

NOTE



All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of ± 0.13 [± 0.005] and angles have a tolerance of $\pm 2^\circ$. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for the application of High Current Pin and Socket Contacts. These contacts are available in two styles. Style I pins and sockets (2 to 9 mm) have retaining springs that lock the contacts into the housing cavity. Style II (12 to 35 mm) feature a retaining ring groove, designed for commercially available retaining rings, that also lock the contacts into the housing cavity.

The High Current Pin and Socket Contacts will accept a wire size range of 14 to 4/0 AWG and 250 MCM to 1000 MCM, depending on your production requirements. These contacts (except 3 mm and 9 mm) are designed for a customer-supplied housing and should *NOT* be mated with any other type of contacts.

When corresponding with Tyco Electronics Personnel, use the terminology provided on this specification to help facilitate your inquiry for information. Basic terms and features of components are provided in Figure 1.

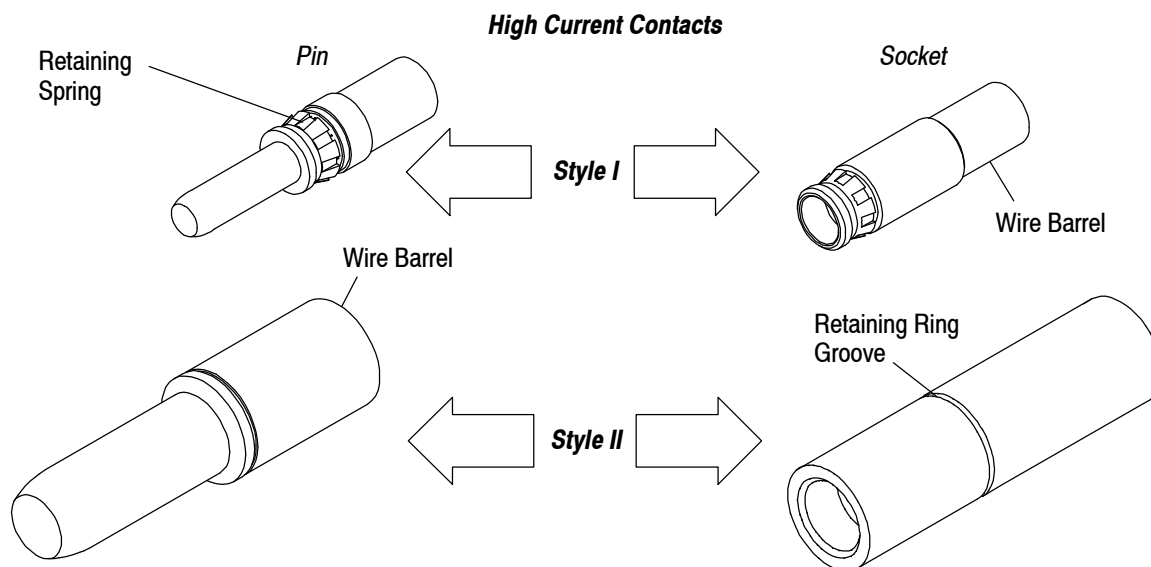


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- New logo and format

2.2. Customer Assistance

Reference Part Number 193673 and Product Code 0790 are representative numbers of High Current Pin and Socket Contacts. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local Tyco Electronics Representative or, after purchase, by calling the Tooling Assistance Center or the Product Information Center number at the bottom of this page.

2.3. Drawings

Customer Drawings for specific products are available from the service network. The information contained in Customer Drawings takes priority if there is a conflict with this specification or with any technical documentation supplied by Tyco Electronics.

2.4. Instructional Material

The following list includes available instruction sheets (408-series) that provide assembly procedures for product, operation, maintenance and repair of tooling; and customer manuals (409-series) that provide setup, operation, and maintenance of machines.

<u>Document Number</u>	<u>Document Title</u>
408-1602	AMPOWER* Crimping Die Assemblies 46754-2, 46755-2, 46756-2, 46757-2, 46758-2, 46759-2, 46760-2, 59870-1, and 69653
408-1606	AMPOWER Crimping Dies
408-2456	DYNA-CRIMP* Crimping Head No. 69082
408-2458	DYNA-CRIMP Crimping Head No. 69099
408-4174	High Current Extraction Tools 679916-1, 679917-1, and 679918-1
408-4305	Extraction Tool 356335-1
408-4398	Extraction Tool 662725-1
408-6827	Extraction Tool 58095-1
409-1950	Hydraulic Power Units 69120-1 and 69120-2
409-5860	Hydraulic Hand Pump 314979-1

3. REQUIREMENTS

3.1. Special Characteristics

These contacts feature the Louvertac bands that provide very low resistance and low voltage drop required for high current applications. The band is a formed louver-type ring inserted only into the socket contact. See Figure 2.

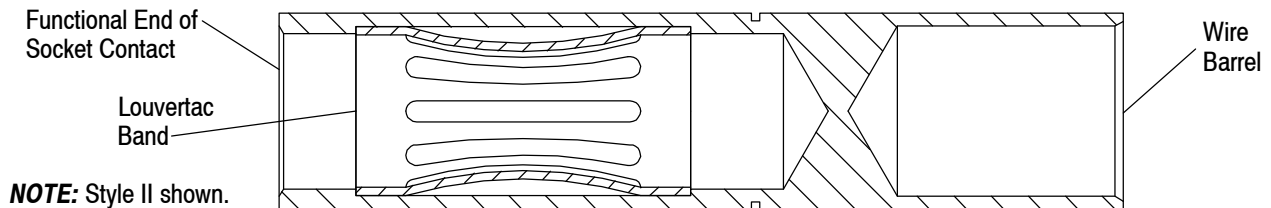


Figure 2

3.2. Wire Selection and Preparation

High Current Pin and Socket Contacts will accept a wire size range of 14 AWG to 1000 MCM.

A. Wire Selection

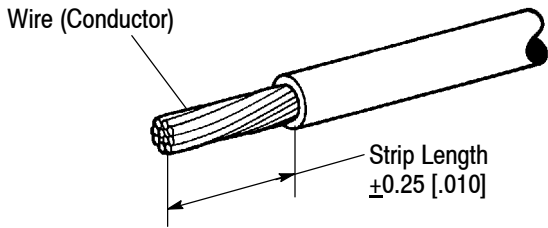
Select the wire size according to your production requirements.

B. Wire Preparation

Strip the wire to the dimensions shown in Figure 3.



Do not nick, scrape, or cut the wire strands during the stripping operation.



NOTE: Not to scale.

PIN SIZE	WIRE SIZE	STRIP LENGTH	PIN SIZE	WIRE SIZE	STRIP LENGTH
2 mm	14 AWG	9.27 [.365]	12 mm	2/0 AWG	19.68 [.775]
	12 AWG	9.27 [.365]		4/0 AWG	24.26 [.955]
3 mm	14-12 AWG	7.00 [.275]	16 mm	4/0 AWG	24.26 [.955]
	10 AWG	7.00 [.275]		300 MCM	28.58 [1.125]
	8 AWG	7.00 [.275]		250 MCM	26.04 [1.025]
4 mm	10 AWG	9.27 [.365]	20 mm	400 MCM	32.64 [1.285]
	8 AWG	9.27 [.365]	25 mm	600 MCM	41.78 [1.645]
6 mm	6 AWG	9.52 [.375]		900 MCM	50.80 [2.000]
	8 mm	4 AWG	11.43 [.450]	30 mm	700 MCM
2 AWG		14.35 [.565]	1000 MCM		53.59 [2.110]
9 mm	1/0 AWG	17.27 [.680]	35 mm	700 MCM	45.08 [1.775]
	1/0 AWG	13.70 [.540]		1000 MCM	53.59 [2.110]

Figure 3

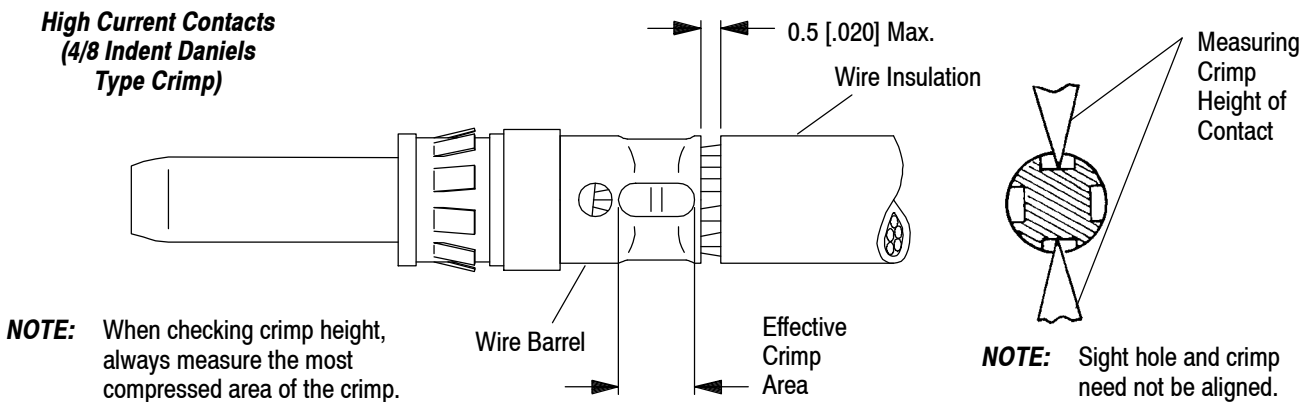
3.3. Crimped Contact Requirements

Figure 4 provides the requirements that shall be followed when terminating the High Current Pin and Socket Contacts using Daniels hand tools and positioners or the AMPPOWER Crimping Dies and Power Units. Detailed instructions covering the placement of the contacts in the positioners or dies and the use of the tools are packaged with each tool.

Terminate the contacts according to the directions shipped with the appropriate tooling. See Section 5, TOOLING.

CAUTION Wire strands shall not be cut or broken during the crimping operation.

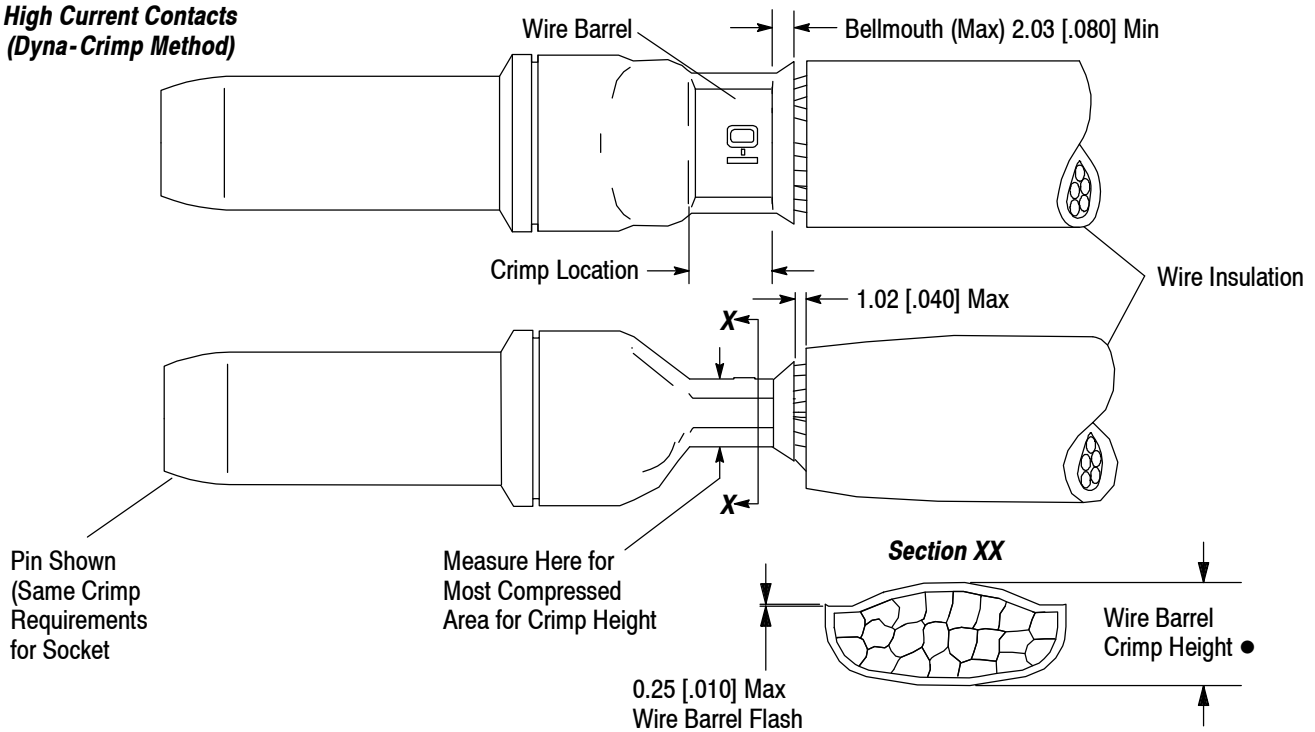
A typical contact is shown as it should appear after crimping. See Figure 4.



NOTE: When checking crimp height, always measure the most compressed area of the crimp.

Figure 4 (cont'd)

**High Current Contacts
(Dyna-Crimp Method)**



CRIMP TYPE	WIRE SIZE	CRIMP HEIGHT●	SELECTOR SETTING	DANIELS POSITIONER
4/8 INDENT DANIELS CRIMP	14 AWG	1.323-1.318 [.0521-.0519]	3	TP1019 (Pin), TP1021 (Socket)
	12 AWG	1.552-1.547 [.0611-.0609]	4	
	10 AWG	1.755-1.750 [.0691-.0689]	5	TP1020 (Pin), TP1022 (Socket)
	8 AWG	2.542-2.537 [.1001-.0999]	8	
DYNA-CRIMP	6 AWG	3.73-3.96 [.147-.156]	---	---
	4 AWG	4.5-4.72 [.177-.186]		
	2 AWG	5.38-5.61 [.212-.221]		
	1/0 AWG	6.65-.6.88 [.262-.271]		
	2/0 AWG	7.54-7.77 [.297-.306]		
	4/0 AWG	9.58-9.80 [.377-.386]		
	250 MCM	10.49-10.72 [.413-.422]	---	---
	300 MCM	11.51-11.73 [.453-.462]		
	400 MCM	13.56-13.79 [.534-.543]		
	600 MCM	16.61-16.84 [.654-.663]		
700 MCM	17.83-18.06 [.702-.711]	---	---	
900 MCM	20.42-20.68 [.804-.813]			
1000 MCM	21.54-21.77 [.848-.857]			

●Crimp height is the measured height for closed dies. Product will have a greater dimension based on conductor type due to spring-back. Contact the Tooling Assistance Center or the Product Information number at the bottom of page 1 for specific dimensions.

Figure 4 (end)

A. Crimp Location

For optimum crimp effectiveness, the crimp must be within the area shown in Figure 4 and must meet the crimp dimensions provided. The effective crimp area shown in Figure 4 is defined as that portion of the wire barrel fully formed by the crimping tool. Instructions for adjusting, repairing, and inspecting tools are packaged with the tools.

B. Conductor Location

The wire shall be fully seated in the wire barrel. See Figure 4.

C. Contact Retention Spring

Contact retention springs shall not be deformed.

D. Crimp Height

See Figure 4 for correct crimp height according to wire size.

E. Bellmouth

Bellmouth shall be evident and conform to the dimensions shown in Figure 4.

F. Wire Barrel Flash

The wire barrel flash shall not exceed the dimensions shown in Figure 4 in Section X-X.

G. Straightness

The force applied during crimping may cause some bending between the crimped wire barrel and the mating portion of the contact. Such deformation is acceptable within the following limits.

1. Up-and-Down

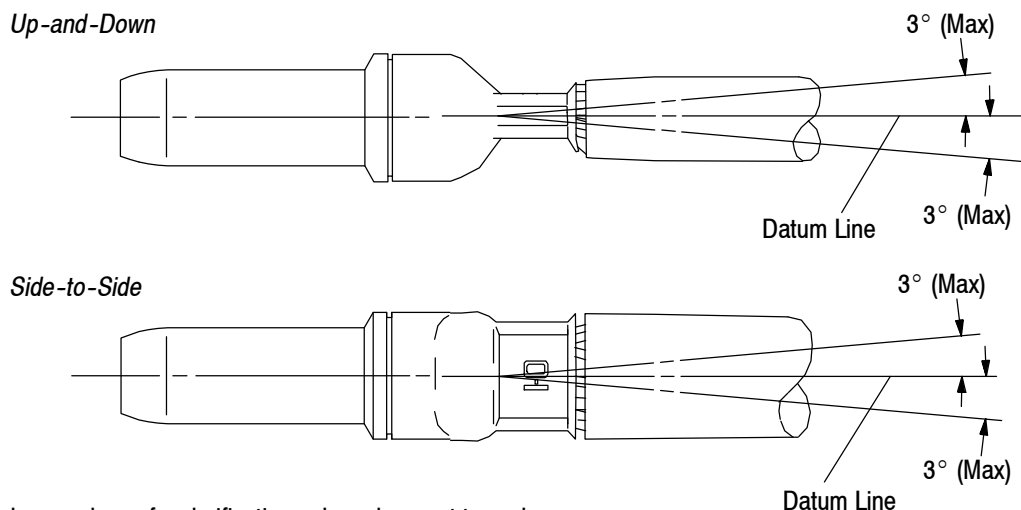
The crimped contact shall not be bent above or below the datum line more than the amount shown in Figure 5.

2. Side-to-Side

The side-to-side bending of the contact may not exceed the limits provided in Figure 5.

NOTE

Periodic inspections must be made to ensure crimped product formation is consistent as shown.



NOTE: Angles are drawn for clarification only and are not to scale.

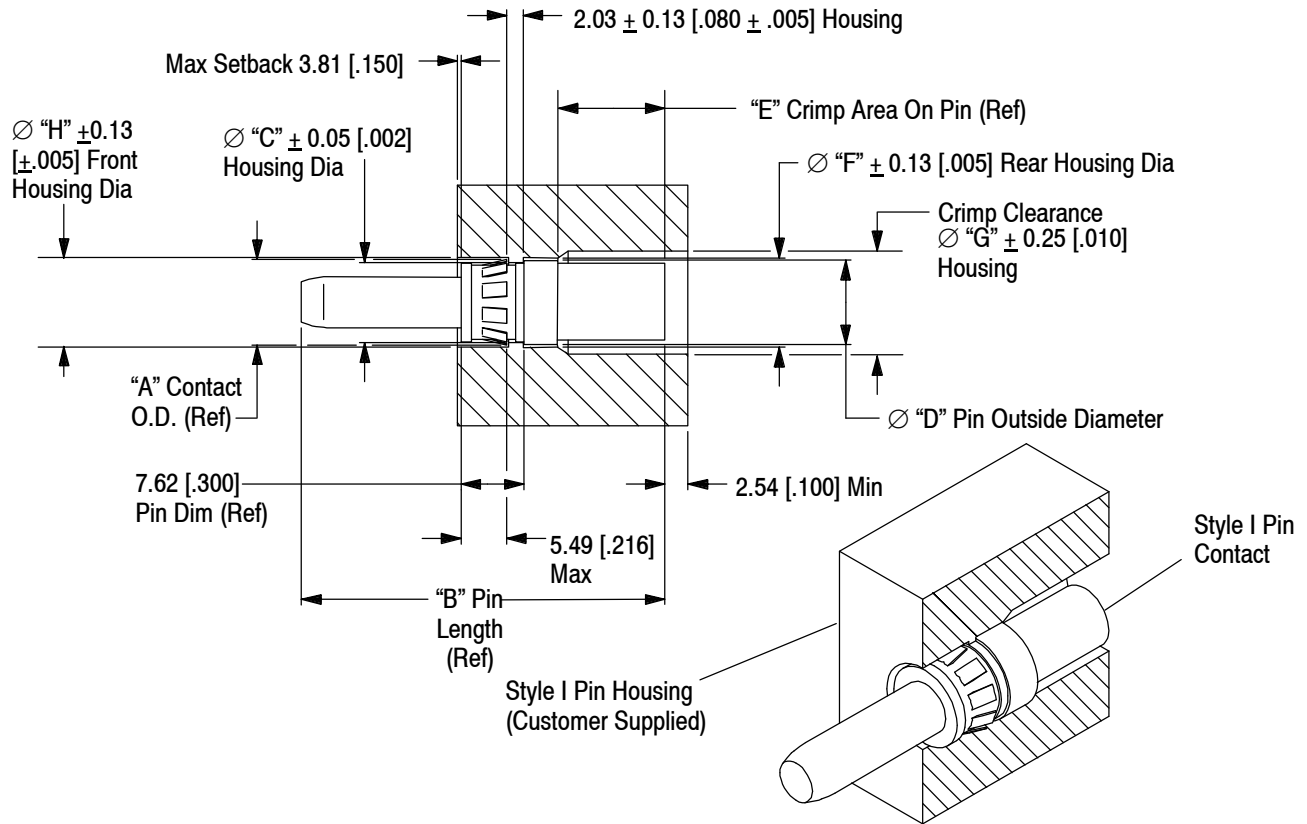
Figure 5

3.4. Housings

High Current Pin and Socket Contacts work in conjunction with customer designed housings. The housing dimensions must conform to those provided in Figures 6, 7, 8, and 9 to ensure proper containment of the contacts.

A. Style I Pin Housing (2 to 9 mm)

See Figure 6 for dimensions of housings designed for use with Style I Pin Contacts (2 to 9 mm).



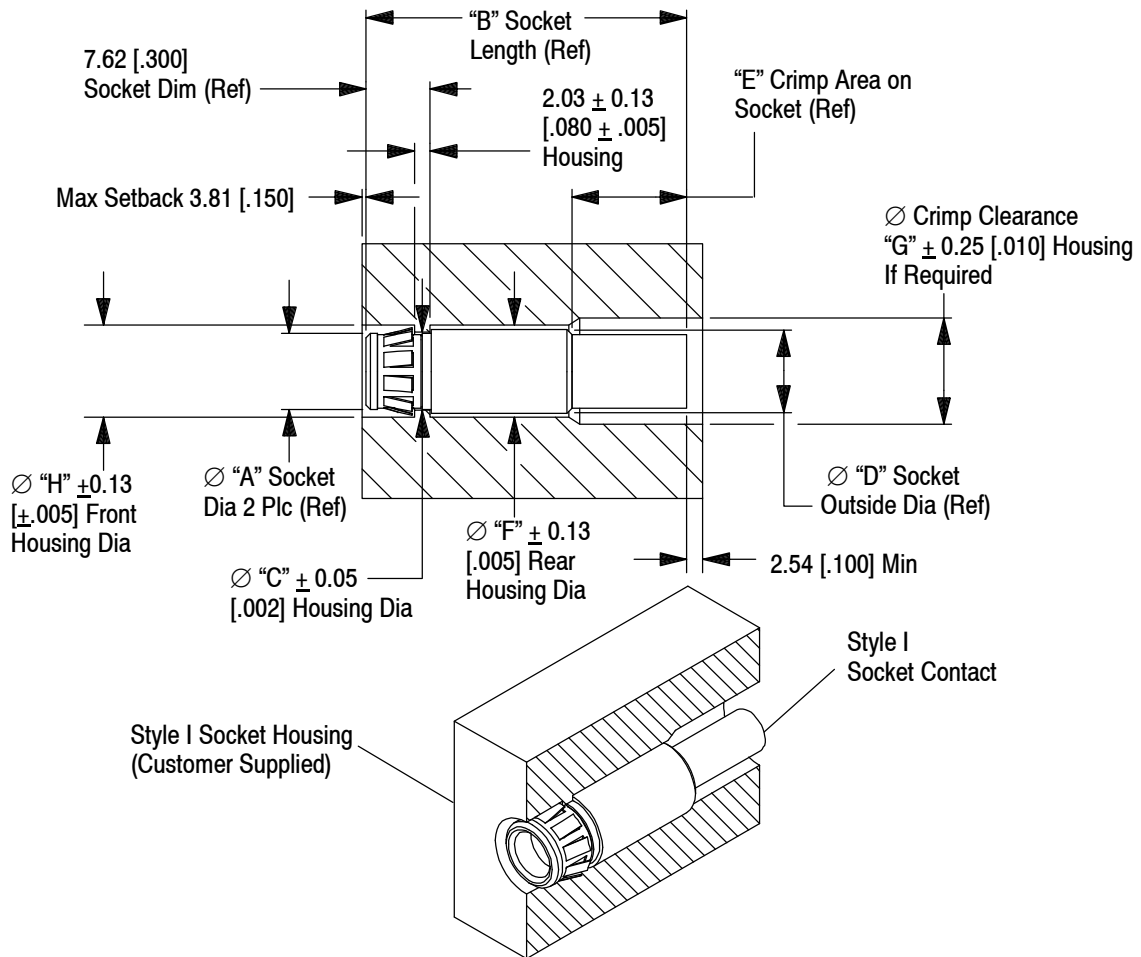
STYLE I PIN HOUSING (2 to 9 mm)

PIN SIZE	WIRE SIZE	A	B	C	D	E	F	G	H
2 mm	14/12 AWG	4.75 [.187]	35.56 [1.400]	5.00 [.197]	5.72 [.225]	9.45 [.372]	6.05 [.238]	---	6.05 [.238]
3 mm	14/12 AWG	3 mm Contacts are designed to be used with AMPPOWER Multi Pin Plug Housings Only							
	10 AWG								
	8 AWG								
4 mm	10 AWG	6.65 [.262]	38.86 [1.530]	6.91 [.272]	7.62 [.300]	9.91 [.390]	8.18 [.322]	---	8.18 [.322]
	8 AWG	6.65 [.262]	38.86 [1.530]	6.91 [.272]	7.62 [.300]	9.91 [.390]	8.18 [.322]		
6 mm	6 AWG	9.45 [.372]	41.66 [1.640]	9.70 [.382]	10.41 [.410]	10.67 [.420]	10.74 [.423]	---	11.35 [.447]
	4 AWG	9.45 [.372]	43.94 [1.730]	9.70 [.382]	10.41 [.410]	12.95 [.510]	10.74 [.423]		
8 mm	2 AWG	13.51 [.532]	63.50 [2.500]	13.77 [.542]	14.48 [.570]	17.02 [.670]	14.99 [.590]	---	16.10 [.634]
	1/0 AWG	13.51 [.532]	68.80 [2.630]	13.77 [.542]	14.48 [.570]	20.32 [.800]	14.99 [.590]		
9 mm	1/0 AWG	9 mm Contacts are designed to be used with AMPPOWER Multi Pin Plug Housings Only							

Figure 6

B. Style I Socket Housing (2 to 9 mm)

See Figure 7 for dimensions of housings designed for use with Style I Socket Contacts (2 to 9 mm).



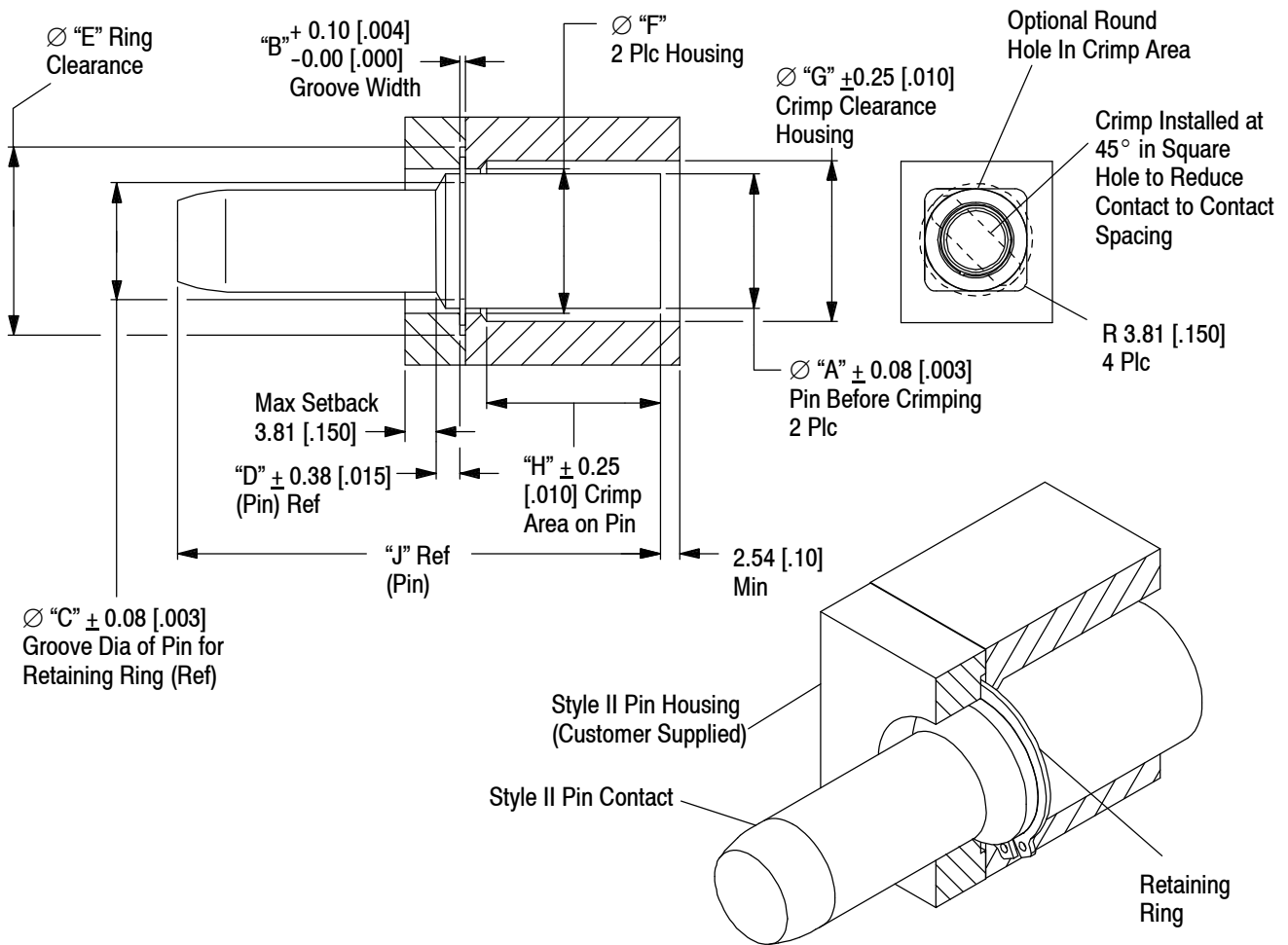
STYLE I SOCKET HOUSING (2 to 9 mm)

PIN SIZE	WIRE SIZE	A	B	C	D	E	F	G	H
2 mm	14/12 AWG	4.75 [.187]	28.70 [1.130]	5.00 [.197]	5.72 [.225]	10.67 [.420]	6.05 [.238]	---	6.05 [.238]
3 mm	14/12 AWG	3 mm Contacts are designed to be used with AMPPOWER Multi Pin Plug Housings Only							
	10 AWG								
	8 AWG								
4 mm	10 AWG	6.65 [.262]	33.27 [1.310]	6.91 [.272]	7.62 [.300]	10.16 [.400]	8.18 [.322]	---	8.18 [.322]
	8 AWG	6.65 [.262]	33.27 [1.310]	6.91 [.272]	7.62 [.300]	10.41 [.410]	8.18 [.322]		
6 mm	6 AWG	9.45 [.372]	36.07 [1.420]	9.70 [.382]	10.41 [.410]	11.68 [.460]	10.74 [.423]	---	11.35 [.447]
	4 AWG	9.45 [.372]	37.59 [1.480]	9.70 [.382]	10.41 [.410]	13.46 [.530]	10.74 [.423]		
8 mm	2 AWG	13.51 [.532]	57.40 [2.260]	13.77 [.542]	14.45 [.569]	16.26 [.640]	14.99 [.590]	---	16.10 [.634]
	1/0 AWG	13.51 [.532]	62.23 [2.450]	13.77 [.542]	14.45 [.569]	20.32 [.800]	14.99 [.590]		
9 mm	1/0 AWG	9 mm Contacts are designed to be used with AMPPOWER Multi Pin Plug Housings Only							

Figure 7

C. Style II Pin Housing (12 to 35 mm)

See Figure 8 for dimensions of housings designed for use with Style II Pin Contacts (12 to 35 mm).



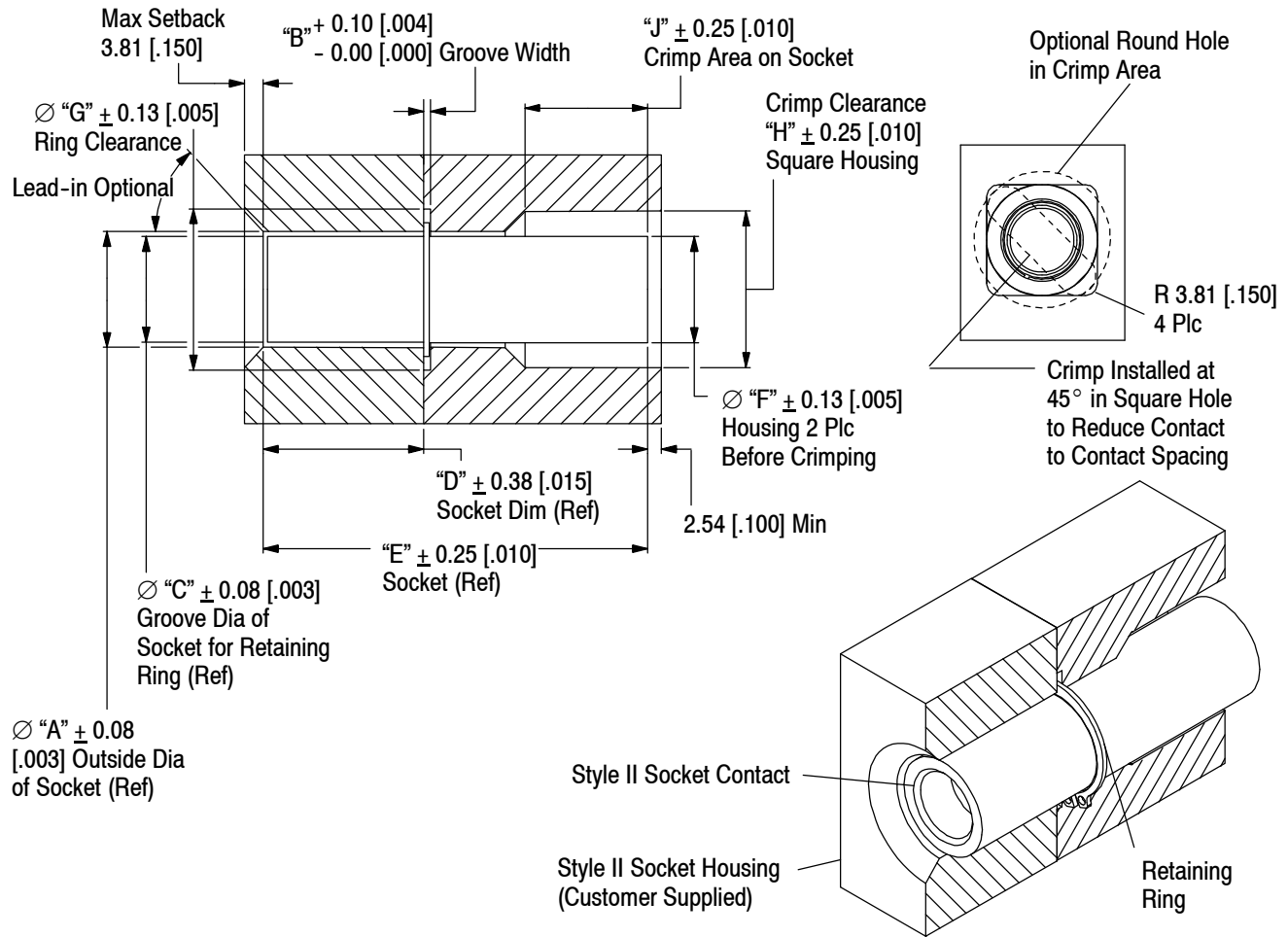
STYLE II PIN HOUSING (12 to 35 mm)

PIN SIZE	WIRE SIZE	A (Ref)	B	C	D	E	F	G	H	J
12 mm	2/0	16.10 [.634]	0.99 [.039]	14.94 [.588]	3.33 [.131]	22.86 [.900]	16.41 [.646]	20.07 [.790]	19.56 [.770]	59.18 [2.330]
	4/0	20.19 [.795]	1.17 [.046]	18.62 [.733]	4.93 [.194]	28.45 [1.120]	20.50 [.807]	23.88 [.940]	24.13 [.950]	65.53 [2.580]
16 mm	4/0	20.19 [.795]	1.17 [.046]	18.62 [.733]	4.29 [.169]	28.45 [1.120]	20.50 [.807]	23.88 [.940]	24.13 [.950]	69.34 [2.730]
	300 MCM	23.60 [.929]	1.17 [.046]	22.40 [.882]	5.77 [.227]	34.04 [1.340]	23.90 [.941]	26.92 [1.060]	28.45 [1.120]	75.18 [2.960]
20 mm	250 MCM	21.54 [.848]	1.17 [.046]	20.09 [.791]	4.60 [.181]	30.23 [1.190]	21.84 [.860]	25.40 [1.000]	25.91 [1.020]	75.18 [2.960]
	400 MCM	27.23 [1.072]	1.42 [.056]	25.35 [.998]	6.58 [.259]	37.85 [1.490]	27.54 [1.084]	28.45 [1.120]	32.51 [1.280]	84.07 [3.310]
25 mm	600 MCM	33.22 [1.308]	1.42 [.056]	31.29 [1.232]	5.74 [.226]	44.45 [1.750]	33.53 [1.320]	36.32 [1.430]	41.66 [1.640]	115.57 [4.550]
	900 MCM	40.67 [1.601]	1.73 [.068]	37.29 [1.468]	8.20 [.323]	53.34 [2.100]	40.97 [1.613]	46.99 [1.850]	51.05 [2.010]	128.27 [5.050]
30 mm	700 MCM	35.86 [1.412]	1.42 [.056]	32.79 [1.291]	5.23 [.206]	45.97 [1.810]	36.17 [1.424]	44.45 [1.750]	44.96 [1.770]	120.14 [4.730]
	1000 MCM	42.80 [1.685]	1.73 [.068]	40.36 [1.589]	7.47 [.294]	56.64 [2.230]	43.10 [1.697]	48.26 [1.900]	53.59 [2.110]	131.57 [5.180]
35 mm	700 MCM	35.86 [1.412]	1.42 [.056]	32.79 [1.291]	5.08 [.200]	45.97 [1.810]	36.17 [1.424]	44.45 [1.750]	44.96 [1.770]	121.67 [4.790]
	1000 MCM	42.80 [1.685]	1.73 [.068]	40.36 [1.589]	7.29 [.287]	56.64 [2.230]	43.10 [1.697]	48.26 [1.900]	53.59 [2.110]	133.10 [5.240]

Figure 8

D. Style II Socket Housing (12 to 35 mm)

See Figure 9 for dimensions of housings designed for use with Style II Socket Contacts (12 to 35 mm).



STYLE II SOCKET HOUSING (12 to 35 mm)

PIN SIZE	WIRE SIZE	A (Ref)	B	C	D	E	F	G	H	J
12 mm	2/0	20.19 [.795]	1.17 [.046]	18.62 [.733]	30.48 [1.200]	63.75 [2.510]	20.50 [.807]	28.45 [1.120]	22.35 [.880]	23.62 [.930]
	4/0	20.19 [.795]	1.17 [.046]	18.62 [.733]	30.48 [1.200]	70.10 [2.760]	20.50 [.807]	28.45 [1.120]	22.35 [.880]	24.13 [.950]
16 mm	4/0	23.57 [.928]	1.17 [.046]	22.40 [.882]	33.02 [1.300]	73.91 [2.910]	23.88 [.940]	34.04 [1.340]	26.92 [1.060]	28.96 [1.140]
	300 MCM	23.57 [.928]	1.17 [.046]	22.40 [.882]	33.02 [1.300]	80.01 [3.150]	23.88 [.940]	34.04 [1.340]	26.92 [1.060]	34.29 [1.350]
20 mm	250 MCM	27.23 [1.072]	1.42 [.056]	25.35 [.998]	35.56 [1.400]	80.52 [3.170]	27.54 [1.084]	37.85 [1.490]	28.45 [1.120]	31.50 [1.240]
	400 MCM	27.23 [1.072]	1.42 [.056]	25.35 [.998]	35.56 [1.400]	89.92 [3.540]	27.54 [1.084]	37.85 [1.490]	28.45 [1.120]	39.12 [1.540]
25 mm	600 MCM	40.67 [1.601]	1.73 [.068]	37.29 [1.468]	55.88 [2.200]	123.44 [4.860]	41.00 [1.614]	53.34 [2.100]	41.15 [1.620]	50.04 [1.970]
	900 MCM	40.67 [1.601]	1.73 [.068]	37.29 [1.468]	55.88 [2.200]	135.38 [5.330]	41.00 [1.614]	53.34 [2.100]	41.15 [1.620]	60.96 [2.400]
30 mm	1000 MCM	42.80 [1.685]	1.73 [.068]	40.36 [1.589]	55.88 [2.200]	127.25 [5.010]	43.13 [1.698]	56.64 [2.230]	43.18 [1.700]	53.85 [2.120]
	700 MCM	42.80 [1.685]	1.73 [.068]	40.36 [1.589]	55.88 [2.200]	139.45 [5.490]	43.13 [1.698]	56.64 [2.230]	43.18 [1.700]	64.01 [2.520]
35 mm	1000 MCM	47.62 [1.875]	1.73 [.068]	44.93 [1.769]	55.88 [2.200]	140.46 [5.530]	47.96 [1.888]	61.98 [2.440]	48.26 [1.900]	64.26 [2.530]
	700 MCM	47.62 [1.875]	1.73 [.068]	44.93 [1.769]	55.88 [2.200]	129.54 [5.100]	47.96 [1.888]	61.98 [2.440]	48.26 [1.900]	53.85 [2.120]

Figure 9

3.5. Contact Insertion and Assembly

A. Style I Pin and Socket Contacts

Style I Pin and Socket Contacts are inserted from the rear of the housing. The retaining spring will snap into place when the contact has bottomed to the full insertion depth.

B. Style II Pin and Socket Contacts

Style II Pin and Socket Contacts must have the external retaining ring attached, then the contacts must be assembled within the housing sections.

3.6. Repair/Replacement

Damaged contacts are not repairable once a termination has been made. Damaged crimped contacts or housings must be removed, discarded, and replaced with new components. See Figure 10. Tyco Electronics provides a variety of extraction tools for your needs. Refer to Section 5, TOOLING, for specific extraction tools.

NOTE: Not to Scale.

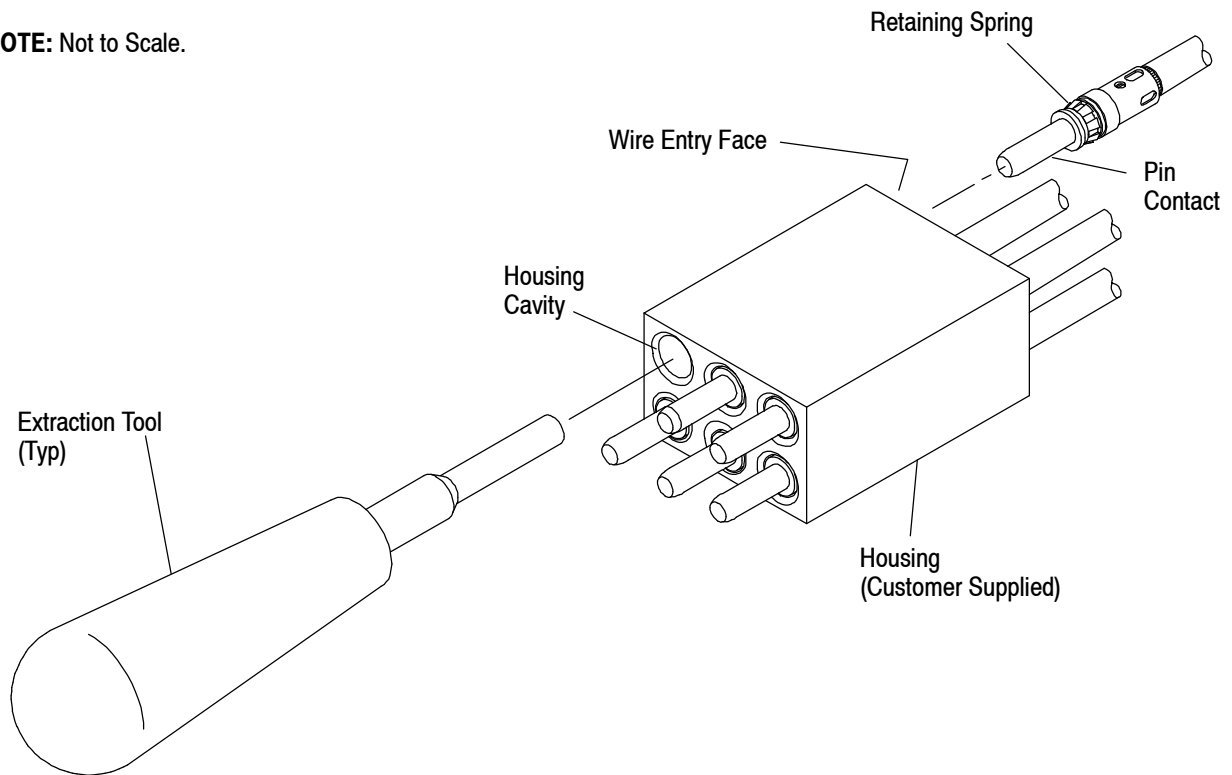


Figure 10

4. QUALIFICATION

Individual High Current Pin and Socket Contacts are not required to be listed or recognized by Underwriters Laboratories Inc. (UL), or certified by the Canadian Standards Association (CSA).

5. TOOLING

Figure 11 provides tool part numbers and instructional material related to High Current Pin and Socket Contacts.

NOTE



Tool Engineers have designed machines for a variety of application requirements. For assistance in setting up prototype and production line equipment, contact Tool Engineering through your local Tyco Electronics Representative or call the Tooling Assistance Center number at the bottom of page 1.

- **Crimping Heads**

Crimping heads have been designed for heavy duty terminations where hydraulic or pneumatic power must be used.

- **Positioners**

Positioners and turret heads have been designed specifically to the configuration of the screw machine pin and socket contacts. They are used with 4/8 indent hand crimping tools.

- **4/8 Indent Hand Crimping Tool**

The 4/8 indent hand crimping tools have been designed to form indents to the proper depth in the contact wire barrel. They must be used in conjunction with the positioner or turret head designed for the contact. They are intended for prototype and low volume applications.

- **Die Assemblies**

Die assemblies for crimping the contacts are available for the specific contact or wire size. They are designed for easy installation and removal in hand crimping tool frame assemblies, applicators, or crimping heads.

- **Extraction Tools**

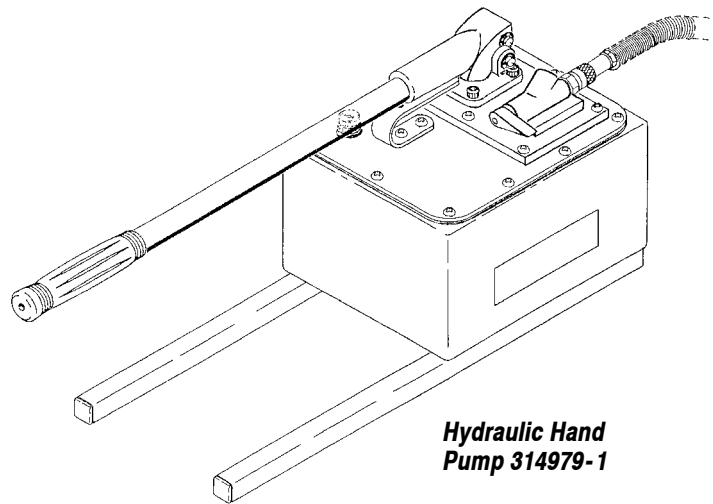
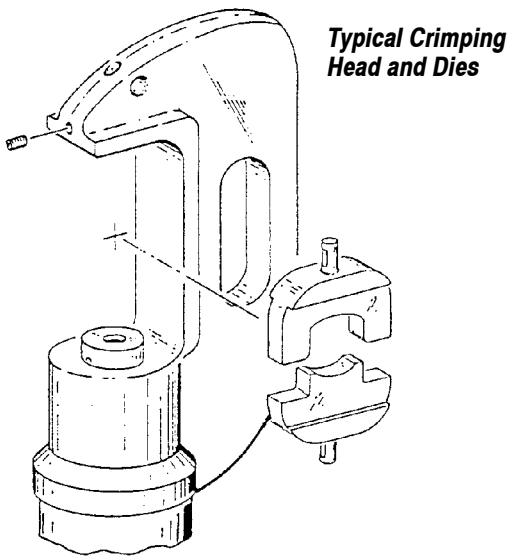
Extraction tools are designed to release the contacts inside the connector housing without damaging the housing or contacts.

- **Power Units**

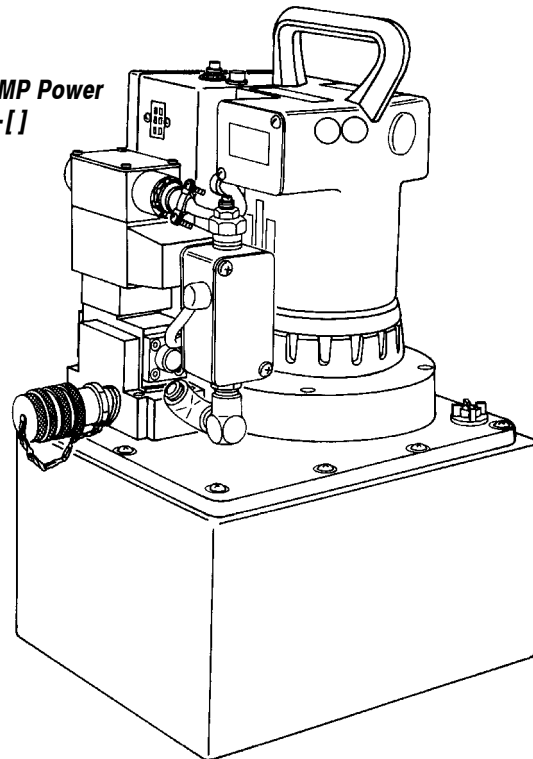
Power units are the sources used to supply the hydraulic assist for crimping die assemblies.

WIRE SIZE	CRIMPING DIE (DOCUMENT)	EXTRACTION TOOL (DOCUMENT)	CRIMPING HEAD (DOCUMENT)	POWER UNIT (DOCUMENT)	DANIELS POSITIONER	DANIELS HAND TOOL (Tyco Electronics PN)
14 AWG	---	318813-1 (408-4374)	---	---	TP1019 (Pin Contact) TP1021 (Socket Contact)	M310 (356114-1)
12 AWG						
10 AWG	---	679916-1 (408-4174)	---	---	TP1020 (Pin Contact) TP1022 (Socket Contact)	
8 AWG						
6 AWG	69133-1 (408-1606)	679917-1 (408-4174)	69099 (408-2458)	69120-1 (409-1950) 69120-2 (409-1950) 314979-1 (409-5860)	---	
4 AWG	69134-2 (408-1606)					
2 AWG	46765-3 (408-1606)	679918-1 (408-4174)				
1/0 AWG	46766-2 (408-1606)					
2/0 AWG	46767-2 (408-1606)	---				
4/0 AWG	46750-2 (408-1606)					
250 MCM	46751-2 (408-1606)					
300 MCM	46752-2 (408-1606)					
400 MCM	46754-2 (408-1602)					
600 MCM	46756-2 (408-1602)					
700 MCM	46757-2 (408-1602)	---	69082 (408-2456)			
900 MCM	46759-2 (408-1602)					
1000 MCM	46760-2 (408-1602)					

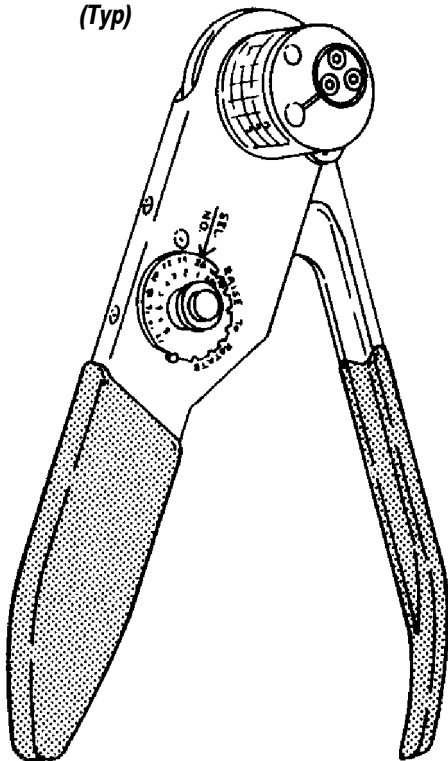
Figure 11 (cont'd)



DYNA-CRIMP Power Unit 69120-[]



Daniels Hand Tool and Turret Positioner (Typ)



Extraction Tools (Typ)

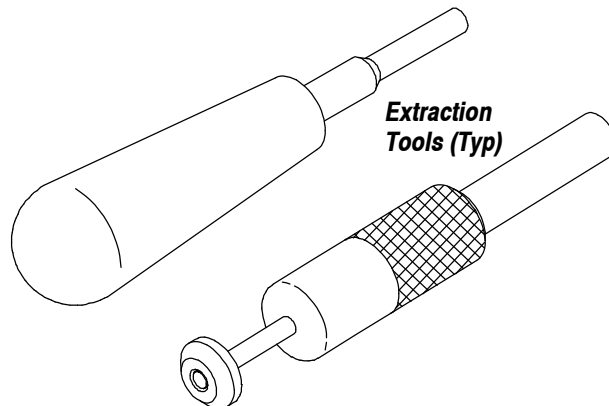


Figure 11 (end)

6. VISUAL AID

Figure 12 shows a typical application of High Current Contact. This illustration should be used by production personnel to ensure a correctly applied product. Applications which do not appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.

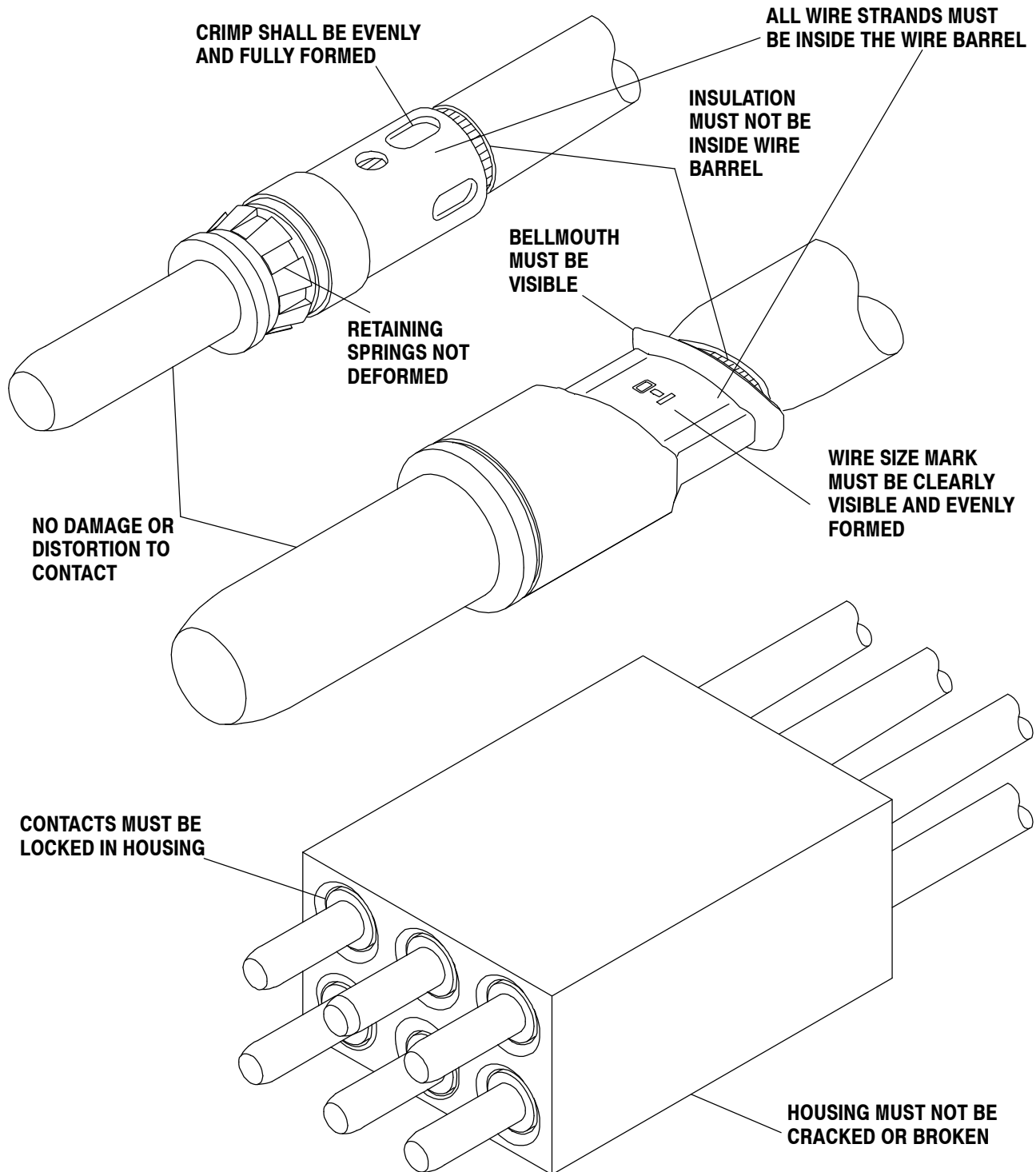


FIGURE 12. VISUAL AID