]	6.754-6.756 [.2659-.2660]	9.52 [.375]	38.1 [1.500]	15.88 [.625]
	45445	7.417 [.2920]	7.569 [.2980]	7.417-7.424 [.2920-.2923]	7.567-7.569 [.2979-.2980]	10.69 [.421]	38.1 [1.500]	15.88 [.625]

* For the 69097 tool, die closure dimensions apply when dies are bottomed, but not under pressure. For the 69099 and 1752868-1 tools, die closure dimensions apply when dies are positioned at the gage dimension indicated in Figure 11.

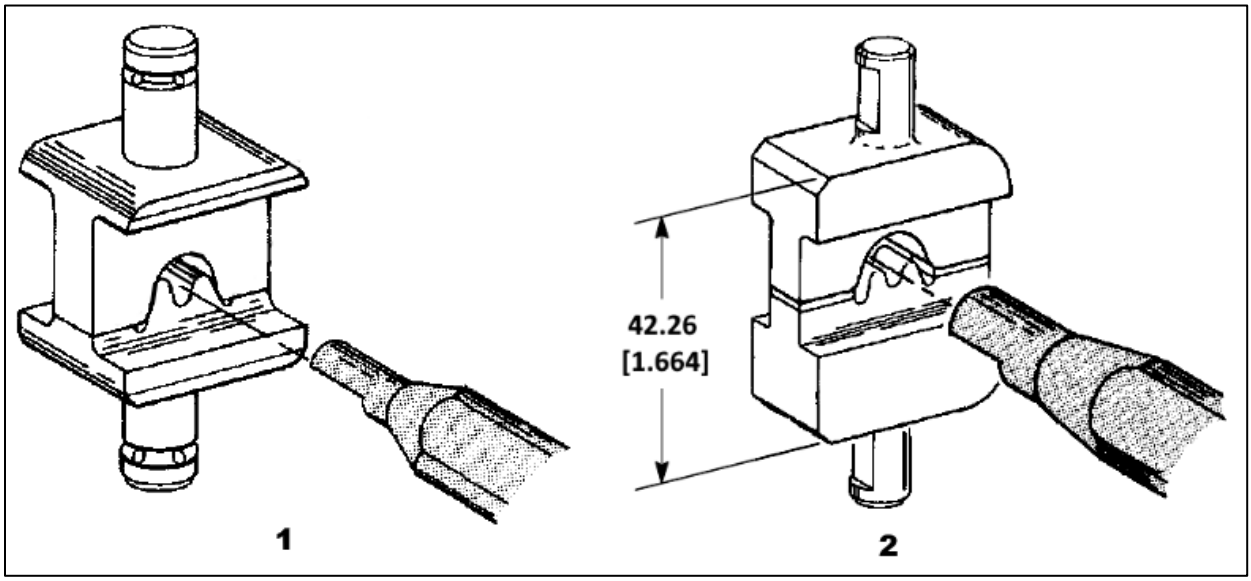
† Material: Tool steel

B. Preparing the dies for inspection

Before inspecting the die closure, prepare the dies as follows:

1. Clean oil and dirt from the die closure surfaces and plug gage members.
2. Position the dies as shown in Figure 11.

Figure 11: Positioning the dies for gaging



1 Dies for the 69097 tool (bottomed, but not under pressure)

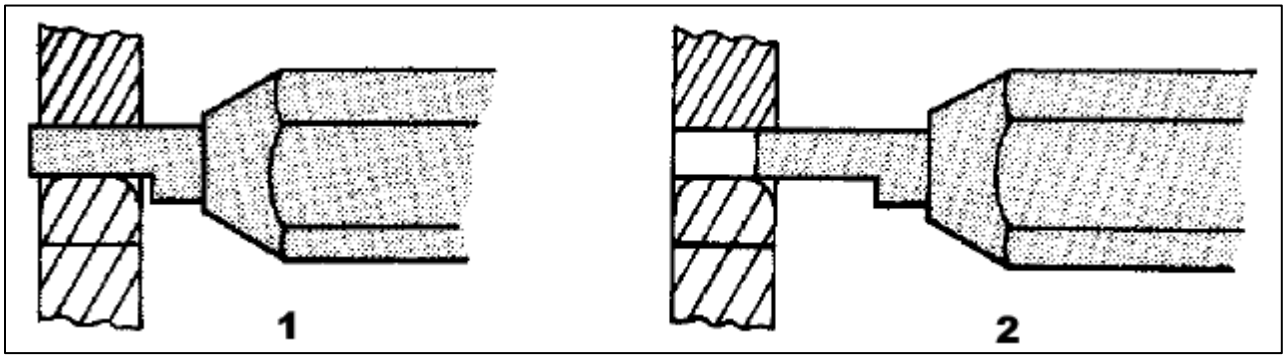
2 Dies for the 69099 and 1752868-1 tools (positioned at gage dimension)

C. Gaging the dies

The following procedure is recommended for inspecting the die closure.

1. Clean oil and dirt from the die closure surfaces and plug gage members.
2. With the crimping dies assembled as described in **Preparing the dies for inspection**, check the wire barrel crimp die closure using the proper plug gage. Hold the gage in straight alignment with the die closure and carefully try to insert it without forcing the GO member as shown in Figure 11. The GO member must pass completely through the die closure as shown in Figure 12.
3. Try to insert the NO GO member. The NO GO member may enter partially, but must not pass completely through the die closure. See Figure 12.
   - If the dies meet the GO / NO GO gage conditions, the dies can be considered dimensionally correct.
   - If the dies do not conform with the GO / NO GO gage conditions, contact your local TE field representative.

Figure 12: Gaging the dies



1 GO gage must pass completely through the die closure.

2 NO-GO gage can enter partially, but must not pass completely through the die closure.

8. REPLACEMENT AND REPAIR

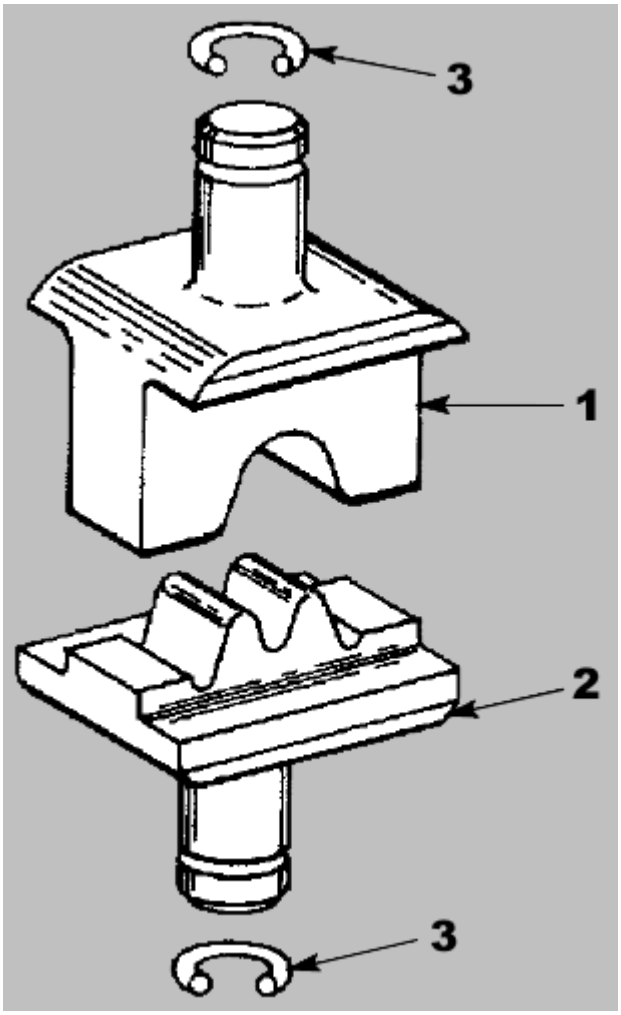
Customer-replaceable parts are shown in Figure 13 and Figure 14 on page 11. Stock and control a complete inventory to prevent lost time when replacement of parts is necessary. Parts other than those listed should be replaced by TE to ensure quality and reliability. Order replacement dies through your 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

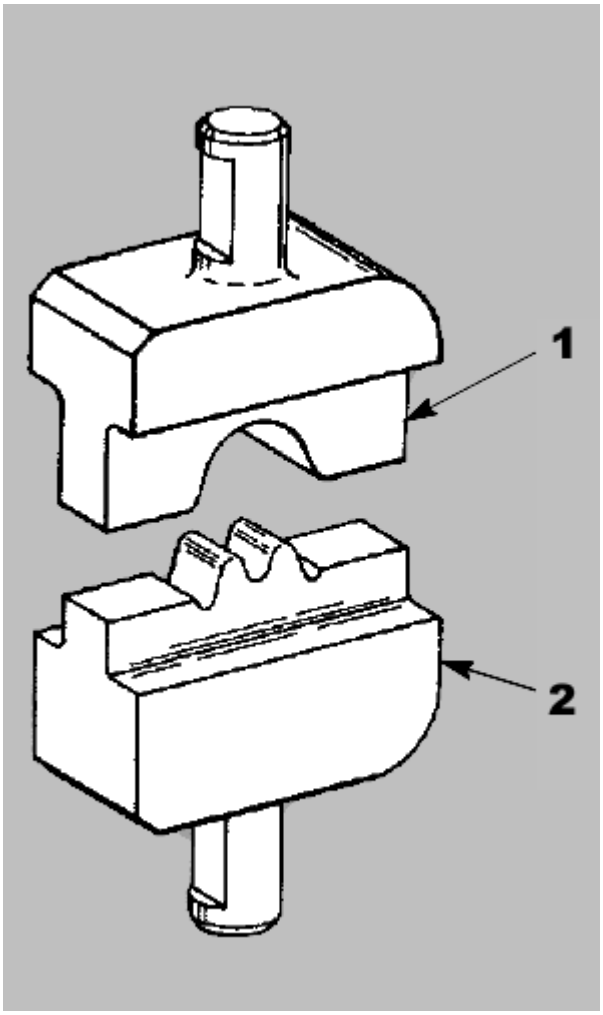
For customer repair services, call 800-522-6752.

Figure 13: Die sets for crimping head 69097



1	2	3
Stationary die	Moving die	Retaining ring
46134	46133	303825
46135		
46136		
46138	46137	
46146	46145	

Figure 14: Die sets for crimping heads 69099 and 1752868-1



Die set	1	2
	Stationary die	Moving die
69216	307543-1	307544-1
69217	307543-2	307544-2
69218	307543-3	307544-3
45433	307543-4	307544-4
45436	307543-5	307544-5
45439	307543-6	307544-6
45442	307543-7	307544-7
45445	307543-8	307544-8
69218-1	307543-9	307544-9
45433-1	1-307543-5	307544-4
45436-1	1-307543-0	1-307544-0

9. REVISION SUMMARY

Revisions to this instruction sheet include:

- Added crimping head 1752868-1.
- Added 90° bend terminals for crimping heads 69099 and 1752868-1.
- Reformatted to conform to current standard for instruction sheets.