



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  $\pm 0.13$  [ $\pm 0.005$ ] 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 application of High Speed Serial Data Connector 2 (HSSDC2) Plug Kits to cable. The plug assembly consists of: a spring clip, upper and lower die cast shells, and a ferrule. The plug assembly mates with the HSSDC2 receptacle connector. The complete system is a 7-position connector with 4 high-speed lines and 3 grounds. An internal HSSDC2 printed circuit (pc) board and wire organizer is customer supplied. Reference dimensions for these options may be found on the HSSDC2 customer print.

HSSDC2 Plug Kits are available with either an INFINIBAND<sup>†</sup> standard or Fibre Channel<sup>‡</sup> standard female key in the lower die cast shell as shown in Figure 1.

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.

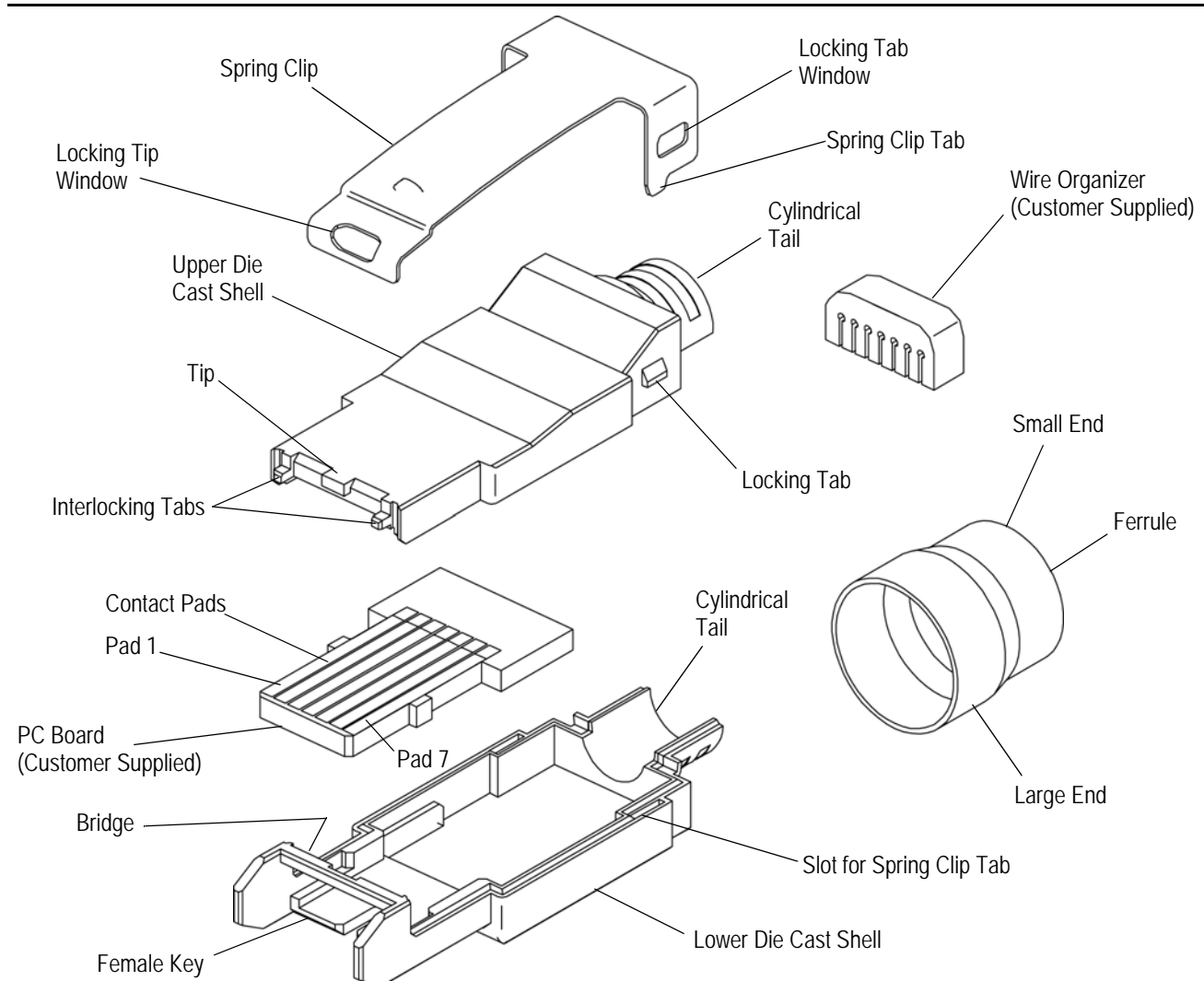


Figure 1

<sup>†</sup> InfiniBand is a trademark of InfiniBand Trade Association.

<sup>‡</sup> Fibre Channel is a trademark of the Fibre Channel Industry Association.

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

Since the previous version of this document, the following changes were made:

- Updated trademark references
- Updated document to corporate requirements

### 2.2. Customer Assistance

Reference Base Part Numbers 1364629, 1364934, and Product Code E609 are representative numbers of High Speed Serial Data Connector 2 (HSSDC2) Plug Kits. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product information. Such information can be obtained through a local TE Representative (Field Sales Engineer, Field Applications Engineer, etc) or, after purchase, by calling the Tooling Assistance Center or the Product Information Center number at the bottom of page 1.

### 2.3. Drawings

Customer Drawings for the connectors 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 TE.

### 2.4. Specifications

Application Specification 114-13028 provides information for HSSDC2 Receptacle Assembly application requirements. Product Specifications 108-1965 and 108-2065 provide product performance requirements and test information for the HSSDC2 Connectors.

### 2.5. 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>
408-7424	Checking Terminal Crimp Height or Gaging Die Closure
408-8609	Crimping Die Assemblies 1583015 and 1583016 for HSSDC2
408-9315	Hand Crimping Tool Frame Assembly 543344-1
408-9721	Die Holder Assembly 58449-1
409-5843	Pneumatic Power Unit 312522-[ ]

## 3. REQUIREMENTS

### 3.1. Safety

Do not stack product packages so high that the shipping containers buckle or deform.

### 3.2. Storage

#### A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the plug assemblies.

#### B. Shelf Life

To prevent damage to the plug assemblies, they should remain in the shipping containers until ready for installation. Also, to prevent possible storage contamination, these products should be used on a first in, first out basis.

**C. Chemical Exposure**

Do not store the plug assemblies near any chemical listed below as they may cause stress corrosion cracks in the product.

Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur	Nitrites	Tartrates

**3.3. Cable Selection and Preparation**


The plug assembly accepts shielded cable while the solid or stranded discrete wire within the cable is soldered to the pads of the internal plug pc board.

**A. Cable Selection**

Select the cable diameter and discrete wire size according to your production requirements.


**B. Cable Preparation**

**NOTE** *Make sure the ferrules are placed correctly over the cable jacket prior to stripping the cable and discrete wires*


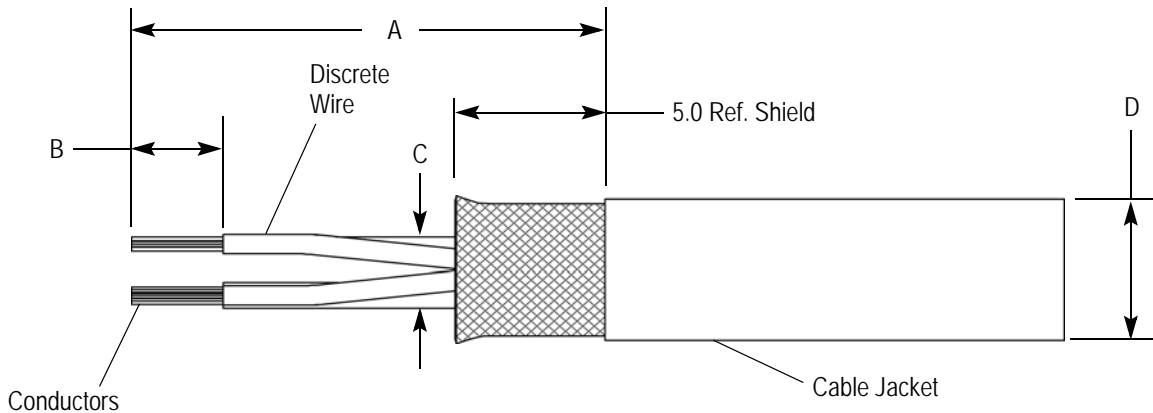


Strip the cable, shield, and discrete wire according to the customer's requirements and procedures or to the dimensions in Figure 2.

**NOTE** *Remove any plastic filler underneath the cable jacket and discard. Also DO NOT nick, cut, or scrape the conductors or the cable shield during the stripping operation.*



**NOTE** *The applied crimp dimension (within the functional range of the product) is dependent on the termination tooling being used. Refer to the documentation supplied with the termination tooling for the applied crimp height. See Section 5, TOOLING.*

**Note:** "A" dimension depends on location of solder pads on the pc board.  
Distance from back edge of shells to edge of pc board is 17.8 ref.

**Note:** "B" dimension depends on the size of the solder pads on the pc board.

MAX WIRE BUNDLE DIA "C"	RECOMMENDED CABLE OUTER DIA "D"		FERRULE DIA (CABLE SIDE)	BRAID CRIMP HEIGHT	INSULATION CRIMP HEIGHT
	MIN	MAC			
5.70	5.46	6.22	7.62	8.65	5.33
	4.06	4.83	6.25	8.65	4.42
7.64	8.26	9.02	9.53	10.30	7.57

Figure 2

### 3.4. Discrete Wire Application

The discrete wires must be hand soldered to the plug assembly. The soldering process is done prior to the plug assembly being placed into the bottom shell. When using the ferrule, make sure the largest diameter end is towards the prepared end of the cable. See Figure 6.

#### A. Placement

Optimally, the wire conductor should be centered on the pc board circuit pads. However, slight misalignment is permissible as shown in Figure 3.

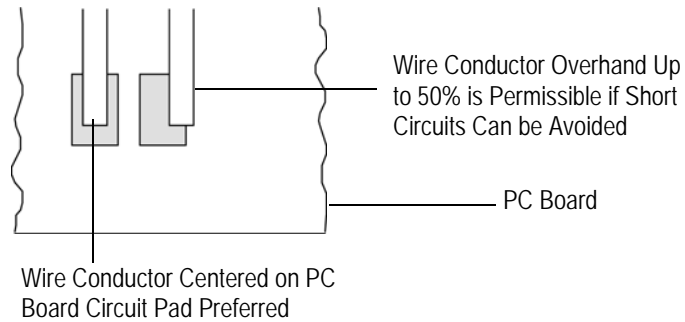


Figure 3

#### B. Flux Selection

The pads on the internal pc board must be fluxed prior to soldering with a mildly active, rosin base flux. Selection of the flux will depend on the type of pc board. Additionally, the flux must be compatible with the manufacturing, health, and safety requirements. Call one of the phone numbers at the bottom of page 1 for consideration of other types of flux. Some fluxes that are compatible with these connectors are provided in Figure 4.

FLUX TYPE	ACTIVITY	RESIDUE	COMMERCIAL DESIGNATION	
			KESTER	ALPHA
Type RMA (Mildly Activated)	Mild	Noncorrosive	186	611

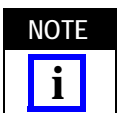
Figure 4

#### C. Cleaning

After soldering, removal of fluxes, residues, and activators is necessary. Cleaning methods depend on the type of flux used. Consult the supplier of solder and flux for recommended cleaning solvents. The following are common cleaning solvents that can be used on these connectors for 10 minutes at room temperature without any adverse effects on the components. See Figure 5.



*Consideration must be given to toxicity and other safety requirements recommended by the solvent manufacturer. Refer to the manufacturer's Material Safety Data Sheet (MSDS) for characteristics and handling of cleaners. Trichloroethylene and Methylene Chloride can be used with no harmful affect to the connectors; however TE does not recommend them because of the harmful occupational and environmental effects. Both are carcinogenic (cancer-causing) and Trichloroethylene is harmful to the earth's ozone layer.*



*If you have a particular solvent that is not listed, contact the Product Information number at the bottom of page 1.*

CLEANER		TIME (Minutes)	TEMPERATURE (Maximum)
NAME	TYPE		
ALPHA 2110	Aqueous	1	132°C [270°F]
BIOACT EC-7	Solvent	5	100°C [212°F]
Butyl CARBITOL	Solvent	1	Ambient Room
Isopropyl Alcohol	Solvent	5	100°C [212°F]
KESTER 5778	Aqueous		
KESTER 5779	Aqueous		
LONCOTERGE 520	Aqueous		
LONCOTERGE 530	Aqueous		
Terpene	Solvent		

ALPHA, BIOACT, CARBITOL, LONCOTERGE, and KESTER are trademarks of their respective owners.

Figure 5

### D. Drying

When drying the cleaned plug assemblies, make certain that the temperature limitations of 15° to 85° C [59° to 185° F] are not exceeded.



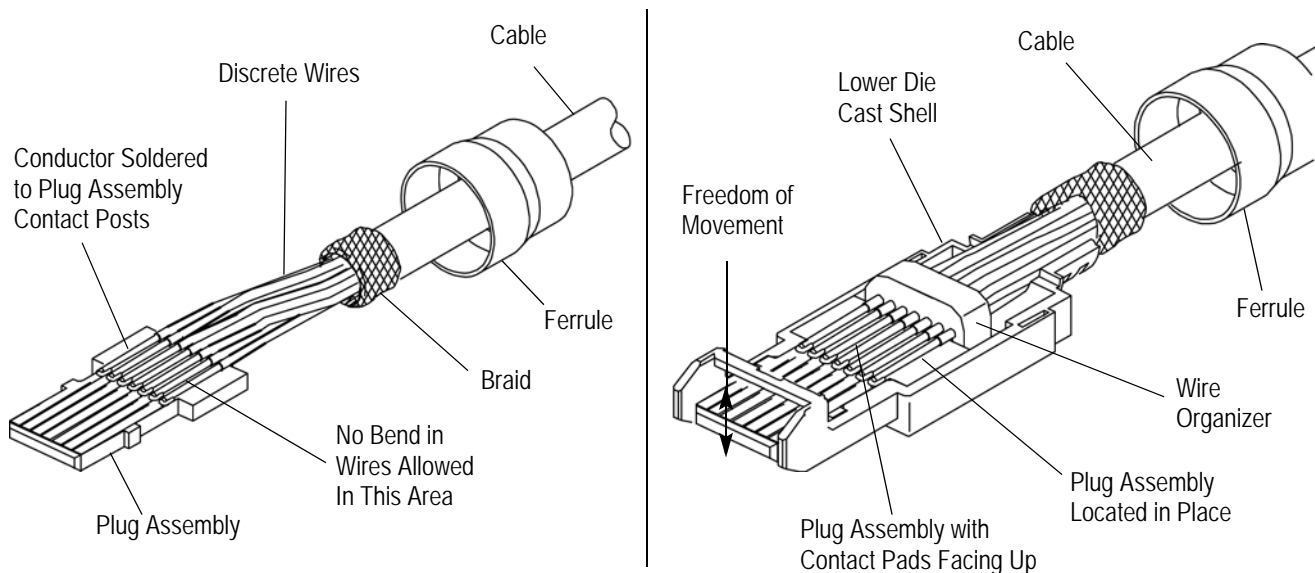
*Excessive temperatures may cause connector degradation.*

### E. Checking Soldered Connector

All solder joints should conform to those specified in Workmanship Specification 101-21.

### 3.5. Plug Assembly Instructions

1. Insert the internal plug pc board into the lower die cast shell with the contact pads facing up. See Figure 6.
2. If used, insert the wire organizer (customer supplied) into the rear of the lower die cast shell. See Figure 6.



**NOTE:** Completed pc board should have some freedom of movement within the plug shells. It should not be rigid within the shells.

Figure 6

3. Insert the front of the spring clip over the tip on top of the upper die cast shell . See Figure 7A.

4. Push the spring clip down until it locks over the locking tabs on both sides of the upper die cast shell. See Figure 7B.

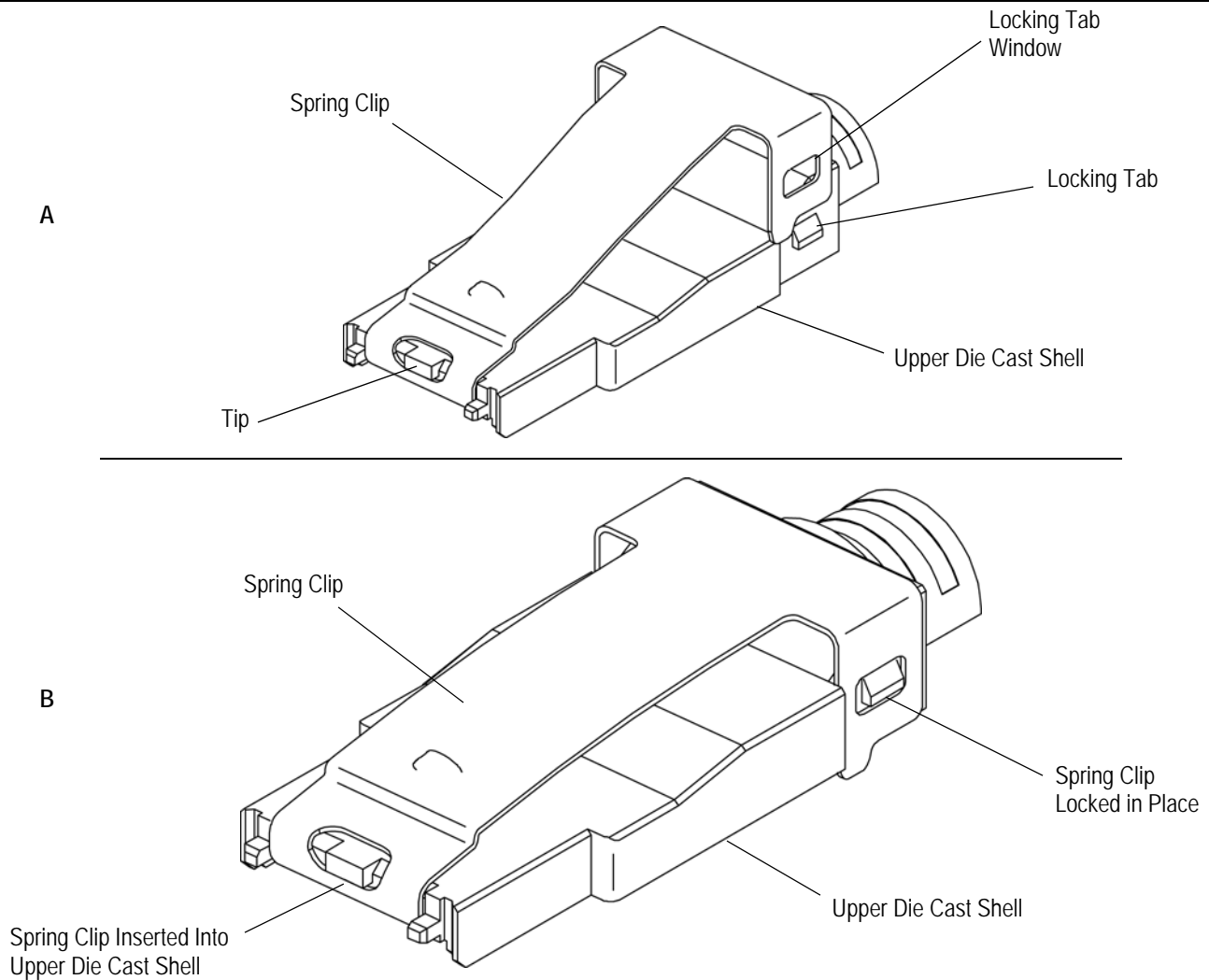


Figure 7

5. Insert the interlocking tabs of the upper die cast shell under the bridge of the lower die cast shell and close it over the top of the lower shell. Make sure all features of each shell are properly aligned. See Figure 8. Make sure the tabs on the spring clip below the locking tab windows on either side are inside the lower die cast shell.

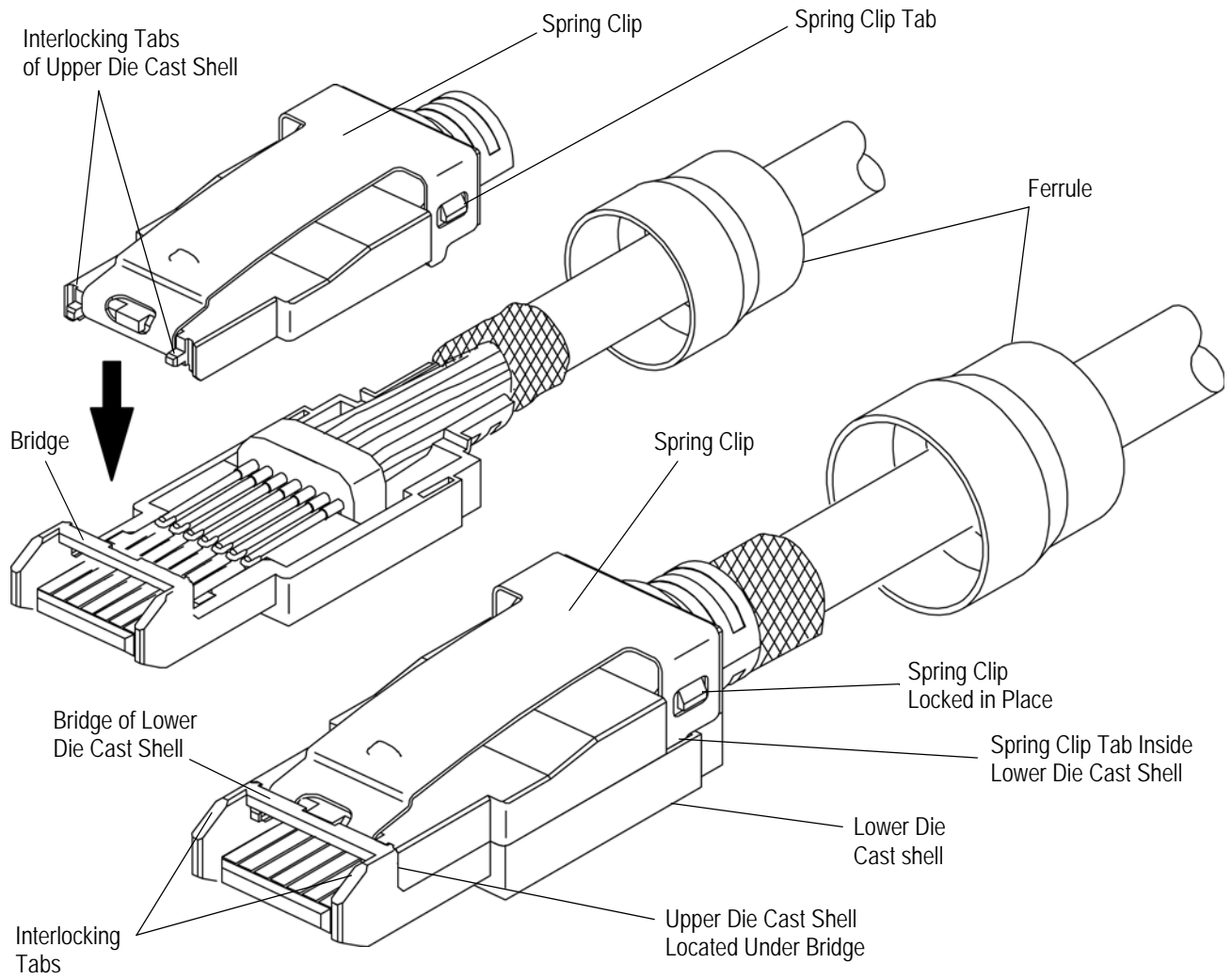


Figure 8

6. Dress the cable braid or shield over the cylindrical tail of the two die cast shells. See Figure 9A.
7. If used, slide the ferrule over the cylindrical tail of the die cast assembly and the cable braid. See Figure 9B.

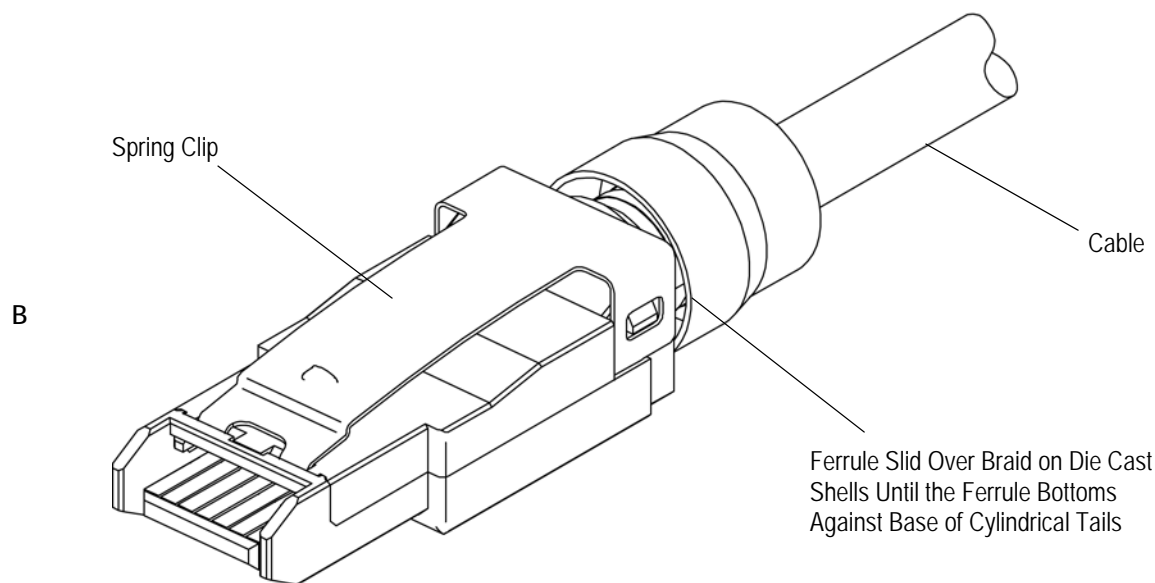
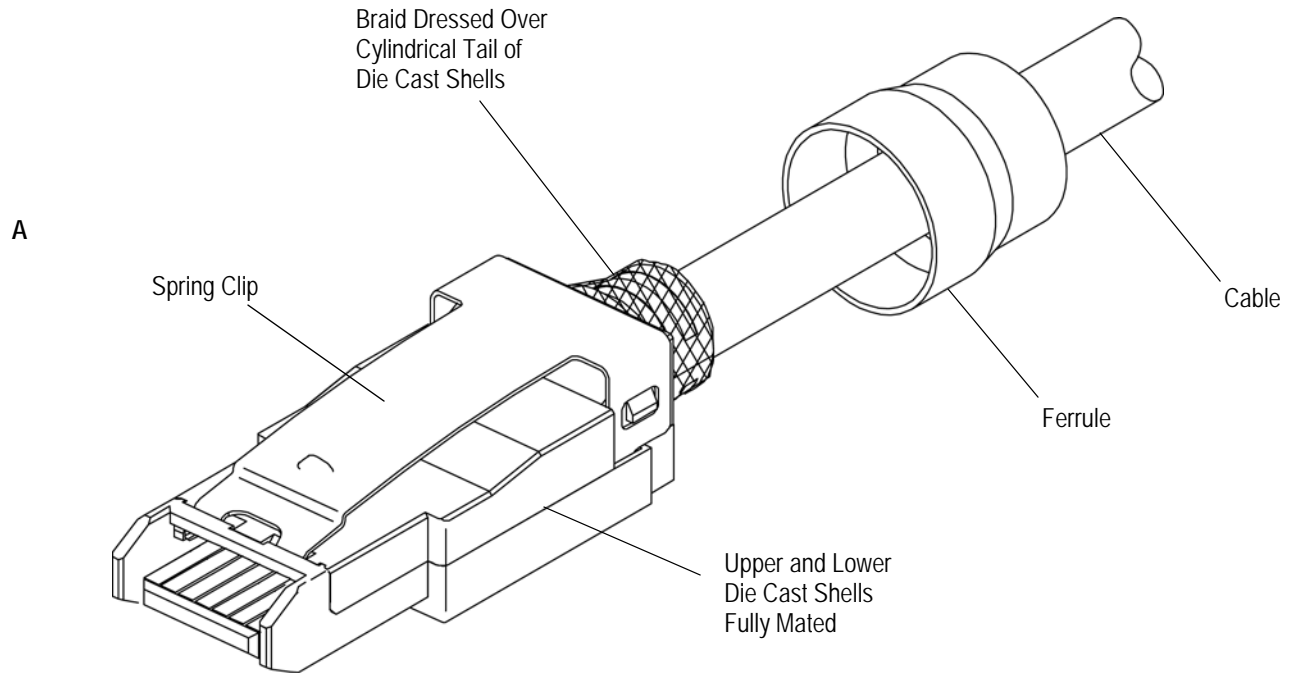


Figure 9

8. Crimp the ferrule over the cylindrical tail and cable braid and to the cable jacket using the recommended tooling in Instruction Sheet 408-8609 and as shown in Section 5, TOOLING. The crimp height over the braid and insulation must be as provided in the table in Figure 2. See Figure 10.



*If overmolding of the ferrule and cable is desired, be careful not to have the overmold compound restrict the movement of the spring clip.*



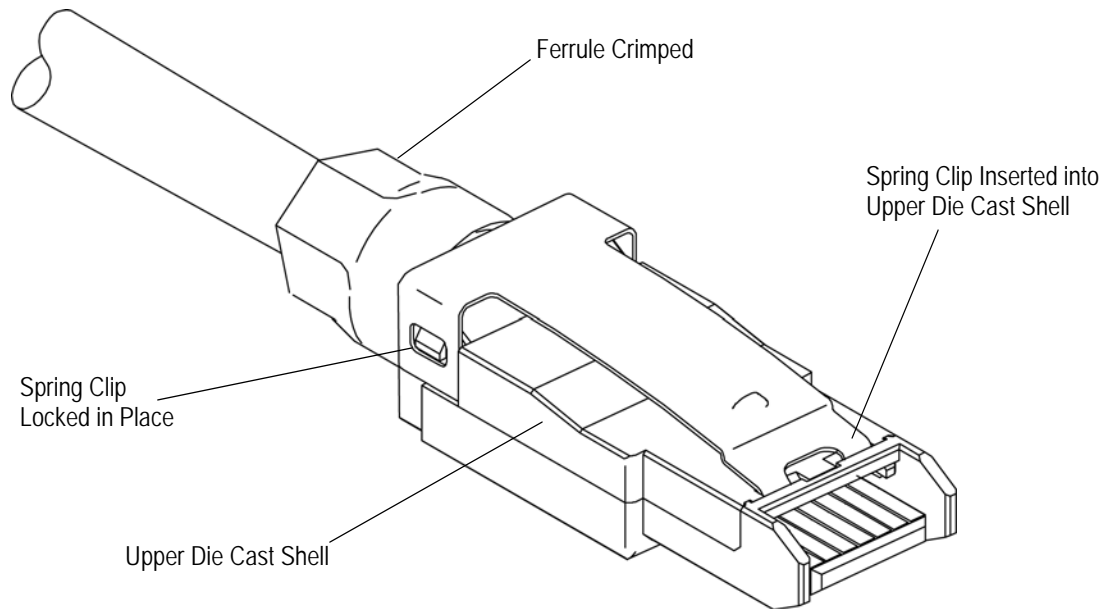


Figure 10

### 3.6. HSSDC2 Connector Mating

The HSSDC2 Plug Assembly mates with the HSSDC2 Receptacle Connector. Information about this connector and mating may be found on Application Specification 114-13028.

### 3.7. Repair/Removal

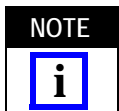
Damaged components may not be used. If damaged components are evident, they must be replaced with new ones. The discrete wire conductors must be cut, re-stripped, and re-terminated to a new internal plug pc board.

## 4. QUALIFICATIONS

The HSSDC2 Plug Assembly is Recognized by Underwriters Laboratories Inc. (UL) under File Number E81956, which also Certifies this product for CSA International.

## 5. TOOLING

Figure 11 provides tooling information for HSSDC2 Plug Assemblies



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

- **Hand Tools**

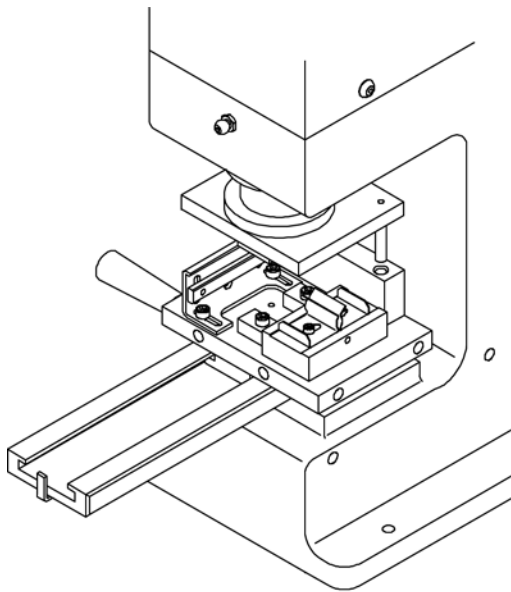
Hand crimping tools that accommodate the full wire range are designed for prototype and low-volume applications.

- **Pneumatic Power Units**

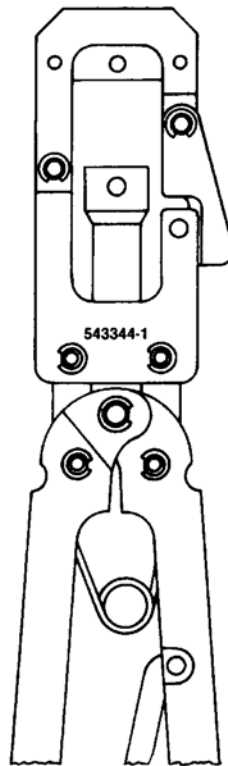
Pneumatic power units are designed for high volume production and will accept a wide variety of die assemblies for production requirements.

- **Crimping Die Assemblies**

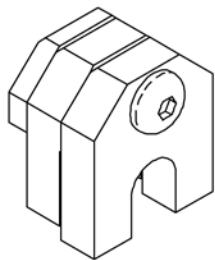
Crimping Die Assemblies for crimping the ferrules are available for the full wire size range. They are designed for easy installation and removal in hand crimping tool frame assemblies or applicators.



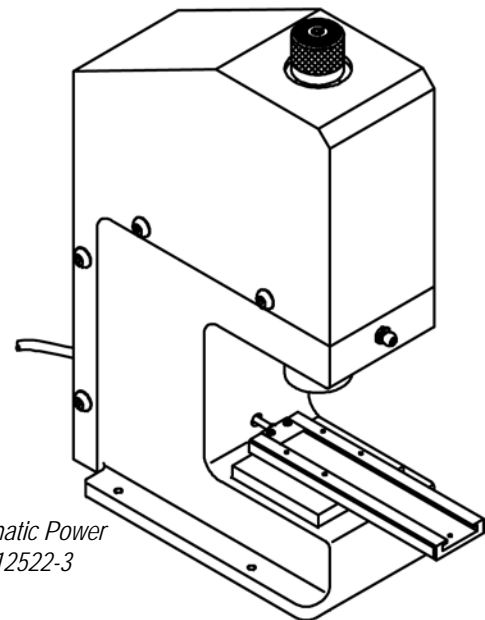
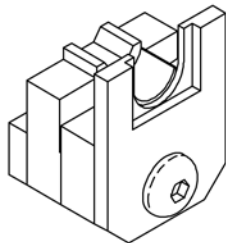
*Pneumatic Die Holder  
Assembly 58449-1*



*Typical Hand  
Tool Assembly  
543344-1*



*Crimping Die Assembly  
1583015-1, -2, and  
1583016-1*



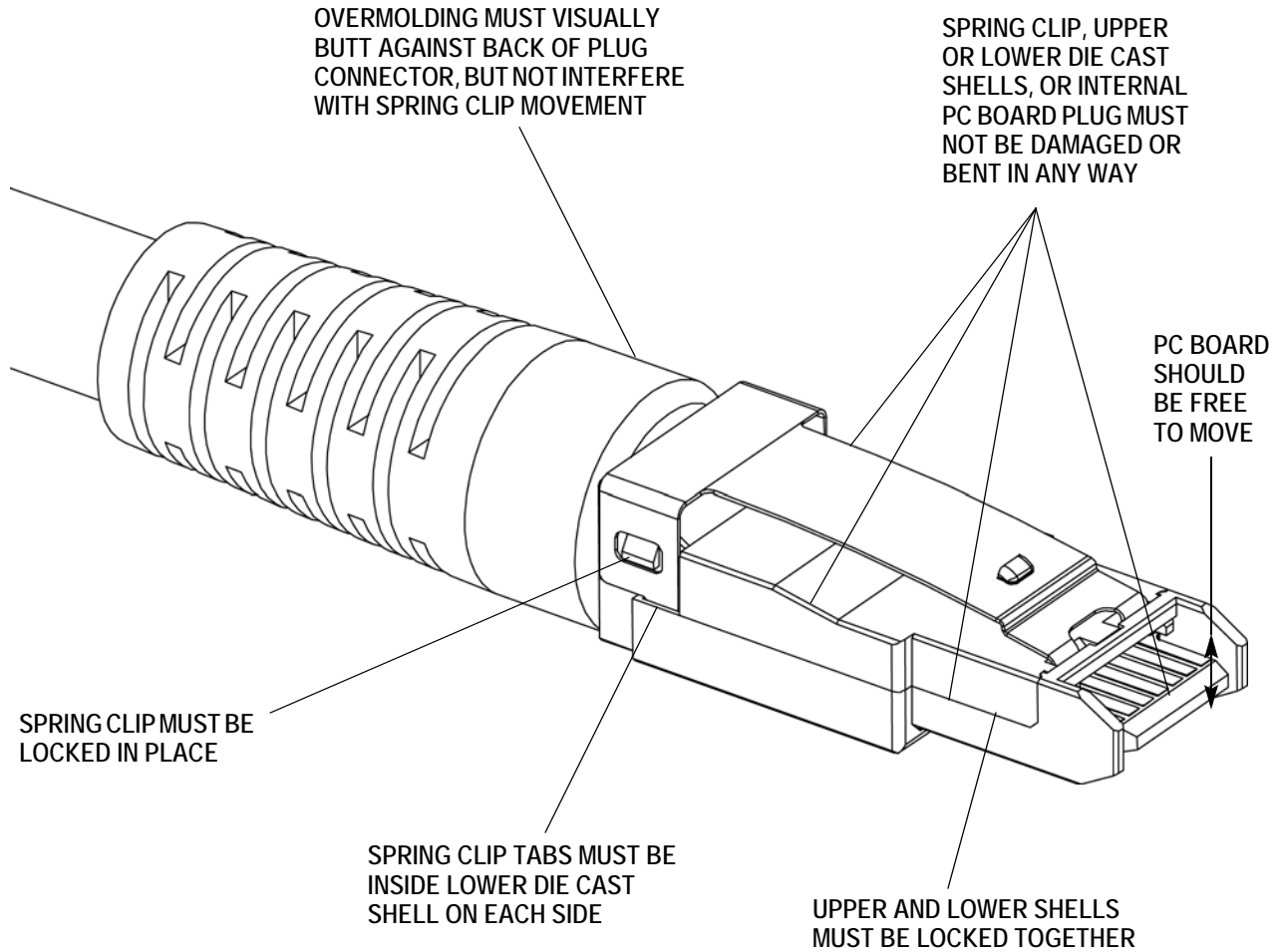
*Pneumatic Power  
Unit 312522-3*

FERRULE	MAXIMUM WIRE BUNDLE DIA	FERRULE DIA (CABLE SIDE)	DIE ASSEMBLY (408-8609)	HAND TOOL (408-9315)	DIE HOLDER ASSY (408-9721)	POWER UNIT (409-5843)
1324504-8	5.70	7.62	1583015-2	543344-1	58449-1	312522-3
1324504-9	5.70	6.25	1583015-1			
1-747579-1	7.64	9.53	1583016-1			

*Figure 11*

6. VISUAL AID

Figure 12 shows a typical application of High Speed Serial Data Connector 2 Plug Assembly. 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**