



**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  $\pm 0.13$  mm [ $\pm .005$  in.] 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 TE Connectivity Electronic Control Module Sealed Connectors (ECMSC). The connectors serve in controllers for diesel engines.

When corresponding with TE 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.

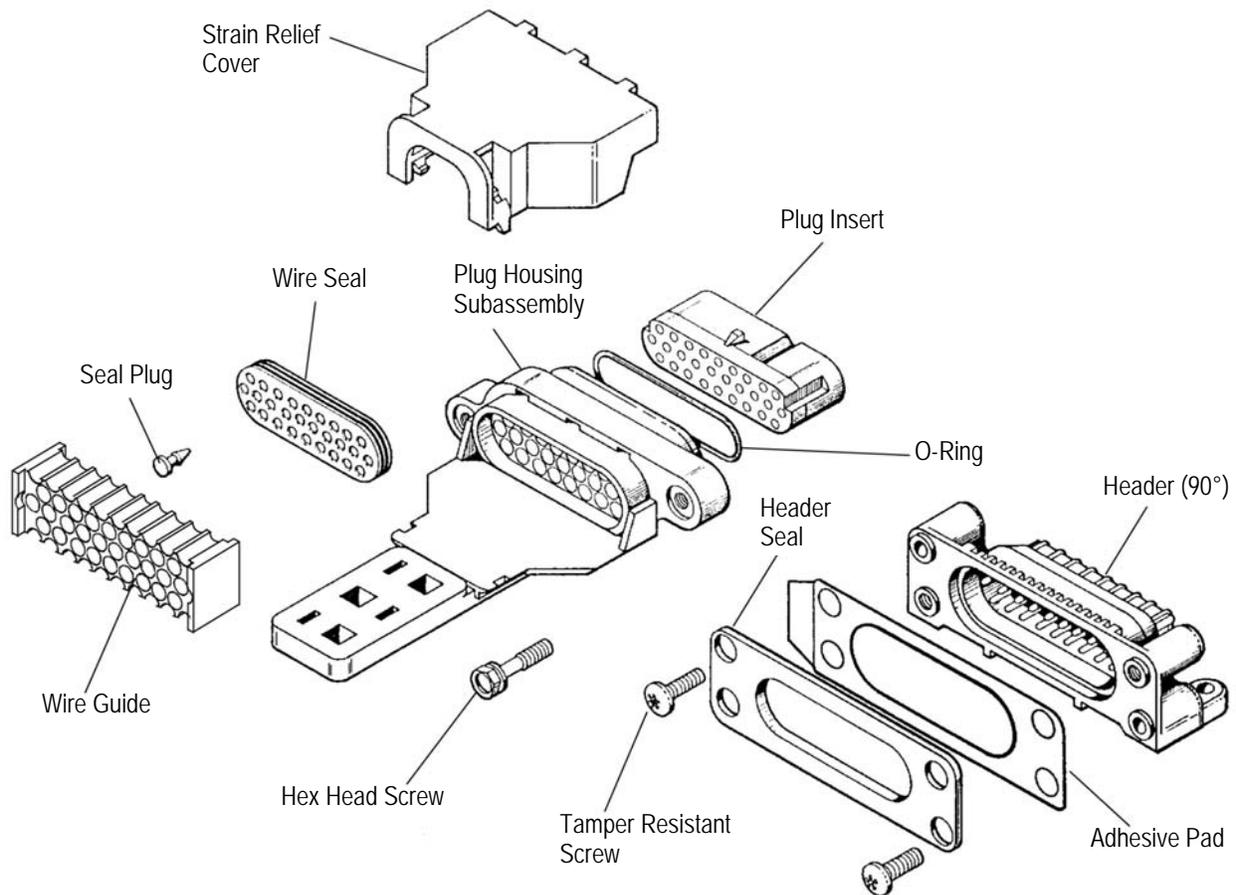


Figure 1

**2. REFERENCE MATERIAL**

**2.1. Revision Summary**

Revisions to this application specification include:

- Updated document to corporate requirements
- Deleted previous company names and logos throughout document
- Changed product code in Paragraph 2.2
- Added part numbers to Paragraphs 3.2, 3.5.A, 3.10.A, and 3.10.B

## 2.2. Customer Assistance

Reference Product Base Part Number 770394 and Product Code J561 are representative of Electronic Control Module Sealed Connectors. 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 TE Representative, by visiting our website at [www.te.com](http://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 specific products are available from the responsible TE Engineering Department via the service network. The information contained in the Customer Drawings takes priority if there is a conflict with this specification or with any other technical documentation supplied by TE.

## 3. REQUIREMENTS

### 3.1. Wire

#### A. Wire Selection

Contacts are available for the wire sizes specified in Figure 2. The wires may be solid, fused-stranded, or stranded conductors.

#### B. Wire Preparation

Insulation shall be stripped as indicated in Figure 2.

### 3.2. Crimped Contact (66773)

#### A. Carrier Cutoff Tab and Burr

The cutoff tab shall be 0.13 to 0.50 mm [.005 to .020 in.]. The burr on the cutoff tab shall not exceed 0.08 mm [.003 in.].

#### B. Crimp Dimensions

Crimp height and width shall be as shown in Figure 2.

#### C. Wire Barrel Flash

Wire barrel flash shall not exceed 0.2 mm [.008 in.].

<i>AUTOMATIC MACHINE WIRE CRIMP DIMENSIONS</i>						
WIRE			WIRE BARREL CRIMP		INSULATION BARREL CRIMP WIDTH	APPLICATOR PART NUMBER (DOCUMENT)
SIZE (AWG)	INSULATION DIAMETER	STRIP LENGTH ±0.4 [.015]	WIDTH	HEIGHT ±0.051 [.002]		
18	2.3-3.05 [.090-.120]	4.2 [.165]	2.3 [.090]	1.17 [.046]	3.05 [.120]	567199-2, -3 (408-8040)
16				1.32 [.052]		
<i>HAND TOOL WIRE CRIMP DIMENSIONS</i>						
WIRE			WIRE BARREL CRIMP		INSULATION BARREL CRIMP WIDTH	HAND TOOL PART NUMBER (DOCUMENT)
SIZE (AWG)	INSULATION DIAMETER	STRIP LENGTH ±0.4 [.015]	WIDTH	HEIGHT ±0.051 [.002]		
18	2.3-3.05 [.090-.120]	4.2 [.165]	2.3 [.090]	1.25 [.049]	3.05 [.120]	90419-1 (408-9236)
16				1.25 [.049]		

Figure 2

#### D. Wire Barrel Seam

Wire barrel seam shall be closed adequately to confine all strands of the wire. There shall be no loose wire strands or wire strands embedded in the outside of the wire barrel.

### E. Bellmouth

Rear bellmouth length shall be 0.2 to 0.46 mm [.008 to .018 in.]. Front bellmouth length shall be 0.25 mm [.010 in.] maximum.

### F. Conductor Location

The end of the wire shall be flush with the front end of the wire barrel or extend 0.8 mm [.032 in.] maximum after crimping.

Both insulation and conductor shall be visible between the insulation barrel and wire barrel. Care shall be taken not to allow insulation to be crimped in the wire barrel.

## 3.3. Locking Lance

Locking lance shall not be deformed.

## 3.4. Alignment

### A. Straightness

The axial concentricity of the crimped product shall fall into an area defined by a 2.5 mm [.100 in.] diameter circle whose center is the center line of the contact as shown in Figure 3.

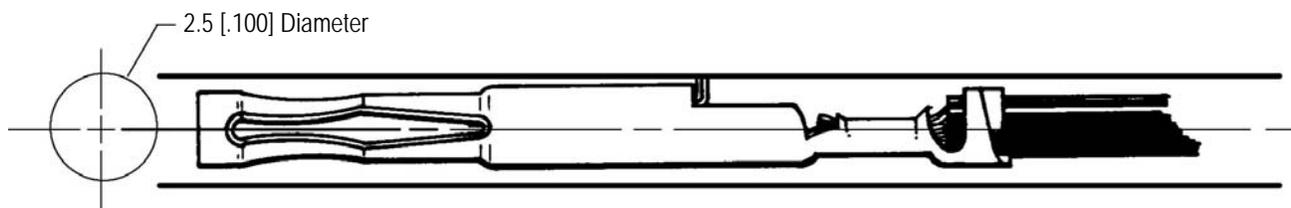


Figure 3

### B. Twist or Roll

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

## 3.5. Housings

### A. Plug Housing

A 28-position plug housing is available for the contacts in plug kit 776179.

### B. Connector Housing

Customer housings for the connectors can be obtained through Cummins Electronics Company, Inc. (Columbus, IN).

## 3.6. Printed Circuit (PC) Board

### A. PC Board Layout

The recommended pc board layout shall be as shown in Figure 4.

### B. PC Board Thickness

The recommended pc board thickness is 1.58 mm [.062 in.].

## 3.7. Panel Mounting (Figure 5)

The following layout provides the dimensions required for mounting the connectors.

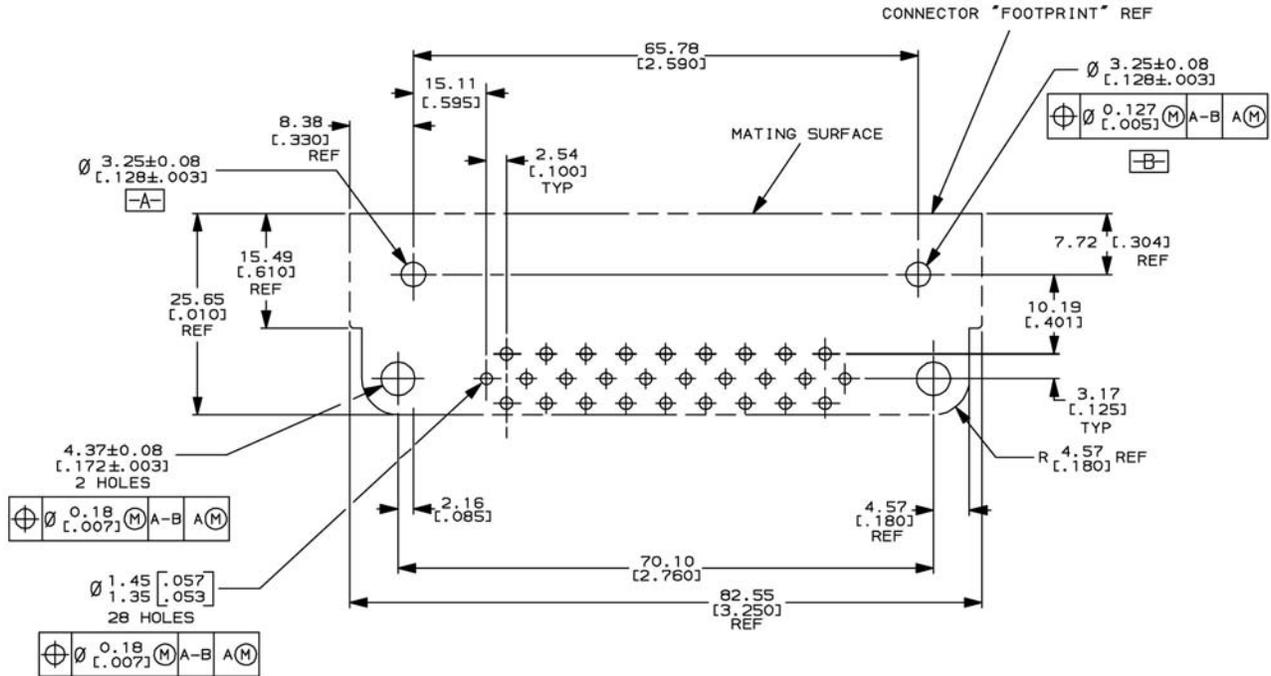


Figure 4

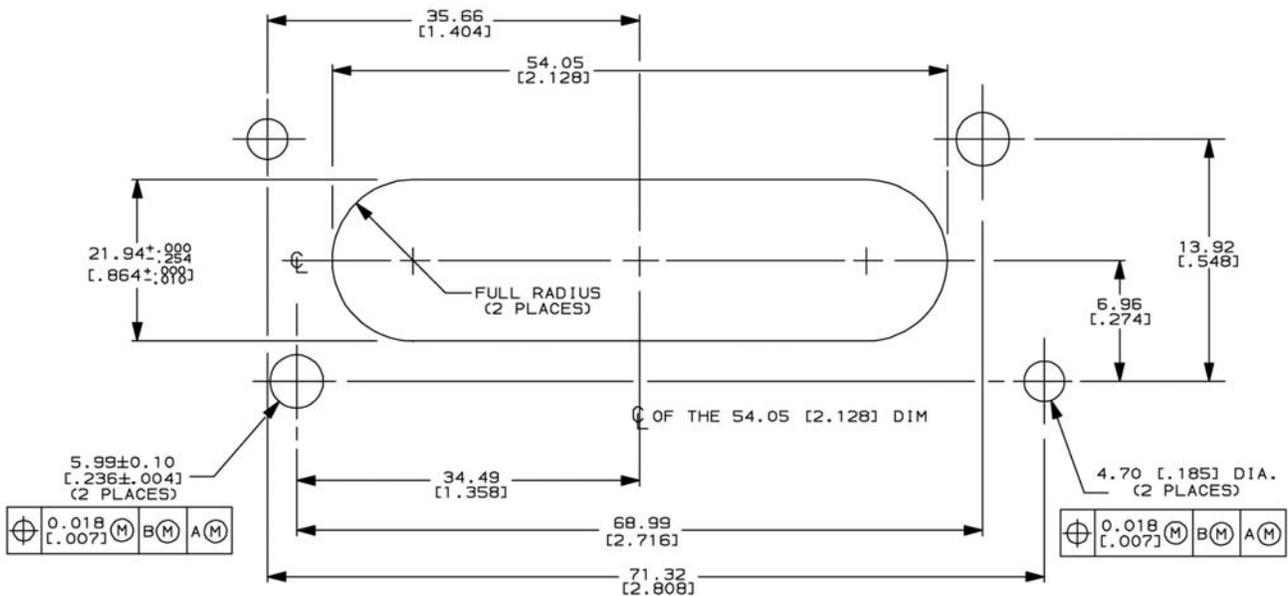


Figure 5

### 3.8. Polarization

The connector is inherently polarized. The configuration of the mating face prohibits the accidental inversion of a mating connector.

### 3.9. Methods of Attachment

Tamper resistant screws are recommended to properly retain header assembly to the panel board.

### 3.10. Accessories

#### A. Plug Kit (776179)

A plug kit is available for sealing the plug housing. The kit includes screws and washers, wire seal, wire guide, plug insert, O-ring, strain relief cover, and plug subassembly. The only variation will be in the keying arrangement of the plug insert.

#### B. Seal Plugs (212980)

## 4. QUALIFICATIONS

The ECMSC (Electronic Control Module Sealed Connectors) are not required to be agency approved.

## 5. TOOLING (Figure 6)

For insertion and extraction of ECMSC contacts into plug housing, use Insertion/Extraction Tool 91178-1 (408-9219). For low volume contact crimping, use Hand Crimping Tool 90419-1 (408-9236). Use Heavy Duty Miniature Quick-Change Applicator 567199-2 (408-8040) and -3 for operation in the AMP-O-ELECTRIC\* Model "G" Terminating Unit 354501-[ ] (See 409-5853).

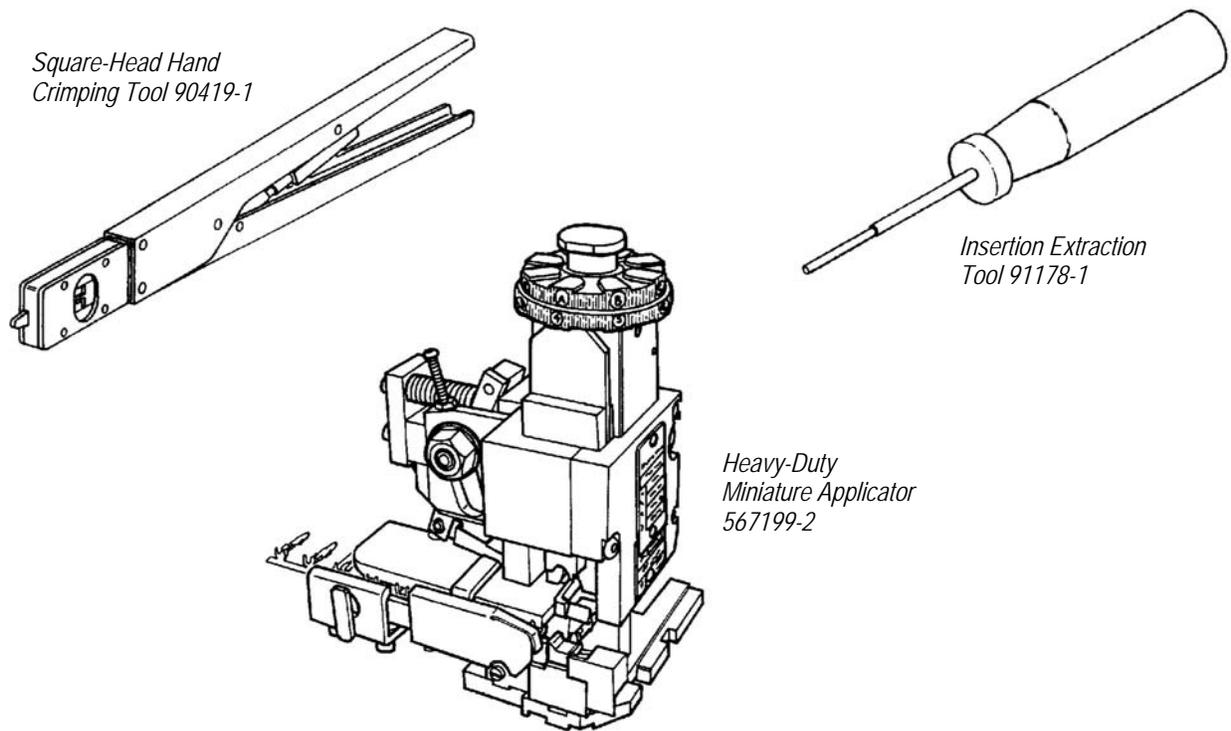
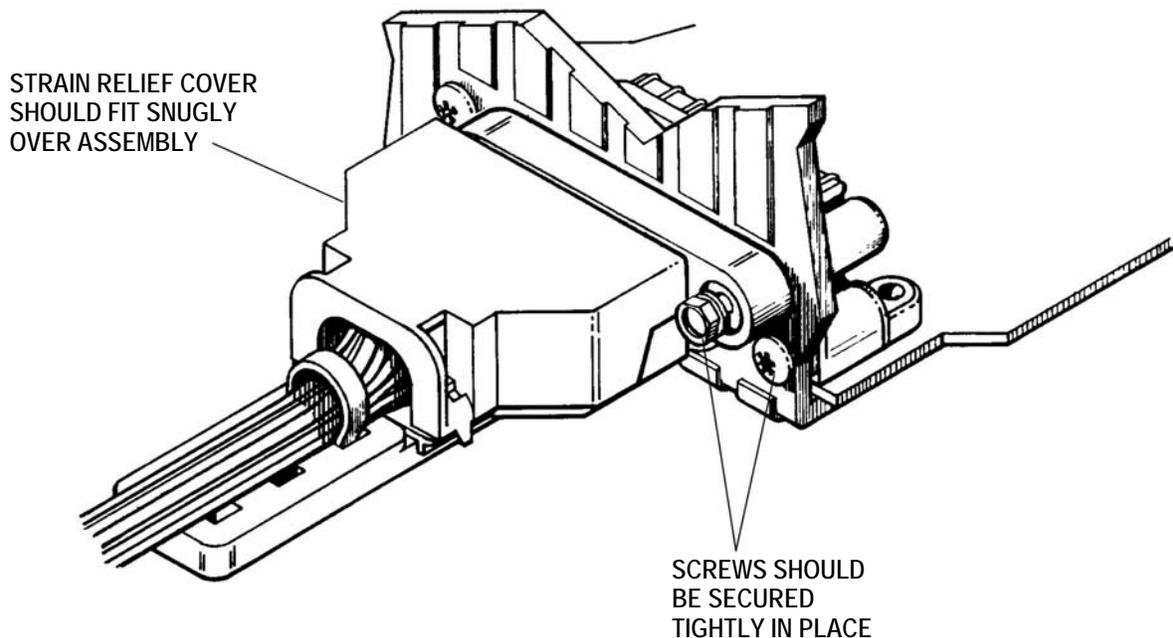
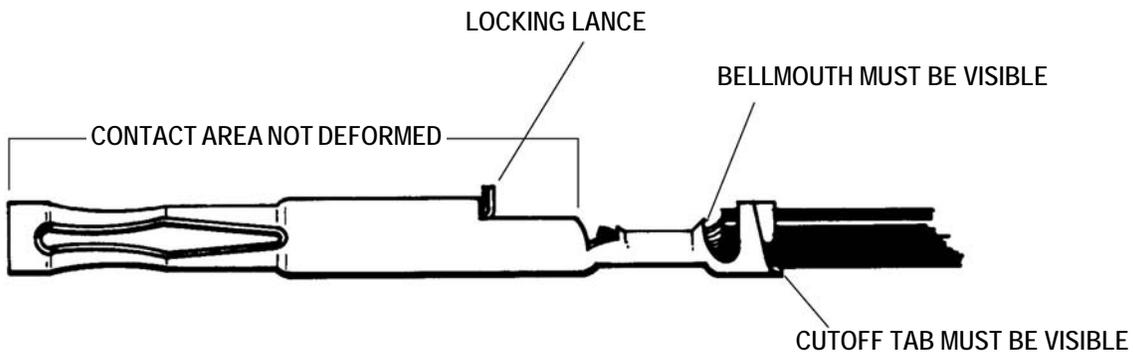
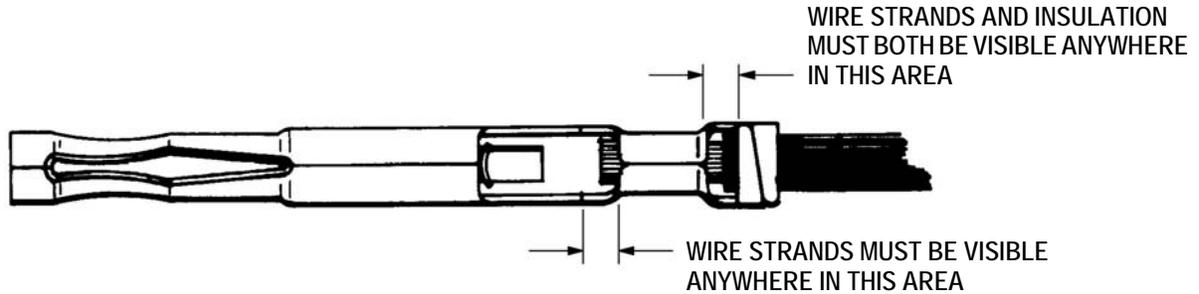


Figure 6

## 6. VISUAL AID

The illustration below shows a typical application of this product. 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 7. VISUAL AID**