

Crimping Die Assemblies and Supports for Nickel Plated Sealed COPALUM* Terminals





Figure 1

1. INTRODUCTION

The crimping die assemblies are designed to be installed into the hydraulic crimping heads listed in Figure 1 and are used to crimp nickel plated COPALUM terminals as shown in Figure 2.

The supports are designed to minimize crimp barrel and wire angle after crimping.

Read these instructions thoroughly before crimping any terminals.

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



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.

2. DESCRIPTION

NOTE

Each crimping die assembly consists of a stationary die (nest) and moving die (anvil), a nest wire support, an anvil wire support, and an anvil tongue support.

3. INSTALLATION

3.1. Support Installation



DANGER

To avoid personal injury, install the supports on the die outside of the crimping head. ALWAYS DISCONNECT electrical and air supply to the power unit before installing the hydraulic crimping head or supports.

The supports can be placed on the dies and removed as needed.

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DANGER

Installing the supports on dies will extend the pinch areas of the dies. BE SURE to keep hands and fingers clear of the supports while crimping. If necessary, use soft jaw pliers to grip the terminal tongue being careful not to impart damage.

3.2. 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.



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, or wire near the crimping area of the die assembly.

4. CRIMPING PROCEDURE

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

1. Refer to Figure 2 and select the appropriate die assembly and terminal according to the wire.

DIE SET	STYLE	TERMINAL
2844065-1	2 AWG AI, Straight	2297683-1
2217855-1	2/0 Straight	1958058-1
2280034-1	2/0 30° Bent	2221881-1
2280035-1	4/0 Straight	1958054-1
2217781-1	4/0 30° Bent	2221742-1
2844425-2	3/0 Straight	2300872-1
2844430-2	1/0 Straight	2300538-1 2300882-1
	- ;	

Figure 2

- 2. Cut the end of the wire perpendicular to the wire; the shape of the wire may be distorted, but can be formed back into a circular shape.
- 3. Strip the wire according to Instruction Sheet 408-2281. DO NOT nick or cut wire strands.
- 4. There are two approved methods for crimping the terminals using these die assemblies and hydraulic crimping heads when not using the spring-loaded tongue support. These two methods are as follows. The spring-loaded tongue support will interfere with the terminal while loading the terminal using these procedures.



NOTE

The tongue supports may leave burnishing marks on the terminal after crimping.



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 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

AVOID moving the wire after it is inserted. The wire should not be rotated or pulled out after it is fully inserted. This could lead to an improperly terminated wire.

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

BE SURE to align the terminal tongue using the scribe lines on the nest. See Figure 3.



NOTE

NOTE

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



If terminal sticks in die after crimping, apply rocking action to free it. Spray a dry lubricant on the dies to prevent sticking.





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. <u>Before each crimp</u>, 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 the locating shoulder of the tongue resting against die, with the crimping head yoke closed and pin fully inserted.

BE SURE to align the terminal tongue using the scribe lines on the nest.



NOTE

Make sure terminal is positioned so crimper of moving die (anvil) will crimp wire barrel of 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

AVOID moving the wire after it is inserted. The wire should not be rotated or pulled out after it is fully inserted. This could lead to an improperly terminated wire.

- 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.

NOTE

If terminal sticks in die after crimping, apply a rocking action to free it. Spray a dry lubricant on the dies to prevent sticking.

When using the spring-loaded tongue support, proceed as follows:

CAUTION

Make sure the yoke is closed, and the yoke pin is fully inserted before crimping. If the yoke is open or the pin is not fully inserted, the crimping motion may damage the dies and crimping head.

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

CAUTION

The wire must avoid being moved after it is inserted. The wire should not be rotated or pulled out after it is fully inserted. This could lead to an improperly terminated wire.

- 4. Position the terminal in the stationary die (nest) and align the terminal tongue with the scribe lines.
- 5. Pivot the crimping head yoke closed while maintaining the position of the terminal. The terminal tongue will contact the spring-loaded support.
- 6. Replace the yoke pin and make sure it is fully inserted.
- 7. Recheck the alignment of the terminal, make sure the terminal locating shoulder is resting against the side of the stationary die (nest), and make sure the wire is fully inserted into the terminal.
- 8. Make sure hands and fingers are clear of the die and supports.
- 9. Holding the wire in place and fully inserted, activate the power unit to complete the crimp.

10. Remove the crimped terminal from the die assembly.

If terminal sticks in die after crimping, apply a rocking action to free it. Spray a dry lubricant on the dies to prevent sticking.

5. CRIMP INSPECTION

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

The crimp inspection mark (created by the die assembly) on the terminal 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:

- * See Figure 2 to verify that the proper terminal 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 dimensions provided in the customer drawings, and that it has not been damaged during shipment.

6.1. Daily Maintenance

Each operator of the power unit 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. When the dies are not in us, 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.

NOTE

Be sure to remove the supports prior to gaging the die assemblies.

Inspect the wire barrel section and insulation sealing section of the crimping chamber using plug gages that conform to the measurements provided in Figure 5 as follows.

NOTE

Crimp height inspection is performed through the use of a micrometer with a modified anvil, commonly referred to as a crimp height comparator. TE Connectivity does not market crimp height comparators. Refer to Instruction Sheet 408-7424 for detailed information on obtaining and using a crimp height comparator.

- 1. Mate the dies until it is evident that 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 6. 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 entry, but must not pass completely through as shown in Figure 6.

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 a 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 (Reference Figure 4)

Order die assemblies through your local 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) TE CONNECTIVITY CORPORATION PO BOX 3608 HARRISBURG PA 17105-3608

Die Assembly for Ni Straight COPALUM Terminals

Die Assembly for Ni COPALUM 30° Bent Terminals

2844065-1	2 AWG				
2217855-1	2/0				
2280035-1	4/0			2280034-1	2/0
2844425-2	3/0	-		2217781-1	4/0
2844430-2	1/0	-			

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ITEM	DIE ASSEMBLY							
	2217855-1	2280035-1	2280034-1	2217781-1	2844065-1	2844425-2	2844430-2	
1	2-312309-7	314951-4	2-312309-7	314951-4	2-307465-9	3-312309-0	2-312309-9	
2	2-307465-8	2-307465-7	2-307465-8	2-307465-7	2-312309-8	2-307465-7	3-307465-0	
3	2217323-6	2217323-7	2217323-6	2217323-7	2217323-8	2217232-7	2217323-5	
4	2280379-1	2280379-2	2280393-1	2280393-2	2844268-1	2280379-3	2844268-2	
5	2217324-6	2217324-8	2217324-6	2217324-8	2217324-9	2217324-7	2217324-5	
6	2217998-1	2217998-1	2280036-1	2280036-1	2217998-1	2217998-1	2217998-1	
7	3-21028-2	3-21028-2	3-21028-2	3-21028-2	3-21028-2	3-21028-2	3-21028-2	

Figure 4

8. REVISION SUMMARY

* Changed all occurrences of PN 2844430-1 to PN 2844430-2.

DIE SET		DIMENSIONS					
PART		GAGE DIMS. (WIRE)		GAGE DIMS. (INS.)			
NUMBER	SITLE	GO	NO-GO	GO	NO-GO		
2844065-1	2 AWG Straight	5.003-5.011 [.19701973]	5.179-5.181 [.20392040]	11.379-11.387 [.44804483]	11.783-11.786 [.46394640]		
2217855-1	2/0 Straight	7.924-7.932 [.31203123]	8.100-8.102 [.31893190]	15.037-15.044 [.59205923]	15.441-15.443 [.60796080]		
2280034-1	2/0 30° Bent	7.924-7.932 [.31203123]	8.100-8.102 [.31893190]	15.037-15.044 [.59205923]	15.441-15.443 [.60796080]		
2280035-1	4/0 Straight	9.550-9.558 [.37603763]	9.802-9.804 [.38593860]	16.205-16.213 [.63806383]	16.609-16.612 [.65396540]		
2217781-1	4/0 30° Bent	9.550-9.558 [.37603763]	9.802-9.804 [.38593860]	16.205-16.213 [.63806383]	16.609-16.612 [.65396540]		
2844425-2	3/0 Straight	7.518-7.526 [.29602963]	7.769-7.772 [.30593060]	16.205-16.213 [.63806383]	16.609-16.612 [.65396540]		
2844430-2	1/0 Straight	6.197-6.205 [.24402443]	6.372-6.375 [.25092510]	13.818-13.825 [.54405443]	14.221-14.224 [.55995600]		

Figure 4

