



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 [$\pm .005$] 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 BUCHANAN WireMate Two Piece Poke-In Series Connector products. The connectors terminate copper wire and are available in variants of two circuits up to eight circuits, with circuit pitches of 5mm or 8mm. Allowable wires are solid conductor in sizes 18 AWG (0.82 mm²) through 24 AWG (0.20 mm²). All connector housing components (contact housing, spacer, end cap, release lever) are constructed of high performance thermoplastic materials to maintain secure wire connections and provide reliable service.

The connector installs onto a customer-provided rigid mounting surface having mounting openings sized/located as described in the appropriate connector (5mm or 8mm pitch) drawing. Latches (rigid, flexible) on the bottom surface of the circuit housings firmly retain the connector on the mounting surface.

Each connector circuit has a wire release lever located opposite the wire entry hole. After insertion, wires are easily removed by depressing the lever and then removing the wire.

The BUCHANAN WireMate Two Piece Poke-In Series Connector products are provided fully assembled and ready for installation onto customer-provided mounting surface.

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.

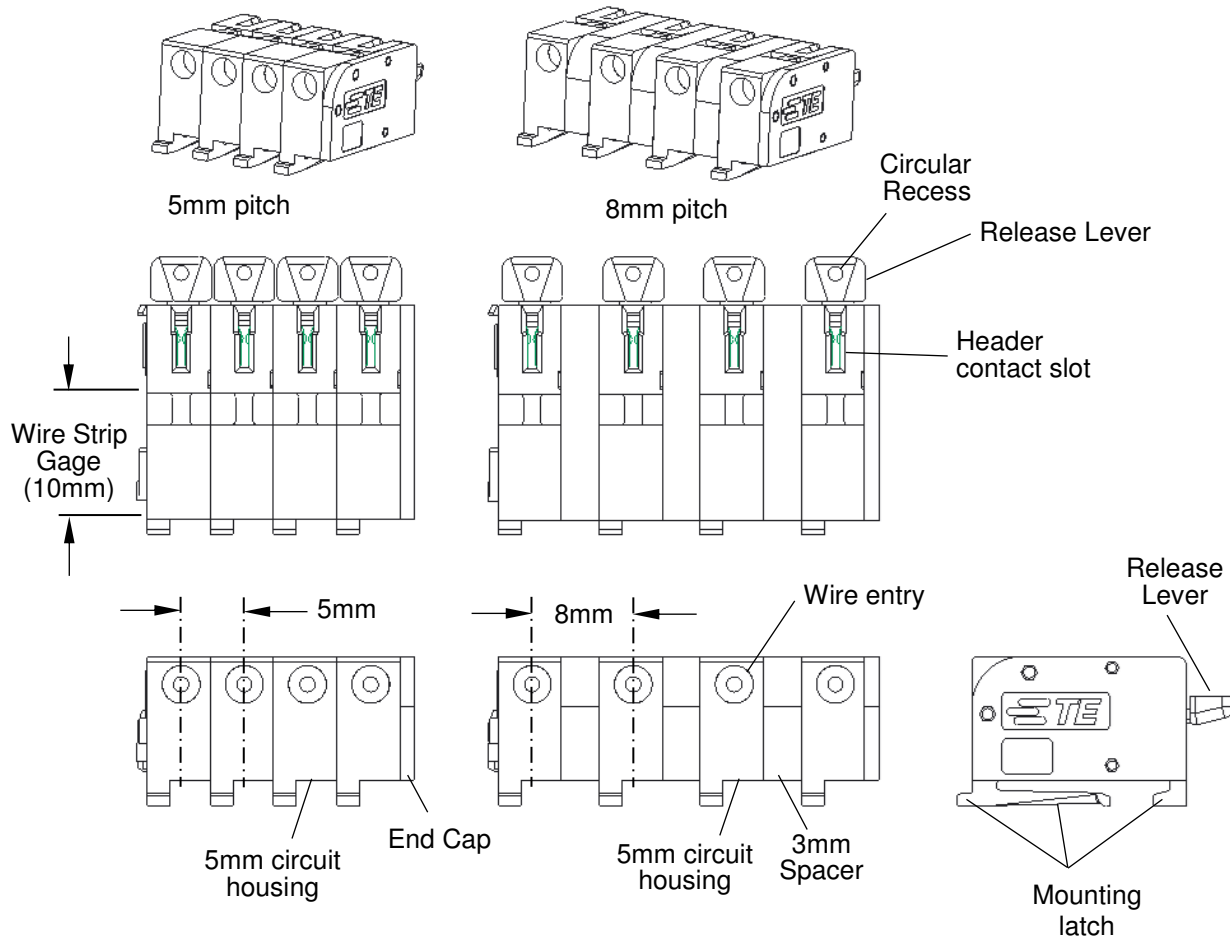


FIGURE 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Revise section 5 to add stranded wire.

2.2. Customer Assistance

Reference product base Part Numbers 2319461-[] (5mm pitch), 2318582-[] (8mm pitch), and Product Code L974 are representative of BUCHANAN WireMate Two Piece Poke-In Series connectors. Using these part 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 TE Connectivity Representative, visiting our website at www.te.com, or, calling the PRODUCT INFORMATION telephone number at the bottom of this page.

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.

3. SPECIFICATIONS

108-133105: Product Specification, BUCHANAN WireMate Two Piece Poke-In Series Connector products.
114-133111: Application Specification, BUCHANAN WireMate Two Piece Series Header

4. REQUIREMENTS

4.1. Safety

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

4.2. Limitations

The connectors are designed to operate in a temperature range of -40° to 105°C.

4.3. Material

The connector housings are made of UL 94V-0 rated thermoplastic. The contacts are made of copper alloy plated overall with tin.

4.4. Storage

A. Ultraviolet Light

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

B. Shelf Life

The product should remain in the shipping containers until ready for use to prevent deformation to components. The product 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 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

5. WIRE SELECTION AND PREPARATION

Allowable wire types are solid copper conductor in AWG sizes 18, 20, 22, and 24 (0.82-0.20mm²), as well as pre-bonded or stranded wire in AWG sizes 18, 20, and 22 (0.82-0.33mm²) with 16 strands or less. Wires should be carefully prepared to the required insulation strip length, and, avoid damage to the conductor. The wire strip length is 10.0+/-0.5mm. A “strip length gage” is provided on top surface of the connector housing to indicate length of insulation to be stripped from wire. Reference Figure 2 for additional wire preparation information.

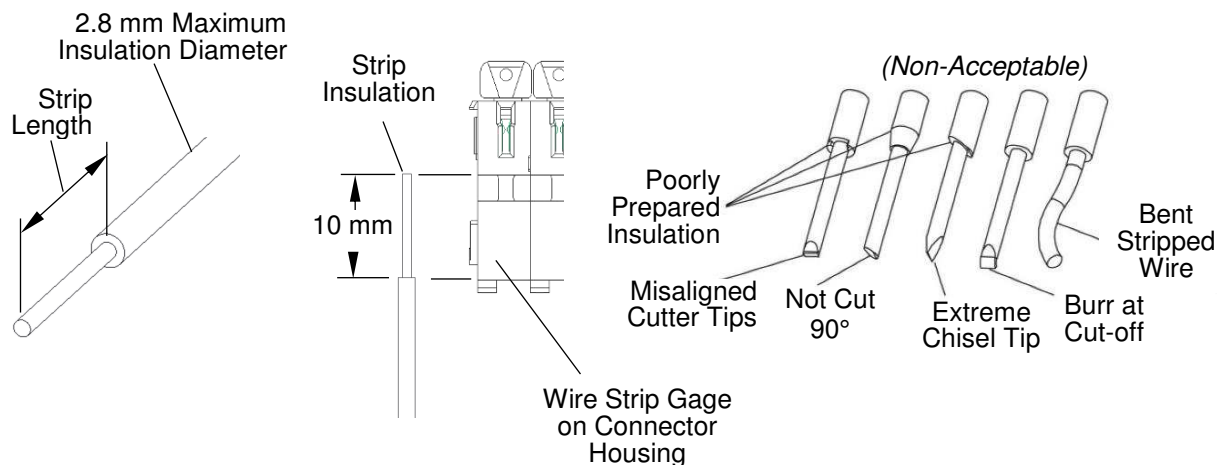


FIGURE 2

6. MOUNTING PANEL

BUCHANAN WireMate Two Piece Poke-In Series Connectors install onto a flat, rigid, mounting surface. When fully installed, the connector is restrained against the mounting surface in all directions. Figure 3 shows a typical connector installation onto a mounting surface.

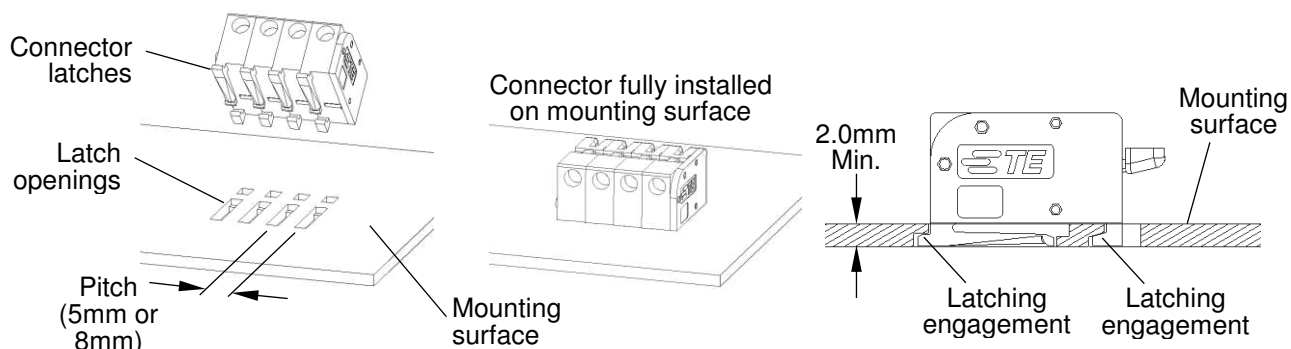


FIGURE 3

6.1. Latch Openings

Latch openings in the mounting surface fix the connector location as well as provide engagement with corresponding latch members on the connector housing. Size of connector latch openings in the mounting surface is provided in Figure 4. Latch openings, of the size specified, *must be provided for each connector circuit.*

Placement of connector latch openings in the mounting panel is determined by the user and is based upon the required location of the connector in the application. The resultant location of the connector must align with the corresponding header on the mating printed circuit board (reference Application Specification 114-133111).

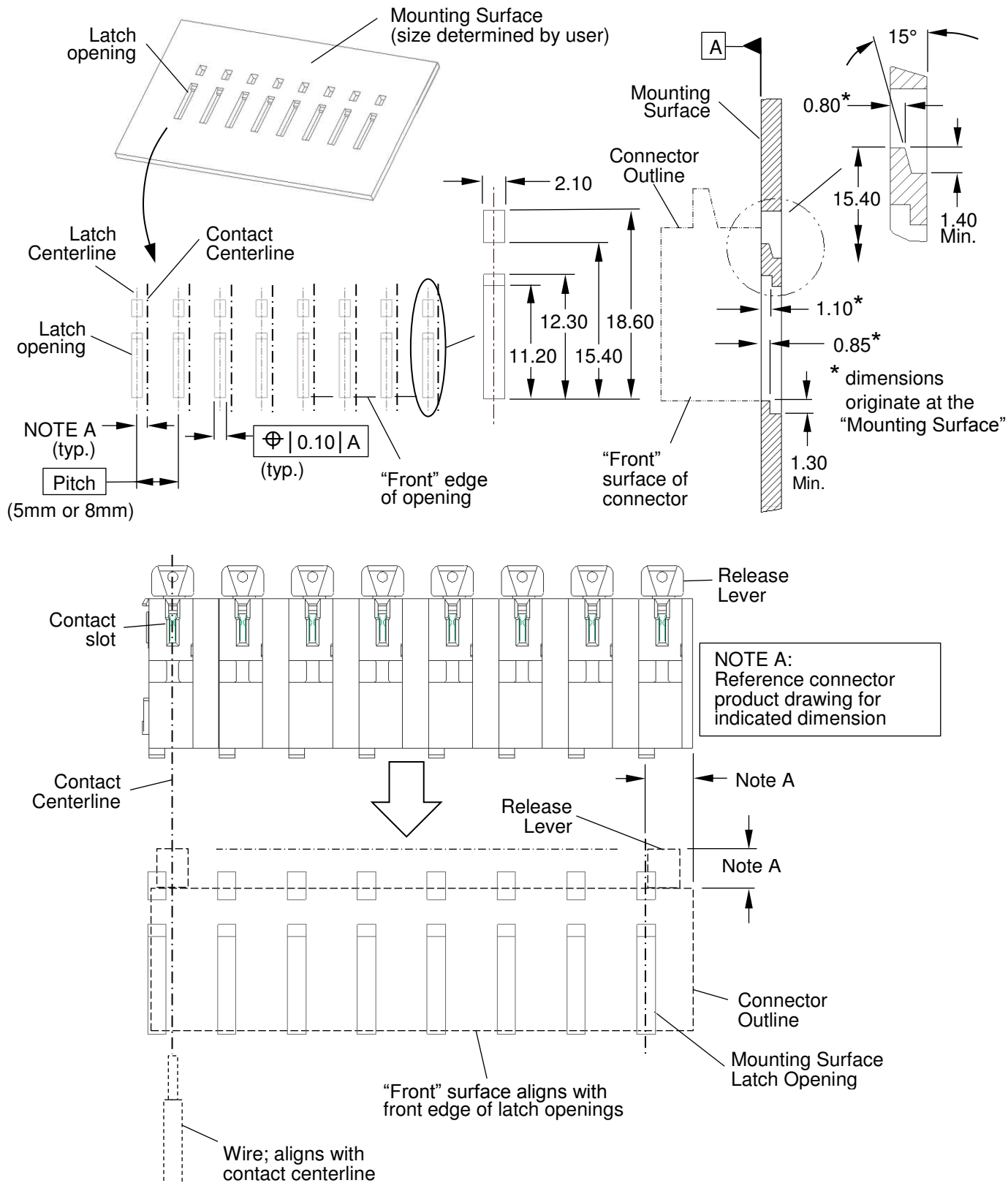


FIGURE 4

6.2. Mounting Panel Size

Size and shape of the mounting panel is determined by the user. The panel thickness may vary according to the application. However, in the location of the connector installation, a specific mounting panel thickness is required to provide adequate engagement with retaining latches on the connector housing. The following guidelines apply to the mounting panel in the location where the connector is to be installed.

Mounting Panel Guidelines:

- The mounting surface must be flat in the location where the connector installs.
- The panel thickness must be 2.0mm (minimum) underneath the connector
- Projections in the mounting surface (raised walls) must not interfere with connector installation, connecting wires, wire release lever travel, or mating header (ref. Application Specification 114-133111).
- Observe all sizes and clearances in Figure 5.

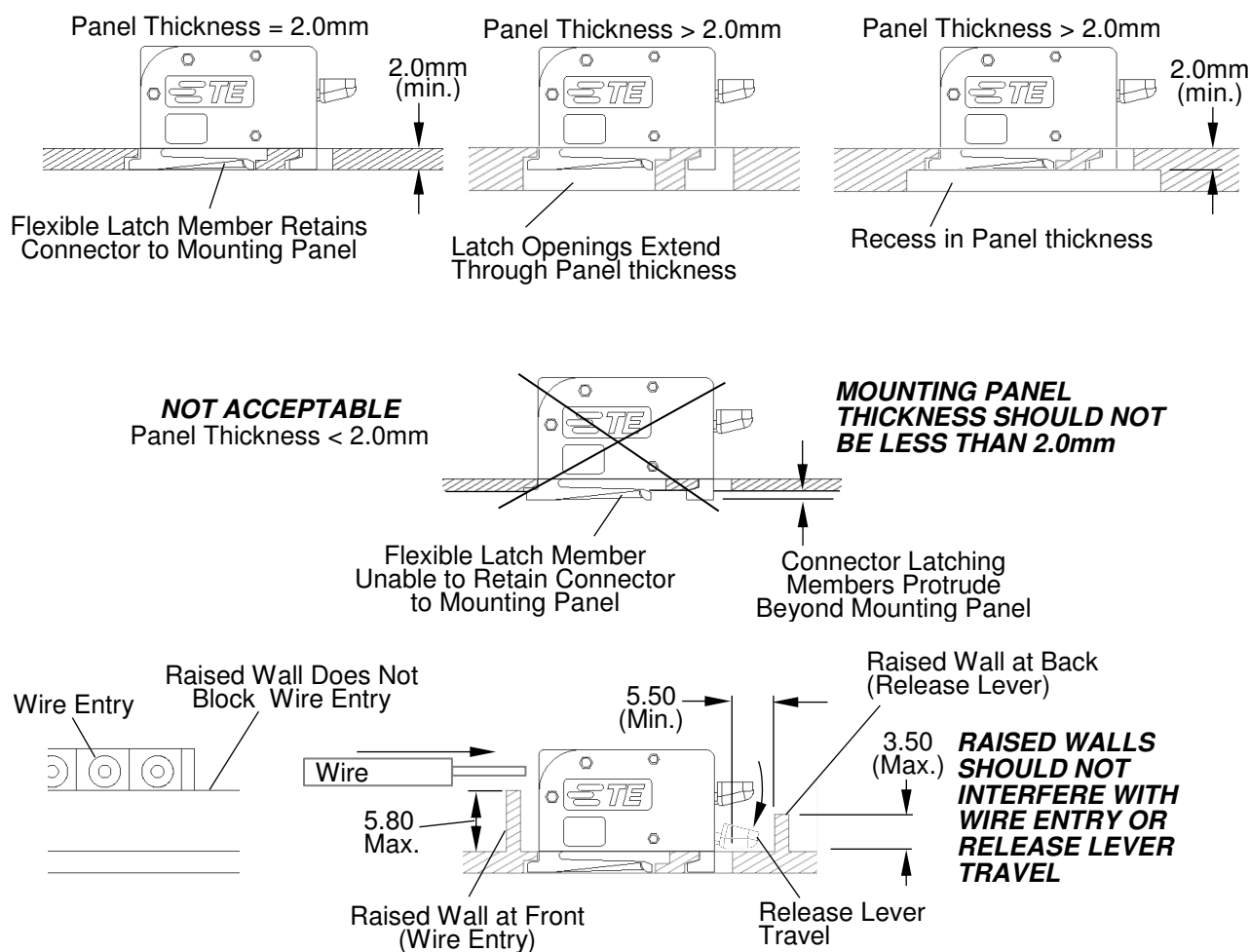


FIGURE 5

7. CONNECTOR INSTALLATION

Each circuit of the BUCHANAN WireMate Two Piece Poke-In Series Connector housings have mounting latches on the bottom surface that engage corresponding “latch openings” in a mounting panel. Each connector circuit housing has two rigid latches (front/rear housing locations) and a flexible latch (center housing location). The combination rigid/flexible latches firmly retain the connector to the mounting panel, and allow removal of the connector from the mounting panel.

The rigid mounting latches engage “undercut” features in the mounting panel latch openings (ref. Figure 4). The rigid latches restrain the connector against sideways movement along the connector length, and vertical movement, affixing the connector to the mounting panel surface.

The flexible latches at each circuit simultaneously deflect during connector installation to the mounting panel. When the connector is moved to the fully installed position, the flexible latches “snap” back into their original position and restrain the connector movement to maintain engagement of the rigid latches to the mounting panel latch openings.

The connector installation onto a properly configured mounting panel is as follows (ref. Figure 6):

1. Orient connector to the mounting surface so the connector front rigid latches are directed towards the front latch openings, the connector rear rigid latches are directed towards the rear latch openings, and the connector bottom surface is directed towards the mounting surface.
2. Locate the connector so the front/rear rigid latches align with the corresponding latch openings in the mounting surface.
3. Angle the connector so the rear rigid latches will enter the rear latch openings in the mounting surface.
4. Lower the connector onto the mounting surface so the rear rigid latches enter the rear latch openings in the mounting surface, and the connector housing rear corner rests on the mounting surface.
5. Maintain the connector housing rear corner against the mounting surface and rotate the connector so the front rigid latches enter the front latch openings in the mounting surface. Continue rotating the connector until the connector bottom surface lays flat on the mounting surface. This action deflects the connector flexible latches and requires slight vertical force to restrain the connector against the mounting surface.
6. With the connector bottom surface restrained against the mounting surface, slide the connector towards the front edge of the mounting surface latch openings. As the connector moves into the fully installed position, an audible “click” will be heard as the connector flexible latches simultaneously snap into their locking position in the mounting surface latch openings. The connector movement will stop when the connector front surface contacts the front edge of the latch openings. This indicates the connector is fully installed.

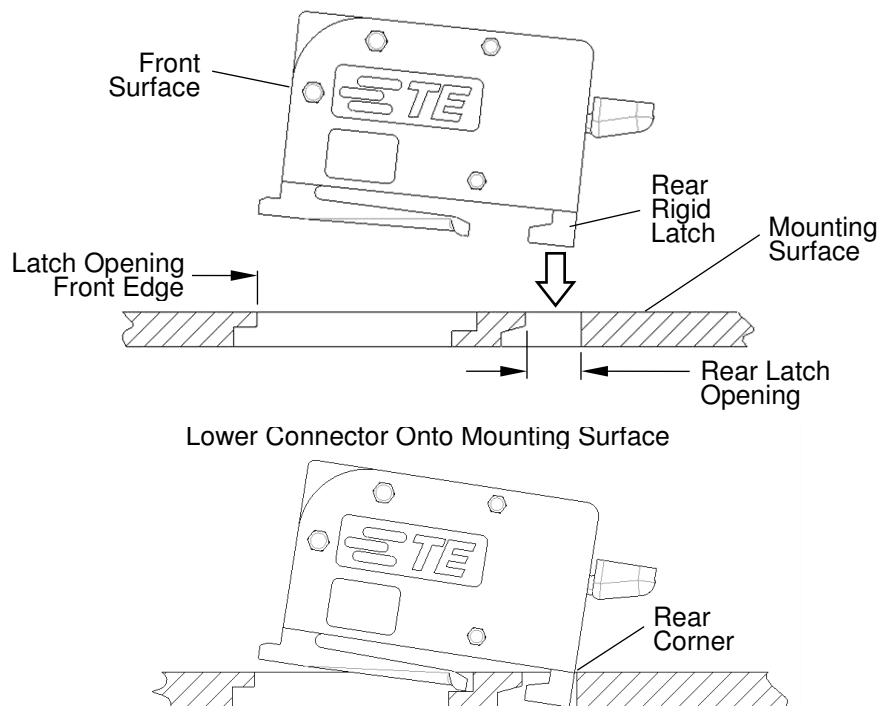
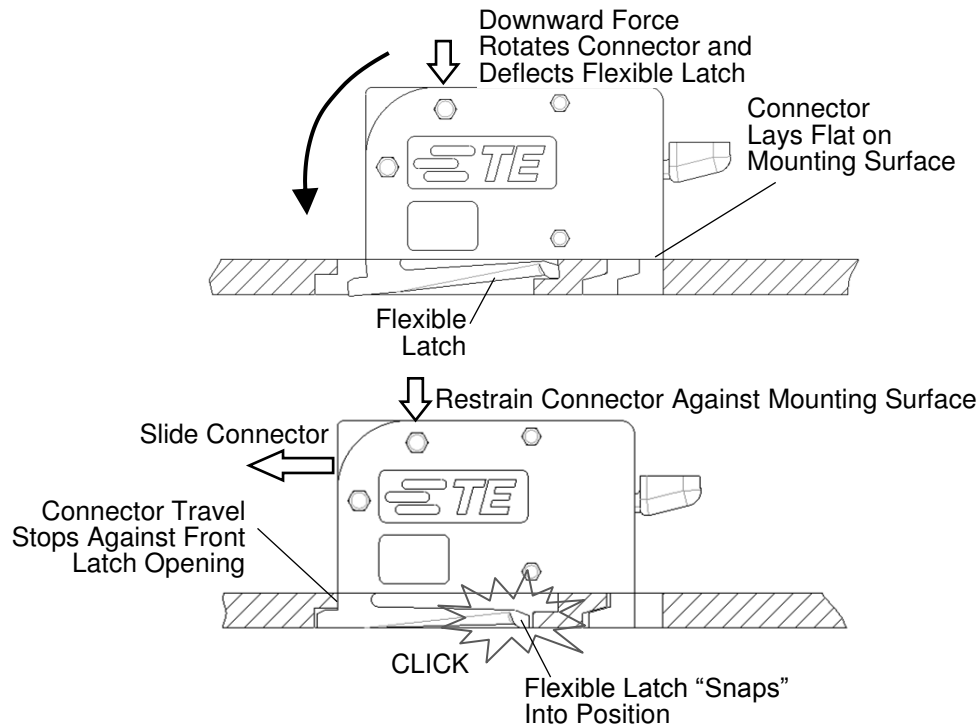


FIGURE 6 (CONT'D)


FIGURE 6

Confirm connector installation by trying to lift the connector from the mounting surface. The connector should remain attached to the mounting surface at the front and rear rigid latches.

i **NOTE:** *There should be slight movement of the connector sideways and front/back, due to clearances between the connector retaining latches and mounting surface latch openings.*

8. CONNECTING WIRES

Wires are installed into BUCHANAN WireMate Two Piece Connector using a "poke-in" technique. For most applications, the wire insertion into the connector is accomplished without use of tools.



CAUTION

Insert one wire, only, into each circuit of the connector

The connector circuit housings have a tapered "wire entry" hole in the front surface that guides the wire conductor to the connector wire spring contact (inside the connector circuit housing) for a secure electrical/mechanical connection. The procedure for inserting wires into the connector circuit are as follows (ref. Figure 7):

1. Select and prepare wire as specified in paragraph 5 and Figure 2.
2. Orient the wire with the bare conductor pointing toward the front of the connector.
3. Select a connector circuit to receive the wire and axially align the bare conductor with the wire entry hole in the front of the selected circuit housing. The conductor should be aligned so the centerline of the conductor is approximately aligned with the center of the wire entry hole.
4. Insert the bare conductor into the selected wire entry hole. Tapered sides of the hole guide the conductor into position for connection to the wire spring contact. The wire moves with little force through the wire entry hole until it contacts the wire spring inside the connector housing.

5. An increase in axial wire insertion force will be noticed as the bare conductor contacts the wire spring. Continue applying force to insert the wire into the circuit housing. Increased insertion force deflects the wire spring and allows the conductor to be further inserted into the connector circuit housing. Large diameter conductors (18 AWG) will require larger insertion force than small diameter conductors (24 AWG).
 - For small wire sizes (such as 24 AWG) the insertion force may cause the wire to “buckle”. In those cases, depress the release lever during wire insertion to relieve the spring pressure on the wire. Release the lever after the wire is fully inserted into the housing to restore the spring pressure on the conductor.
6. Continue inserting the wire into the connector circuit housing until there is an abrupt increase in the insertion force. The increased force indicates the wire is inserted to full depth allowed by the connector circuit housing.

i **NOTE:** When a wire stripped to the specified length (paragraph 5) is fully inserted into the connector circuit housing, there should be no bare conductor protruding beyond the front surface of the connector circuit housing.

7. Repeat wire insertion process for each wire being applied to the connector.

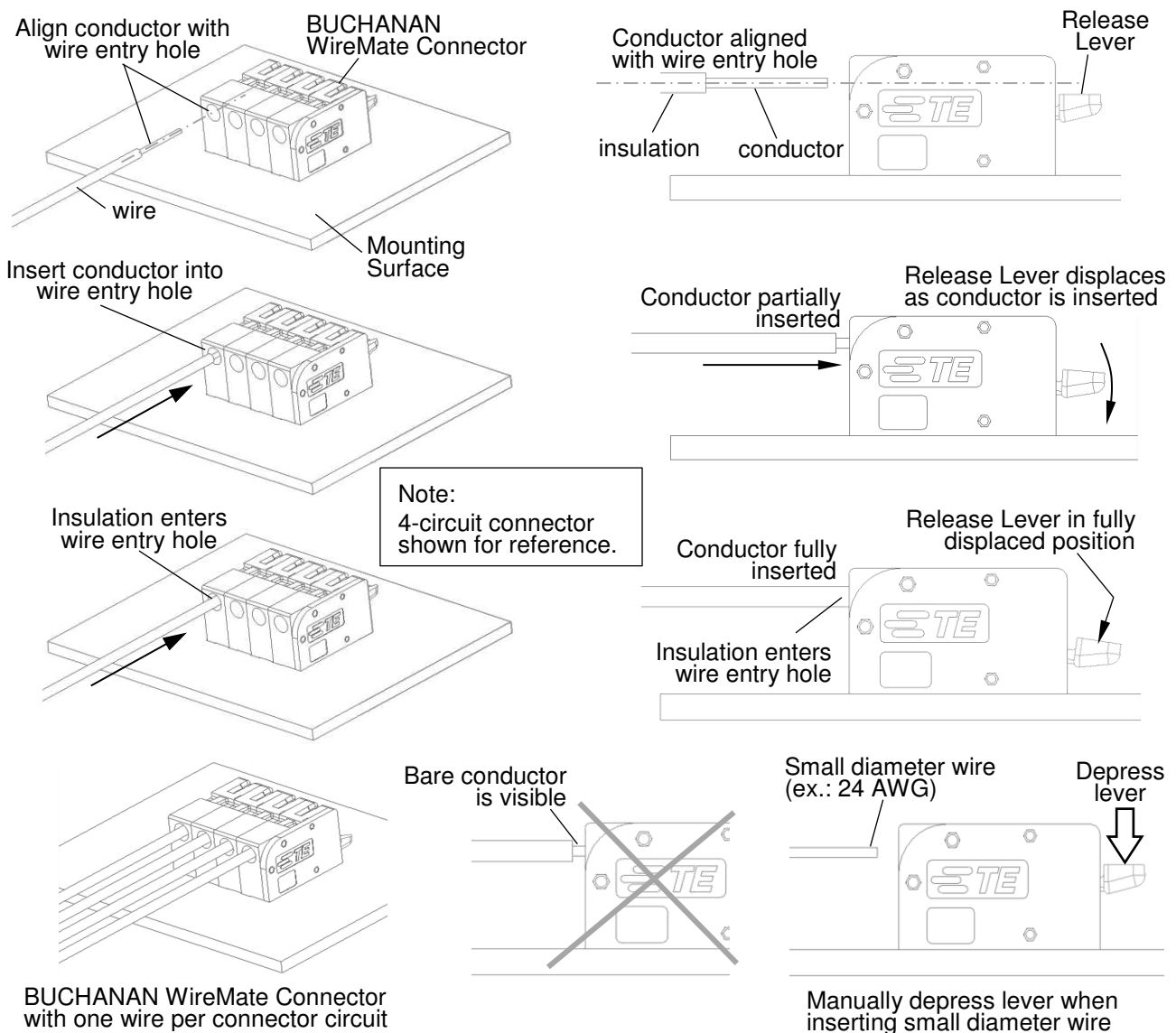


FIGURE 7

9. DISCONNECTING WIRES

Wires are easily disconnected from the BUCHANAN WireMate Two Piece Connector by depressing a release lever, to relieve contact spring pressure on the wire, and removing the selected wire. Each connector circuit has a release lever corresponding, only, with the selected circuit. Finger pressure, or various tools, may be used to actuate the release lever. The actuation technique can be a matter of user preference, or, determined by clearances around the connector.

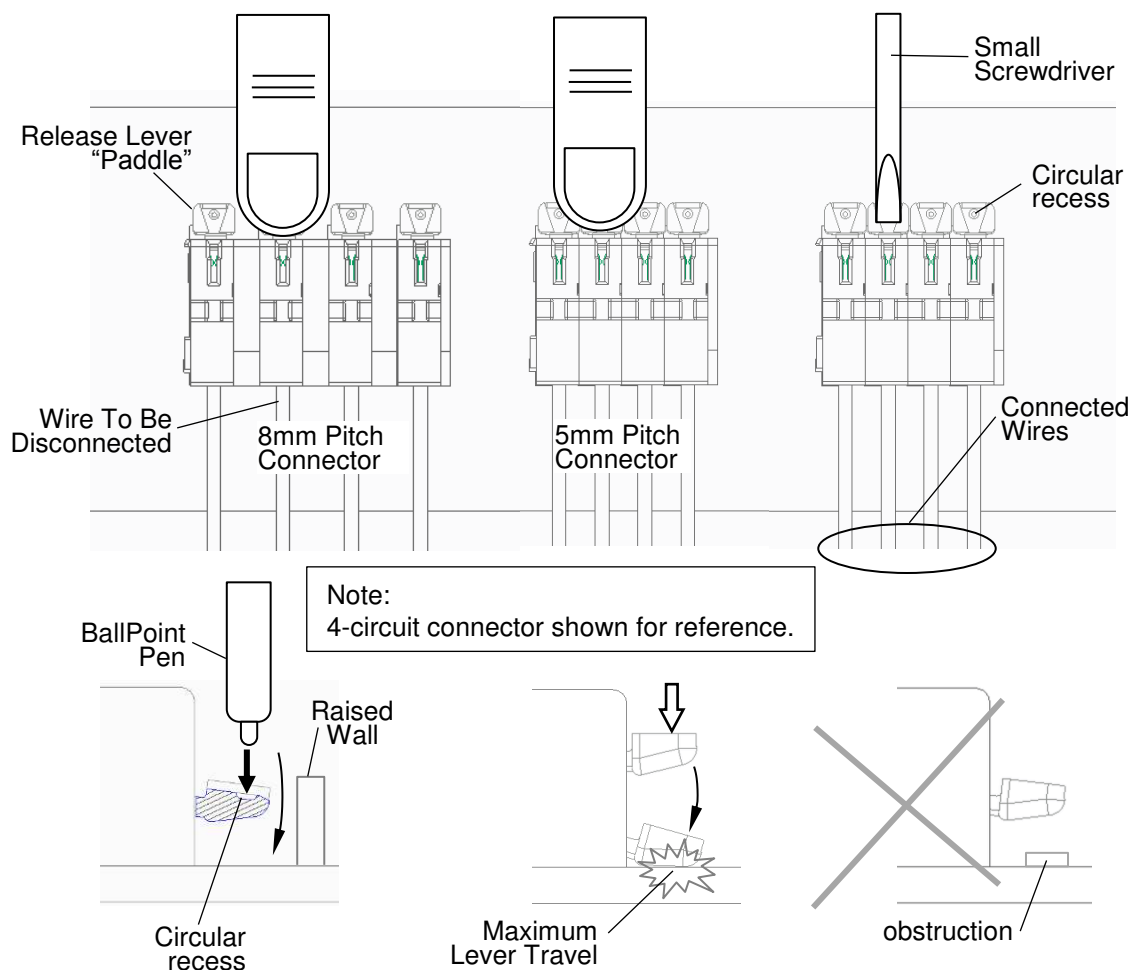
9.1 Release Lever Actuation

The release lever actuation is accomplished by depressing the lever “paddle” extending beyond the connector housing, on the side opposite the wire entry. The lever can be depressed by finger, however, 5mm pitch connector lever paddles may be spaced too closely for some finger sizes to depress only the intended lever. Alternatively, a small tool (screwdriver, ballpoint pen, length of wire, etc.) can be used to actuate the release lever. Raised walls near the release lever may necessitate using a small tool to actuate the lever, if the raised wall interferes with finger actuation. For lever actuation with a spherically-tipped tool, such as a ballpoint pen, a circular recess is provided in the paddle to engage the tip of the tool. Reference Figure 8 for options to depress release lever.

Regardless of the technique used to depress the release lever, there is a limit to the travel of the lever paddle. Release of the wire occurs before the lever has travelled its’ maximum distance. However, the paddle will stop against the flat mounting surface at its’ maximum travel. In this position, applying additional force to depress the lever does not cause additional relief of contact spring pressure on the conductor.

**CAUTION**

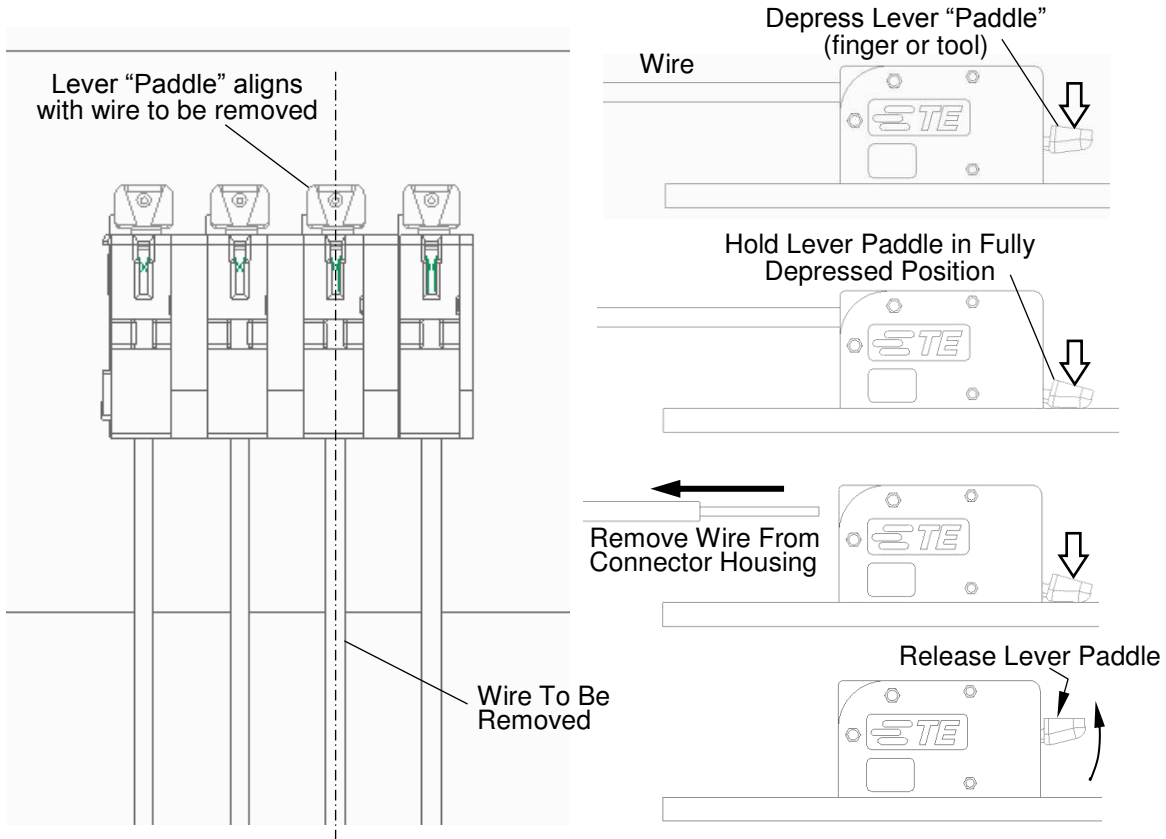
There should be no projections, or debris, on the mounting surface that obstructs full travel of the lever paddle.


FIGURE 8

9.2. Wire Release

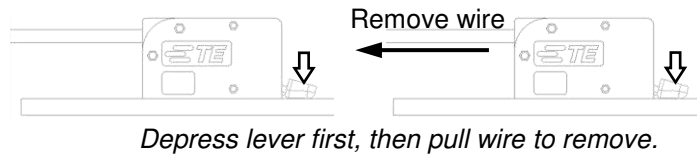
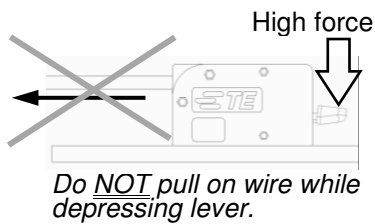
Releasing wires from the BUCHANAN WireMate Two Piece Connector is accomplished by depressing the release lever paddle corresponding with the wire to be released, then removing the wire from the connector. The appropriate release paddle is aligned with the selected wire, on the opposite side of the connector, as shown in Figure 9. Depressing the wrong release paddle will not allow release of the selected wire. The following steps describe the procedure to remove/disconnect a wire from the BUCHANAN WireMate Two-Piece Connector (ref. Figure 9):

1. Select the wire to be disconnected from the connector.
2. Visually identify the release lever paddle, on the opposite side of the connector, that aligns with the selected wire.
3. Using a finger, or appropriate tool, fully depress the lever paddle to relieve spring pressure on the wire. Hold the paddle in the fully depressed position until the wire is removed from the connector.
4. With the lever paddle depressed, gently pull the wire from the connector (see "CAUTION" in Figure 9).
5. Once the end of the conductor is seen to be out of the connector housing, the lever can be released so it returns to its' raised position. The wire spring automatically restores its' original position and is ready for a wire to be inserted.



CAUTION:

Do NOT pull on wire while depressing lever. This results in high force to depress lever and may damage the wire release mechanism. Depress lever **B E F O R E** pulling on wire to remove from housing.



CAUTION:

The connector/wires installation may produce stress on the wires. Stress is present if the lever is hard to depress. Relieve stress on wire before depressing lever.

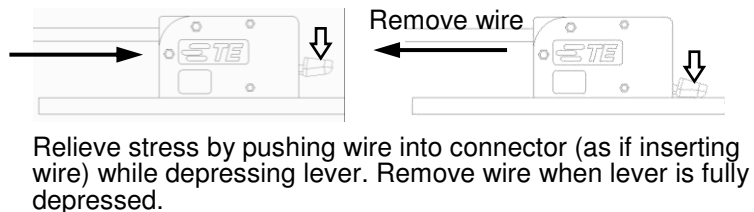


FIGURE 9

10. REMOVE CONNECTOR

The BUCHANAN WireMate Two Piece Connector is retained on a mounting surface by two rigid latches *at each connector circuit* that engage corresponding latch features in the mounting surface. A flexible latch *at each connector circuit* deflects during connector installation, and snaps into position to “lock” the connector onto the mounting surface.

The connector can be removed, without damage, from the mounting surface by reversing the installation process. Removing the connector requires access to the underside of the mounting surface so that the flexible latch at each circuit can be deflected. The flexible latches may be deflected individually, or, a tool can be fabricated that simultaneously deflects the flexible latch at each circuit. Connector removal can be accomplished while wires are connected to the connector circuits, however, it is easier if all wires are disconnected from the connector.

The procedure to remove the connector from a mounting surface is as follows (ref. Figure 10):

1. Obtain access to the underside of the mounting panel. The connector mounting latches, rigid and flexible, must be visible at each connector circuit location.
2. Apply small force to the connector wire entry surface (“front” surface) along the entire length of the connector. Maintain this force until the following steps free the connector from the mounting surface.
3. From the underside of the mounting panel, use a small tool (screwdriver, ballpoint pen, rigid wire, etc.) to depress the tip of each flexible latch in the direction of connector removal. Start at one end of the connector and move to each adjacent latch along the connector length. The force maintained on the front surface of the connector (step 2) will also hold the flexible latches in the deflected position.
4. Once the last latch has been depressed by the tool, the force on the connector front surface moves the connector to dis-engage the rigid latches at each connector circuit from the mounting panel latch openings.
5. When the connector latches are completely dis-engaged from the mounting surface, the connector can be removed by lifting it from the surface.

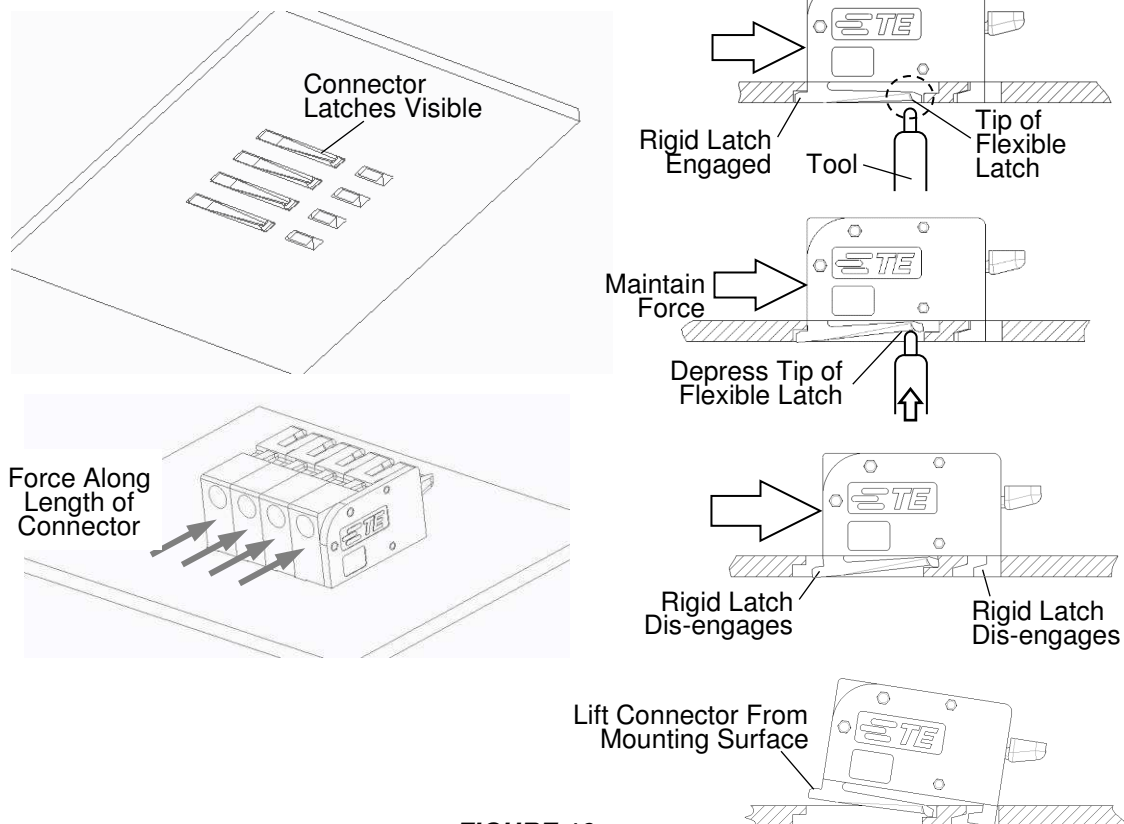


FIGURE 10

11. QUALIFICATIONS

BUCHANAN Wiremate 2 piece poke in connector system is Component Recognized by Underwriters Laboratories, Inc. in File E60677 volume 20.

12. VISUAL AIDS

The illustrations below shows typical application of BUCHANAN WireMate Two Piece Connector products. The 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.

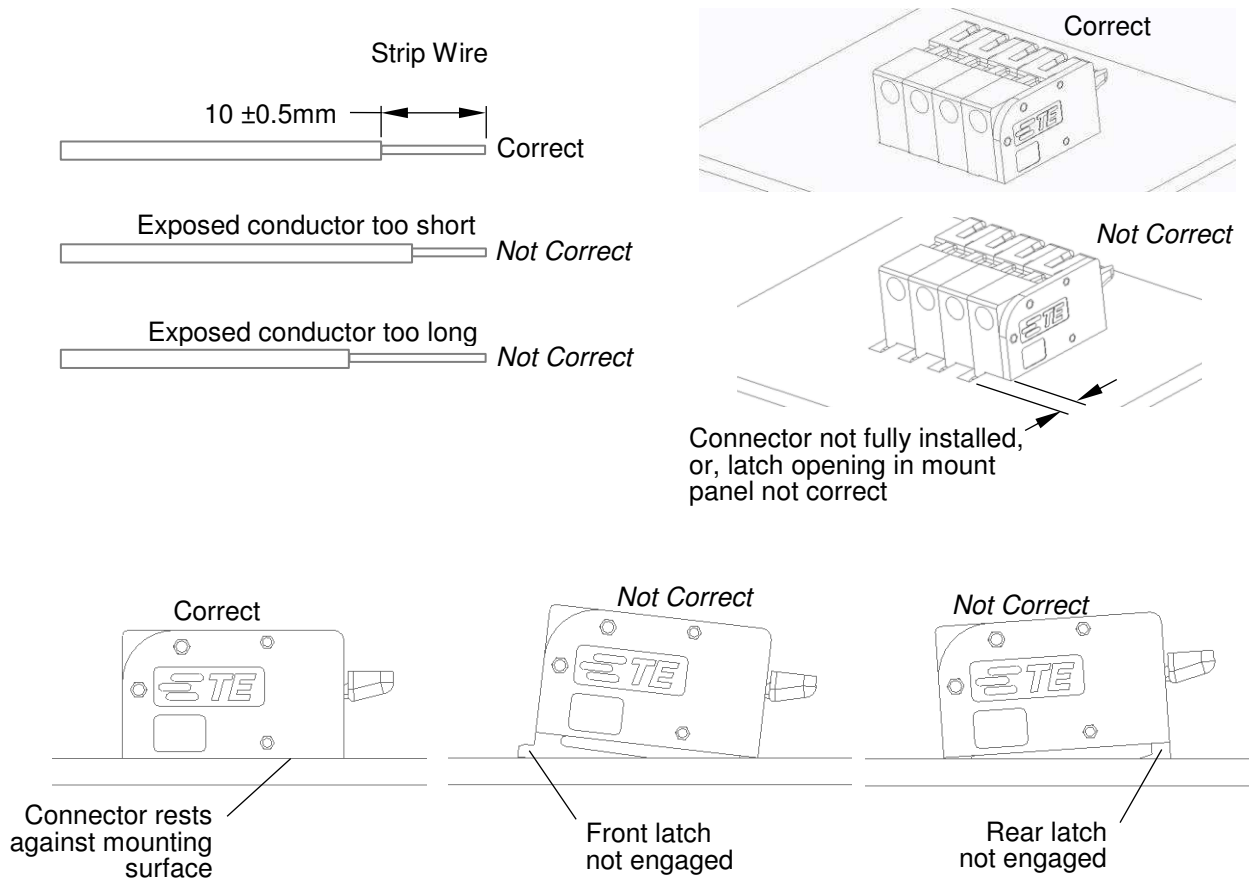


FIGURE 11