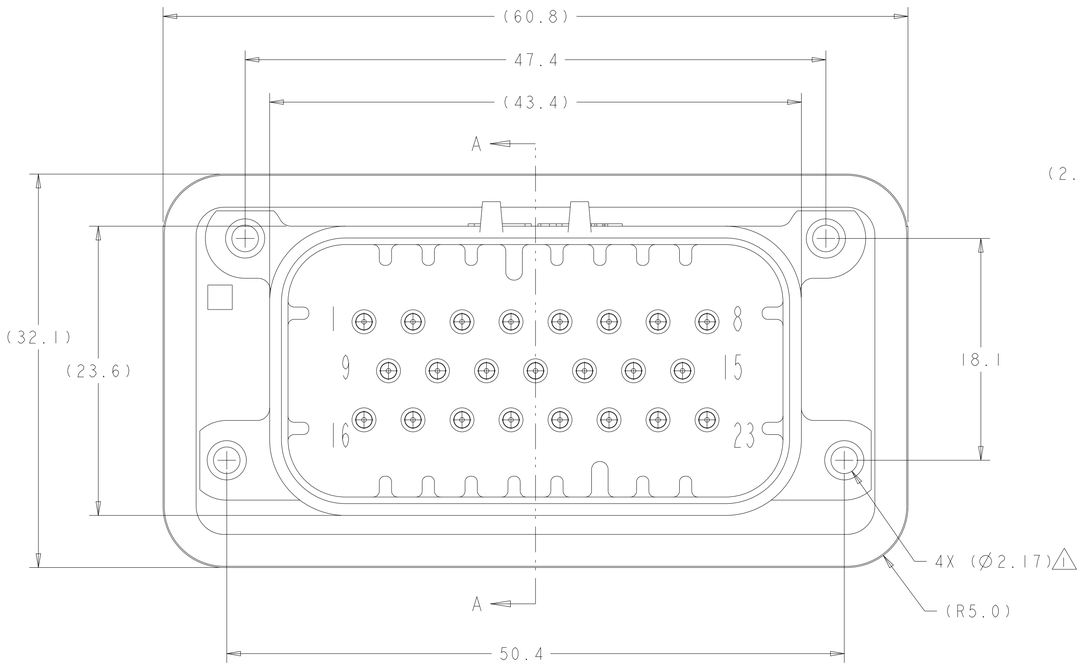
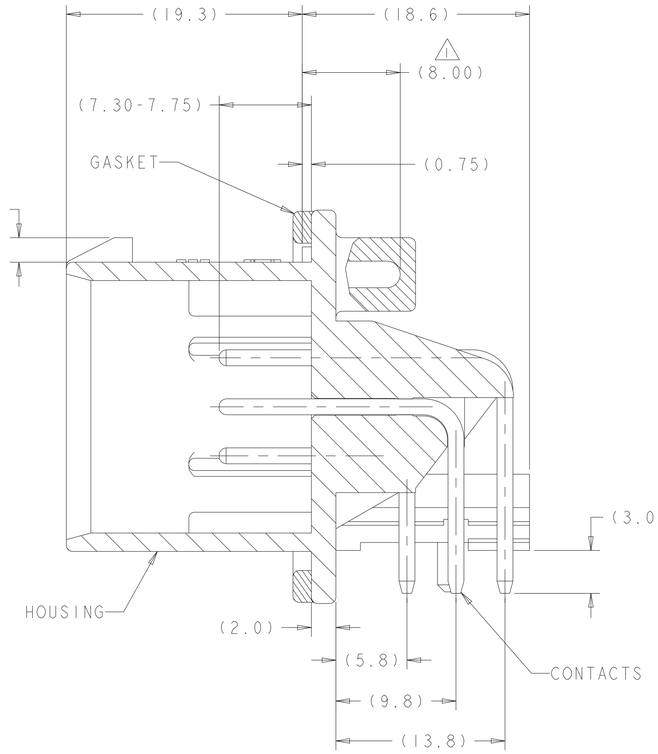
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REVISIONS					
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	E13	REVISED PER ECO-20-004256	26MAR2020	JM	DS
	E14	REVISED PER PCN E-20-016603	24NOV2020	PN	DS
	F	REVISED PER ECN-21-123056	08NOV2021	DK	CB





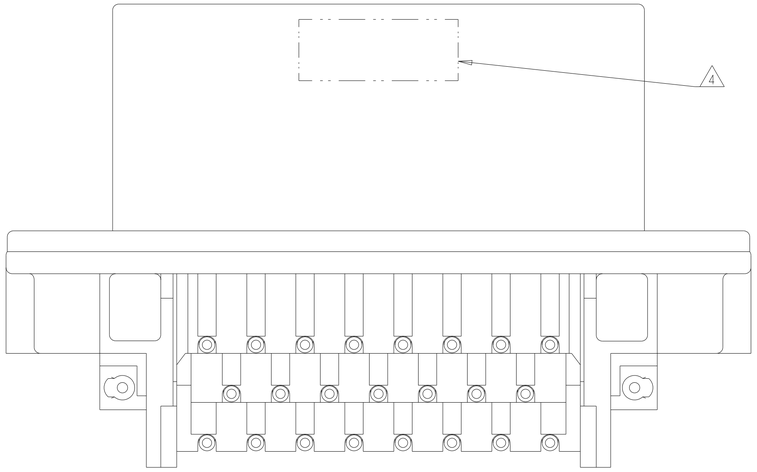
1 SUGGESTED MOUNTING SCREW SIZE IS Ø2.50-3.00mm [Ø0.099 - 0.118 INCH] SELF TAPPING THREAD FORMING SCREW, SUCH AS DELTA PT, TO BE DRIVEN AT 0.6-0.8 N-m THE CUSTOMER SHOULD TEST THE SCREW SIZE AND TYPE IN ORDER TO VERIFY THEIR SELECTION FOR THEIR APPLICATION

2 HOUSING COLORS ARE MECHANICALLY KEYED TO MATE ONLY WITH IDENTICALLY COLORED PLUG ASSEMBLIES.

3 MATERIALS: HEADER HOUSING - GLASS FILEED PBT
PINS - TIN OR GOLD PLATED BRASS
GASKET - SILCONE

4 DATE CODE IN THIS LOCATION USING 5 DIGIT CODE
FIRST 2 DIGITS = YEAR, SECOND 2 DIGITS = WEEK
LAST DIGIT = DAY

5. HEADER MATES TO PLUG ASSEMBLY 770680 WHICH USES REELED TERMINAL 770520 AND LOOSE PIECE TERMINAL 770854

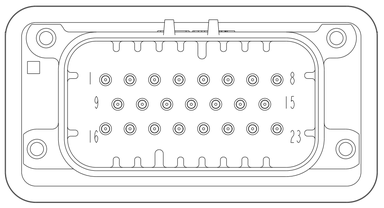


SECTION A-A

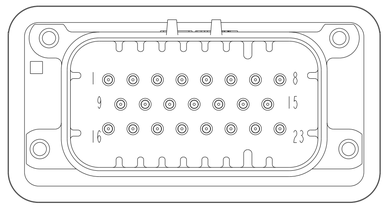
勝特力電材超市-龍山店 886-3-5773766
勝特力電材超市-光復店 886-3-5729570
胜特力电子(上海) 86-21-34970699
胜特力电子(深圳) 86-755-83298787
http://www.100y.com.tw

776087-1 & 1-776087-1
KEY LOCATION AS SHOWN

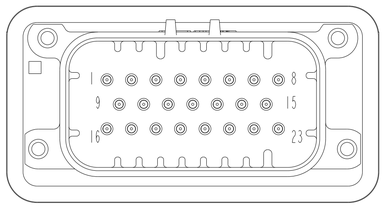
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GOLD	GRAY	1-776087-4
GOLD	NATURAL (WHITE)	1-776087-2
GOLD	BLACK	1-776087-1
TIN	BLUE	776087-5
TIN	GRAY	776087-4
TIN	NATURAL (WHITE)	776087-2
TIN	BLACK	776087-1
FINISH	COLOR 2	PART NUMBER



776087-2 & 1-776087-2
KEY LOCATION AS SHOWN
SCALE 2:1



776087-4 & 1-776087-4
KEY LOCATION AS SHOWN
SCALE 2:1



776087-5 & 1-776087-5
KEY LOCATION AS SHOWN
SCALE 2:1

THIS DRAWING IS A CONTROLLED DOCUMENT.

DIMENSIONS: mm

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC ±
1 PLC ±0.2
2 PLC ±
3 PLC ±
4 PLC ±
ANGLES ±

MATERIAL - 3

FINISH - 3

DWN R. VESTAL 31DEC2002
CHK D. CROWE 31DEC2002
APVD D. CROWE 31DEC2002
PRODUCT SPEC 108-1329
APPLICATION SPEC 114-16016
WEIGHT 29.04g

TE Connectivity

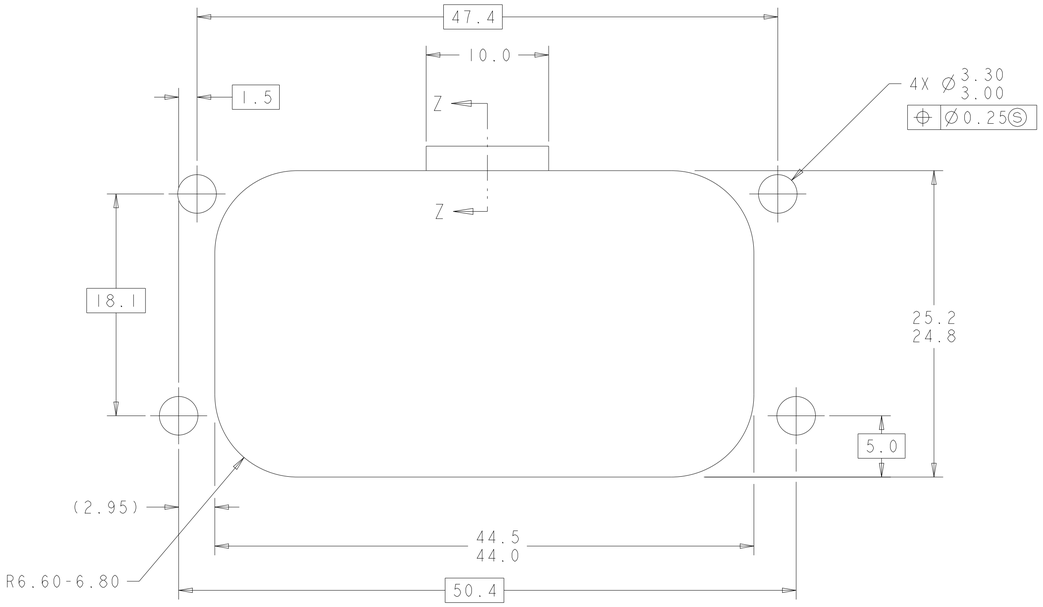
NAME HEADER ASSEMBLY, 23 POSITION, RIGHT ANGLE, AMPSEAL

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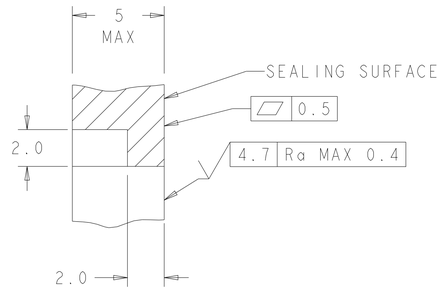
CUSTOMER DRAWING | SCALE 4:1 | SHEET 1 OF 2 | REV F

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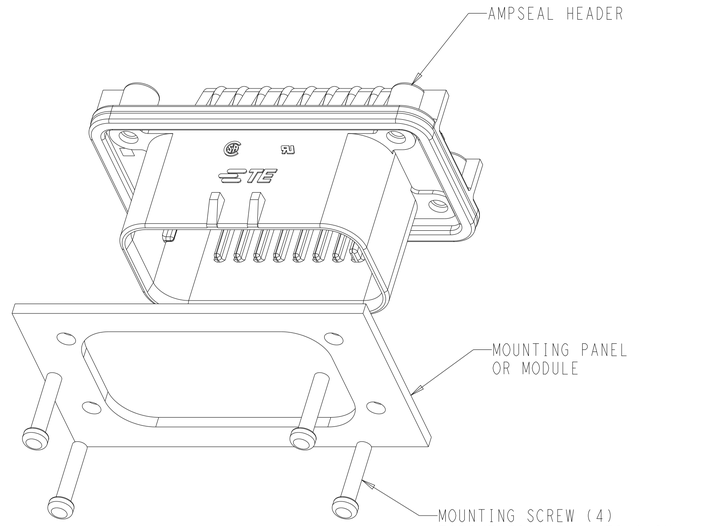
REVISIONS					
P	LTR	DESCRIPTION	DATE	DWN	APVD
	-	SEE SHEET 1	-	-	-



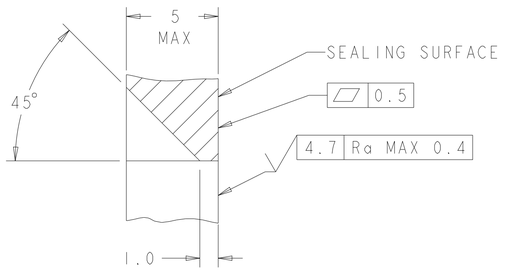
RECOMMENDED MOUNTING HOLE LAYOUT
FOR 5.0 MAX THICK PANEL



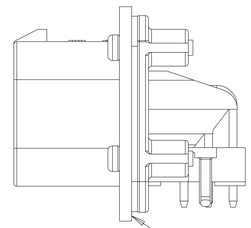
SECTION Z-Z
OPTIONAL CONSTRUCTION IF
THICKNESS IS GREATER THAN 2.0
SCALE 6:1



SCALE 2:1

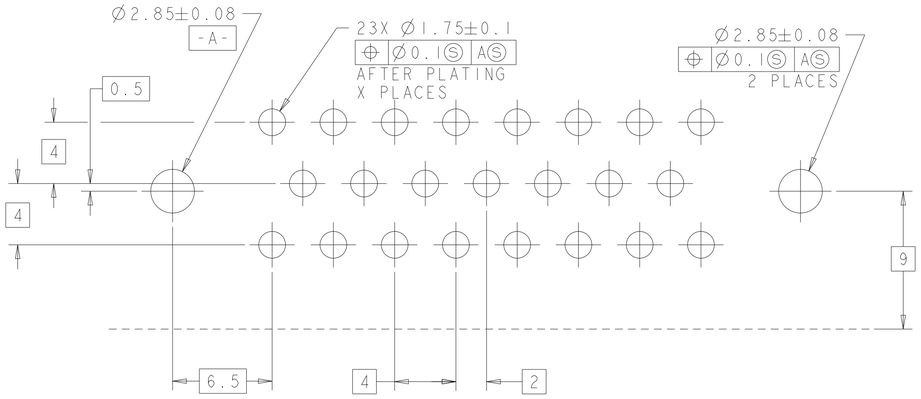


SECTION Z-Z
OPTIONAL CONSTRUCTION IF
THICKNESS IS GREATER THAN 2.0
SCALE 6:1



SCALE 2:1

ENSURE THE HEADER IS FLUSH
TO THE PANEL FACE ALL AROUND
BEFORE TIGHTENING TO FINAL TORQUE



RECOMMENDED P.C. BOARD LAYOUT
FOR 1.57 THICK P.C.BOARD

THIS DRAWING IS A CONTROLLED DOCUMENT.

DIMENSIONS: mm

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC ±
1 PLC ±0.2
2 PLC ±0.13
3 PLC ±
4 PLC ±
ANGLES ±

MATERIAL -
FINISH -

DWN R. VESTAL 31DEC2002
CHK D. CROWE 31DEC2002
APVD D. CROWE 31DEC2002
PRODUCT SPEC 108-1329
APPLICATION SPEC 114-16016
WEIGHT 29.04g

TE Connectivity

NAME HEADER ASSEMBLY, 23 POSITION, RIGHT ANGLE, AMPSEAL

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A1	00779	C-776087	-

CUSTOMER DRAWING | SCALE 2:1 | SHEET 2 OF 2 | REV F

AMPSEAL* Automotive
Plug Connector and Header Assembly
Standard Wire Size (SWS) 20-18-16AWG
Reduced Wire Size (RWS) 20-22-24AWG

Application Specification
114-16016
21 SEP 22 Rev R1

NOTE

All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of ±0.13 mm 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 the AMPSEAL automotive plug connector and header assembly. The plug will accept multiple socket contacts. All plugs and headers are color coded as a positive mating feature.

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

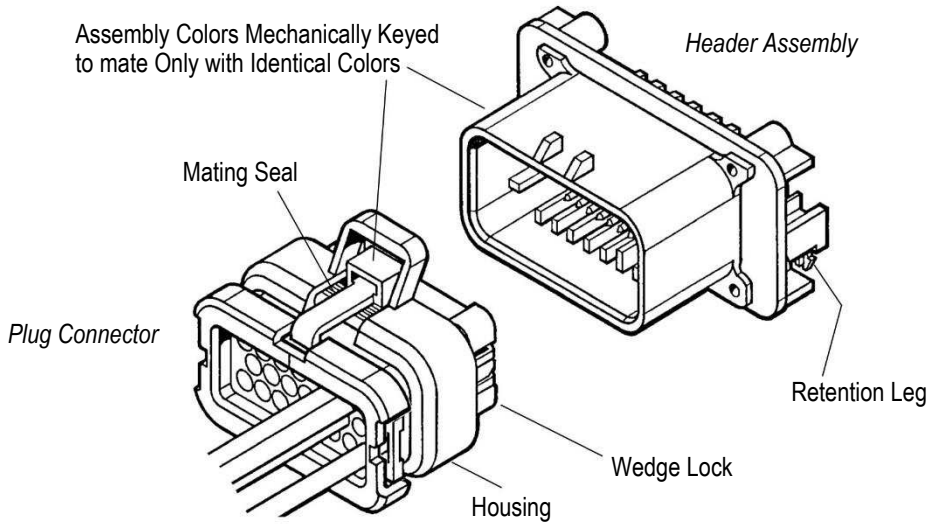


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated Panel Cutout Dimension “C” for 35P header

2.2. Customer Assistance

Reference Product Base Part Number 770520 and Product Code J561 are representative numbers that identify the AMPSEAL automotive plug connector and header assembly. 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, or by calling PRODUCT INFORMATION

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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

This product meets the requirements outlined in the applicable EIA-364 standards

2.5. Instructional Material

The following instruction sheets (408-series) are supporting documents available to assist with product assembly and tool setup and operation.

Document	Document Title
408-3229	AMPSEAL Automotive Plug Assemblies 776268-[ ], 776273-[ ], 770680-[ ], and 776164-[ ]
408-9592	Hand Crimping Tool 58440-1
408-9999	PRO-CRIMPER* III Hand Tool Assembly 58529-1 with Die Assembly 58529-2
408-8040	Heavy Duty Miniature Quick-Change Applicators with Mechanical Feed System

3. REQUIREMENTS

3.1. Safety

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

3.2. Storage

A. Shelf Life

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

B. Chemical Exposure

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

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

3.3. Wire

A. Wire Selection

A.1. Standard Wire Size

The contact will accept wire ranging in size from 20 to 16 AWG and 1.5 mm^2. Wire insulation diameter shall be a minimum dimension of 1.7 mm and a maximum dimension of 2.7 mm.

A.2. Reduced Wire Size

The contact will accept wire ranging in size from 24 to 20 AWG. Wire insulation diameter shall be a minimum dimension of 1.4 mm and a maximum dimension of 1.8 mm.

3.4. Crimped Contact

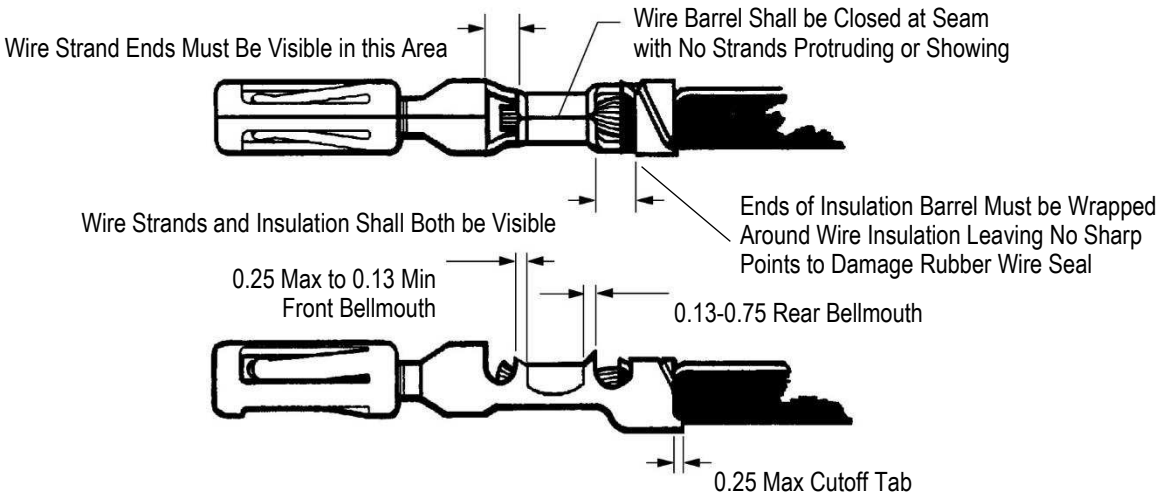
A. Crimping

The contacts shall be crimped in accordance with the material packaged with the tooling; refer to the charts in Figure 2.

CAUTION
Contacts are available in loose piece form for hand tool crimping. ***Do not*** *cut strip form (reeled) contacts into loose piece form. This will produce burrs on the cutoff tab which will damage the wire seal in the plug.*

B. Inspection

Inspect crimped contacts for conditions shown in Figure 2.



TERMINAL	WIRE				WIRE BARREL		INSULATION BARREL	
PART NUMBER	SIZE		INSULATION DIA RANGE	STRIP LENGTH ±0.4	CRIMP HEIGHT	CRIMP WIDTH (NOMIAL)	CRIMP HEIGHT (MAX)	CRIMP WIDTH ±0.1
	mm^2	AWG						
770520-1 AND 770520-3	0.5	20	1.7-2.7	5.1	1.17±0.05	2.03	3.2	3.1
	0.8	18			1.27±0.05			
	1.0 FLRY	---			1.28±0.05			
	1.5	16			1.40±0.05			
	1.5 FLRY	---	2.2-2.4		1.40±0.05			

Figure 2a. Standard Wire Size

TERMINAL	WIRE			CONDUCTOR CRIMP		INSULATION CRIMP	
PART NO	SIZE AWG	INSULATION DIA RANGE	STRIP LENGTH ±0.4	CRIMP HEIGHT	CRIMP WIDTH	CRIMP HEIGHT	CRIMP WIDTH
770520-5	20	1.4 – 1.8	4.3	0.99±0.03	1.78 +0.2	2.3±0.1	2.3 +0.3
770520-8	22			0.94±0.03		2.0±0.1	
770520-6	22		4.0	0.93±0.03	1.57 +0.15	2.1±0.1	2.3 +0.2
1-770520-1	24			0.91±0.03		1.8±0.1	

Figure 3b Reduced Wire Size

CAUTION

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

NOTE

Wire stripping tool jaws may leave corrugated indentations on the surface of the wire insulation. This is especially severe with cross-linked polyethylene (high temperature) insulation. If these indentations occur at the location of the wire seal, leakage may result. Insulation surface within 26 mm from the tip of the contact must be smooth and free of residual indentations.

CAUTION

It is important in any application that the far end of the cable be sealed or otherwise isolated from the environment and that the insulation is not cut or damaged.

CAUTION

Care shall be taken to ensure that the wire insulation is not cut or broken during the crimping operation and to ensure that the insulation is not crimped into the wire barrel.

C. Further Processing

Care must be taken when transporting, storing, or further processing the crimped contacts and wires that any damage or soiling of the contact body or crimped area is avoided. When processing the end of the wire or anywhere along the wire, damage or impairment of the crimped contact must be avoided.

For a twisting operation after crimping or mounting a contact to its housing, the twist must end at least 35 mm away from the contact. Additional care must be taken during or after the twisting operation to avoid any pulling force to the contact or crimped area that may affect the function of the connector.

TE has not tested, nor otherwise verified, contact performance after processing of the connected wire by ultrasonic welding. TE does not make any representation or warranty, expressed or implied, and disclaims any and all liability, on any legal basis whatsoever, for contact performance after ultrasonic welding of the connected wire. Customer takes sole responsibility for the evaluation, application, and use of contacts in such circumstances.

3.5. Plug Connector

A. Assembly

Before starting assembly, the wedge lock must be in the **open**, or as-shipped, position. Refer to Figure 3.

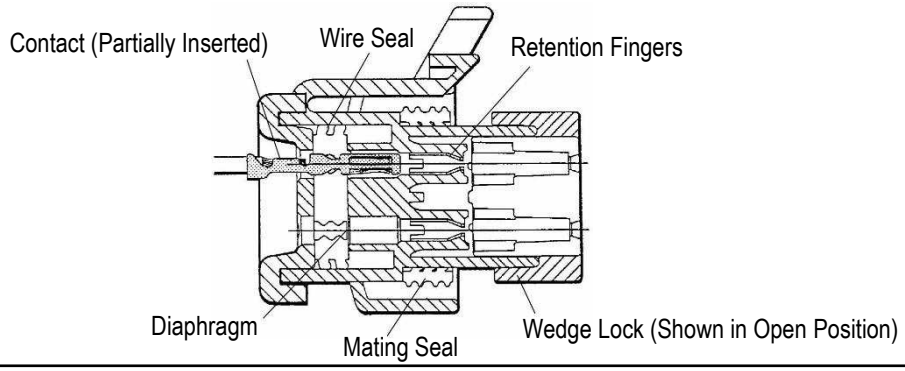


Figure 4

The plug must be assembled as follows:

1. To insert a contact, push it straight into the appropriate circuit cavity as far as it will go (see Figure 4).

2. Pull back on the contact wire with a force of 4.45 or 8.9 N [1 or 2 lb-force] to be sure the retention fingers are holding the contact (see Figure 4).

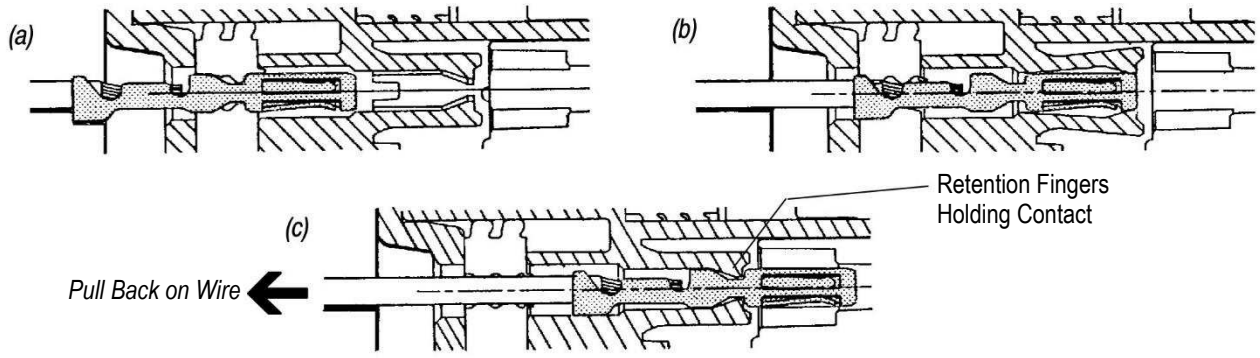


Figure 5

3. After all required contacts have been inserted, the wedge lock must be closed to its locked position. Release the locking latches by squeezing them inward (see Figure 5).

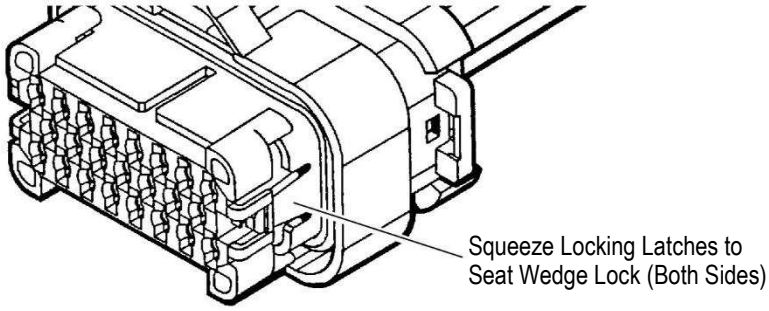


Figure 6

4. Slide the wedge lock into the housing until it is flush with the housing (see Figure 6).

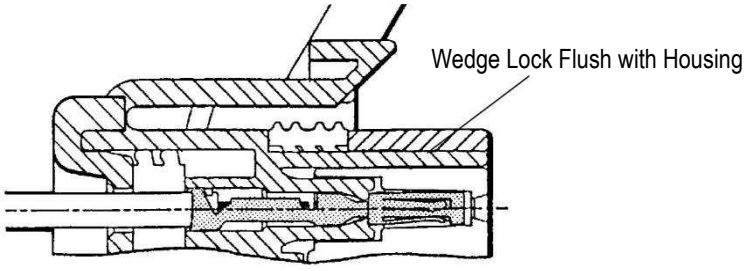


Figure 7

B. Disassembly

The plug must be disassembled (contacts removed) as follows (refer to Figure 7):

1. Insert a 4.8-mm wide screwdriver blade between the mating seal and one of the red wedge lock tabs.
2. Pry open the wedge lock to the open (as shipped) position.
3. While rotating the wire back and forth over a half turn (one-quarter turn in each direction), gently pull the wire until the contact is removed.

NOTE
The wedge lock should never be removed from the housing for insertion or removal of the contacts.

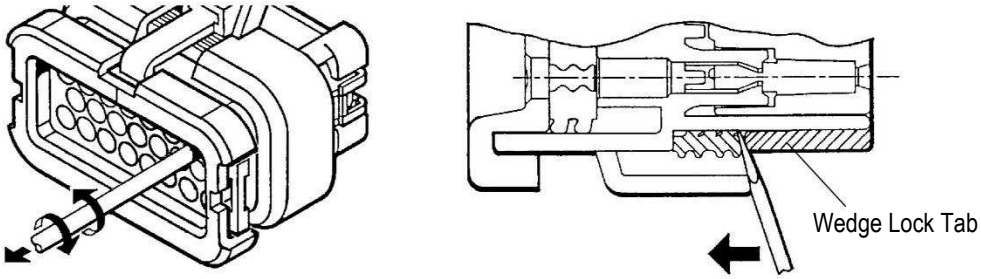


Figure 8

C. Seal Plug

All circuits are sealed by a diaphragm in the rubber wire seal. During plug assembly, the diaphragm is pierced as the contact passes through it. Unused circuit cavities, unless accidentally perforated, will remain sealed.

Standard Wire Size - Seal plug is 770678-1 is designed to keep out contaminants if diaphragm is pierced. Insert seal plug, **large end first**, into the circuit cavity as far as it will go. An insertion tool is not required for this procedure, See Figure 8a.

Reduced Wire Size – AMPSEAL 16 Size 20 seal plug 776364-1 is designed to keep out contaminants if diaphragm is pierced. Insert seal plug into the circuit cavity as far as it will go. An insertion tool is not required for this procedure. See Figure 8b

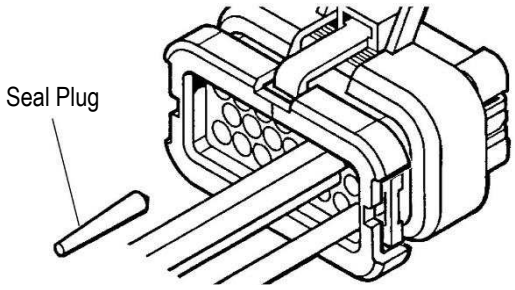


Figure 9a

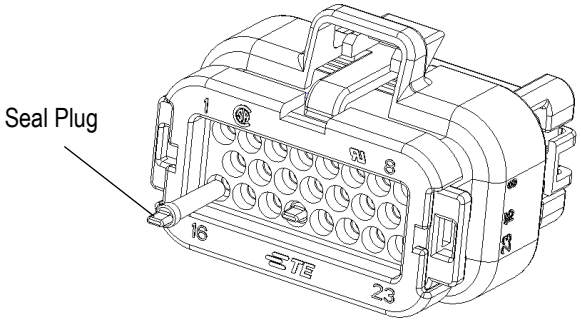


Figure 8b

D. Connector Position Assurance (CPA)

1. Assembly

To ensure the proper assembly, and prevent accidental disengagement of the connector halves, an optional CPA can be used. Before mating connector halves, assemble the CPA into the plug using a rotating motion shown in Figure 9. The CPA is in the pre-staged position when both side latches are engaged on the overstress feature of the plug.

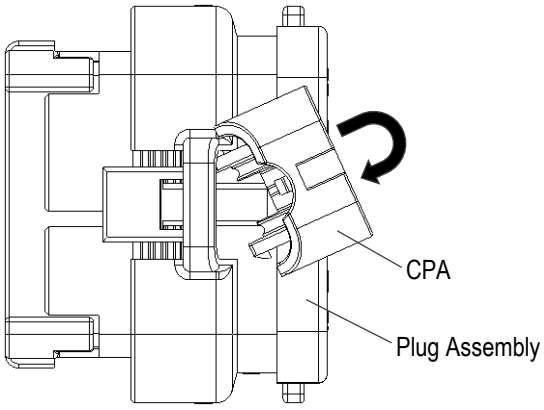


Figure 9

Once the connector halves are mated, fully engage the CPA by applying a small downward force on the top surface and sliding it forward. The CPA is in the fully engaged position when an audible click is heard and the center locking latch is fully visible on the front side of the overstress feature as seen in Figure 10.

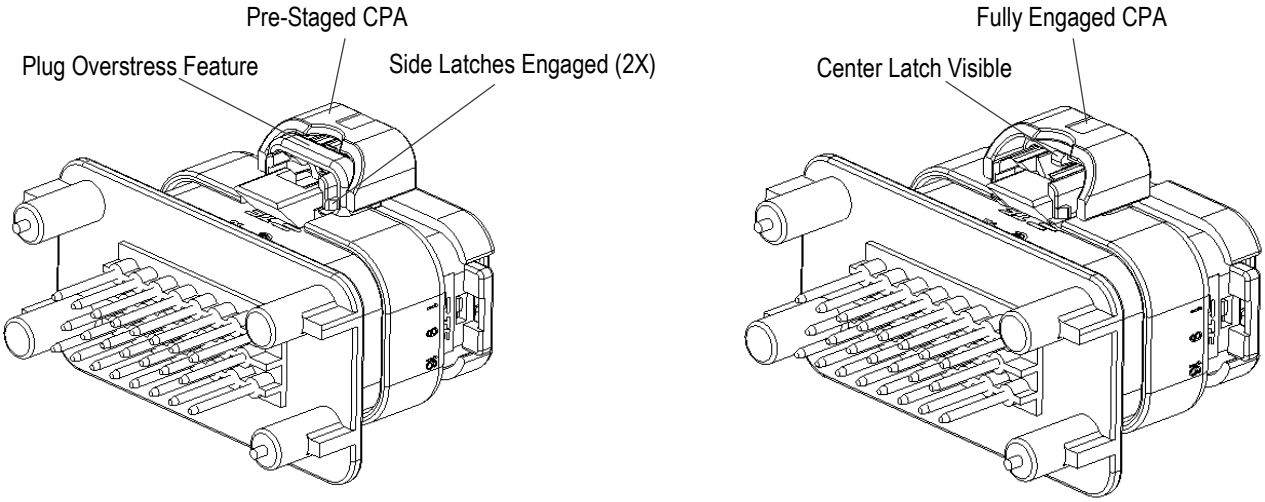


Figure 10

2. Disassembly

Before disassembling the connector halves, the CPA must be slid back into the pre-staged position. The connector halves can then be separated using the screwdriver slot shown in Figure 17.

E. Strain Relief/Backshell

1. Assembly

A backshell assembly can be used to assist in cable management and act as a cable strain relief. After contacts and cables are installed into the plug housing, assemble the strain relief by sliding one half of the backshell around the cable exit side of the plug assembly. Mount the second half in a similar manner until the locking latches and engagement studs are fully mated. Ensure that both latches are locked into place before completing assembly. The use of a wire tie on the cable exit end of the backshell is recommended to aid in securing the two halves together.

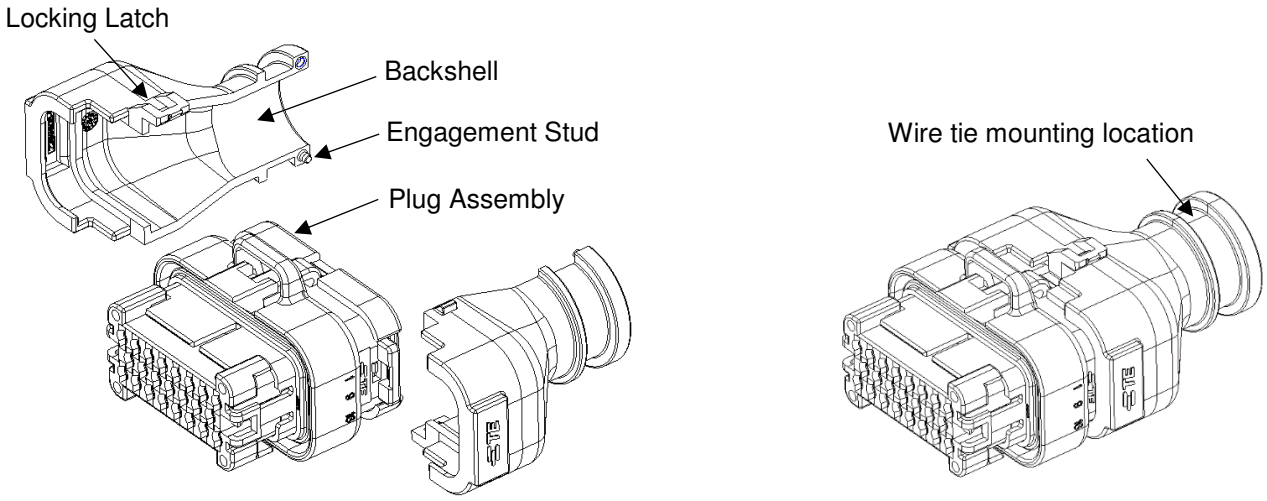


Figure 11

F. Circuit Testing

The wedge lock has slotted openings in the forward, mating end. These slots accommodate circuit test tabs that are approximately 3.3 x 0.6 mm, which prevent damage to the header. For circuit testing in the field, use a flat probe such as a pocket knife blade. Do not use a sharp point such as an ice pick.

G. Application

Refer to Figure 12 for the opening size that will clear a completed plug assembly.

CONTACT ASSEMBLY	OPENING SIZE
35 Position	Ø66 mm
23 Position	Ø50 mm
14 Position	Ø44 mm
8 Position	Ø40 mm

Figure 12

H. Service Voltage Reading

CAUTION
*Do **not** pierce wire insulation to take voltage readings.*

It has been common practice in electrical troubleshooting to probe wires by piercing the insulation with a sharp point. This practice should be discouraged when dealing with the AMPSEAL plug or any other sealed connector system. The resulting pinholes in the insulation will allow moisture to invade the system by traveling along the wire strands. This nullifies the effectiveness of the connector seals and could result in system failure.

3.6. Header Assembly

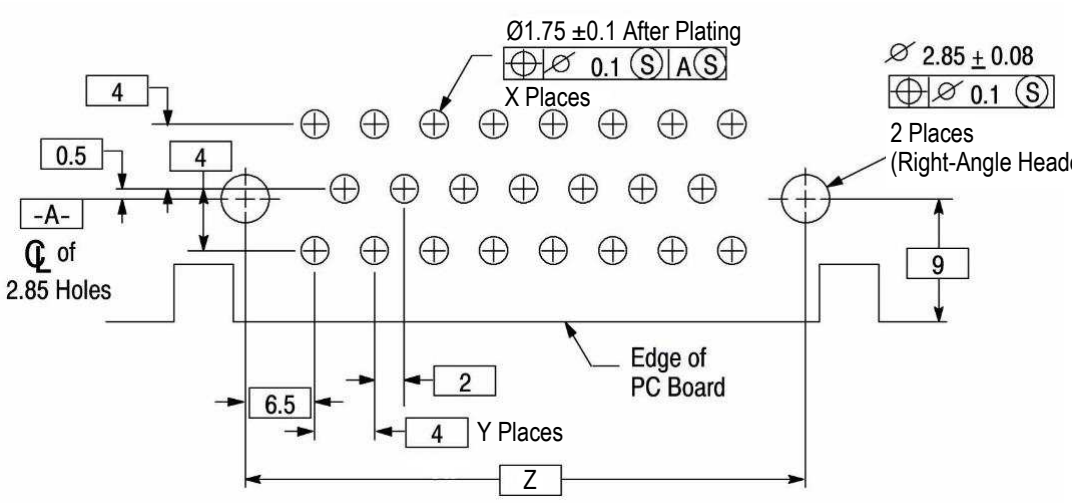
A. Printed Circuit (PC) Board

The suggested pc board layout requirements shall be as shown in Figure 13. The pc board thickness shall be 1.57 mm.

The header assembly is designed to be compatible with any standard wave soldering process, which uses tin solder. However, there must be no interruptions of the conveyer carrying the pc boards through the solder bath.

CAUTION

Care must be taken not to leave the AMPSEAL headers exposed directly to the solder flow during an interruption. Any headers exposed to the solder flow longer than the normal soldering cycle must be rejected and replaced

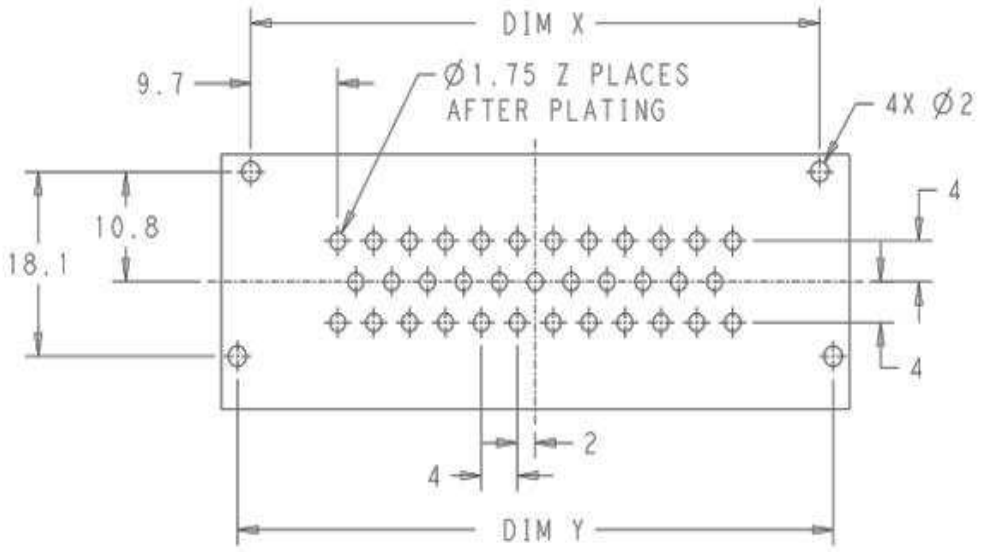


CONNECTOR SIZE	X Places	Y Places	Z
8-Position	8	2	20.60
14-Position	14	4	28.95
23-Position	23	7	41.0
35-Position	35	11	57.0

Figure 13a Right Angle Header

3.6 Header Assembly

A. Printed Circuit (PC) Board (cont)

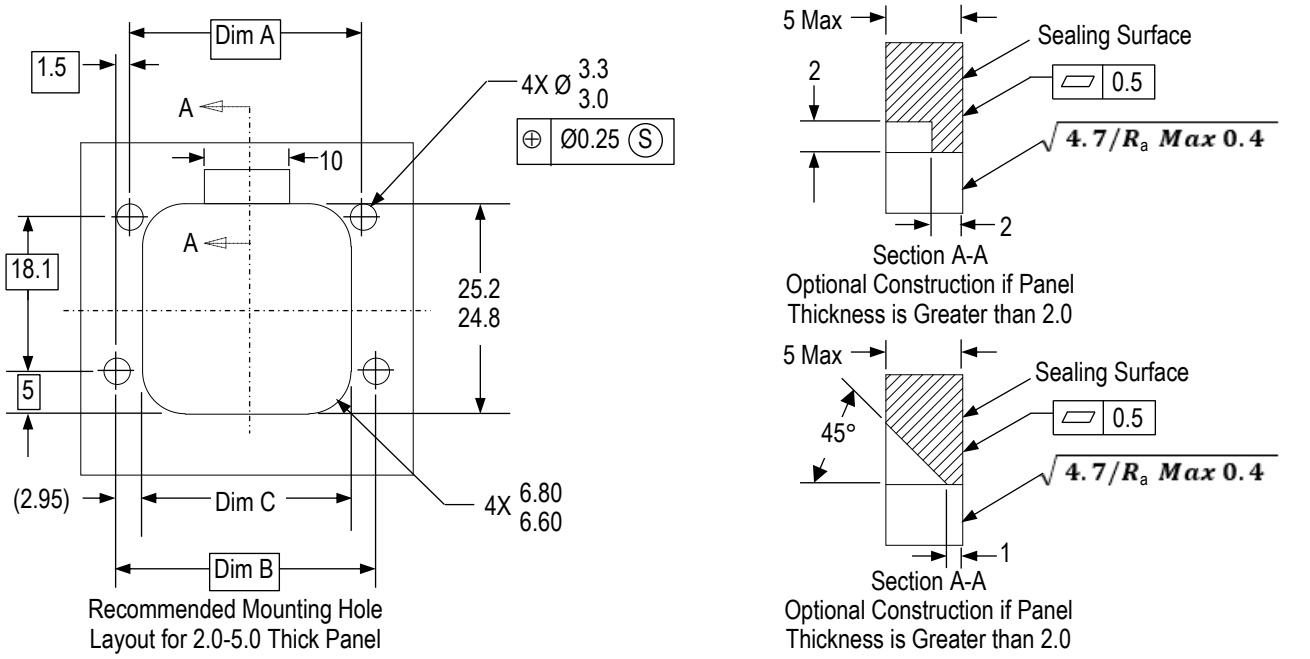


CONNECTOR SIZE	Dim X	Dim Y	Z Places
8 Position	27.4	30.4	8
14 Position	35.4	38.4	14
23 Position	47.4	50.4	23
35 Position	63.4	66.4	35

Figure 13b Vertical Header

B. Panel Mounting

Panel mounting cutout requirements shall be as shown in Figure 14. The panel thickness shall be 2-5 mm for proper assembly clearance. Panel sealing surface shall be in accordance with ISO 1302.



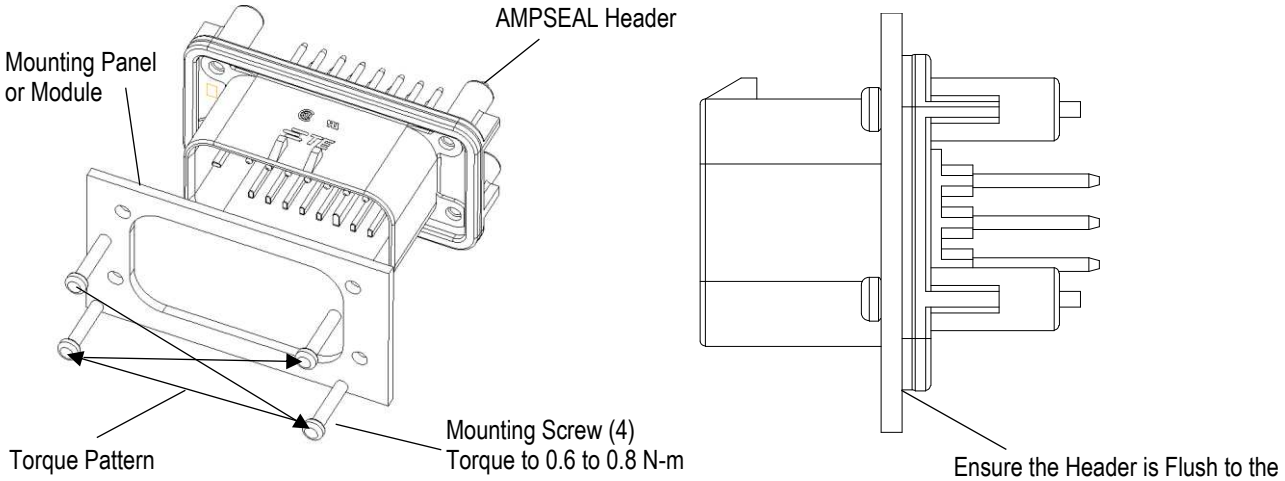
PANEL CUTOUT DIMENSIONS

CONNECTOR SIZE	A	B	C
8-Position	27.4	30.4	24.5-24.0
14-Position	35.4	38.4	32.5-32.0
23-Position	47.4	50.4	44.5-44.0
35-Position	63.4	66.4	60.5-60.0

Figure 14

The header assembly is designed to be fastened to the enclosure by four self-tapping thread-forming screws, such as the DELTA-PT, or metric equivalent, Ø2.50-3.00mm [Ø0.099-0.118 inch]. The screw length will depend on the panel thickness. Torque the screws to 0.6 to 0.8 N-m using a cross pattern shown in Figure 15. Any of the four screws can be used as a starting point. Before the final torque is applied, all four screws should be torqued to 0.3 to 0.4 N-m to evenly distribute the applied force.

Header assemblies will be provided both with and without a Dispensed-In-Place gasket bonded to the flange. For sealing a bare flange to an enclosure, a loose piece gasket will be required. The customer will be responsible for the design and performance of the gasket.



NOTE: 23-position AMPSEAL header shown, but 8-, 14-, and 35-position are similar.

Figure 15 Panel Mounting Instructions

4. QUALIFICATIONS

AMPSEAL automotive plug connectors are Listed in Underwriters Laboratories Inc. (UL) File E28476 and Certified in CSA International File LR7189.

5. TOOLING

Tooling and instruction material for this product are listed in Figure 16. Loose-piece contacts are designed to be crimped with a TE hand tool. Strip-form contacts are designed to be crimped with a miniature applicator used in a semi-automatic or automatic machine. Refer to Instruction Sheet 408-3229 for contact insertion and extraction.

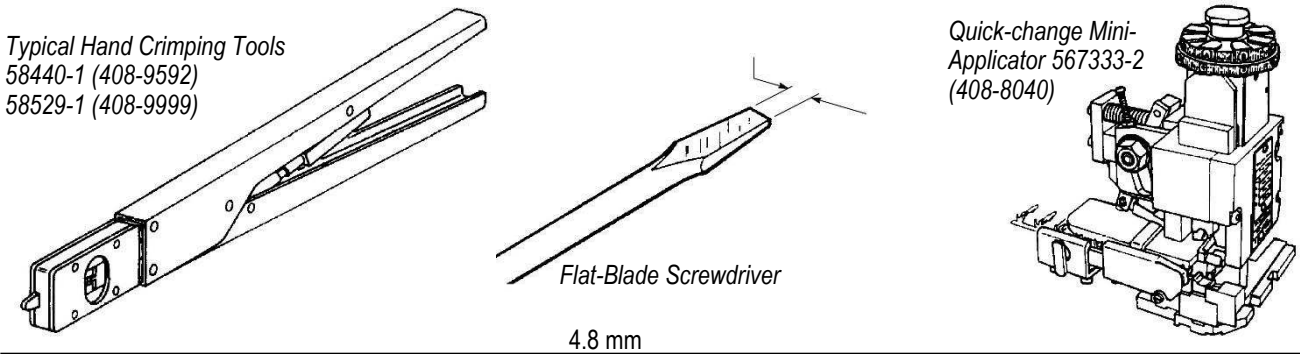


Figure 16

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.

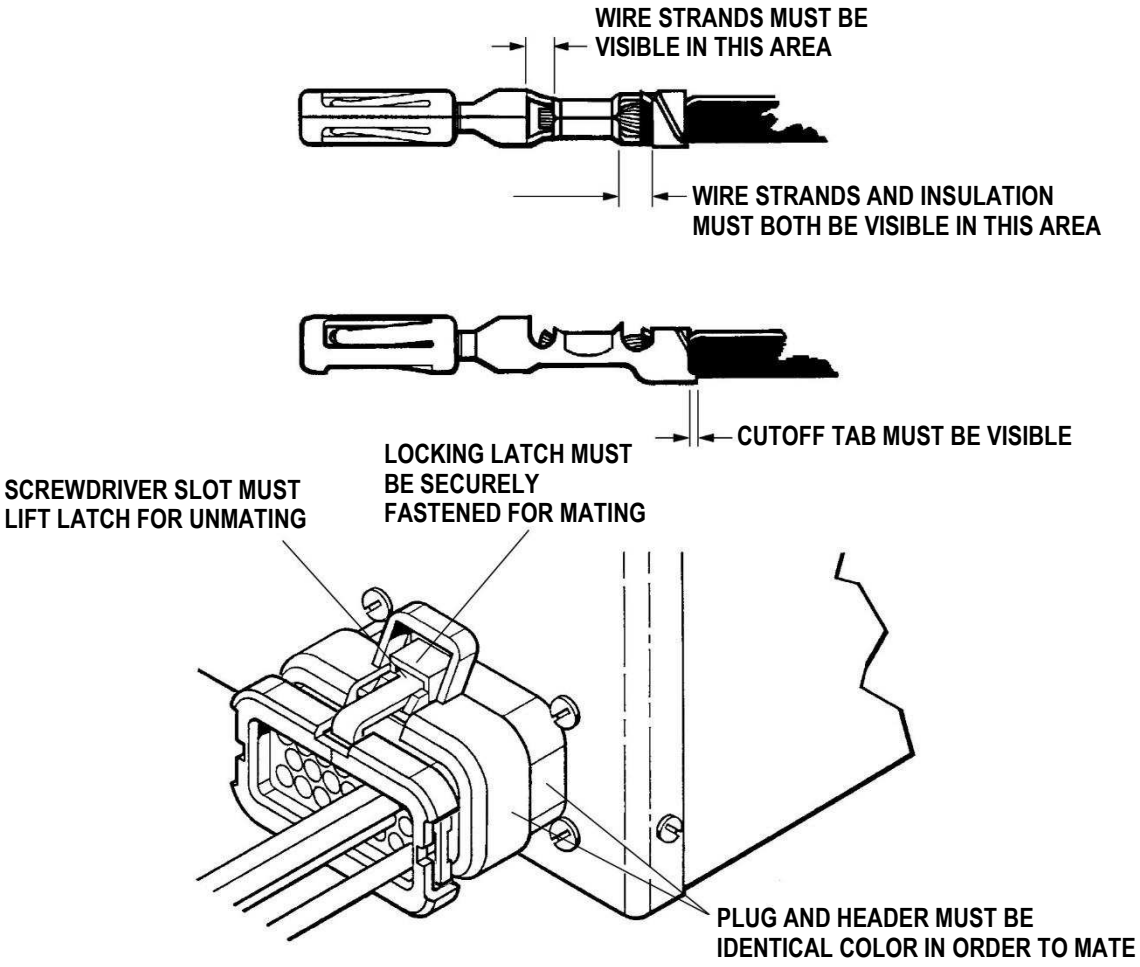


FIGURE 17. VISUAL AID