

Figure 1

CRIMPING DIE ASSEMBLY	HYDRAULIC CRIMPING HEAD	HYDRAULIC CRIMPING HEAD (INSTRUCTION SHEET)
68006 68007 68008● 68008-1 68009 68010 68010-1■ 68010-2 314964-1	69066-0 58422-1 1752787-1 1752877-1	408-2453 408-9535 408-8914 408-8956
598771 68011-1 314948-1 1976441-1 1976442-1 1976443-1 2217781-1 2217855-1 2280034-1 2280035-1 2844065-1	58422-1 1752787-1	408-9535 408-8914

●Superseded by 68008-1, ■superseded by 68010.

Table 1

1. INTRODUCTION

The crimping die assemblies are designed to be installed into the hydraulic crimping heads listed in Table 1 and are used to crimp COPALUM sealed terminals and splices. Read these instructions thoroughly before crimping any terminals or splices.

Reasons for reissue of this instruction sheet are provided in Section 8, REVISION SUMMARY.



NOTE

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

2. DESCRIPTION

Each crimping die assembly consists of a stationary die (nest) and moving die (anvil). Each die features an alignment dot on the front of the die. See Figure 1.

3. DIE ASSEMBLY INSTALLATION

For information concerning die installation and general performance of the hydraulic crimping head, refer to the instruction sheet packaged with the crimping head.

**DANGER**

To avoid personal injury, ALWAYS DISCONNECT electrical and air supply to power unit before installing the hydraulic crimping head or die assembly.

In order to achieve proper mating of the dies during installation, ensure that:

- the shanks of the dies are offset to the same surface of the die, but that the alignment dots align and face the operator
- the anvil moves and the nest is stationary

**CAUTION**

DO NOT mix dies from different or the same die assemblies (because of inconsistent wearing) — it is important that the dies are used as the set.

**DANGER**

To avoid personal injury, make sure to close the yoke of the hydraulic crimping head and fully insert the pin. When operating the power unit, be careful when handling terminals, splices, or wire near the crimping area of the die assembly.

4. CRIMPING PROCEDURE

Select the die assembly and terminal or splice, and prepare the wire as follows:

1. Refer to Figure 2/Table 2 to select the appropriate die assembly and terminal or splice according to the wire.

**NOTE**

For aluminum-to-aluminum application, butt splices will accept the same wire size at either end. For aluminum-to-copper application, the copper wire size must be smaller to compensate for differences in the electrical properties of copper and aluminum. This also applies when using copper wire in a terminal as listed in Table 2.

2. Cut the end of the wire perpendicular to the wire; DO NOT distort the shape of the wire. It is recommended to chamfer the edge around the group of wires. See Figure 2. The chamfer will aid in the insertion of the wire into the terminal or splice.
3. Strip the wire to the length indicated in Figure 2/Table 2. DO NOT nick or cut the wire strands. The strip length for the wire will depend on the number of insulation layers covering the wire.

There are two approved methods for crimping the terminals and splices using these die assemblies and hydraulic crimping heads. Proceed as follows:

4.1. Terminal

IMPORTANT: To ensure a quality crimp, gage the die assembly at the beginning of a run, after changing a die assembly — and then periodically during the run. Refer to paragraph 6.2 for gaging instructions.

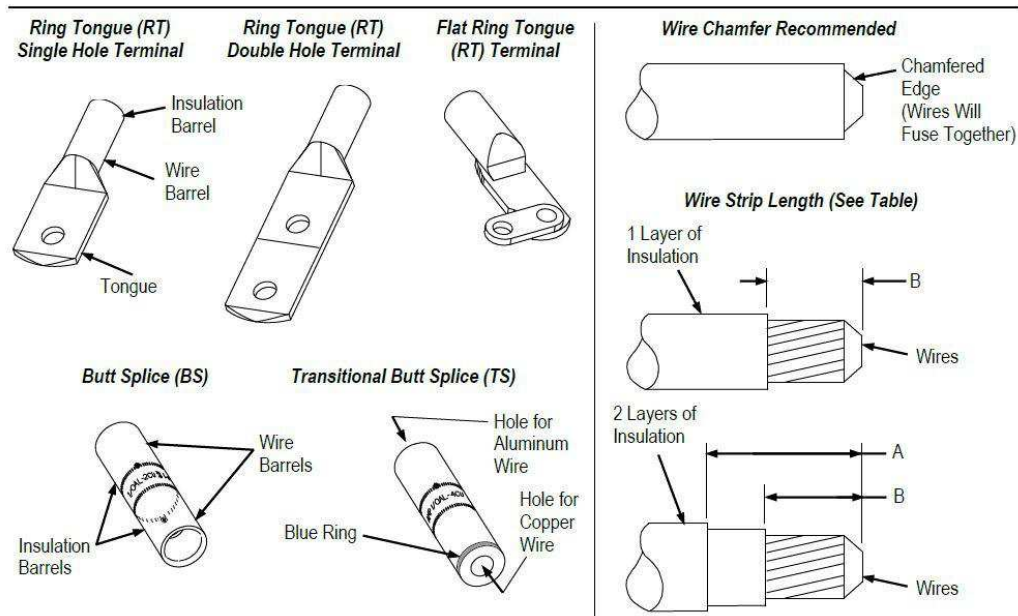


Figure 2

Terminal (RT)		Butt Splice (BS)	Wire							Die Assy	Crimping Head
Single Hole	Double Hole		Aluminum		Copper		Insulation Range	Strip Length ±1.59 [1/16]			
			mm² (CMA)†	AWG	mm² (CMA)†	AWG		A (Insul)	B (Wire)		
277147-[]	---	277156-[]	8.60 (16,564)	8	4.80 (9,354)	10	4.62-5.08 [182-.200]	22.23 [7/8]	11.11 [7/16]	68006	58422-1 69066 1752787-1 1752877-1
277148-[]	55832-[]	277157-[]	14.60 (28,280)	6	8.80 (16,983)	8	5.72-6.35 [225-.250]	22.23 [7/8]	12.70 [1/2]	68007	
277149-[]	55833-[]	277158-[]	21.90 (42,420)	4	13.80 (26,818)	6	7.01-7.75 [276-.305]	25.40 [1]	17.45 [11/16]	68008-1	
277150-[]	55835-[]	277159-[]	35.00 (67,872)	2	22.00 (42,615)	4	8.64-9.65 [340-.380]	31.75 [1 1/4]	19.10 [3/4]	68009	
277151-[]	55837-[]	277160-[]	55.50 (107,464)	1/0	34.30 (66,500)	2	10.79-11.94 [425-.470]	32.54 [1 9/32]	25.40 [1]	68010 68010-1	
277152-[]	55839-[]	277161-[]	71.30 (138,168)	2/0	53.90 (104,500)	1/0	12.70-13.97 [500-.550]	34.93 [1 3/8]	25.40 [1]	314964-1 68011-1	
277153-[]	55840-[]	277162-[]	87.20 (168,872)	3/0	68.60 (133,000)	2/0	13.21-16.38 [520-.645]	34.93 [1 3/8]	25.40 [1]	59877-1	58422-1 1752787-1
---	55841-[]†	---	110.94 (214,928)	4/0	85.94 (166,500)	3/0	14.99-17.27 [590-.680]	33.34 [1 5/16]	25.40 [1]	314948-1	

Table 2 (Cont'd)

Transitional Butt Splice (TS)	Wire							Die Assy	Crimping Head
	Aluminum		Copper		Insulation Range	Strip Length ±1.59 [1/16]			
	mm² (CMA)†	AWG	mm² (CMA)†	AWG		A (Insul)	B (Wire)		
277163-[]	55.50 (107,464)	1/0	22.00 (42,615)	4	Al End: 10.80-11.94 [.425-.470] Cu End: 7.01-7.75 [.276-.305]	32.54 [1 9/32]	25.4 [1]	68010 68010-1	58422-1 69066
277164-[]	21.90 (42,420)	4	8.80 (16,983)	8	Al End: 7.01-7.75 [.276-.305] Cu End: 5.33-6.48 [.210-.255]	25.40 [1]	17.45 [11/16]	68008-1	1752787-1 1752877-1
277168-[]	87.20 (168,872)	3/0	53.90 (104,500)	1/0	Al End: 13.21-16.38 [.520-.645] Cu End: 10.92-12.97 [.430-.495]	34.93 [1 3/8]	25.40 [1]	59877-1	58422-1 1752787-1

Table 2 (Cont'd)

Terminal (RT)		Butt Splice (BS)	Wire						Die Assy	Crimping Head
Single Hole	Double Hole		Aluminum		Copper▲		Insulation Range	Strip Length B (Wire)		
			mm ² (CMA)†	AWG	mm ² (CMA)†	AWG				
696866-[]	696804-[]	696852-[]	8.60 (16,564)	8	4.80 (9,354)	10	5.59-6.30 [.220-.248]	11.11 [7/16]	68006	58422-1 69066 1752787-1 1752877-1
696869-[]	696999-[] 696887-[] 696951-[] 696953-[]	696847-[]	14.60 (28,280)	6	8.80 (16,983)	8	6.60-7.39 [.260-.291]	12.70 [1/2]	68007	
696872-[]	696834-[]	696854-[]	21.90 (26,818)	4	13.80 (26,818)	6	8.23-9.04 [.324-.356]	15.88 [5/8]	68008-1	
696838-[]	696890-[]	696857-[]	35.00 (67,872)	2	22.00 (42,615)	4	9.65-10.59 [.380-.417]	19.10 [3/4]	68009	
696875-[]	696830-[] 696957-[] 696959-[]	696843-[]	55.50 (107,464)	1/0	34.30 (66,500)	2	11.81-13.03 [.465-.513]	20.57 [.810]	68010-2	
696878-[] 696819-[]●	696840-[]	696861-[]	71.30 (138,168)	2/0	53.90 (104,500)	1/0	12.70-14.58 [.500-.574]	25.40 [1]	68011-1	58422-1 1752787-1
696881-[] 696821-[]●	696825-[] 696961-[] 696963-[]	696863-[]	87.20 (168,872)	3/0	68.60 (133,000)	2/0	13.21-16.08 [.520-.633]	25.40 [1]	59877-1	
696884-[] 696823-[]●	696893-[]	696849-[]	110.94 (214,928)	4/0	85.94 (166,500)	3/0	15.62-17.35 [.615-.683]	25.40 [1]	314948-1	

Table 2 (Cont'd)

Terminal (RT)			Wire						Die Assy	Crimping Head
Single Hole	Double Hole	Bent	Aluminum		Copper		Insulation Range	Strip Length A (Insulation) ±1.59 [1/16]		
			mm² (CMA)†	AWG	mm² (CMA)†	AWG				
2297683-[]	---	---	35.00 (67.872)	2	22.00 (42,615)	4	8.64 – 9.70 [.340 - .382]	31.75 [11/4]	2844065-1△	58422-1 1752787-1
1958058-[]	1958080-[]	---	71.30 (138,168)	2/0	---	---	12.70-14.58 [.500-.574]	25.40 [1]	1976441-1 2217855-1△	
---	---	1958060-[] 15° 2290515-[] 30°			---	---			1976441-1	
---	---	2221881-[] 30°			---	---			1976441-1 2280034-1△	
1958091-[]	---	1958093-[] 15°	87.20 (168,872)	3/0	---	---	13.21-16.08 [.520-.633]	1976442-1		
1958054-[]	1958078-[]	---	110.94 (214,928)	4/0	---	---	14.99-17.35 [.590-.683]	1976443-1 2280035-1△		
---	---	1958056-[] 15° 2290514-[] 30°			---	---		1976443-1		
---	---	2221742-[] 30°			---	---		1976443-1 2217781-1△		

Table 2 (Cont'd)

Flag Terminal		Wire						Die Assy	Crimping Head
Straight	90° Bend	Aluminum		Copper		Insulation Range	Strip Length A (Insulation) ±1.59 [1/16]		
		mm² (CMA)†	AWG	mm² (CMA)†	AWG				
696931-[]	696933-1	55.50 (107,464)	1/0	34.30 (66,500)	2	11.18-13.03 [.440-.513]	25.40 [1]	68010-2	58422-1 69066 1752787-1 1752877-1
696925-[]	696927-1	71.30 (138,168)	2/0	53.90 (104,500)	1/0	12.45-14.58 [.490-.574]	20.57 [.810]	68011-1	58422-1 1752787-1
696910-[]	696912-1	110.94 (214,928)	4/0	85.94 (166,500)	3/0	15.21-17.35 [.599-.683]	25.40 [1]	314948-1	

†For Reference Only •Break-Away Terminal △Die Assembly with Straighteners ▲Only applies to splices (not terminals)

Table 2 (End)

The preferred method is:

1. Before each crimp, apply a spray dry lubricant to the crimping area of the dies to reduce sticking of the terminal in the dies.
2. Insert the properly stripped wire fully into the wire barrel of the terminal. Ensure that there are no exposed strands.



CAUTION

DO NOT turn or twist the wire or terminal during wire insertion; otherwise, the internal screen of the terminal could turn and cut into the wires during crimping.

3. Position the terminal in the stationary die (nest) with the back of the tongue resting against the die, with the crimping head yoke closed and pin fully inserted.



NOTE

Make sure terminal is positioned so crimper of the moving die (anvil) will crimp the wire barrel of the terminal. See Figure 3.

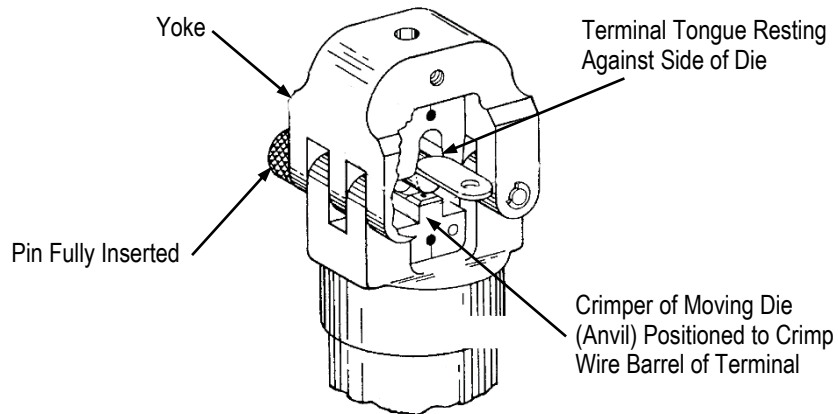


Figure 3

4. Holding the wire in place and fully inserted, activate the power unit to complete the crimp.
5. Remove the crimped terminal from the die assembly. When removing a terminal from the die assembly, grip it as shown in Figure 4.



NOTE

If terminal sticks in die after crimping, apply a rocking action to free it. Wipe light oil or use spray dry lubricant on dies to prevent sticking.

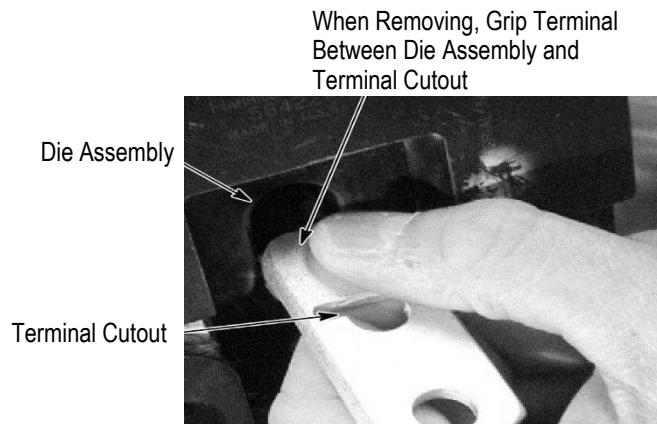


Figure 4

An alternate method is:



NOTE

This method is only slightly different than the preferred method. The difference is when the wire is inserted into the wire barrel.

1. Before each crimp, apply a spray dry lubricant to the crimping area of the dies to reduce sticking of the terminal in the dies.
2. Position the terminal in the stationary die (nest) with back of tongue resting against die, with the crimping head yoke closed and pin fully inserted.



NOTE

Make sure terminal is positioned so crimper of the moving die (anvil) will crimp the wire barrel of the terminal. See Figure 3.

3. Jog the power unit to advance the ram to hold the terminal in place. Make sure not to deform the wire barrel; otherwise, it may be difficult to insert the wire into the wire barrel of the terminal.

4. Insert the properly stripped wire fully into the wire barrel of the terminal. Ensure that there are no exposed strands.


CAUTION

DO NOT turn or twist the wire or terminal during wire insertion; otherwise, the internal screen of the terminal could turn and cut into the wires during crimping.

5. Holding the wire in place and fully inserted, activate the power unit to complete the crimp.
6. Remove the crimped terminal from the die assembly. When removing a terminal from the die assembly, grip it as shown in Figure 4.


NOTE

If terminal sticks in die after crimping, apply a rocking action to free it. Wipe light oil or use spray dry lubricant on dies to prevent sticking.

4.2. Splice

IMPORTANT: To ensure a quality crimp, gage the die assembly at the beginning of a run, after changing a die assembly — and then periodically during the run. Refer to Paragraph 6.2 for gaging instructions.

The preferred method is:

1. Before each crimp, apply a spray dry lubricant to the crimping area of the dies to reduce sticking of the splice in the dies.
2. Insert the properly stripped wire fully into the wire barrel of the splice. When crimping a splice with a color-coded band, insert the correct copper wires into the color-coded banded end of the splice. Ensure that there are no exposed strands.


CAUTION

DO NOT turn or twist the wire or splice during wire insertion; otherwise, the internal screen of the splice could turn and cut into the wires during crimping.

3. Position the splice in the stationary die (nest) so that edge of the die is within the width of the circumferential crimp alignment mark of the splice. The asterisk alignment mark on the splice must be inside the die, facing up, and in alignment with the alignment dot of the die. See Figure 5.


NOTE

Make sure that the splice is properly aligned in the stationary die (nest) so that the moving die (anvil) will crimp the wire barrel of the splice.

4. Holding the wire in place, activate the power unit to complete the first wire barrel crimp.
5. When the first wire barrel crimp is completed, remove the crimping head pin, open the yoke, and remove the splice.
6. To crimp the other wire barrel of the splice, rotate the splice or crimping head 180 degrees, and position the splice in the die so that the asterisk alignment mark on the splice is inside the die, facing up, and in alignment with alignment dot of the die. See Figure 5. Follow the same steps used to crimp the first wire barrel (Steps 1 through 5).

An alternate method is:


NOTE

This method is only slightly different than the preferred method. The difference is when the wire is inserted into the wire barrel.

7. Before each crimp, apply a spray dry lubricant to the crimping area of the dies to reduce sticking of the splice in the dies.
8. Position the splice in the stationary die (nest) so that edge of the die is within the width of the circumferential crimp alignment mark of the splice. The asterisk alignment mark on the splice must be inside the die, facing up, and in alignment with the alignment dot of the die. See Figure 5.

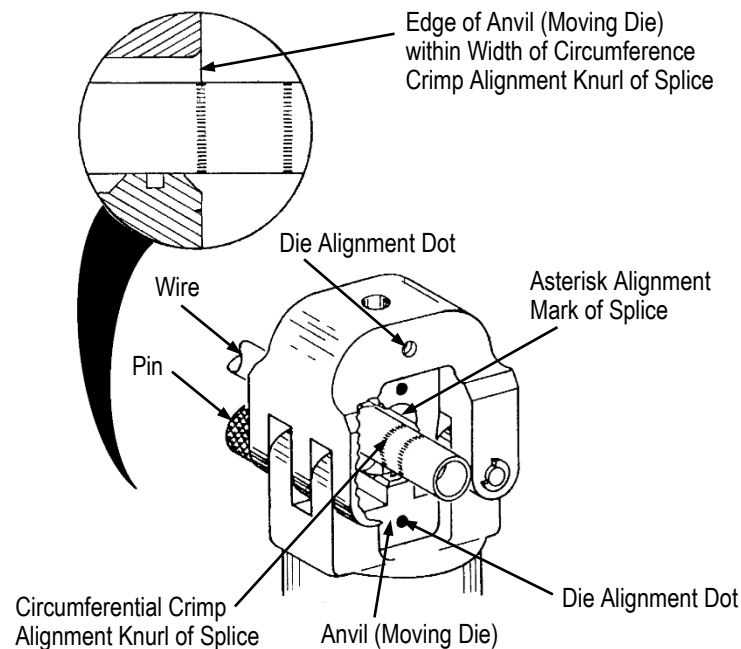


Figure 5

9. Jog the power unit to advance the ram to hold the splice in place. Make sure not to deform the wire barrel; otherwise, it may be difficult to insert the wire into the wire barrel of the splice.
10. Insert the properly stripped wire fully into wire barrel of the splice. When crimping a splice with a color-coded band, insert the correct copper wires into the color-coded banded end of the splice. Ensure that there are no exposed strands.



CAUTION

DO NOT turn or twist the wire or splice during wire insertion; otherwise, the internal screen of the splice could turn and cut into the wires during crimping.

11. Holding the wire in place, activate the power unit to complete the other wire barrel crimp.
12. When the wire barrel crimp is completed, remove the crimping head pin, open yoke, and remove the splice.
13. To crimp the other wire barrel of the splice, rotate the splice or crimping head 180 degrees, and position the splice in the die so that the asterisk alignment mark on the splice is inside the die, facing up, and in alignment with alignment dot of the die. See Figure 5. Follow the same steps used to crimp the first wire barrel (Steps 1 through 5).

5. CRIMP INSPECTION

Refer to Application Specification 114-2134 for detailed criteria to check that crimp is applied properly.

The crimp inspection mark (created by the die assembly) on the terminal or splice can be used as a visual indicator of an acceptable termination, but it does not indicate that the crimp is not acceptable. If the crimp inspection mark is centered in the crimp area and is evenly and distinctly formed, the crimp is considered properly applied; however, if it is not:

- refer to Table 2 to verify that the proper terminal or splice and die combination according to the wire size was used,
- verify that the dies fully bottom during the crimp cycle, and
- ensure that the die assembly is dimensionally correct as specified in paragraph 6.2

6. MAINTENANCE AND INSPECTION

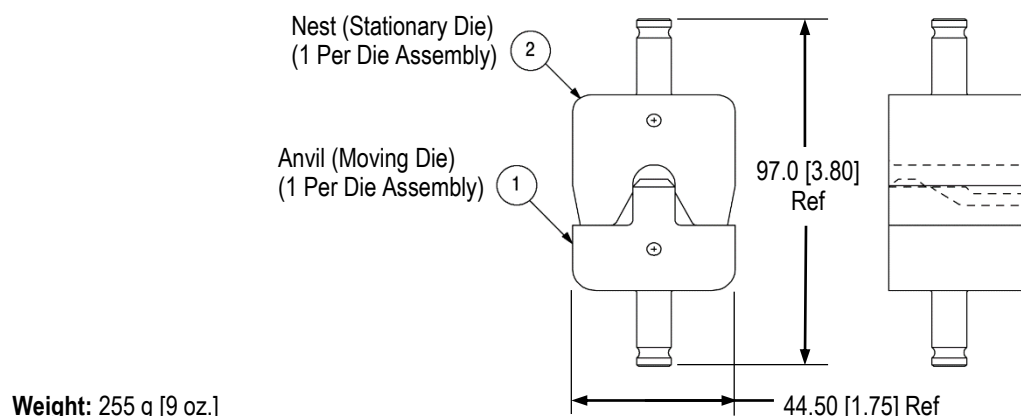
Each die assembly is inspected before shipment. It is recommended that the die assembly be inspected immediately upon arrival at your facility to ensure that it conforms to the gage dimensions provided in Figure 7 and that it has not been damaged during shipment.

Keep the dies together as a complete set (assembly). DO NOT mix dies from different die assemblies or the same die assemblies. Die part numbers for each die assembly are listed in Figure 6.



DANGER

To avoid personal injury, ALWAYS DISCONNECT electrical and air supply to power unit before performing adjustments, inspections, or repairs.



Item	Die Assembly									
	59877-1	68006	68007	68008	68008-1	68009	68010	68010-1	68010-2	68011-1
1	312309-9	312309-1	312309-2	312309-3	1-312309-4	312309-4	1-312309-0	312309-5	1-312309-1	312309-7
2	307465-9	307465-1	307465-2	307465-3	1-307465-3	307465-4	307465-5	1-307465-0	307465-5	307465-7

Item	Die Assembly									
	314948-1	3149644-1	1976441-1	1976442-1	1976443-1	2217855-1	2280034-1	2280035-1	2217781-1	2844065-1
1	314951-1	314965-1	1-312309-2	1-312309-3	314951-2	2-312309-7	2-312309-7	314951-4	314951-4	2-312309-8
2	307465-9	307465-7	1-307465-1	1-307465-2	1-307465-2	2-307465-8	2-307465-8	2-307465-7	2-307465-7	2-307465-9

Figure 6

6.1. Daily Maintenance

Each operator must be made aware of—and responsible for—the following steps of daily maintenance.

1. Remove dust, dirt, and other contaminants with a clean brush or a soft, lint-free cloth. DO NOT use objects that could damage the dies.
2. Make certain the dies are protected with a thin coat of any good SAE 20 motor oil. DO NOT OIL EXCESSIVELY.
3. When the dies are not in use, mate them and store in a clean dry area.

6.2. Gaging the Die Assembly

**NOTE**

It is highly recommended to gage the die assembly at the beginning of a run, after changing a die assembly - and then periodically during the run.

Inspect the wire barrel section and insulation sealing section of the crimping chamber using plug gages that conform to the measurements provided in Figure 7 as follows:

**NOTE**

Gages can be purchased from Pennoyer-Dodge Company, 6650 San Fernando Road, Glendale, CA 91201

1. Mate the dies until it is evident they have bottomed. Hold the dies in this position.
2. Align the GO element of the plug gage with the crimping chamber. Push the element straight into the crimping chamber as shown in Figure 8. The GO element must pass completely through the crimping chamber.
3. Align the NO-GO element with the crimping chamber and try to insert it straight into the crimping chamber. The NO-GO element may start to enter, but must not pass completely through, as shown in Figure 8.

If the crimping chamber conforms to the gage inspection, the die assembly is considered dimensionally correct. If not, the die assembly must be replaced.

6.3. Periodic Inspection

Regular inspections should be performed by quality control personnel. A record of scheduled inspections should remain with the dies and/or be supplied to personnel responsible for the dies. Although recommendations call for at least one inspection per month, the inspection frequency should be based on the amount of use, ambient working conditions, operator training and skill, and established company standards. This inspection should be performed as follows:

1. Remove all lubrication and accumulated film by immersing the die assembly in a suitable commercial degreaser that will not affect the painted alignment dots.
2. Inspect the crimp area for flattened, chipped, cracked, worn, or broken areas. If damage is evident, the die assembly must be replaced.

7. REPLACEMENT AND REPAIR

Order die assemblies through your TE Representative or call 1-800-526-5142, or send a facsimile of your purchase order to 1-717-986-7605, or write to:

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

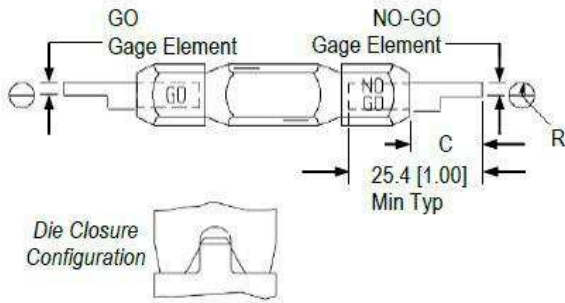
Die assemblies may be returned for evaluation and repair. For repair service, call 1-800-526-5136.

8. REVISION SUMMARY

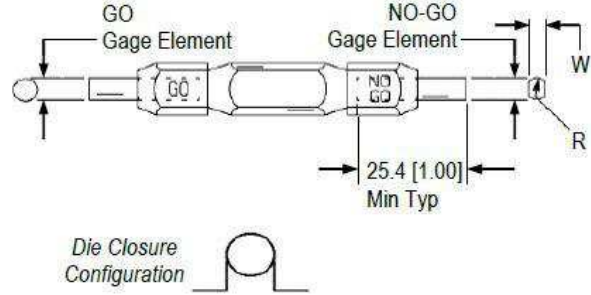
Revisions to this instruction sheet include:

- Added new part number 68010-1 to table in Figures 1, 2, 6, and 7
- Added PN 2844065-1 throughout

**Suggested Plug Gage Design for
Wire Barrel Section of Crimping Chamber**



**Suggested Plug Gage Design for
Insulation Sealing Section of Crimping Chamber**



Die Assy	Gage Element						C (Exposed Length)	W Tip Width (max)
	Wire Barrel Section			Insulation Sealing Section				
	GO	NO-GO	R (Radius) (max)	GO	NO-GO	R (Radius) (max)		
59877-1	7.518-7.526 [.2960-.2963]	7.769-7.772 [.3059-.3060]	7.62 [.300]	16.205-16.213 [.6380-.6383]	16.609-16.612 [.6539-.6540]	8.08 [.318]	9.91 [.390]	16.15 [.636]
68006	2.870-2.877 [.1130-.1133]	3.045-3.048 [.1199-.1200]	3.18 [.125]	6.248-6.256 [.2460-.2463]	6.652-6.655 [.2619-.2620]	3.10 [.122]	6.35 [.250]	6.20 [.244]
68007	3.200-3.208 [.1260-.1263]	3.375-3.378 [.1329-.1330]	3.556 [.140]	7.518-7.526 [.2960-.2963]	7.922-7.925 [.3119-.3120]	3.73 [.147]	6.35 [.250]	7.47 [.294]
68008 68008-1	3.937-3.945 [.1550-.1553]	4.112-4.115 [.1619-.1620]	4.34 [.171]	9.195-9.202 [.3620-.3623]	9.599-9.601 [.3779-.3780]	4.57 [.180]	6.35 [.250]	9.14 [.360]
68009	5.003-5.011 [.1970-.1973]	5.179-5.181 [.2039-.2040]	5.54 [.218]	11.379-11.387 [.4480-.4483]	11.783-11.786 [.4639-.4640]	5.66 [.223]	9.91 [.390]	11.33 [.446]
2844065-1	5.003-5.011 [.1970-.1973]	5.179-5.181 [.2039-.2040]	5.54 [.218]	11.379-11.387 [.4480-.4483]	11.783-11.786 [.4639-.4640]	5.66 [.223]	9.91 [.390]	11.33 [.446]
68010 68010-1	6.197-6.205 [.2440-.2443]	6.372-6.375 [.2509-.2510]	6.73 [.265]	13.818-13.825 [.5440-.5443]	14.221-14.224 [.5599-.5600]	6.88 [.271]	9.91 [.390]	13.77 [.542]
68010-2	6.579-6.586 [.2590-.2593]	6.754-6.756 [.2659-.2660]	6.73 [.265]	13.818-13.825 [.5440-.5443]	14.221-14.224 [.5599-.5600]	6.88 [.271]	9.91 [.390]	13.77 [.542]
68011-1	7.924-7.932 [.3120-.3123]	8.100-8.102 [.3189-.3190]	7.52 [.296]	15.037-15.044 [.5920-.5923]	15.441-15.443 [.6079-.6080]	7.49 [.295]	9.91 [.390]	14.99 [.590]
314948-1	9.550-9.558 [.3760-.3763]	9.802-9.804 [.3859-.3860]	8.13 [.320]	16.205-16.213 [.6380-.6383]	16.609-16.612 [.6539-.6540]	8.08 [.318]	9.91 [.390]	16.15 [.636]
314964-1	10.922-10.930 [.4300-.4303]	11.097-11.100 [.4369-.4370]	7.52 [.296]	15.037-15.044 [.5920-.5923]	15.441-15.443 [.6079-.6080]	7.49 [.295]	9.91 [.390]	14.99 [.590]
1976441-1	7.924-7.932 [.3120-.3123]	8.100-8.102 [.3189-.3190]	7.52 [.296]	15.037-15.044 [.5920-.5923]	15.441-15.443 [.6079-.6080]	7.49 [.295]	9.91 [.390]	14.99 [.590]
1976442-1	7.518-7.526 [.2960-.2963]	7.769-7.772 [.3059-.3060]	7.62 [.300]	16.205-16.213 [.6380-.6383]	16.609-16.612 [.6539-.6540]	8.08 [.318]	9.91 [.390]	16.15 [.636]
1976443-1	9.550-9.558 [.3760-.3763]	9.802-9.804 [.3859-.3860]	8.13 [.320]	16.205-16.213 [.6380-.6383]	16.609-16.612 [.6539-.6540]	8.08 [.318]	9.91 [.390]	16.15 [.636]
2217855-1	7.924-7.932 [.3120-.3123]	8.100-8.102 [.3189-.3190]	7.52 [.296]	15.037-15.044 [.5920-.5923]	15.441-15.443 [.6079-.6080]	7.49 [.295]	9.91 [.390]	14.99 [.590]
2217781-1	9.550-9.558 [.3760-.3763]	9.802-9.804 [.3859-.3860]	8.13 [.320]	16.205-16.213 [.6380-.6383]	16.609-16.612 [.6539-.6540]	8.08 [.318]	9.91 [.390]	16.15 [.636]
2280034-1	7.924-7.932 [.3120-.3123]	8.100-8.102 [.3189-.3190]	7.52 [.296]	15.037-15.044 [.5920-.5923]	15.441-15.443 [.6079-.6080]	7.49 [.295]	9.91 [.390]	14.99 [.590]
2280035-1	9.550-9.558 [.3760-.3763]	9.802-9.804 [.3859-.3860]	8.13 [.320]	16.205-16.213 [.6380-.6383]	16.609-16.612 [.6539-.6540]	8.08 [.318]	9.91 [.390]	16.15 [.636]

Figure 7

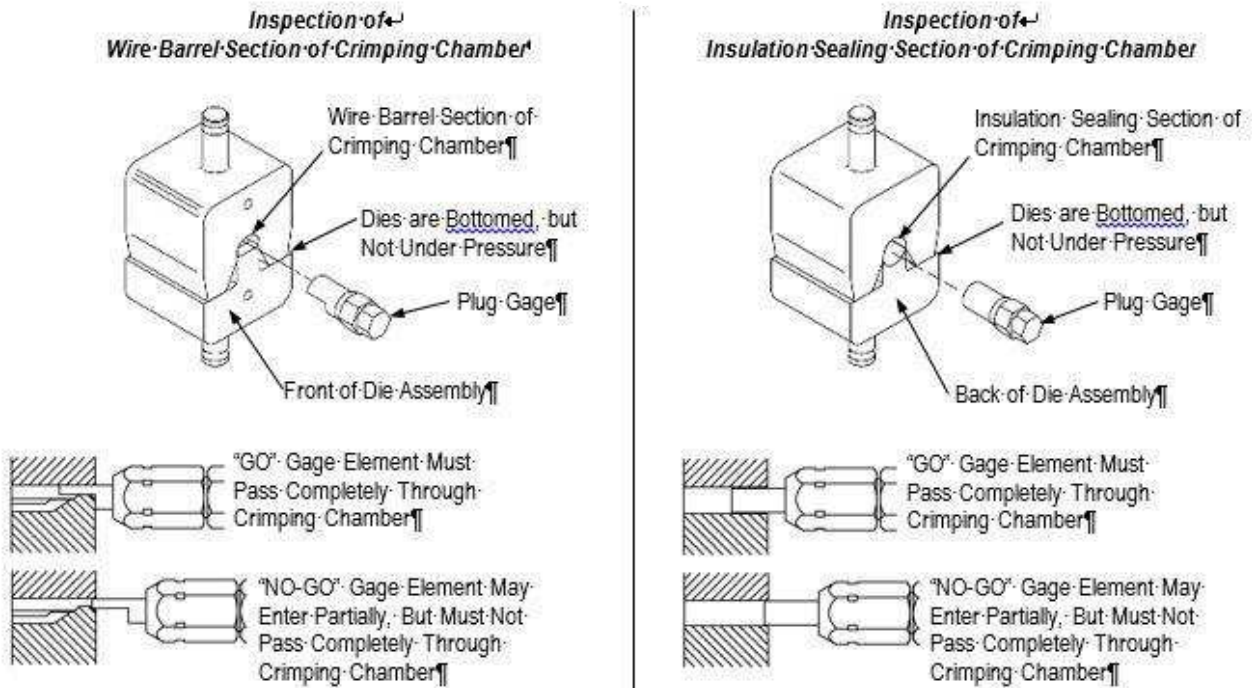


Figure 8