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 specification covers the requirements for application of 78–position SDM header assemblies for wire–to–printed circuit (pc) board applications used in the automotive industry. The header assembly is a fully integrated right–angle module containing three rows of ACTION PIN* (compliant pin) contacts (74 contacts and 4 grounding lug contacts) with a centerline spacing of 2.54 mm [.100 in.].

A cover (available separately) is designed to be permanently installed to the top of the header assembly to provide a mechanical connection and environmental seal. The cover features alignment tabs that aid in proper alignment and attachment to the header assembly.

When corresponding with Tyco Electronics 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.

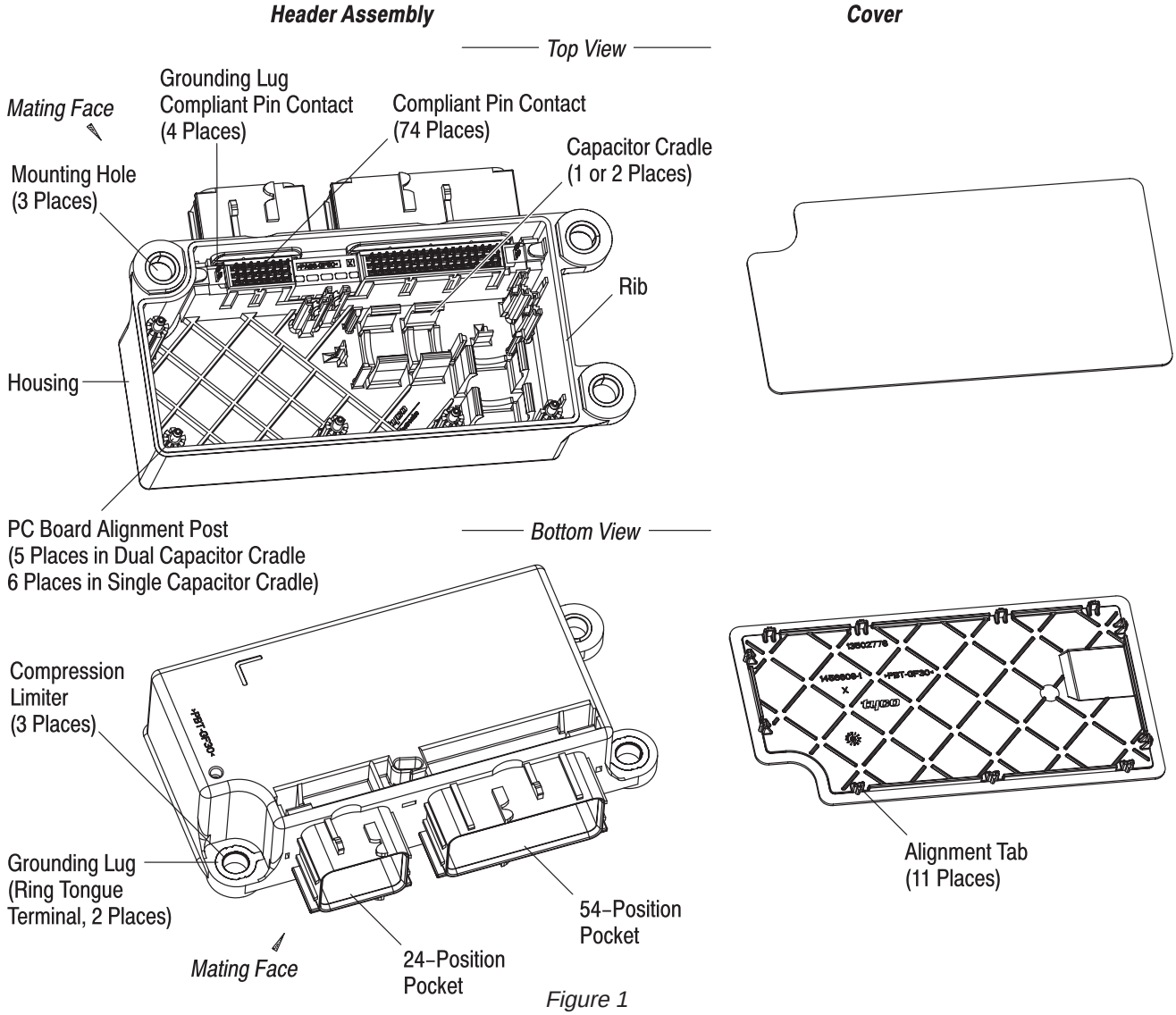


Figure 1

The header assembly features pc board alignment posts for proper placement of the pc board onto the header assembly.

The rib around the circumference of the top of the header assembly aids in the process of attaching the cover. The 3 mounting holes are used to secure the header assembly to the vehicle frame. The header assembly contains grounding lugs for grounding the header assembly to the vehicle frame. The header assembly is available with a dual or single capacitor cradle.

The housing features a 24– and 54–position pocket; each pocket accepts a same–position SDM plug assembly. The pockets contain a keying feature to ensure proper mating of the plug assemblies.

The pc board is installed onto these header assemblies using hand application tooling.

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- Changed information in table in Figure 2
- Added new information to Paragraph 3.4 and added new artwork in Figure 4

2.2. Customer Assistance

Reference Product Base Part Numbers 1456563 and 1456608 and Product Code K938 are representative of 78–position SDM header assemblies. 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 PRODUCT INFORMATION at the number 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, call PRODUCT INFORMATION at the number at the bottom of page 1.

2.4. Related Specifications

Specification YPES–15–711 (available from Yazaki North America, Inc.) provides product description and application requirements for the 0.64 mm contacts used in the mating plug assemblies.

2.5. Instructional Material

Instruction Sheets (408–series) provide product assembly instructions or tool setup and operating procedures. Documents available which pertain to this product are:

408–10126 SDM Connector System

3. REQUIREMENTS

3.1. Safety

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

3.2. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the product material.

B. Shelf Life

The products should remain in the shipping containers until ready for use to prevent deformation to the contacts. The products should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

C. Chemical Exposure

Do not store products near any chemical listed below as they may cause stress corrosion cracking in the contacts.

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

3.3. PC Board

A. Material and Thickness

The recommended pc board material is a glass epoxy that meets the requirements of the National Electrical Manufacturers Association (NEMA) grades G–10, G–11, FR–4, or FR–5.

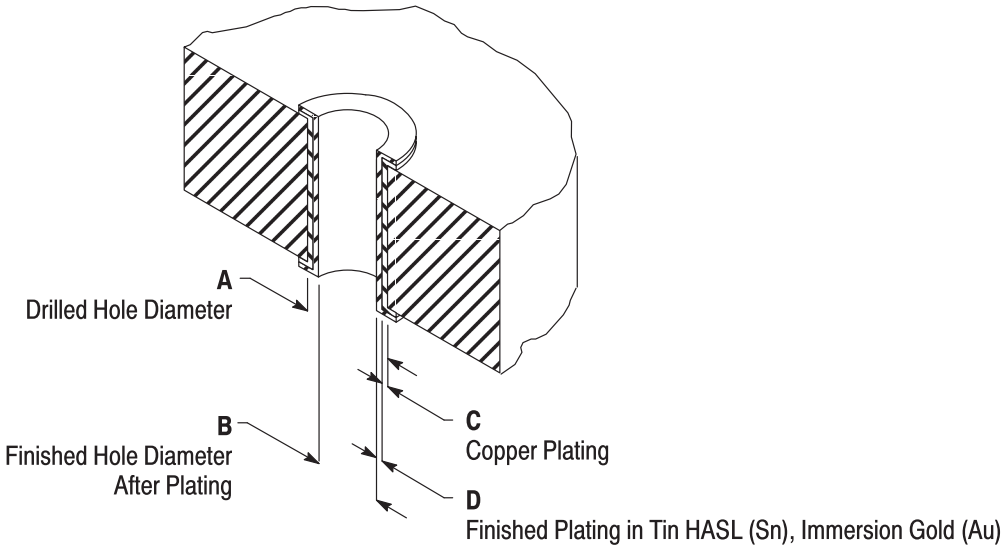
NOTE

For suitability of other board materials, contact PRODUCT INFORMATION at the number listed at the bottom of page 1.

The pc board thickness shall be 1.60 mm [.063 in.].

B. Holes

The pc board holes for the compliant pin contacts (including the ground lug contacts) must be plated through. Plating is not necessary for the holes for the alignment posts. The plating type and thickness and finished hole size must be as stated to provide unrestricted insertion. Refer to Figure 2.



COMPONENT HOLE	DIMENSION				
	A	B	C	D	
Compliant Pin Contacts	1.00±0.025 [.039±.0010]	0.9±0.05 [.035±.002]	0.025–0.050 [.0010–.0020]	Tin (Sn) HASL	0.004 [.0002] Min
				Nickel (Ni) + Immersion Gold (Au)	Ni 0.004–0.005 [.0002] + Au 0.0001 [3x10^{-6}] Min
Ground Lug Compliant Pin Contacts	1.15±0.025 [.045±.0010]	1.00+0.09/–0.06 [.039+.004/–.002]	0.025–0.075 [.0010–.0030]	Tin (Sn) HASL	0.004 [.0002] Min
				Nickel (Ni) + Immersion Gold (Au)	Ni 0.004–0.005 [.0002] + Au 0.0001 [3x10^{-6}] Min

Figure 2

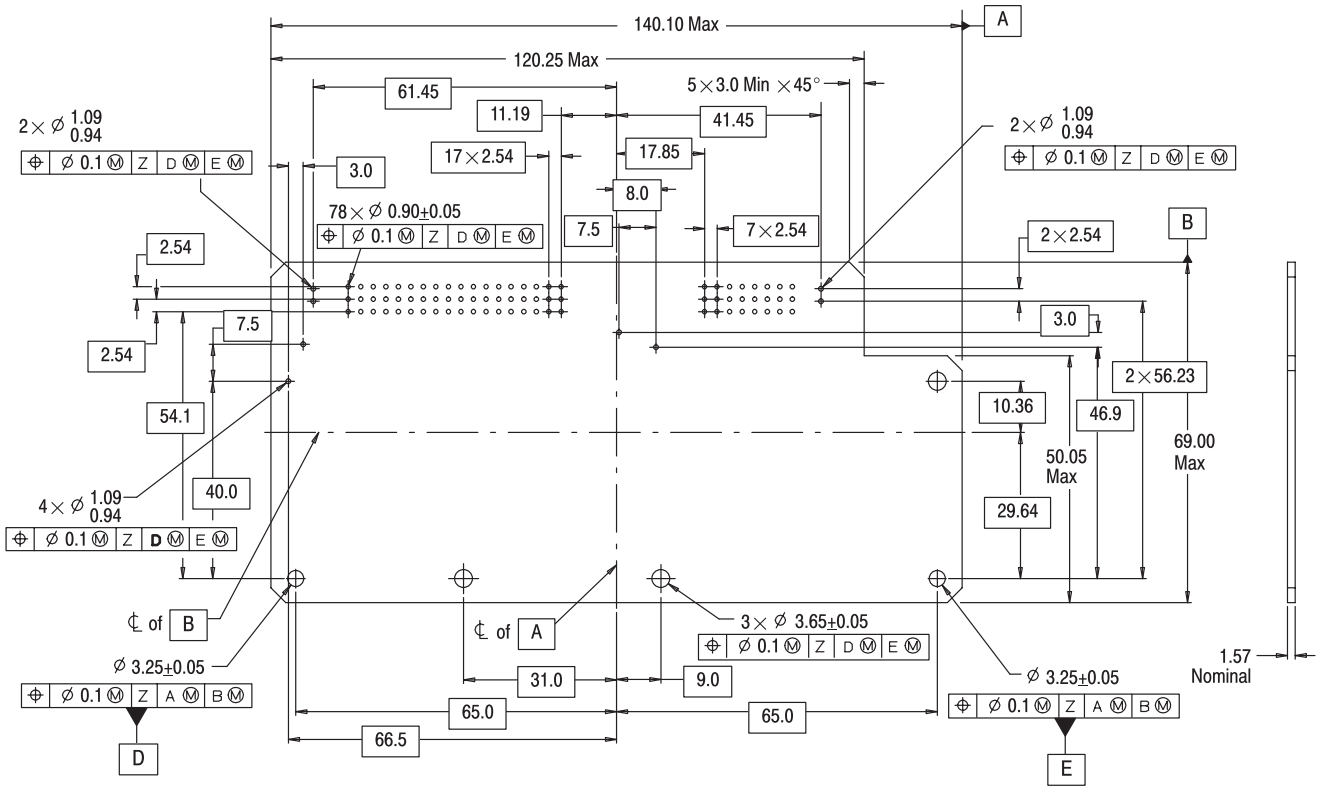
C. Layout

The holes in the pc board must be precisely located to ensure proper placement and optimum performance of the header assembly. The pc board layout must be designed using the dimensions provided on the customer drawing for the specific header assembly. A reference *sample* of the recommended pc board layout is shown in Figure 3.

Sample Recommended PC Board Layout

Note: Dimensions are in millimeters

Dual Capacitor Cradle Header Assembly
(Header Assembly Side Shown)



Single Capacitor Cradle Header Assembly
Same as Dual Capacitor Module Except as Shown
(Header Assembly Side Shown)

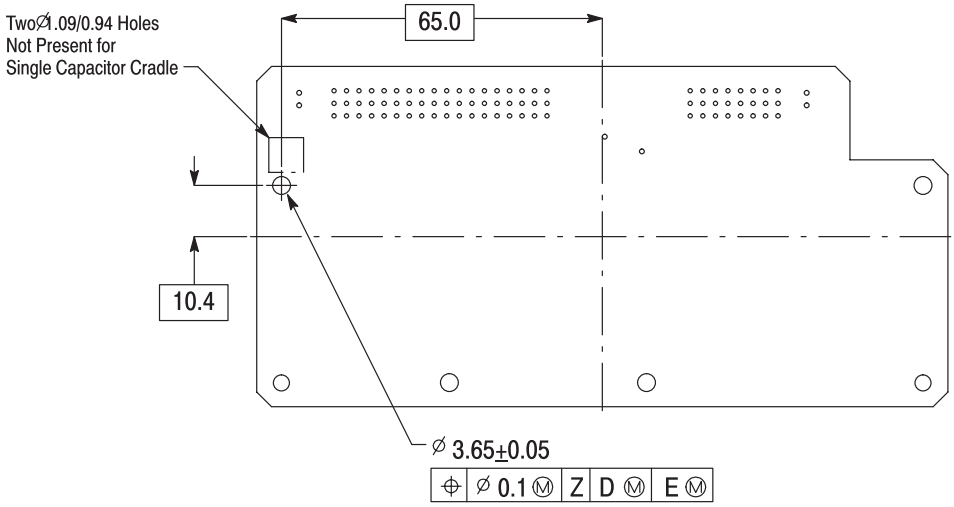


Figure 3

D. Placement

CAUTION

Header assemblies should be handled only by the housing to avoid deformation, contamination, or damage to the contacts.

1. Registration

All pc board holes for the compliant pin contacts (including the ground lug contacts) and alignment posts must align with their matching contacts before seating the pc board onto the header assembly. The application tooling specifically designed to seat the pc board onto these header assemblies ensures proper registration.

2. Seating Force

The force required to seat the pc board onto the header assembly is 40–178 N [9–40 lb–force] per contact (78 contacts and 4 ground lug contacts) which equals a seating force of 3280–14596 N [738–3280 lb–force].

CAUTION

The force applied to seat a pc board onto a header assembly must be applied evenly to prevent deformation or damage to the contacts.

3.4. Checking Installed PC Board

After seating the pc board onto the header assembly, the following requirements must apply. These requirements must be ensured *before* installing the cover.

— All alignment posts are completely through their pc board hole.

— All compliant pin contacts are through their pc board hole to the dimension given in Figure 4.

— Maximum gap between the lower pc board surface and the datum surface on the header assembly is 0.1 mm [.004 in.] as shown in Figure 4, Detail C. The pc board should not be pressed beyond the datum surface.

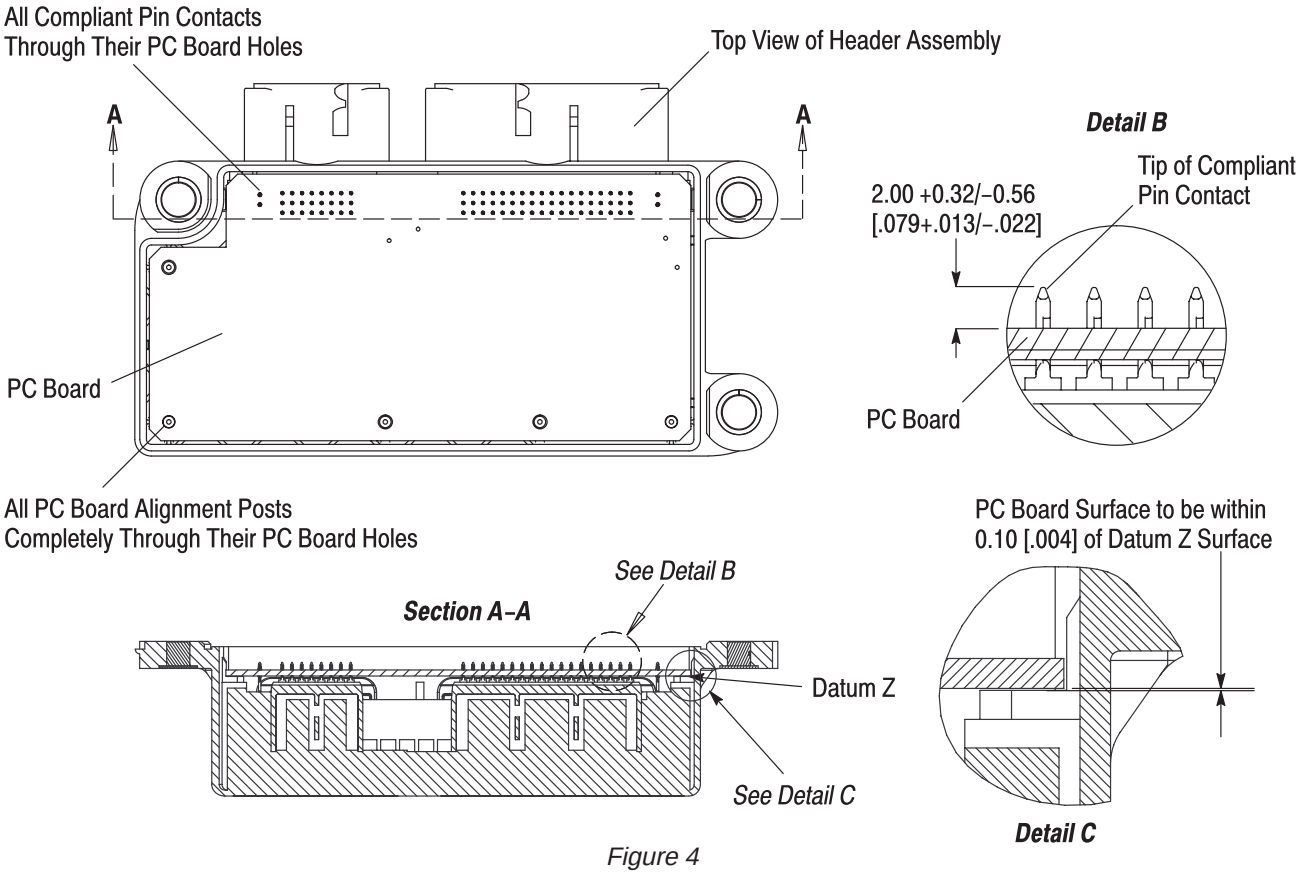


Figure 4

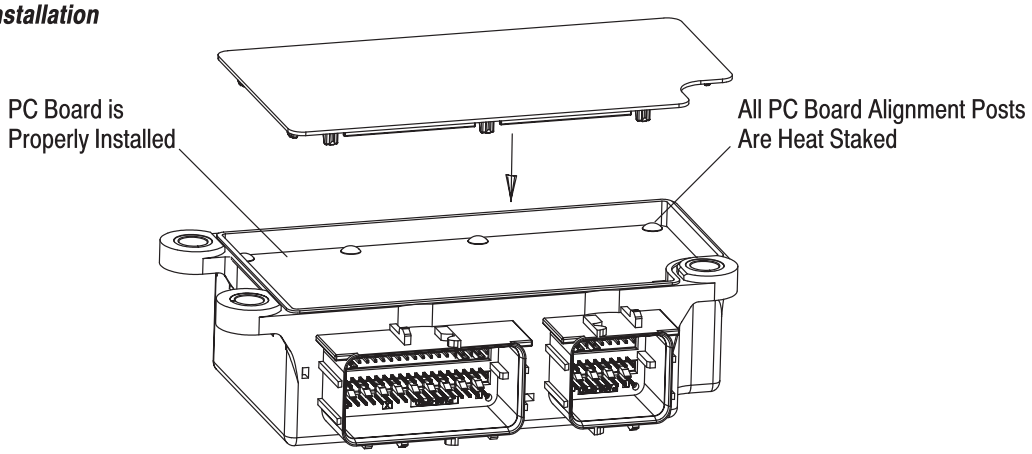
3.5. Installing the Cover

The cover can be installed onto the header assembly after proper pc board installation is verified. Before placing the cover onto the top of the header assembly, all pc board alignment posts must be heat staked to form a mushroom cap. Refer to Figure 5, Detail A.

When placing the cover onto the header assembly, make sure that the edge of the cover does not protrude onto the mounting holes.

After the cover is properly placed onto the header assembly, the cover must be laser welded so that the cover is permanently attached to the header assembly. To ensure that the cover is properly installed, verify the requirements given in Figure 5, Detail B.

Detail A — Before Installation



Detail B — After Installation

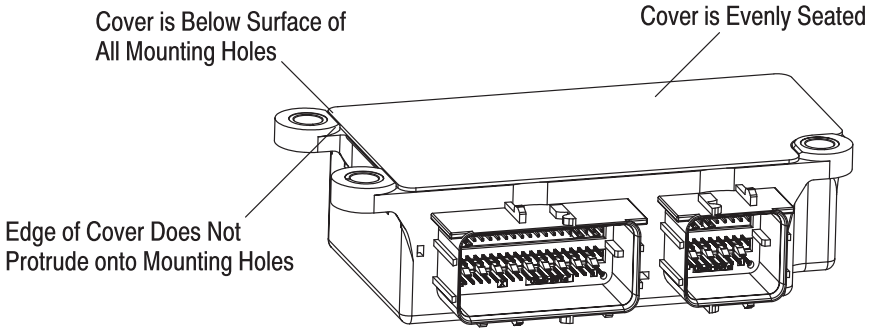


Figure 5

3.6. Mounting the Header Assembly

The header assembly must be compatible with the vehicle frame. The mounting holes of the header assembly are designed to fit over the M6 bolts of the vehicle sheet metal supports. The header assembly must be secured to the vehicle frame using a customer–supplied flanged self–locking nut installed onto each bolt. Each nut must be tightened to a torque of 9.0 $\pm$3.0 N–m [80 $\pm$27 in.–lb].

3.7. Repair

The header assembly and cover are not repairable. Damaged or defective product MUST NOT be used.

4. QUALIFICATION

78–position SDM header assemblies does not require agency approval.

5. TOOLING

Application tooling required to seat the pc board onto the header assembly includes a movable seating tool and fixed tooling base. The fixed tooling base includes pc board support to provide proper support for the header assembly. A power unit is also required. For specific design recommendations, call PRODUCT INFORMATION at the number at the bottom of page 1. Refer to Figure 6 for tooling setup.

No special tooling is required to install the cover onto the header assembly.

Tooling Setup

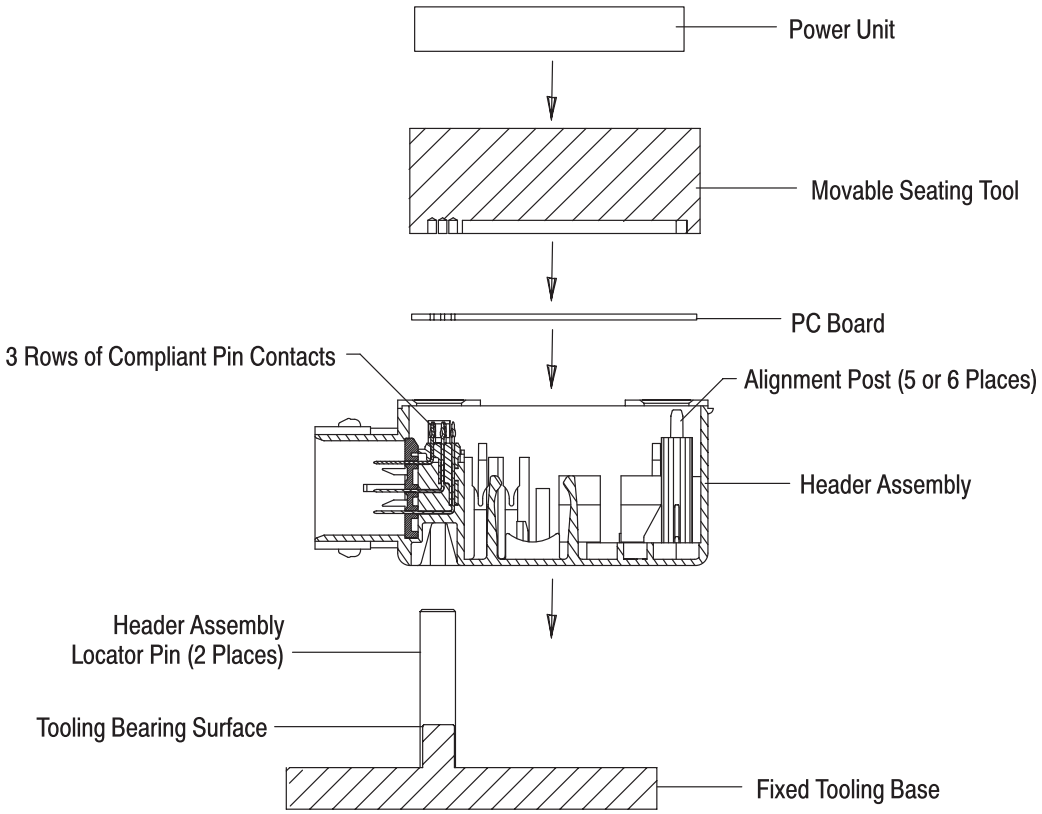


Figure 6

5.1. Application Tooling

Design recommendations for the application tooling is provided in Figure 7.

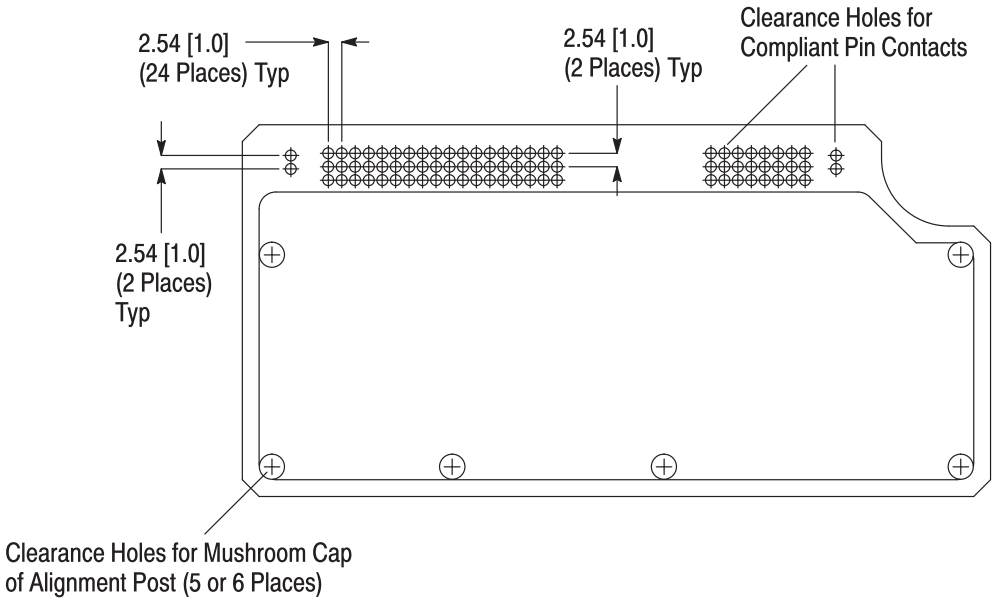
5.2. Power Unit

Power for the seating tool must be provided by a unit capable of supplying a downward force of 178 N [40 lb–force] per contact.

Application Tooling Design Recommendation

Note: Not to Scale

Movable Seating Tool



Fixed Tooling Base

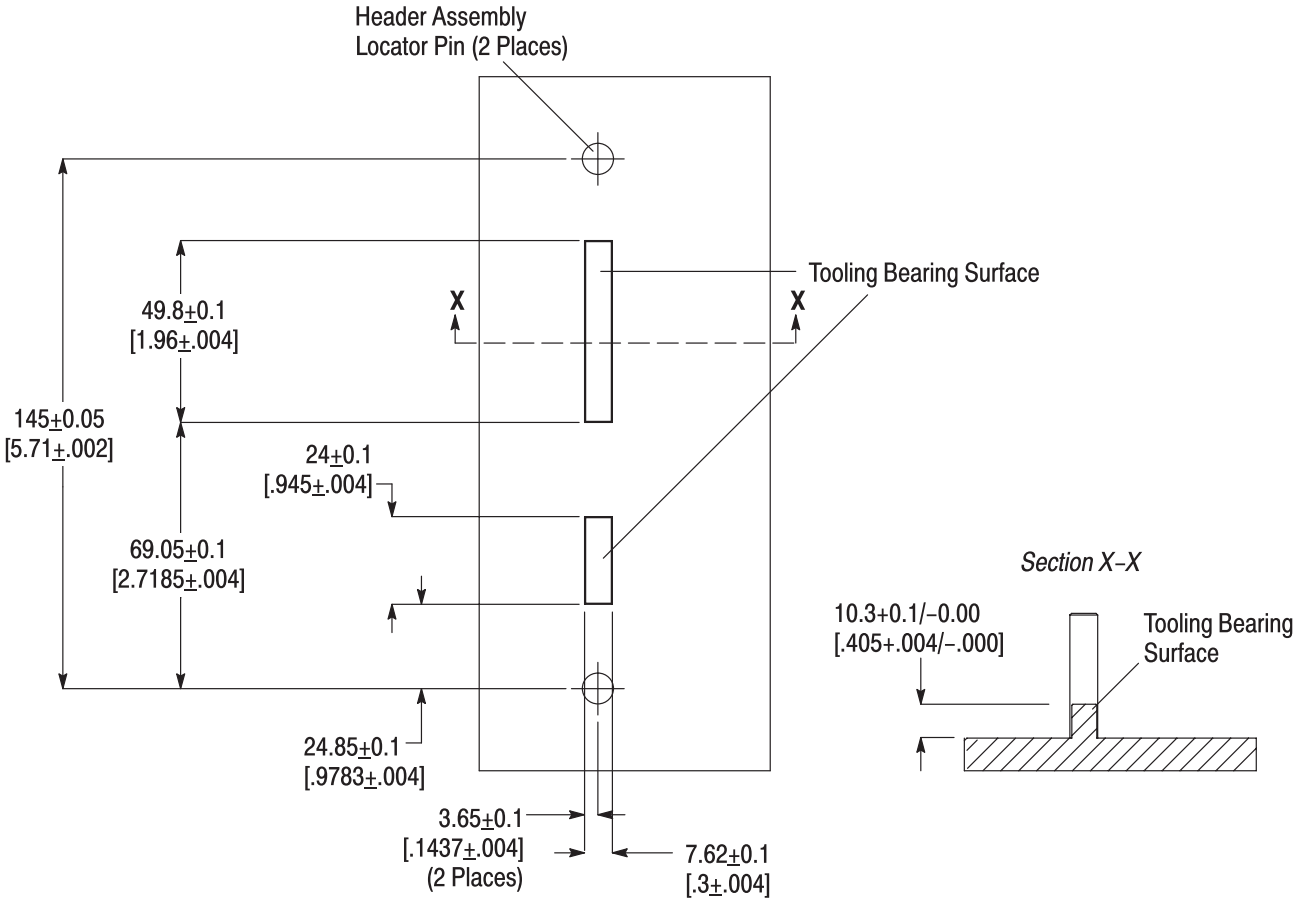


Figure 7

6. VISUAL AID

Figure 8 shows a typical application of 78–position SDM header assemblies. 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.

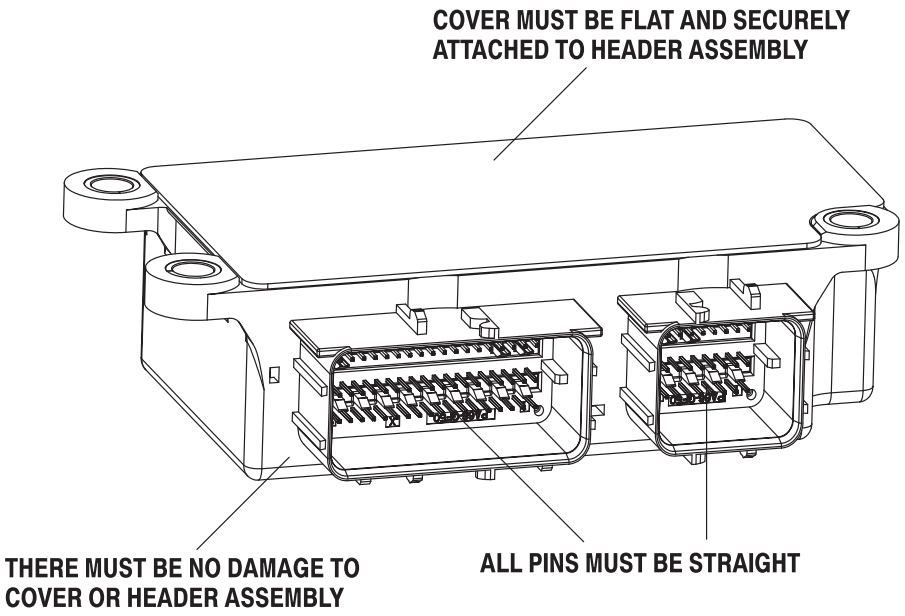


FIGURE 8. VISUAL AID