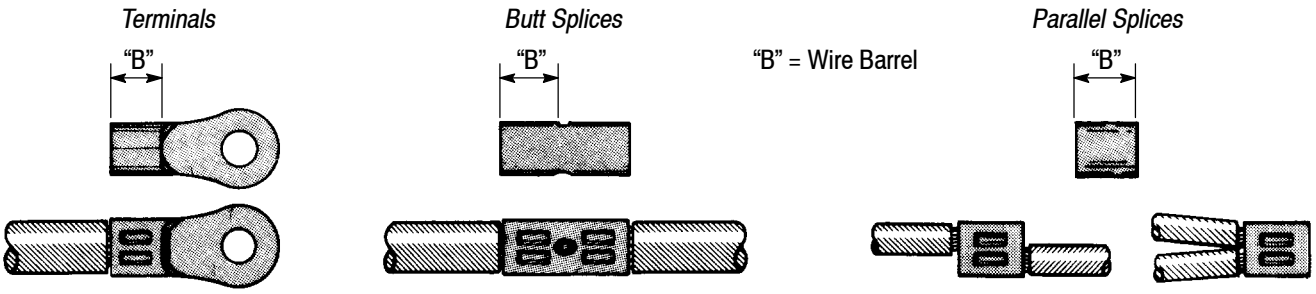
# SOLISTRAND* Crimping Dies (Used in Crimping Heads 69097 and 69099)

ORIGINAL INSTRUCTIONS




| WIRE SIZE, AWG | DIE SET NUMBERS FOR CRIMPING HEAD 69097 | | DIE SET NUMBERS FOR CRIMPING HEAD 69099 | WIRE STRIP LENGTH for WIRE BARREL "B" | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | TERMINAL | | BUTT SPLICE | | PARALLEL SPLICE | |
| | STATIONARY DIE | MOVING DIE | | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. |
| 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 | 46133 | 69218● | 11.13 [.438] | 11.91 [.469] | 13.49 [.531] | 14.27 [.562] | 13.49 [.531] | 14.27 [.562] |
| 2 | 46136 | 46133 | 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● | 19.05 [.750] | 19.84 [.781] | 17.48 [.688] | 18.26 [.719] | 19.05 [.750] | 19.84 [.781] |
| 3/0 | --- | --- | 45442 | 19.05 [.750] | 19.84 [.781] | 17.48 [.688] | 18.26 [.719] | 19.05 [.750] | 19.84 [.781] |
| 4/0 | --- | --- | 45445 | 19.05 [.750] | 19.84 [.781] | 17.48 [.688] | 18.26 [.719] | 19.84 [.781] | 20.62 [.812] |

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

*Figure 1*

## 1. INTRODUCTION

This instruction sheet provides instructions on product application, and maintenance and inspection procedures for SOLISTRAND Crimping Dies which are used in Crimping Heads 69097 and 69099. See Figure 1.

These dies are used to crimp SOLISTRAND Terminals and Splices onto solid or stranded copper wire in AWG sizes of 8–4/0.

Basic instructions on the use of the dies, die insertion and removal, etc., are provided in Section 2, INSTRUCTIONS. Section 3, CRIMP INSPECTION features a terminal and splice crimp inspection procedure. Section 4, MAINTENANCE AND INSPECTION, will enable you to establish and maintain a die certification program.

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 6, REVISION SUMMARY.

## 2. INSTRUCTIONS

### 2.1. Die Insertion

**DANGER**

*Avoid personal injury. Disconnect power unit from power supply when changing dies.*

### A. Crimping Head 69097

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

©2011 Tyco Electronics Corporation, a TE Connectivity Ltd. Company
All Rights Reserved
*Trademark



TE Connectivity, TE connectivity (logo), and TE (logo) are trademarks. Other logos, product and/or Company names may be trademarks of their respective owners.

*Crimping Head 69097*

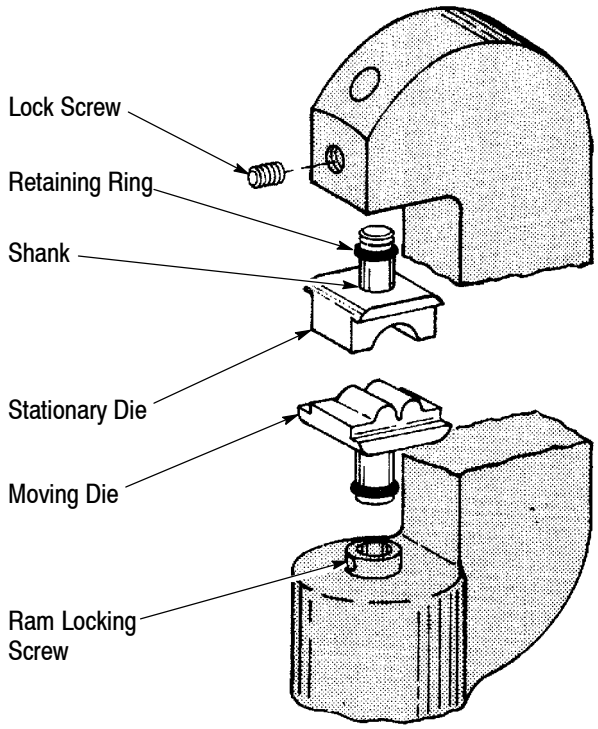



*Figure 2*

*Crimping Head 69099 (Die Set 69218 Shown)*

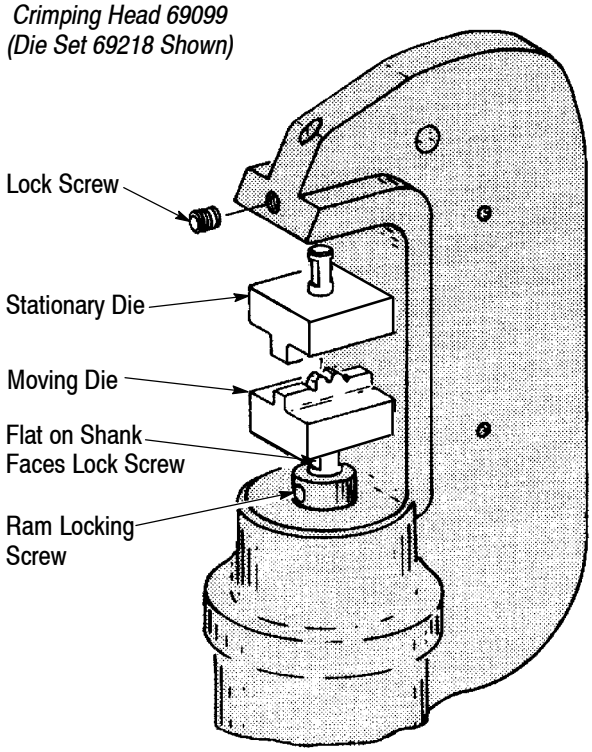



*Figure 3*

**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.*

2. Insert the shank of the stationary die into the top section of the crimping head. See Figure 2. The retaining clip will hold the die in place.

3. Activate the power unit to advance the ram until the lock screw is visible.

4. Loosen the lock screw and insert the shank of the moving die into the ram well. See Figure 2. The retaining ring will hold the die in place.

5. Activate the power unit to complete the cycle and allow the ram to return to the "DOWN" position.

### B. Crimping Head 69099

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

2. Insert the shank of the stationary die into the top section of the crimping head and tighten the lock screw. See Figure 3.

**NOTE**

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

3. Loosen the ram lock screw and insert the shank of the moving die into the ram well. Tighten the lock screw. See Figure 3.

## 2.2. Die Removal

In crimping head 69097, insert the screwdriver blade under the base of the stationary and moving dies. Apply a prying action to loosen and remove the dies.

In crimping head 69099, loosen the lock screws in the top section of the crimping head and ram and remove the dies.

## 2.3. Wire Stripping and Crimping Procedures

### A. Wire Stripping Procedure

Strip the wire to the dimensions shown in the table in Figure 1.

**CAUTION**

*Do not nick or cut the conductor strands.*

### B. Crimping Procedure

**DANGER**

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

*Terminals*

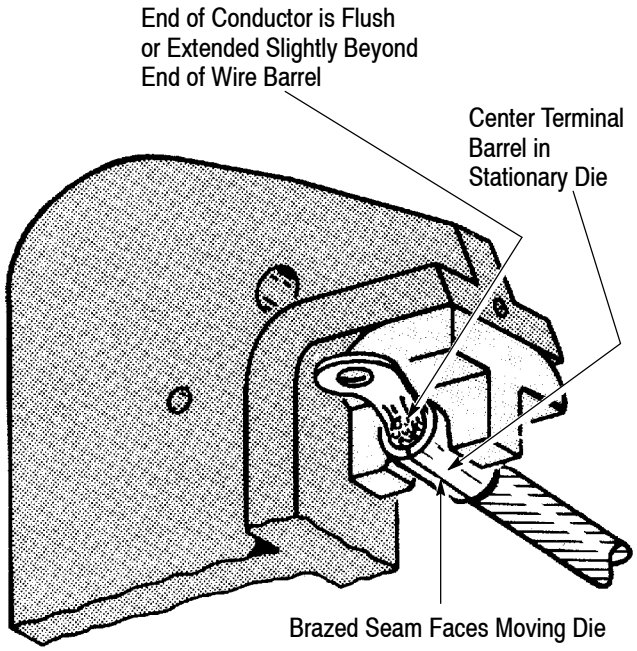



*Figure 4*

*Butt Splices*

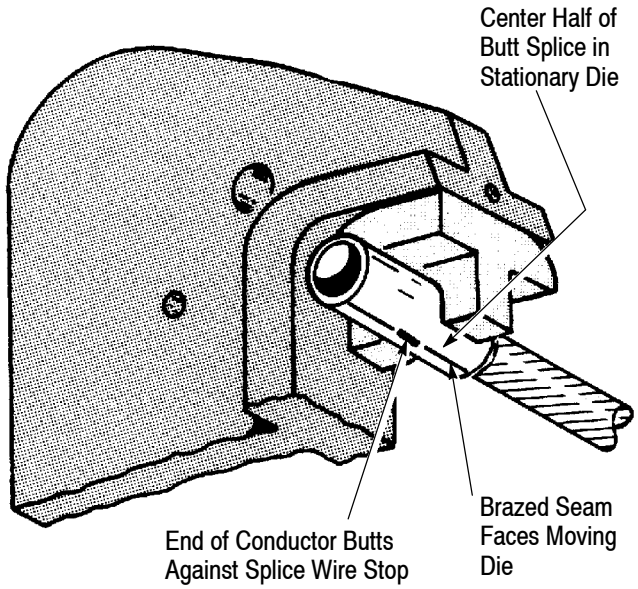



*Figure 5*

*Parallel Splices*

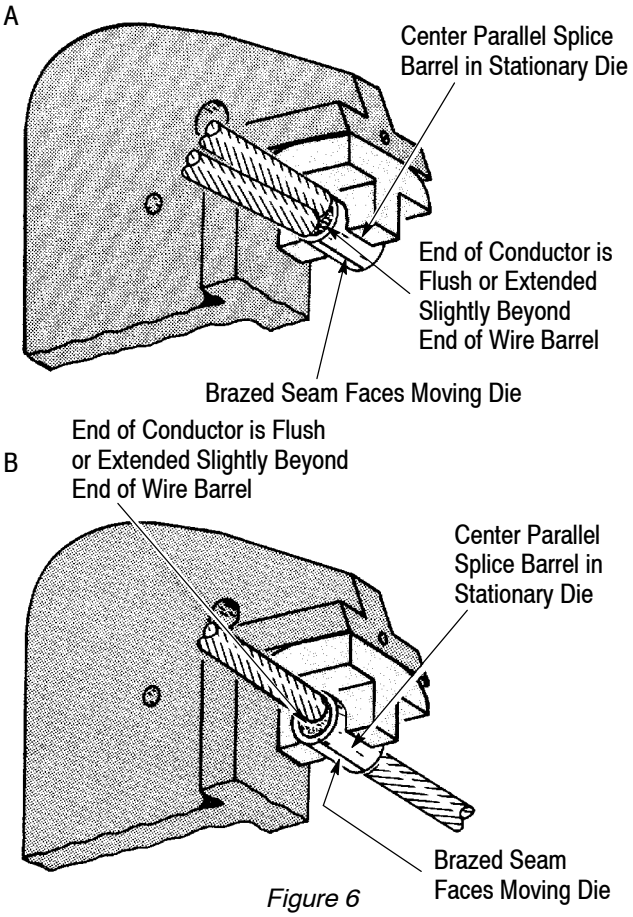



*Figure 6*

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 Figures 3 thru 6. The crimping procedure is identical when using crimping head 69097.

1. Place the terminal or splice in the stationary die as shown in Figures 4, 5, or 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 3, CRIMP INSPECTION and Figure 7 for crimp inspection information.

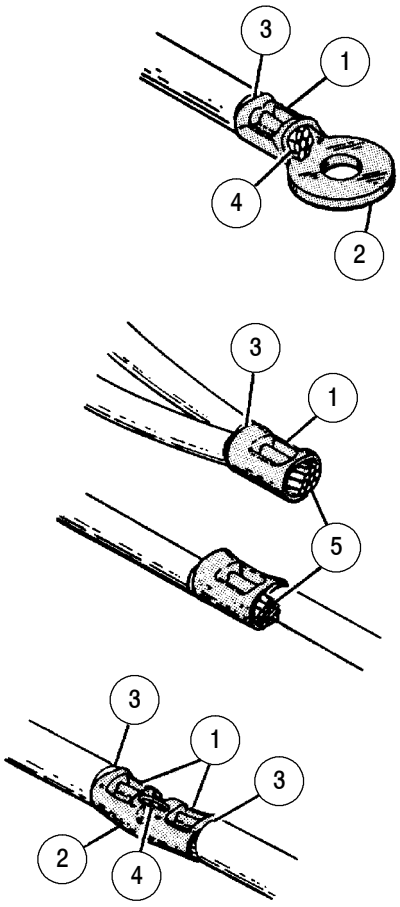
**NOTE**

*If SOLISTRAND terminals or splices stick in the die after crimping, apply a rocking motion to remove them from the die.*

## 3. CRIMP INSPECTION

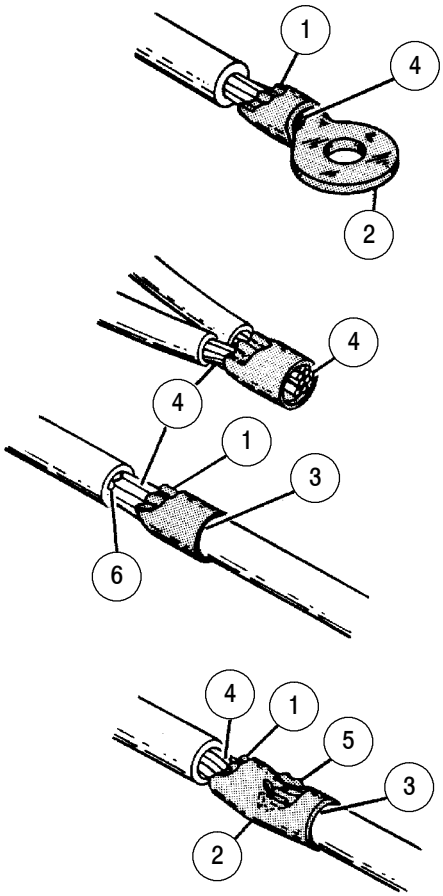
Inspect crimped terminals and splices by checking the features described in Figure 7. Use only the terminals and splices that meed the conditions shown in the "ACCEPT" column. "REJECT" terminals and splices can be avoided through careful use of instructions in Section 2, INSTRUCTIONS, and by performing regular die maintenance as instructed in Section 4, MAINTENANCE AND INSPECTION PROCEDURES.

**ACCEPT**




1. Crimps centered. Crimps may be off center, BUT NOT OFF END OF WIRE BARREL.
2. AWG wire size being used matches wire size stamped on terminal or splice and crimping dies.
3. Wire insulation does not enter wire barrel.
4. Wire is visible through inspection hole or butt splices. Wire is flush with or extends slightly beyond end of terminal wire barrel.
5. On parallel splices, bare wire ends must be flush with or extend slightly beyond end of barrel.

**REJECT**




1. Crimped off end of splice or terminal wire barrel.
2. AWG wire size being used does not match wire size stamped on terminal or splice crimping dies.
3. Wire insulation entered barrel of terminal or splice. CHECK FOR INCORRECT STRIP LENGTH.
4. Wire not inserted far enough in terminal or splice. End of wire must be visible through inspection hole of butt splices, and be flush with or extend slightly beyond end of terminal wire barrel or parallel splice.
5. Excessive "flash" on terminal or splice indicates wrong combination of wire, terminal, splice, or tooling.
6. Nicked or missing conductor strands.

*Figure 7*

## 4. MAINTENANCE AND INSPECTION PROCEDURES

TE Connectivity recommends that a maintenance and inspection program be performed periodically to ensure dependable and uniform terminations. Dies should be inspected at least once a month. Frequency of inspection may be adjusted to suit your requirements through experience. Frequency of inspection is dependent 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 amount of dust and dirt.
- Your own established standards.

Since there is a possibility of die damage in shipment, new dies should be inspected in accordance with the following instructions when received in your plant.

### 4.1. Cleaning

Do not allow deposits of dirt, grease, and foreign matter to accumulate in the die closure surfaces and on the bottoming surfaces of the dies. These deposits may prevent the dies from bottoming fully and may also cause excessive wear in the die closure surfaces, thereby affecting the quality of the crimp. The dies should be wiped clean frequently with a clean cloth.

### 4.2. Visual Inspection

Visually inspect the die closure surfaces for broken, pitted, or chipped areas. Although dies may gage within possible limits, worn or damaged die closure surfaces are objectionable and can affect the quality of the crimp. Examples of possible damaged die closure surfaces are shown in Figure 8.

### 4.3. Die Closure Inspection

Every die set is inspected for proper die closure before packaging. An inspection should be performed periodically to check the die closure for excessive wear. The die closure inspection is accomplished using the GO NO-GO plug gage. TE neither manufactures nor sells plug gages. A suggested plug gage design and the GO NO-GO dimensions of the plug gage members are listed in Figure 9. The following procedure is recommended for inspecting the die closure.

#### Dies for the 69097 Tool

1. Clean oil and dirt from the die closure surfaces and plug gage members.

2. Assemble the dies so that they are bottomed but not under pressure. See Figure 10, Detail “A”.

#### Dies for the 69099 Tool

1. Clean oil and dirt from the die closure surfaces and plug gage members.

2. Assemble and adjust the dies to meet the “gage dimension” indicated in Figure 10, Detail “A”.

3. With the crimping dies assembled as described in steps 1 and 2, check the wire barrel crimp die closure using the proper plug gage. Hold gage in straight alignment with the die closure and carefully try to inset them without forcing the GO member as shown in Figure 10, Detail “A”. The GO member must pass completely through the die closure as shown in Figure 10, Detail “B”.

4. 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 10, Detail “B”.

5. If the dies meet the GO NO-GO gage conditions, the dies may be considered dimensionally correct. If you find that the dies no not conform with the GO NO-GO gage conditions, contact your local TE Field Representative.

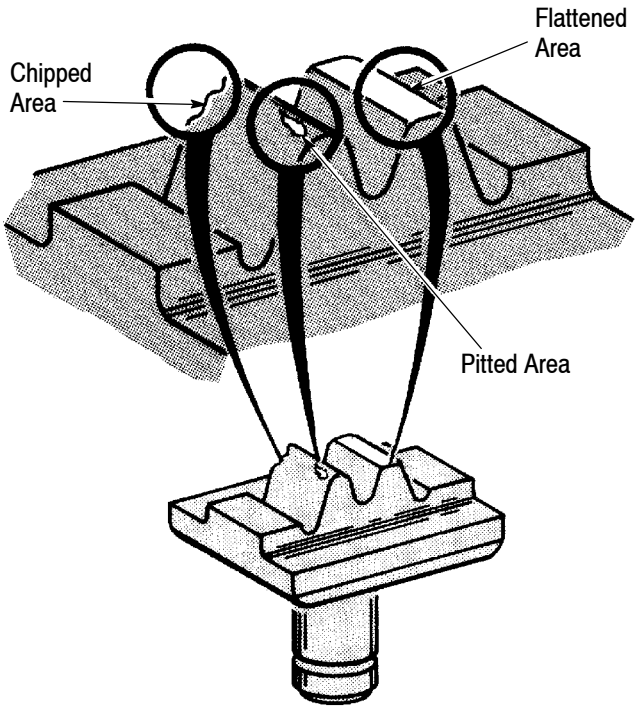
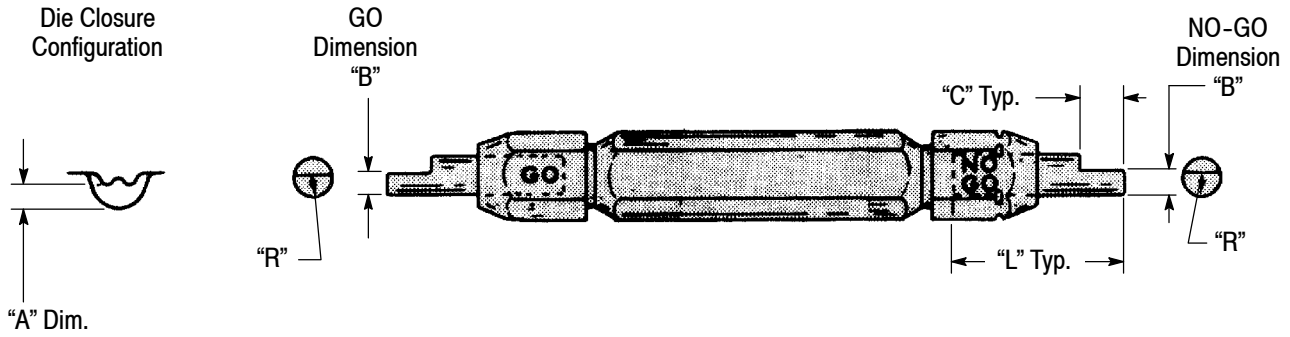



*Figure 8*

***Suggested Plug Gage Design***




| CRIMPING HEAD | DIE SET | DIE CLOSURE DIMENSIONS "A"† | | GAGE MEMBER‡ DIMENSIONS "B" | | RADIUS "R" | GAGE MEMBER LENGTH | |
|---|---|---|---|---|---|---|---|---|
| | | GO | NO-GO | GO | NO-GO | | "L" | "C" |
| 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] | 7.29 [.287] | 31.75 [1.500] | 14.27 [.562] |
| 69099 | 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 | 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 | 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 | 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] |

† Die closure dimensions apply when dies are bottomed, but not under pressure, (Dies for 69097 tool).
Die closure dimensions apply when dies are positioned at "gage dimension" indicated in Figure 10, Detail "A", (Dies for 69099 tool).

‡ Material - Tool Steel

*Figure 9*

***Inspection of Wire Barrel Crimping Dies with Plug Gage***

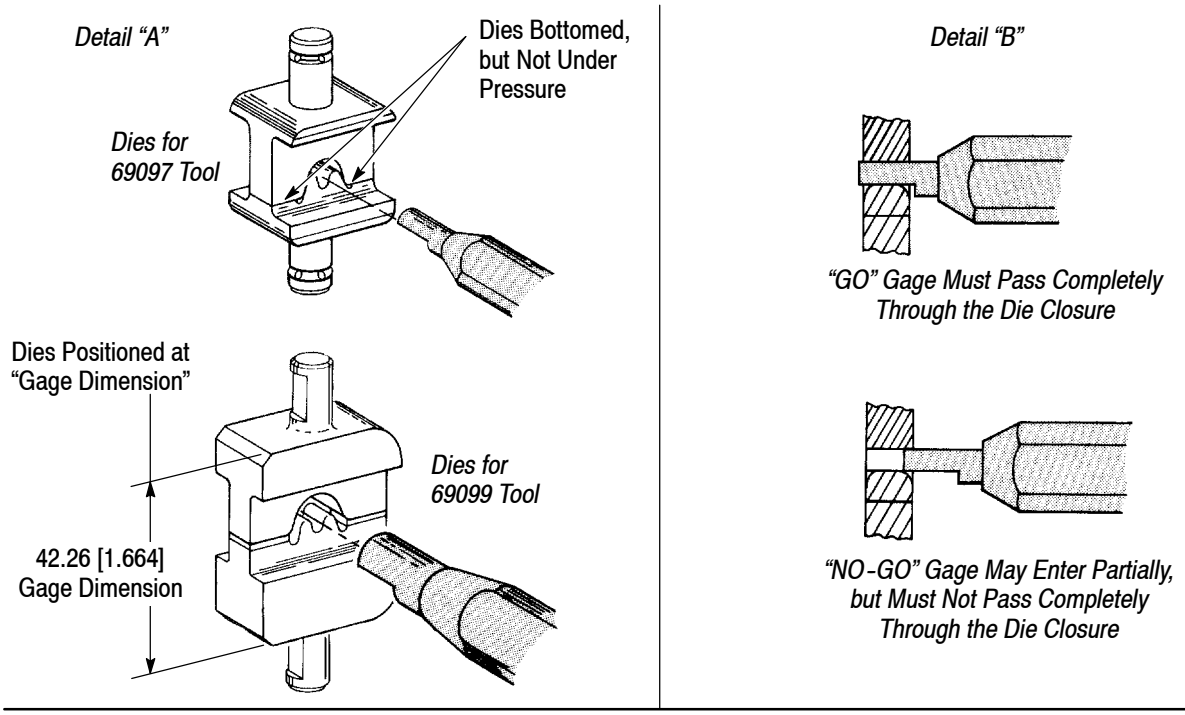
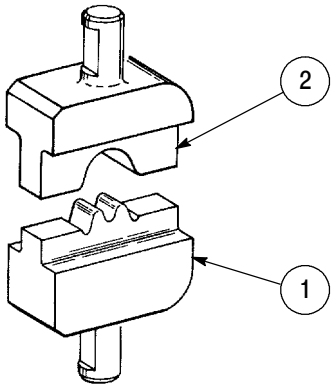
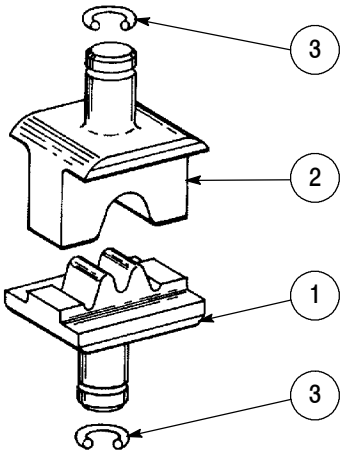



*Figure 10*

*Die Sets for Crimping Head 69099*




*Die Sets for Crimping Head 69097*




| ITEM | DESCRIPTION | DIE SETS FOR CRIMPING HEAD 69099 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 69216 | 69217 | 69218 | 45433 | 45436 | 45439 | 45442 | 45445 |
| 1 | DIE, Moving | 307544-1 | 307544-2 | 307544-3 | 307544-4 | 307544-5 | 307544-6 | 307544-7 | 307544-8 |
| 2 | DIE, Stationary | 307543-1 | 307543-2 | 307543-3 | 307543-4 | 307543-5 | 307543-6 | 307543-7 | 307543-8 |

| ITEM | DESCRIPTION | DIE SETS FOR CRIMPING HEAD 69097 | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | DIE, Moving | 46133 | | | 46137 | 46145 | --- |
| 2 | DIE, Stationary | 46134 | 46135 | 46136 | 46138 | 46146 | |
| 3 | RING, Retaining | 303825 | | | | | |

*Figure 11*

## 5. REPLACEMENT PARTS

Customer-replaceable parts are listed in Figure 11. A complete inventory should be stocked and controlled 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 parts through your TE Representative, or call 1-800-526-5142, or send a facsimile of your purchase order to 717-986-7605, or write to:

CUSTOMER SERVICE (038-035)
TYCO ELECTRONICS CORPORATION
PO BOX 3608
HARRISBURG PA 17105-3608

For customer repair service, contact a TE Representative at 1-800-526-5136.

## 6. REVISION SUMMARY

- Updated document to corporate requirements
- New logo