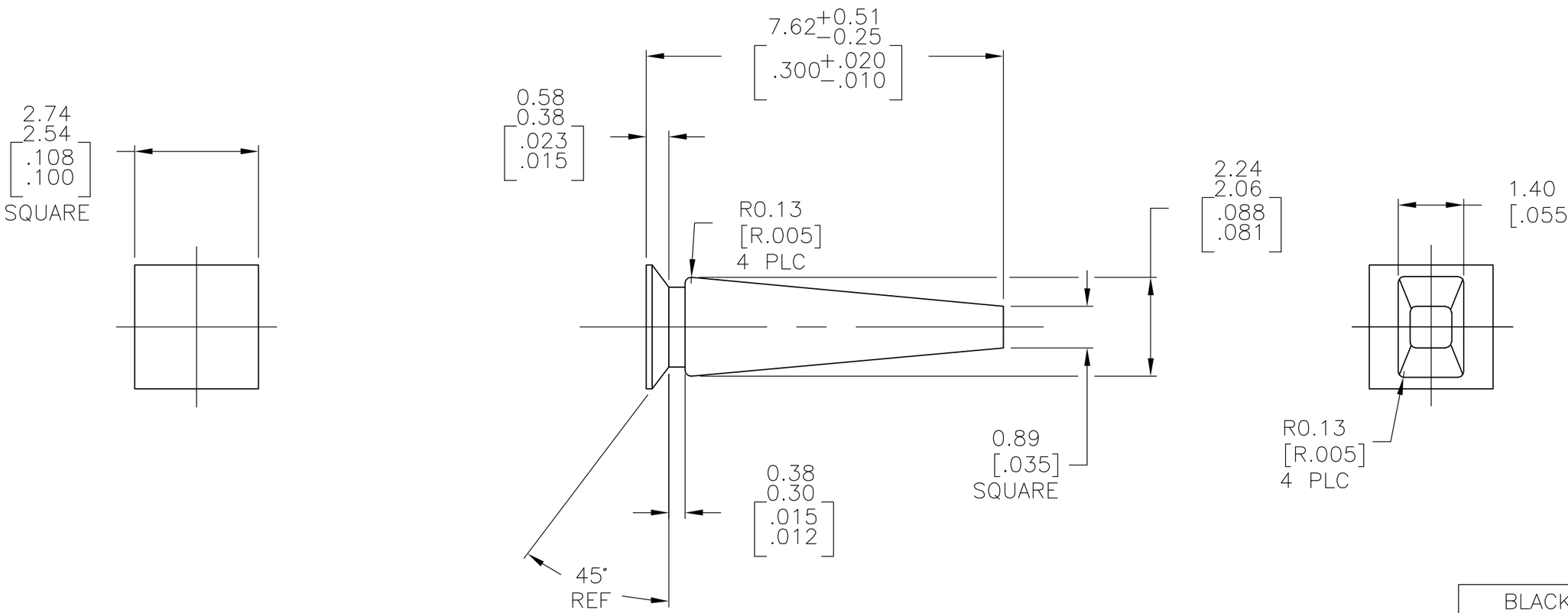
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LOC	DIST
CM	54

REVISIONS

P	LTR	DESCRIPTION	DATE	DWN	APVD
	F1	ECO-06-017889	07AUG06	BSV	DB

1. MOLDING COMPOUND NYLON,6/6 .
2. DIMENSIONS IN BRACKETS ARE IN INCHES.



COLOR	PART NO.
BLACK	640254-2
NATURAL	640254-1

THIS DRAWING IS A CONTROLLED DOCUMENT.

DIMENSIONS: mm [INCHES]

TOLERANCES UNLESS OTHERWISE SPECIFIED:

0 PLC	± –
1 PLC	± –
2 PLC	± –
3 PLC	± 0.13 [.005]
4 PLC	± –
ANGLES	± –

MATERIAL 1

FINISH –

METRIC

DWN –	10DEC91
CHK R SWING	10DEC91
APVD –	11DEC91
PRODUCT SPEC –	
APPLICATION SPEC –	
WEIGHT –	

CUSTOMER DRAWING

tyco Electronics

Tyco Electronics Corporation
Harrisburg, Pa 17105-3608

NAME
SL-156 KEYING PLUG,
.045 SQ. POST CONNECTOR

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A3	00779	C-640254	–

SCALE	SHEET	REV
10:1	1 OF 1	F1

SL-156 Contacts and Housings

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 [±.005] and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This application specification covers the requirements for application of SL-156 contacts and housings used for wire-to-printed circuit (pc) board interconnection.

The contact is available in standard high force, low force, and hooded (dual wipe) and large insulation diameter (LID) hooded (dual wipe). Each contact features a wire barrel, insulation barrel, locking lance. The hooded contact features a hood that prevents wires from surrounding harnesses from being trapped under the contact element before being inserted into the housing. The contacts are available in loose-piece form for terminating using a hand tool and strip-form for terminating using a semi-automatic or automatic machine.

The housings are available in standard and LID having 1 through 24 positions with or without a locking ramp and 2 through 24 positions with a locking ramp and polarization tabs, and standard having 2 through 10 positions with a through board latch(es). Both types accept standard and LID contacts; however, LID contacts can only be used with a LID housing. Keying plugs are available with or without a pin to enable polarization during mating. The housing mates with the MTA-156 flat polarized and friction lock header containing 1.14 [.045] square or round posts or staked posts on 3.96 [.156] centers.

When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

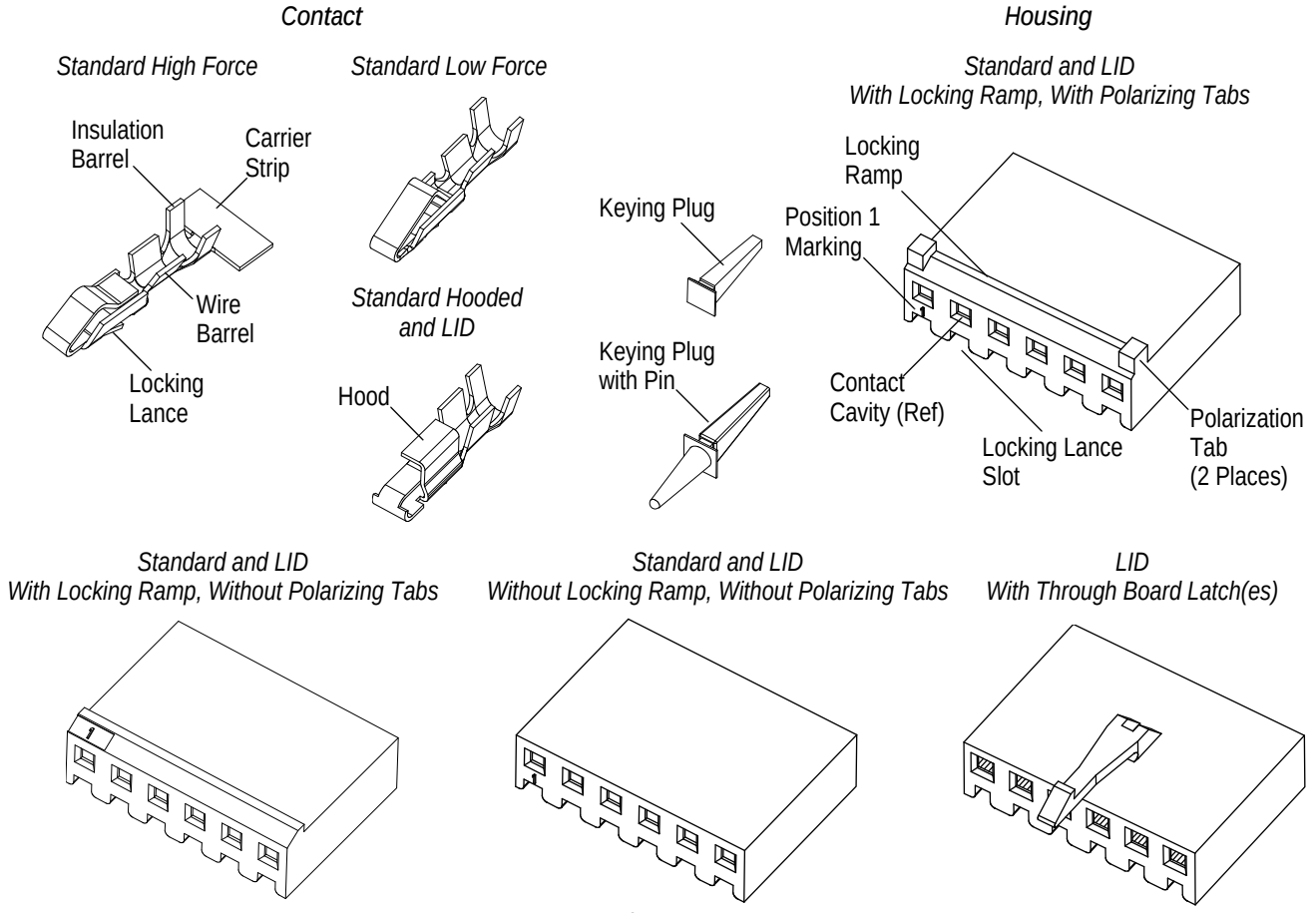


Figure 1

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Each housing features contact cavities marked with a number to indicate position 1. The locking ramp provides positive mating with the friction-lock header. The polarizing tabs prevents mis-mating. Housings with a through board latch(es) are designed to connect to posts on the pc board; as opposed to a header. The through board latch(es) secure the housing in place.

Each contact cavity has a locking lance slot that is used to release the contact locking lance from the housing to enable the contact to be removed.

2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this instruction sheet include:

- Updated application specification to corporate requirements
- Corrected hand tool part number in table in Figure 8

2.2. Customer Assistance

Reference Product Base Part Numbers 640252 (contact) and 640250 (housing) and Product Code 1385 are representative of SL-156 contacts and housings. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local Representative, by visiting our website at www.te.com, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of page 1.

2.3. Drawings

Customer Drawings for product part numbers are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, the information contained in the Customer Drawings takes priority.

2.4. Specifications

Product Specification 108-1049 provides product performance and test results.

2.5. Instructional Material

Instruction Sheets (408-series) provide product assembly instructions or tooling setup and operation procedures and Customer Manuals (409-series) provide machine setup and operating procedures. Documents available that pertain to this product are:

408-4228	PRO-CRIMPER* III Hand Crimping Tool Assembly 58614-1 with Die Assembly 58614-2
408-4523	Extraction Tool 90471-1
408-7332	Hand Crimping Tools 90123-2, 90123-5, and 90124-2
408-8040	Heavy Duty Miniature Quick-Change Applicators (Side Feed)
408-8775	PRO-CRIMPER III Hand Crimping Tool Assembly 91368-1 with Die Assembly 91368-2
408-8776	PRO-CRIMPER III Hand Crimping Tool Assembly 91369-1 with Die Assembly 91369-2
408-8813	SL-156 Contacts Visual Training Aid (Insertion and Extraction)
408-9930	PRO-CRIMPER III Hand Crimping Tool Frame Assembly 354940-1
408-10389	Ocean Side-Feed Applicators 1385219-[ ]
408-10426	SL-156 Contacts 647406-[ ] and 647466-[ ], Housings 2132189-[ ], and Optional Break-Away Retainer 2132074-1
409-5842	AMP-O-LECTRIC* Model “G” Terminating Machines 354500-[ ]
409-5855	AMP-O-MATIC* Side Feed Stripper Crimper Model II Machines 854040-3 and -4
409-5878	AMPOMATOR* CLS III “G” Lead Making Machines 356500-[ ]
409-10012	AMP-O-MATIC Side-Feed Stripper Crimper III Machines 1320895-[ ]

3. REQUIREMENTS

3.1. Material

The housings are made of flame-retardant rated (UL 94V-0) nylon and the keying plug is made of flame-rated (UL 94V-2) nylon.

Plating on the contacts must be considered when selecting housings. Housings containing gold-plated contacts must mate with headers containing gold-plated contacts and housings with tin-plated contacts must mate with headers containing tin-plated contacts.

3.2. Wire Selection and Preparation

The standard contacts accept stranded copper wire sizes 30 to 18 AWG with an insulation diameter range of 1.09 through 2.79 [.043 through .110]. The LID contacts accept stranded copper wire sizes 24 to 16 AWG (2550-2800 CMA only for 16 AWG) with an insulation diameter range of 2.54 through 2.84 [.100 through .112].

The wire must be stripped to the dimension given in Figure 2.

NOTE
Reasonable care shall be taken during the stripping operation to ensure the conductor is not nicked, scraped, or cut.

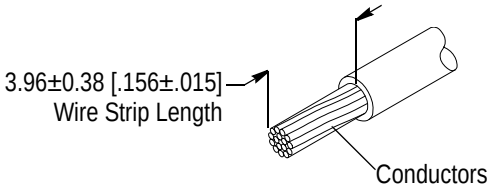


Figure 2

3.3. Contact Crimp

The contacts must be crimped according to the instructional material packaged with the tooling.

A. Carrier Cutoff Tab and Burr

Cutoff tab and burr shall not exceed the dimensions given in Figure 3.

B. Wire Barrel Crimp

Wire barrel crimp width and height shall be as specified in Figure 3.

C. Insulation Barrel Crimp

Insulation barrel crimp width shall be as specified in Figure 3.

NOTE
Reasonable care shall be taken not cut or break the insulation during the crimping operation.

D. Wire Barrel Flash

Wire barrel flash shall not exceed the dimension given in Figure 3.

E. Wire Barrel Seam

The wire barrel seam shall be closed adequately enough to confine all strands of wire. There shall be no loose wire strands. Wire strands shall not be embedded in the seam of the wire barrel.

F. Front and Rear Bellmouths

Front and rear bellmouths shall not exceed the dimensions given in Figure 3.

G. Locking Lance

The locking lance shall not be deformed.

H. Wire Location

Both wire insulation and conductor shall be visible between the contact insulation barrel and wire barrel. Care shall be taken not to allow the wire insulation to be crimped in the wire barrel. The end of the wire shall be flush with or extend beyond the front of the wire barrel to the dimension given in Figure 3.

I. Twist and Roll

There shall be no twist or roll in the crimped portion of the contact that will impair usage of the contact.

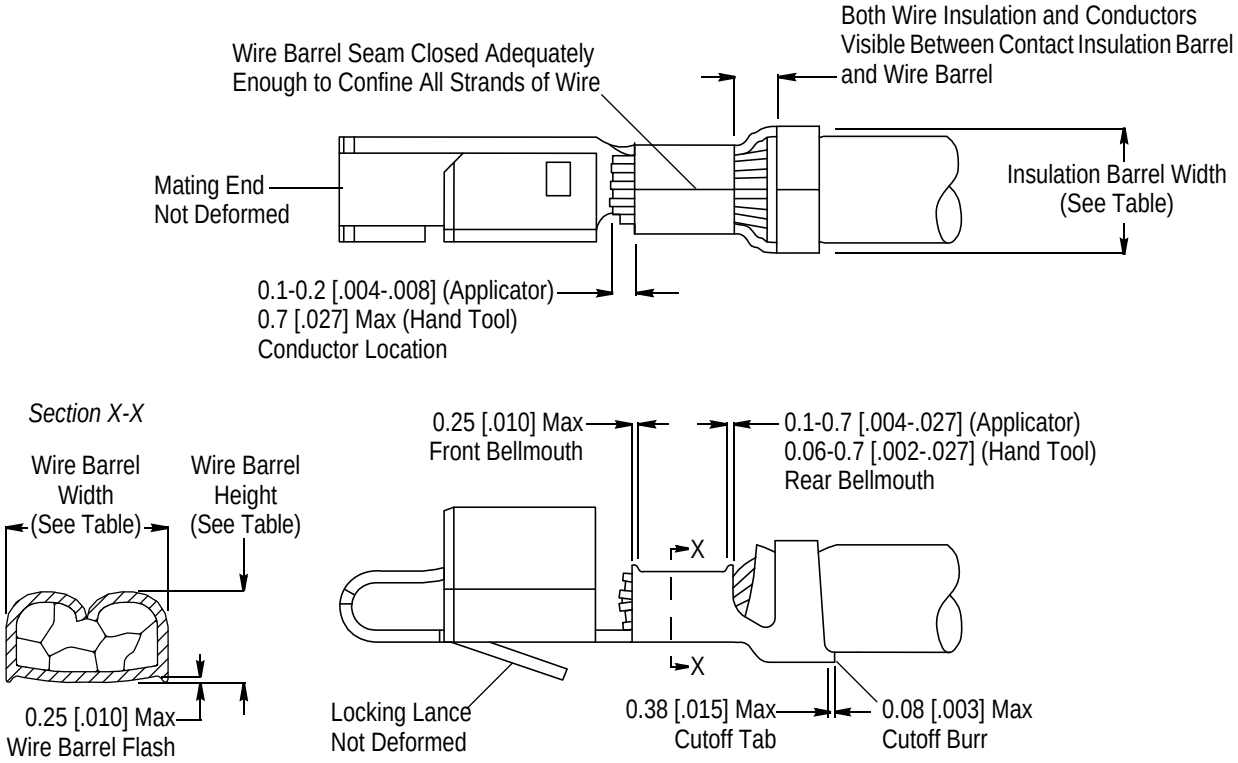
J. Alignment

The contact, including the cutoff tab and burr, shall not be bent above or below the datum line more than the amount given in Figure 4.

The side-to-side bending of the contact shall not exceed the limit given in Figure 4.

Crimp Requirements

Note: Hooded (dual wipe) contact shown; same requirements apply to low force and high force contacts.



WIRE		CONTACT CRIMP		
SIZE RANGE (AWG)	MAXIMUM INSULATION DIAMETER	WIRE BARREL		INSULATION BARREL WIDTH
		HEIGHT ±0.05 [±.002]	WIDTH ±0.08 [±.003]	
30-28	1.45 [.057]	0.86 [.034]	1.40 [.055]	2.29 [.090]
26-24		0.91 [.036]		
24	2.79 [.110]	1.02 [.040]	1.78 [.070]	2.54 [.100]
22		1.07 [.042]		
20		1.14 [.045]		
18		1.30 [.051]		
16	2.79 [.110]	1.50 [.059]	2.29 [.090]	3.05 [1.20]

Figure 3

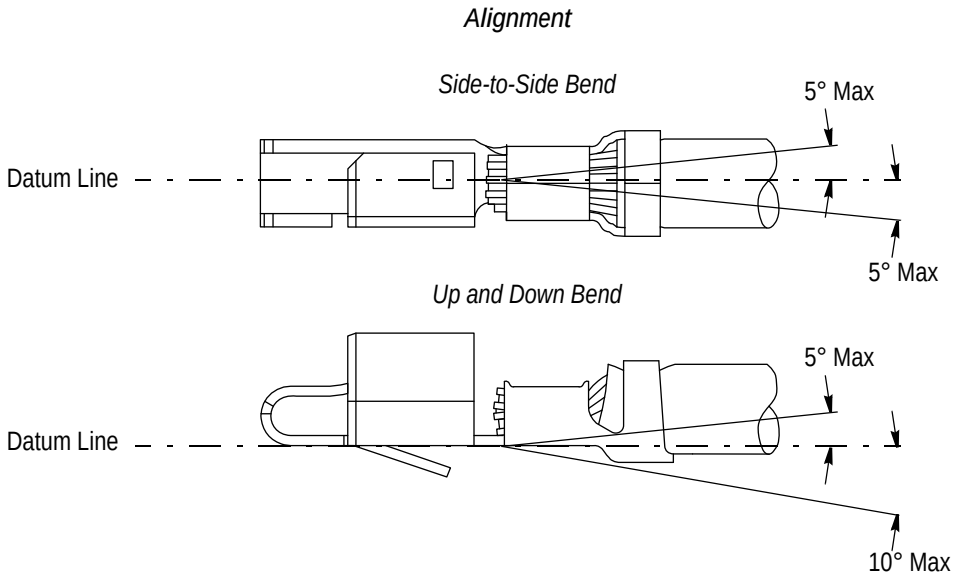


Figure 4

3.4. Contact Insertion

The terminated contact must be grasped directly behind the insulation barrel, then inserted straight into the appropriate contact cavity of the housing until it stops. To ensure that the locking lance has engaged, the wire of each contact should be pulled back. Refer to Figure 5.

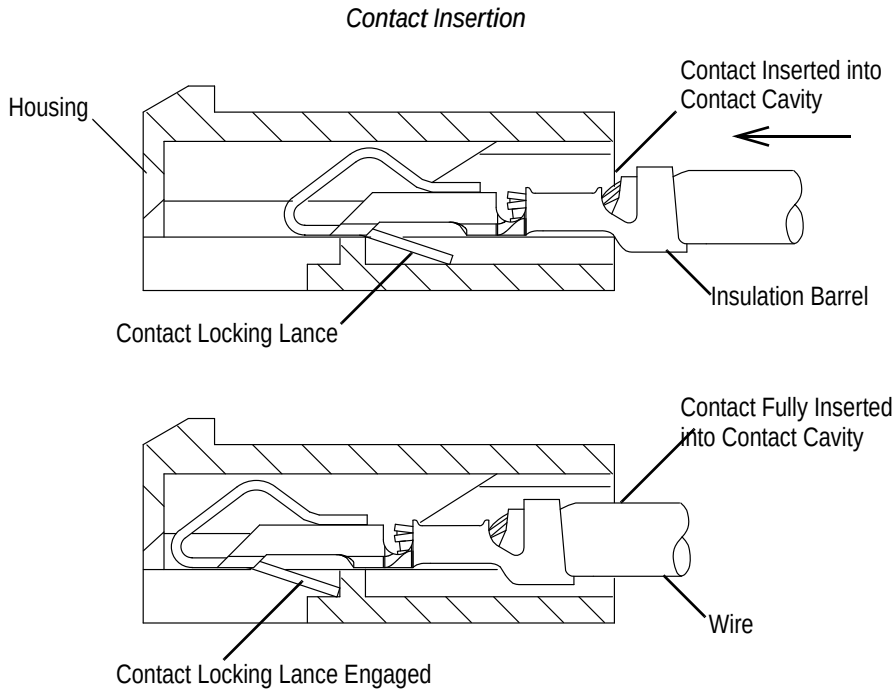


Figure 5

3.5. Keying

A post or posts of the mating header can be omitted for keying purposes. A keying plug must be inserted into the corresponding contact cavity from the mating face of the housing to ensure polarization when mating. See Figure 6.

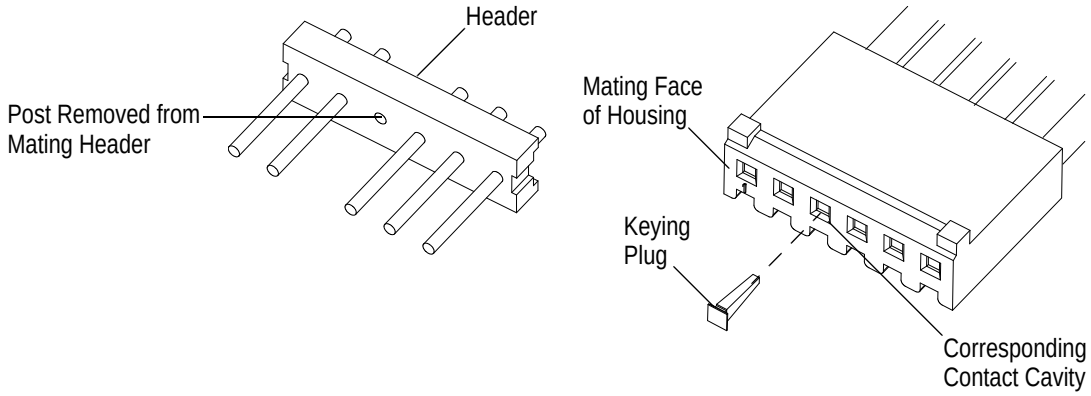


Figure 6

3.6. PC Board

These requirements apply to the housing with a through board latch(es).

A. Material and Thickness

The pc board material shall be glass epoxy (FR-4 or G-10). The pc board thickness shall be 1.57 [.062].

B. Cutout

The hole for the through board latch(es) must be 1.14 [.045] square or round on 3.96 [.156] centers.

The cutout and hole(s) in the pc board must be precisely located to ensure proper placement and optimum performance of the housing. The pc board layout must be designed using the dimensions provided on the customer drawing for the specific housing. A reference sample of the recommended pc board layout is shown in Figure 7.

Sample Recommended PC Board Layout

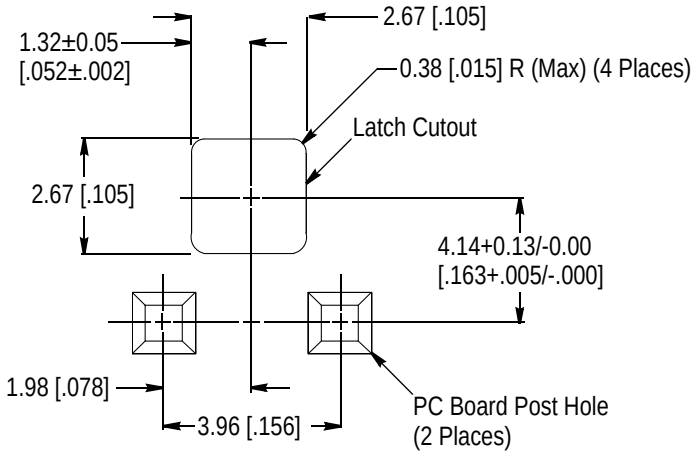


Figure 7

C. Posts

The post length range above the pc board must be 8.89 through 11.81 [.350 through .465].

3.7. Housing Placement

The housing with through board latch(es) must be placed on the pc board so that the end of the through board latch(es) is completely through the pc board latch cutout(s) and the pc board posts enter the housing contact cavities.

3.8. Replacement and Repair

Contacts can be extracted from the housing using the extraction tool referenced in Section 5 according to the instructions packaged with the extraction tool. The contact must not be re-used by removing the wire. The contact can be replaced by cutting it from the wire and terminating a new contact to the wire.

Contacts and housings cannot be repaired. Damaged or defective contacts or housings must not be used.

4. QUALIFICATIONS

SL-156 housings are Listed by Underwriters Laboratories Inc. (UL) in File E 28476 and Certified by CSA International in File LR7189.

5. TOOLING

Tooling part numbers and instructional material packaged with the tooling are shown in Figure 8.

5.1. Hand Tool

The PRO-CRIMPER III hand crimping tool is a “commercial” grade tool and is designed primarily for field installation, repair, or maintenance work. Contacts crimped with this tool will meet the crimp height requirements, but may not comply with the other crimp requirements for these contacts. This hand tool consists of a tool frame and crimping dies.

The double-action hand crimping tool consists of a handle assembly with integral fixed jaws and a ratchet that ensures full crimping pressure is applied to the contact.

5.2. Applicator

The applicator is designed to crimp strip-form contacts onto pre-stripped wire. The applicator must be installed into a power unit.

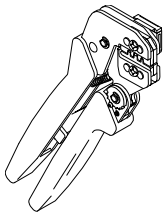
NOTE
The AMP-O-LECTRIC Model “G” terminating machine must be equipped with Machine Conversion Kit 690675-2 to accept the miniature applicator.

5.3. Power Units

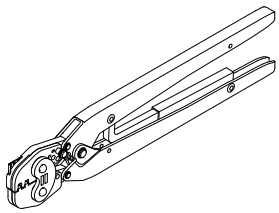
The power unit provides the force required to crimp the contacts in the applicator. The AMP-O-LECTIC Model “G” terminating machine is designed as a stand-alone semi-automatic bench machine. The AMP-O-MATIC stripper-crimper machine is an automatic machine with a pneumatic system intended for bench-top operation.

5.4. Extraction Tool

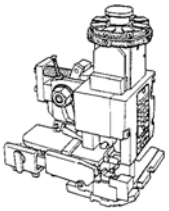
The extraction tool is designed to extract a contact from the housing without distorting the locking lance.



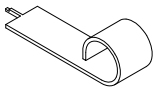
PRO-CRIMPER III Hand Crimping Tool Assembly:
58614-1 with Die Assembly 58614-2 (408-4228)
91368-1 with Die Assembly 91368-2 (408-8775)
91369-1 with Die Assembly 91369-2 (408-8776)



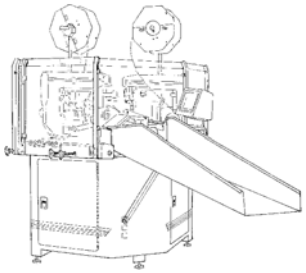
Hand Crimping Tool 90123-2, 90123-5, or 90124-2 (408-7332)



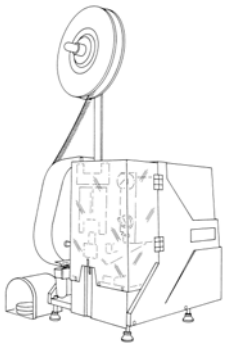
Heavy Duty (HD) Miniature Quick-Change Applicators (See Table) (408-8040)
AMP-O-MATIC CQM Stripper Crimper Applicator 567828-1
AMP-O-MATIC Stripper Crimper Applicator 466947-1
Ocean Side-Feed Applicator 2151033-1 (408-10389)



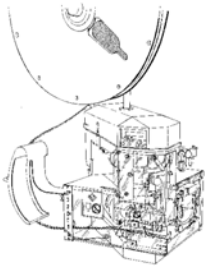
Extraction Tool 90471-1 (408-4523)



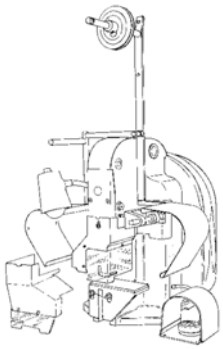
AMPOMATOR CLS III-G Lead Making Machines 356500-[ ] (409-5878)



AMP-O-MATIC Side Feed Stripper Crimper Model II Machine 854040-3 or 854040-4 (409-5855)
AMP-O-MATIC Side-Feed Stripper Crimper Model III Machines 1320895-[ ] (409-10012)



AMP-O-LECTRIC Model "G" Terminating Machines 354500-[ ] (409-5842)



AMP-O-LECTRIC Model "K" Terminating Machines 471273-[ ] (409-5128)

CONTACT	WIRE		HAND TOOL	APPLICATOR AND POWER UNIT	
	SIZE RANGE (AWG)	INSULATION DIAMETER		APPLICATOR	POWER UNIT
Standard	30-24	1.45 [.057] Max	—	466407-[ ] (HD)	Model "G"
	24-18	1.52-2.79 [.060-.110]	58614-1	—	—
	24-20	1.09-1.90 [.043-.075]	58614-1		
	24-14	1.09-3.30 [.043-.130]	90123-2, 90123-5, or 90124-2		
	24-18	2.79 [.110] Max	—	466468-1 (HD)	Model "G"
				2151033-1 (Ocean)	
				466469-[ ] (HD)	
				1385219-[ ] (HD)	
				680211-3 (HD)	
				466468-2 (HD)	Model "K"
				466947-1 (AOM)	Stripper Crimper
				567828-1 (AOM CQM)	Stripper Crimper
LID	24-18	2.54-2.84 [.100-.112]	91368-1	1385048-3 (HD)	Model "G"
				1385048-2 (HD)	Model "K"
	16	2.54-2.84 [.100-.112]	91369-1	1385219-3 (HD)	Model "G"
				1385219-2 (HD)	Model "K"

Figure 8

6. VISUAL AID

The illustration below shows a typical application of SL-156 contacts and housings. 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.

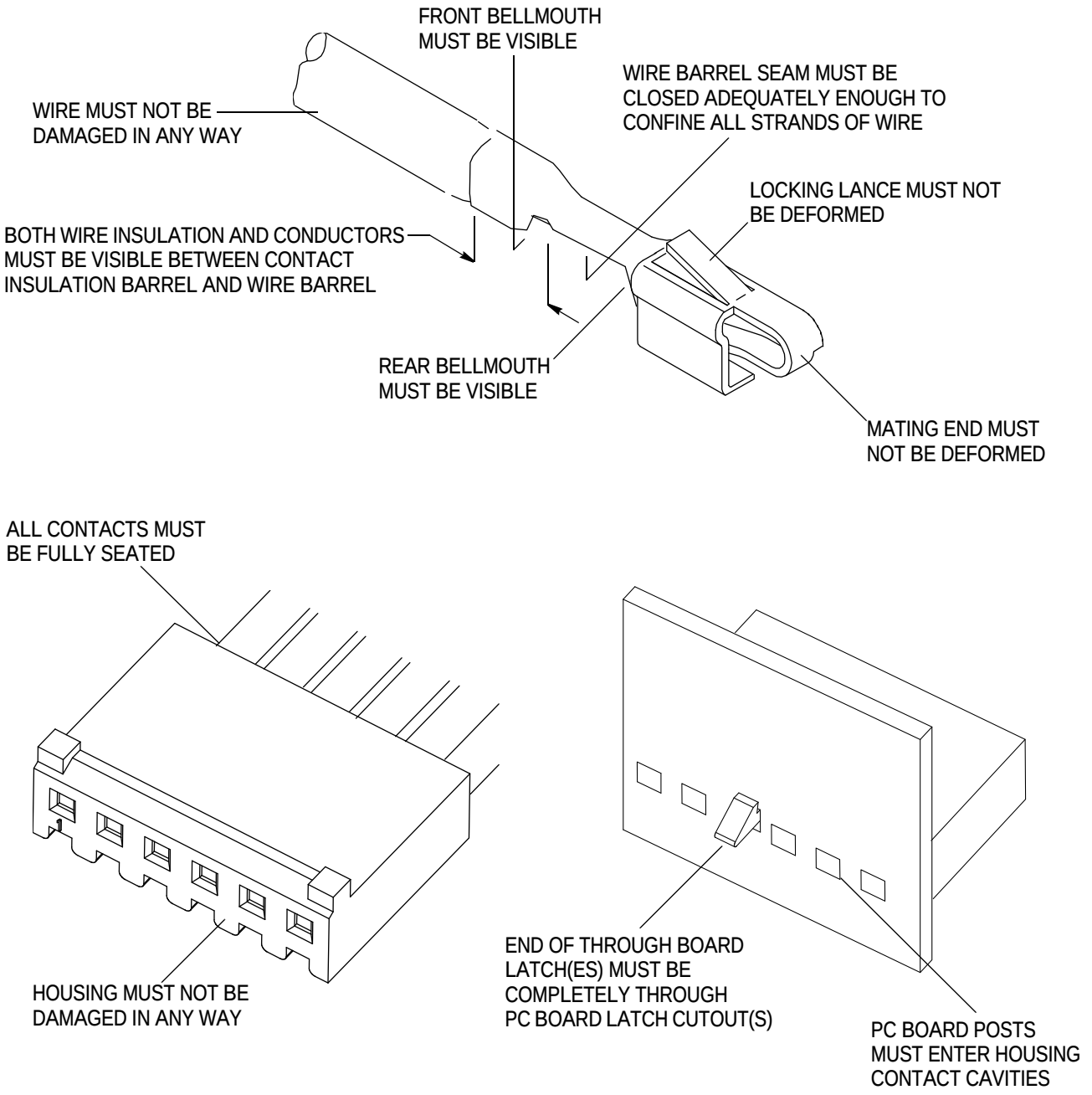


FIGURE 9. VISUAL AID