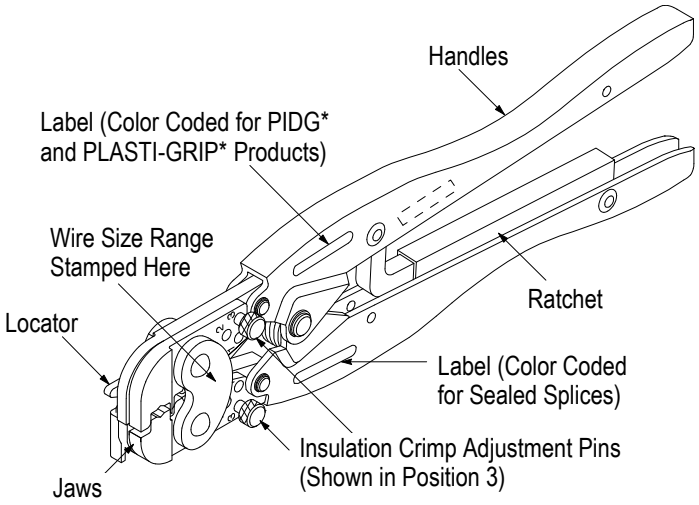
CERTI-CRIMP* Hand Crimping Tools

ORIGINAL INSTRUCTIONS

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 for extended-use, production operations is available.



Hand Crimping Tool Part Numbers
46121
47304
47386
47386-5
47387
47907-1
48518-2
68343-1
69151-1
69454
169485

Figure 1

1. INTRODUCTION

CERTI-CRIMP hand crimping tools listed in Figure 1 are used to crimp the products onto the wire listed in Figure 2.

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

Reasons for reissue of this instruction sheet are provided in Section 7, REVISION SUMMARY.

2. DESCRIPTION (Figure 1)

The handles and label (if applicable) of each tool are color-coded to match the color coding of the product to be crimped. The tools may show more than one color code.

PRODUCT	COPPER WIRE	
	TYPE	SIZE RANGE (AWG)
PIDG Terminals and Splices	Solid or Stranded	30-14
PIDG Radiation Resistant Terminals and Splices	Stranded	27-14
PLASTI-GRIP Butt Splices	Solid or Stranded	26-22
PIDG Insulation Restricting Nylon Terminals	Stranded	26-14
PIDG FASTON* Receptacles 641321-1 (.187 Series) and 641324-1 (.110 Series)	Stranded	26-24
PLASTI-GRIP Terminals	Solid or Stranded	22-14
Spare Wire Cap	Stranded	22-14

Figure 2

These tools are members of the CERTI-CRIMP hand crimping tool family. The ratchet ensures full crimping of the product. Once engaged, the ratchet will not release until the handles have been FULLY closed.

CAUTION
The crimping jaws bottom before the ratchet releases. This design feature ensures maximum tensile performance of the crimp. DO NOT re-adjust the ratchet.

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3. CRIMPING PROCEDURE

Refer to Figure 3 to ensure that the correct tool and product combination is being used. Figure 3 also lists the number of dots (or dots and rib) that appear embossed on a crimped product when it is crimped using the correct tooling.

3.1. PIDG and PLASTI-GRIP Terminal and Splice and PIDG FASTON Receptacle

1. Strip the wire to the dimension provided in Figure 3 being careful to avoid nicking or cutting the conductor(s).

CAUTION
DO NOT use wire with nicked or missing conductor(s).

2. Open the tool jaws by closing the tool handles until the ratchet releases, then allow the handles to open fully.

TOOL			PRODUCT		WIRE			
PART NO.	COLOR CODE	DOT CODE	DESCRIPTION	INSUL COLOR	SIZE RANGE (AWG)	INSUL DIA RANGE	STRIP LENGTH	
							TERMINAL	SPLICE
46121 169485	Red and Yellow	1	PIDG Terminals and Splices	Yellow	26-22	---	4.0-4.8 [5/32-3/16]	4.4-5.2 [11/64-13/64]
			PLASTI-GRIP Butt Splices					
47304●	Yellow	---	PIDG Terminals					
47907-1	White	2	PIDG Terminals and Splices	Natural Translucent	24-20	---	4.8-6.6 [3/16-7/32]	5.6-6.4 [7/32-1/4]
			PIDG Radiation Resistant Terminals and Splices	Natural Translucent with White Stripe				
47386 47386-5	Red and Yellow	1	PIDG Terminals MS 25036-143 through -147	Yellow	26-24	---	5.2-6.0 [13/64-15/64]	---
			PIDG Radiation Resistant Terminals MS 7928/4-143 through -147	Natural with Yellow Stripe				
47386 47386-5	Red and Yellow	1	PIDG Terminals and Splices	Red	22-16	---	5.2-6.0 [13/64-15/64]	6.4-7.1 [1/4-9/32]
			PLASTI-GRIP Terminals					
			PIDG Radiation Resistant Terminals and Splices	Natural Translucent with White Stripe				
69151-1●	Red	---	PIDG Terminals and Splices	Red	22-16	---	5.2-6.0 [13/64-15/64]	6.4-7.1 [1/4-9/32]
			PLASTI-GRIP Terminals					
			PIDG Radiation Resistant Terminals and Splices	Natural Translucent with White Stripe				
69454	Red	1 Dot 1 Rib	PIDG Terminals and Splices	Red	22-18	---	5.2-6.0 [13/64-15/64]	6.4-7.1 [1/4-9/32]
			PLASTI-GRIP Terminals					
			PIDG Radiation Resistant Terminals and Splices	Natural Translucent with White Stripe				
47387	Blue and Green	2	PIDG Terminals and Splices PLASTI-GRIP Terminals	Blue	16-14	1.04-2.62 [.041-.103]	5.2-6.0 [13/64-15/64]	6.4-7.1 [1/4-9/32]
				Green	20-16 HD	0.41-1.65 [.016-.065]		
			PIDG Radiation Resistant Terminals and Splices	Natural Translucent with Blue Stripe	16-14	---		
					20-16 HD			

●Use Tight Insulation Support for Wires with Thin Wall Insulation

Figure 3 (cont'd)

TOOL			PRODUCT		WIRE			
PART NO.	COLOR CODE	DOT CODE	DESCRIPTION	INSUL COLOR	SIZE RANGE (AWG)	INSUL DIA RANGE	STRIP LENGTH	
							TERMINAL	SPLICE
46121 169485 47304●	Red and Yellow	1	PIDG Insulation Restricting Nylon Terminals	Yellow with 3 Black Stripes	26	0.66-1.40 [.026-.055]	4.8-5.6 [3/16-7/32]	---
				Yellow with 3 Blue Stripes	24	0.79-1.40 [.031-.055]		
47386 47386-5	Red and Yellow	1	PIDG Insulation Restricting Nylon Terminals MS 7928/1-1 through -10	Yellow with 3 Black Stripes	26	0.66-1.40 [.026-.055]	6.4-7.1 [1/4-9/32]	---
				Yellow with 3 Blue Stripes	24	0.79-1.40 [.031-.055]		
47386 47386-5 69151-1●	Red and Yellow Tool 69151-1 Mod F Red Only	1	PIDG Insulation Restricting Nylon Terminals	Red with 3 Green Stripes	22	0.97-1.40 [.038-.055]	6.4-7.1 [1/4-9/32]	---
				Red with 3 Red Stripes	20	1.17-2.79 [.046-.110]		
				Red with 3 White Stripes	18	1.42-2.79 [.056-.110]		
47387	Blue and Green	2	PIDG Insulation Restricting Nylon Terminals	Blue with 3 Blue Stripes	16	1.60-3.30 [.063-.130]	6.4-7.1 [1/4-9/32]	---
47386 47386-5	Red and Yellow	1	Spare Wire Cap 328307	Red	22-18	---	8.0-8.7 [5/16-11/32]	
47387	Blue and Green	2	Spare Wire Cap 328308	Blue	16-14	---		
48518-2	---	---	PIDG FASTON Receptacles 641321-1 (.187 Series) and 641324-1 (.110 Series)	Yellow■	26-24	---	4.8-5.6 [3/16-7/32]	
68343-1 6.35 [.250] Exp.	Blue	2	PLASTI-GRIP Terminals	Blue	16-14	3.81-6.35 [.150-.250]	5.2-6.0 [13/64-15/64]	---

●Use Tight Insulation Support for Wires with Thin Wall Insulation

■For Reference Only – (Check Product-to-Tool Match Using Part Numbers)

Figure 3 (end)

3. Place the product in the jaws as shown in Figure 4 or Figure 5.
4. Close the tool handles until the product is held firmly in place. DO NOT deform the wire barrel.
5. Insert properly stripped wire(s) into the wire barrel as shown in Figure 4 or Figure 5.

CAUTION

DO NOT allow wire insulation to enter the wire barrel.

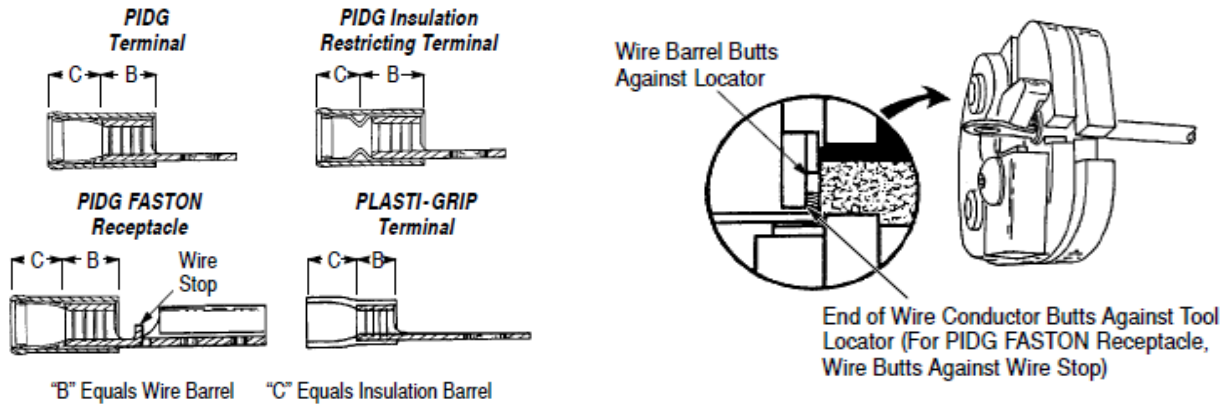


Figure 4

6. Complete the crimp by closing the tool handles until the ratchet releases.
7. Release the tool handles, allow the handles to open fully, and remove the crimped product.
8. To crimp the other wire barrel of a splice, re-position the uncrimped wire barrel in the tool as shown in Figure 5, and repeat Steps 2 through 7.
9. Inspect the crimped product according to Figure 7. Product not meeting these conditions should NOT be used. If the wire insulation grip is not satisfactory, refer to Section 4 to adjust the grip using the insulation crimp adjustment pins.

3.2. Spare Wire Cap

1. Strip the wire to the dimension provided in Figure 3, being careful to avoid nicking or cutting the conductor(s).

CAUTION
DO NOT use wire with nicked or missing conductor(s).

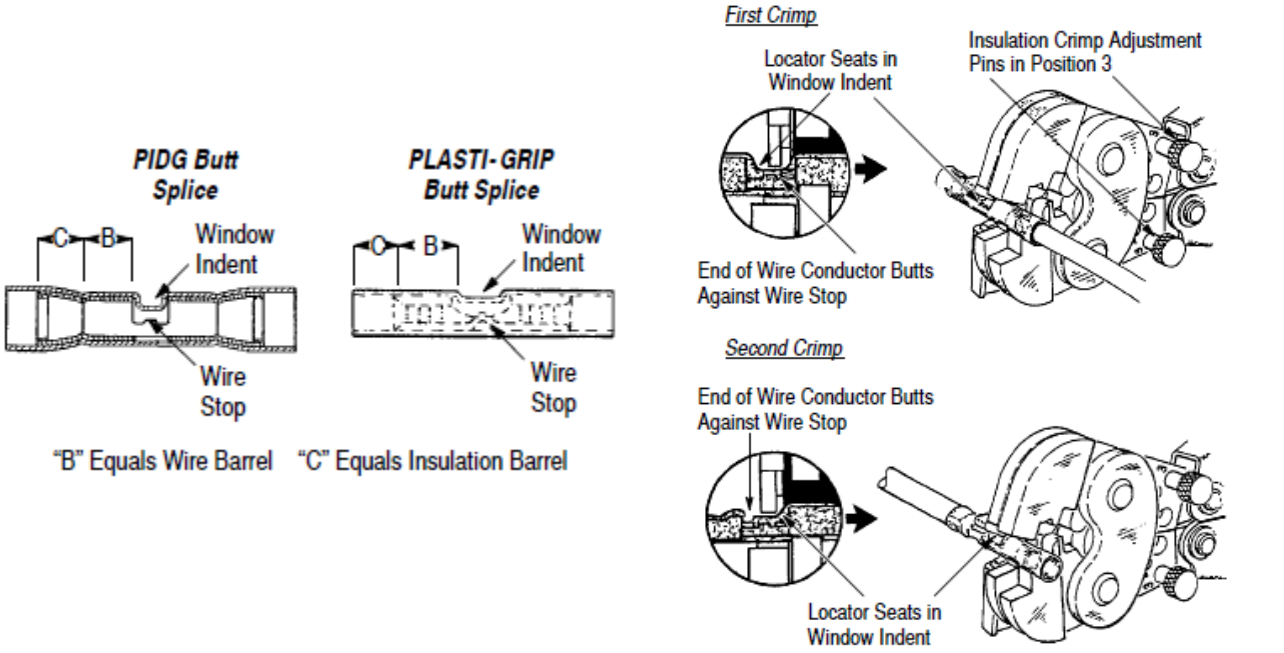


Figure 5

2. Place the tool insulation crimp adjustment pins in Position 3.
3. Close the tool handles until the jaws partially close, but leave enough space for the spare wire cap to be inserted between the jaws.
4. Raise the locator so that the end of the cap rests against the recessed surface of the locator as shown in Figure 6.

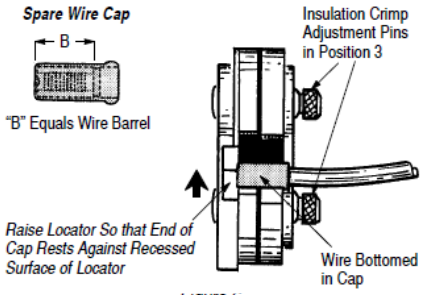
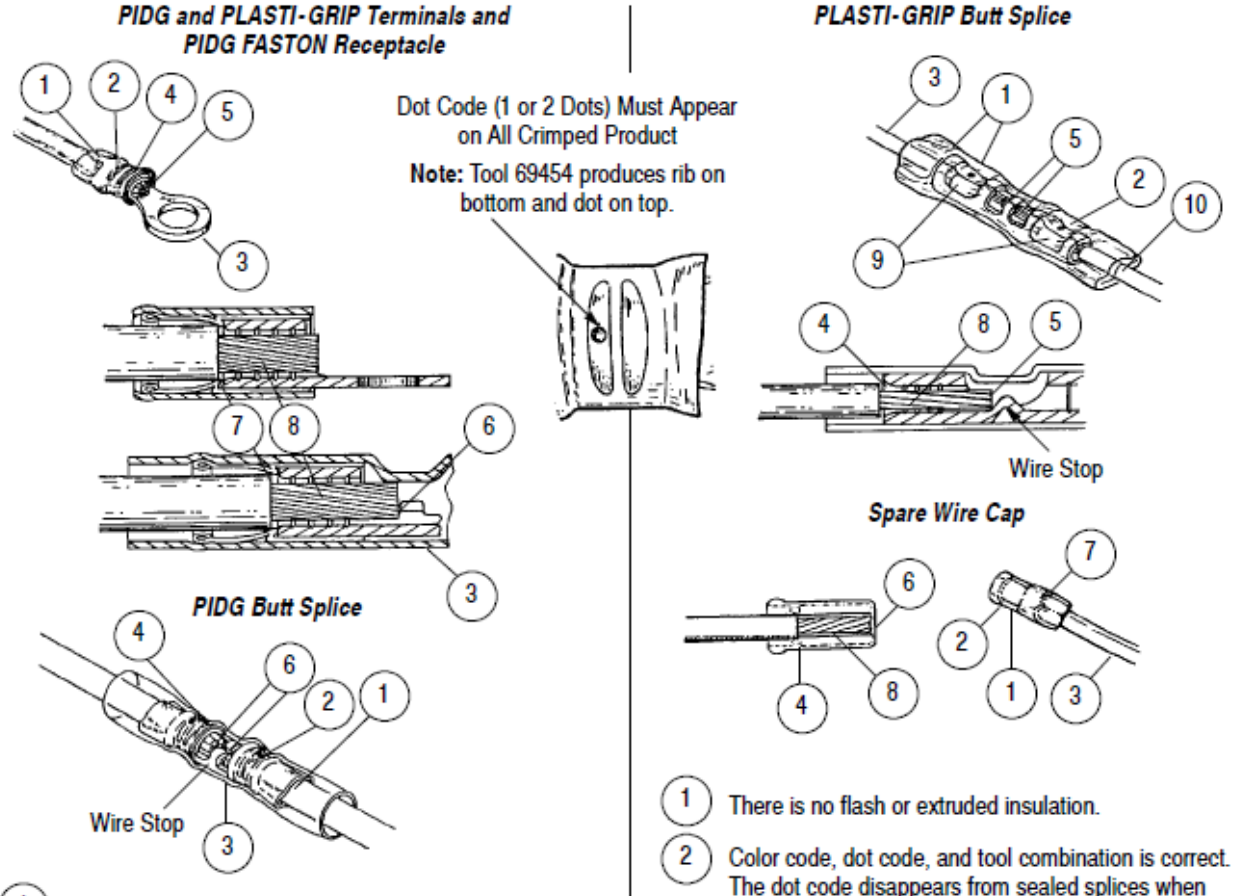


Figure 6

5. Close the tool handles until the spare wire cap is held firmly in place. DO NOT deform the wire barrel.
6. Insert a properly stripped wire into the wire barrel until the wire bottoms.
7. Hold the wire in position, and complete the crimp by closing the tool handles until the ratchet releases.
8. Release the tool handles, allow the handles to open fully, and remove the crimped spare wire cap.
9. Inspect crimped product according to Figure 7. Product not meeting these conditions should NOT be used.



1. The insulation barrel is in firm contact with the wire insulation.
2. Color code, dot code, and tool combination is correct (rib on bottom, dot on top when using Tool 69454).
3. The wire size is within the wire size range stamped under the terminal tongue or on the center of the splice.
4. The crimp is centered on the wire barrel.
5. The end of the conductor is flush with, or extends beyond, the end of the wire barrel.
6. The conductor end is against the wire stop, is at least flush with, or extends slightly beyond, the wire barrel.
7. The wire insulation does not enter the wire barrel.
8. There are no nicked or missing conductor strands.

1. There is no flash or extruded insulation.
2. Color code, dot code, and tool combination is correct. The dot code disappears from sealed splices when they are heat sealed.
3. The correct wire size is used.
4. The wire insulation does not enter the wire barrel.
5. The end of the conductor is against the wire stop, is at least flush with, or extends slightly beyond, the wire barrel.
6. The end of the conductor is bottomed in the cap.
7. The full width of the crimp is over the wire barrel.
8. There are no nicked or missing conductor strands.
9. The crimp is centered on the wire barrel.
10. The splice insulation is in contact with the wire insulation.

Figure 7

4. INSULATION CRIMP ADJUSTMENT

The insulation crimp section of the hand tool has three positions: 1 (tight), 2 (medium), and 3 (loose) to adjust the wire insulation crimp grip. To adjust the insulation grip, proceed as follows:

4.1. PIDG Terminals and Splices and PIDG FASTON Receptacles

NOTE
PIDG terminals and splices feature a wire insulation "grip".

1. Insert the insulation crimp adjustment pins into Position 3. Refer to Figure 1.

CAUTION
Make sure that both insulation crimp adjustment pins are in the same position.

2. Place a terminal or splice into the tool jaws as shown in Figure 4 or Figure 5.
3. Insert UNSTRIPPED wire into ONLY the insulation barrel of the terminal or splice.
4. Close the tool handles to complete the crimp.
5. Remove the crimped terminal or splice and check the insulation crimp by bending the wire back and forth once. The terminal or splice should retain its grip on the wire insulation. If the wire pulls out, set BOTH insulation crimp adjustment pins to the next higher position (2).
6. Perform another crimp, and repeat the adjustment as necessary until the correct insulation grip is attained. DO NOT use a tighter setting than required.

4.2. PLASTI-GRIP Terminals and Splices

NOTE
PLASTI-GRIP terminals and splices feature a wire insulation "support". The terminal or splice insulation should ideally be in contact with the wire insulation.

Set the insulation crimp adjustment pins into position according to the following:

— 3 for wire having a large insulation diameter
— 2 for wire having a medium insulation diameter
— 1 for wire having a small insulation diameter

CAUTION
Make sure that both insulation crimp adjustment pins are in the same position.

5. MAINTENANCE AND INSPECTION

Hand crimping tools are inspected before shipment. The tool received should be inspected immediately upon arrival to ensure that the tool has not been damaged during shipment, and that it performs according to the criteria described in this sheet. If a tool is damaged upon arrival, retain the shipping container, file a claim with the carrier, and notify TE immediately.

5.1. Daily Maintenance

1. Remove dust, moisture, and other contaminants from the tool with a clean brush or a soft, lint-free cloth. DO NOT use objects that could damage the tool.
2. Make sure that the proper retaining pins are in place and are secured with the proper retaining rings.
3. Make certain that all pins, pivot points, and bearing surfaces are protected with a THIN coat of any good SAE 20 motor oil. DO NOT oil excessively.
4. When the tool is not in use, keep the handles closed to prevent objects from becoming lodged in the crimping areas and store the tool in a clean, dry area.

5.2. Periodic Inspection

Regular inspections should be performed by quality control personnel. A record of scheduled inspections should remain with the tool or be supplied to supervisory personnel responsible for the tool. Though

recommendations call for at least one inspection per month, the inspection frequency should be based on the amount of use, working conditions, operator training and skill, and established company standards. These inspections should be performed in the following sequence:

A. Visual Inspection

1. Remove all lubrication and accumulated film by immersing the tool (handles partially closed) in a suitable commercial degreaser that will not affect paint or plastic material.
2. Make certain that all retaining pins are in place and are secured with retaining rings. If replacements are necessary, refer to the parts list in Figure 10.
3. Inspect crimping areas for pitted or chipped surfaces.
4. Close the tool handles until the ratchet releases, then allow handles to open freely. If they do not open quickly and fully, the spring is defective and must be replaced. Refer to Section 6, REPLACEMENT AND REPAIR.

B. Gaging Crimping Chamber

This inspection requires the use of plug gages conforming to the dimensions listed in Figure 8. To gage the crimping chamber, proceed as follows:

1. Close the jaws by squeezing the tool handles together until the jaws have bottomed, and then HOLD the handles in this position. DO NOT force the jaws beyond initial contact.
2. Align the GO element of the gage with the wire barrel crimp section of the crimping chamber. Refer to Figure 9. Push the element straight into the crimping chamber without using force. The GO element must pass completely through the crimping chamber.
3. Align the NO-GO element of the gage with the same crimp section, and try to insert the element. The NO-GO element may start entry, but it must not pass completely through the crimping chamber. Refer to Figure 9.
4. Repeat the gage inspection for the insulation crimp section of the crimping chamber, making sure to use the correct plug gage.

If the crimping chamber conforms to the gage inspection, the tool is considered dimensionally correct. If the crimping chamber does not conform to the inspection, the tool must be repaired. Refer to Section 6, REPLACEMENT AND REPAIR.

For additional information concerning the use of the plug gage, refer to Instruction Sheet 408-7424.

C. Ratchet Inspection

Obtain a .025-mm [.001-in.] shim that is suitable for checking the clearance between the bottoming surfaces of the jaws. To inspect the ratchet control, proceed as follows:

1. Refer to Figure 3, and select a product and maximum size wire.
2. Position the product in the crimping chamber according to Paragraph 3.1, Steps 1 through 5 or Paragraph 3.2, Steps 1 through 6.
3. While holding the wire in place, squeeze the tool handles together until the ratchet releases. Holding the tool in this position, maintain just enough pressure to keep the jaws closed.
4. Check the clearance between the bottoming surfaces of the jaws. If the clearance is .025 mm [.001 in.] or less, the ratchet is satisfactory. If clearance exceeds .025 mm [.001 in.], the ratchet is out of adjustment and must be repaired. Refer to Section 6, REPLACEMENT AND REPAIR. If the tool conforms to this inspection procedure, lubricate it with a THIN coat of any good SAE 20 motor oil, and return it to service.

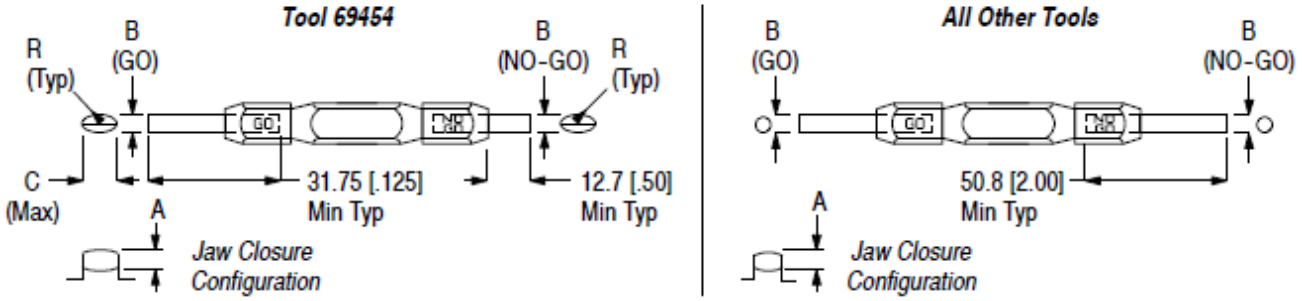
6. REPLACEMENT AND REPAIR

Customer-replaceable parts are listed in Figure 10. Parts other than those listed should be replaced by TE to ensure quality and reliability. For customer repair service or to order replacement parts, call 1-800-522-6752, or fax your purchase order to 717-986-7605, or write to: Customer Service (038-035), TE Connectivity Corporation, PO Box 3608, Harrisburg, PA 17105-3608.

7. REVISION SUMMARY

♠ Figure 3: changed color code of PN 47907-1 from [Blue and White] to [White]

Suggested Plug Gage Design — Wire Barrel Crimp Section

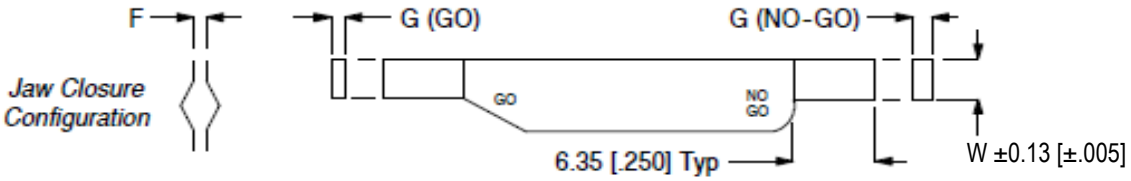


TOOL	JAW CLOSURE♦ DIAMETER A		GAGE ELEMENT♦♦ DIAMETER B		DIMENSION	
	GO	NO-GO	GO	NO-GO	C (WIDTH)	R (RADIUS)
46121 169485	1.600 [.0630]	1.753 [.0690]	1.600-1.608 [.0630-.0633]	1.750-1.753 [.0689-.0690]	---	---
47304	1.600 [.0630]	1.753 [.0690]	1.600-1.608 [.0630-.0633]	1.750-1.753 [.0689-.0690]		
47386 47386-5	2.768 [.1090]	2.921 [.1150]	2.768-2.776 [.1090-.1093]	2.918-2.921 [.1149-.1150]		
47387 68343-1	3.022 [.1190]	3.175 [.1250]	3.022-3.030 [.1190-.1193]	3.172-3.175 [.1249-.1250]		
47907-1	2.260 [.0890]	2.413 [.0950]	2.260-2.268 [.0890-.0893]	2.410-2.413 [.0949-.0950]		
48518-2	1.600 [.0630]	1.753 [.0690]	1.600-1.608 [.0630-.0633]	1.750-1.753 [.0689-.0690]		
69151-1	2.768 [.1090]	2.921 [.1150]	2.768-2.776 [.1090-.1093]	2.918-2.921 [.1149-.1150]		
69454	2.616 [.1030]	2.718 [.1070]	2.616-2.624 [.1030-.1033]	2.715-2.718 [.1069-.1070]	3.962 [.156]	3.454 [.136]

♦Jaw closure dimensions apply when wire barrel jaws are bottomed, but not under pressure. ♦♦Material: Tool Steel

Figure 8 (cont'd)

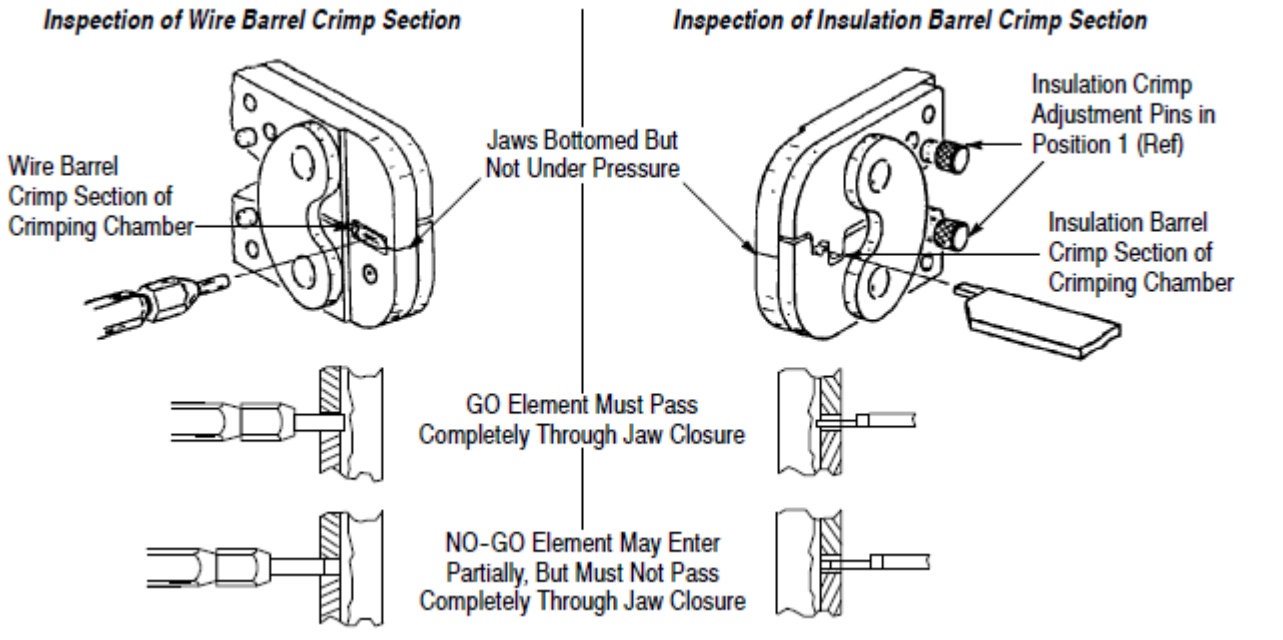
Suggested Plug Gage Design — Insulation Barrel Crimp Section



TOOL	JAW CLOSURE♦ DIMENSION F		GAGE ELEMENT♦♦ DIMENSION G		DIMENSION W (WIDTH)
	GO	NO-GO	GO	NO-GO	
46121 169485	0.762 [.0300]	1.27 [.0500]	0.762-0.77 [.0300-.0303]	1.267-1.27 [.0499-.0500]	3.05 [.120]
47304	0.762 [.0300]	1.27 [.0500]	0.762-0.77 [.0300-.0303]	1.267-1.27 [.0499-.0500]	3.05 [.120]
47386 47386-5	0.762 [.0300]	1.27 [.0500]	0.762-0.77 [.0300-.0303]	1.267-1.27 [.0499-.0500]	3.05 [.120]
47387	1.016 [.0400]	1.524 [.0600]	1.016-1.024 [.0400-.0403]	1.521-1.524 [.0599-.0600]	4.75 [.187]
47907-1	0.762 [.0300]	1.27 [.0500]	0.762-0.77 [.0300-.0303]	1.267-1.27 [.0499-.0500]	2.36 [.093]
48518-2	0.762 [.0300]	1.27 [.0500]	0.762-0.77 [.0300-.0303]	1.267-1.27 [.0499-.0500]	3.05 [.120]
69151-1	0.762 [.0300]	1.27 [.0500]	0.762-0.77 [.0300-.0303]	1.267-1.27 [.0499-.0500]	3.05 [.120]
69454	0.762 [.0300]	1.27 [.0500]	0.762-0.77 [.0300-.0303]	1.267-1.27 [.0499-.0500]	3.05 [.120]
68343-1	1.828 [.0720]	2.337 [.0920]	1.828-1.836 [.0720-.0723]	2.334-2.337 [.0919-.0920]	4.75 [.187]

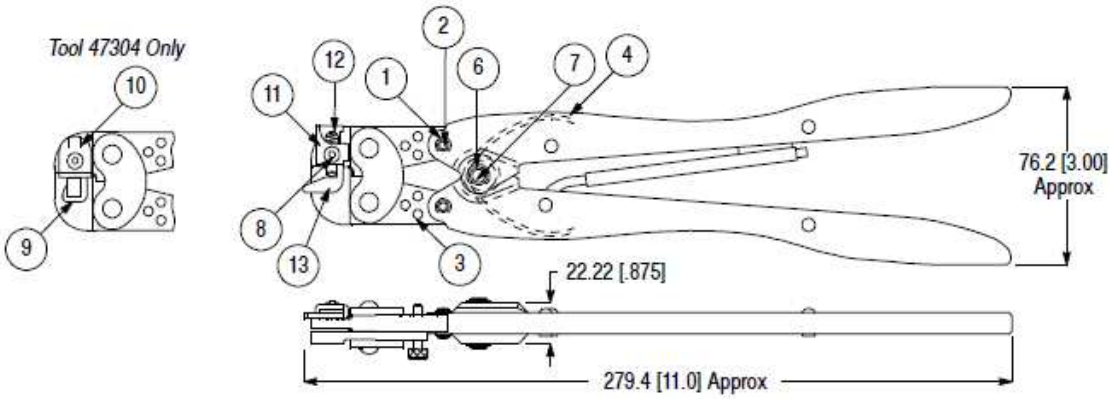
♦Jaw closure dimensions apply when wire barrel jaws are bottomed, but not under pressure. ♦♦Material: Tool Steel

Figure 8 (end)



NOTE: Most insulation barrel gages are designed to check one side of the crimp nest at a time.

Figure 9



ITEM	DESCRIPTION	PART NUMBER FOR TOOL				
		46121	47304	47386	47386-5	47387 & 68343-1
1	RING, Retaining	21045-3	21045-3	21045-3	21045-3	21045-3
2	PIN, Retaining	1-23619-6	1-23619-6	1-23619-6	1-23619-6	1-23619-6
3	PIN, Adjustment	39207	39207	39207	39207	39207
4	SPRING	39364	39364	39364	39364	39364
6	RING, Retaining	21045-6	21045-6	21045-6	21045-6	21045-6
7	PIN, Retaining	2-23620-9	2-23620-9	2-23620-9	2-23620-9	2-23620-9
8	SCREW	3-306105-9	3-21016-4	9-305927-1	9-305927-1	9-305927-1
9	SUPPORT	---	39193	---	---	---
10	STOP	---	302765	---	---	---
11	LOCATOR, Housing	302994	---	302994	302994	302994
12	SPRING	301201	---	301201	301201	301201
13	LOCATOR	3-304052-6	---	302993	302993	45965-6

ITEM	DESCRIPTION	PART NUMBER FOR TOOL				
		47907-1	169485	48518-2	69151-1	69454
1	RING, Retaining	21045-3	21045-3	21045-3	21045-3	21045-3
2	PIN, Retaining	1-23619-6	1-23619-6	1-23619-6	1-23619-6	1-23619-6
3	PIN, Adjustment	39207	39207	39207	39207	39207
4	SPRING	39364	39364	39364	39364	39364
6	RING, Retaining	21045-6	21045-6	21045-6	21045-6	21045-6
7	PIN, Retaining	2-23620-9	2-23620-9	2-23620-9	2-23620-9	2-23620-9
8	SCREW	3-306105-9	3-21016-4	9-305927-1	9-305927-1	9-305927-1
9	SUPPORT	---	---	---	---	---
10	STOP	---	---	---	---	---
11	LOCATOR, Housing	302994	302994	302994	302994	302994-1
12	SPRING	301201	301201	301201	301201	2-304668-6
13	LOCATOR	303542	575960-4	125644-7	302993	4-304052-6

Figure 10