Low Voltage DC (LVDC) Grid Interconnects

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 LVDC Grid Interconnects. The Power-Feed, Device-Load, External Bus Bar and Internal Bus Bar Connectors are designed to engage the Emerge Alliance Corporation (EAC) system suspended ceiling bus bar. The Power-Feed, Load Device and External Bus Bar Connector will mount to the 6.35 mm [.250 in.] wide external in-plane bus bar. The Internal Bus Bar Connector will mount to the 6.35 mm [.250 in.] wide below-plane internal bus bar.

The Power-Feed and Load Device Connectors consist of a housing and two contacts that straddle the external bus bar and held in place by a clamp. The clamp has a slot that is press-fit over the locking tab of the housing, ensuring proper electrical connection and rigid placement. Additionally the Power-Feed Connector has a specifically shaped keying feature that can only be accepted at specific locations on the external bus bar. The External Bus Bar Connector will mount to a peripheral device. It consist of a housing and two contacts that straddle the external bus bar and is electrically connected and held in place by contact normal force. The Internal Bus Bar Connector is fitted into the internal bus bar and is electrically connected and rigidly mounted by manually activating and locking the rotator.

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.

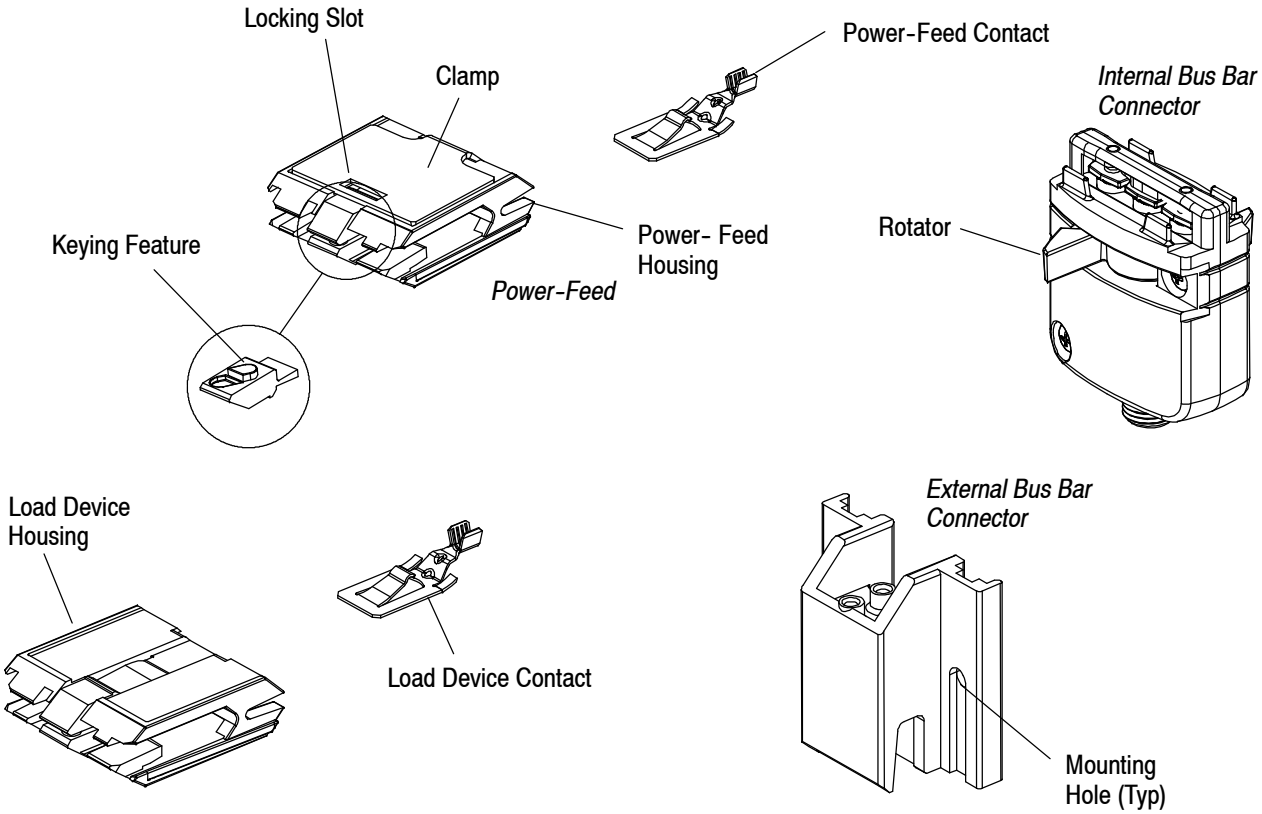

Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Changed information in table in Figure 2, added new Figure 18 and renumbered

2.2. Customer Assistance

Reference Product Base Part Number 2106710 and Product Code L655 are representative of LVDC Grid Interconnects. 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 TE 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. Specifications

Design Objective 108–2414 provides expected product performance and test information.

Finish Specifications (112–Series) provide quality assurance and technical requirements which describe a finish applied to a material. Specifications available that pertain to this product are:

112–65 Plating, Tin (Whisker Mitigated, Lead–Free), Electrodeposited
112–25 Plating, Nickel, Electrodeposited

3. REQUIREMENTS

3.1. Limitations

A. Safety

Safety interlocks and/or insulating devices must be designed into the system in which the connector will be installed to avoid inadvertent electrical shock to the installer and equipment operator.

To avoid shock or electrocution, the electrical system must be de-energized BEFORE wiring connector.

B. Chemical Exposure

The connectors are not intended for concentrated sulfur– or chlorine–bearing atmospheres.

3.2. Storage

A. Ultraviolet Light

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

B. Shelf Life

Each connector is packaged and shipped in an individual container. To prevent damage to the housings and contacts, the connectors should remain in the container until ready for installation. Also, to prevent possible storage contamination, the connectors should be used on a first in, first out basis.

C. Chemical Exposure

Do not store contacts near any of the following chemicals as they may cause stress corrosion.

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

3.3. Wire/Wire Preparation

A. Wire Selection: Power-Feed and Load Device Connectors (See Figure 2)

The contacts will accept stranded wire ranging in size from 12 to 18 AWG. Reasonable care shall be taken during the stripping operation to ensure the connector is not nicked, scraped, or cut.

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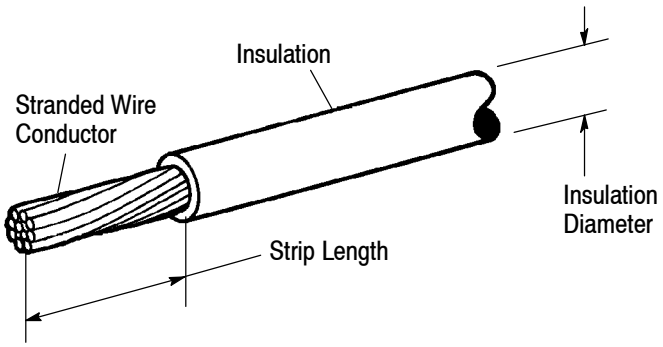
Note: Not to Scale



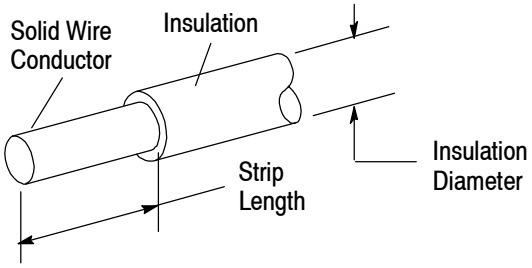
WIRE PREPARATION AND HAND TOOL WIRE CRIMP DIMENSIONS			
WIRE		WIRE BARREL	
SIZE	STRIP LENGTH ±0.3 [.012]	CRIMP HEIGHT ±0.1 [.004]	CRIMP WIDTH (NOMINAL)
18	5.08 [.200]	1.91 [.075]	2.77 [.110]
12	5.08 [.200]	2.22 [.087]	3.66 [.144]

Figure 2

B. Wire Selection: External Bus Bar Connector (See Figure 3)

The poke-in contacts will accept 18 AWG solid wire. Reasonable care shall be taken during the stripping operation to ensure the connector is not nicked, scraped, or cut.

Note: Not to Scale



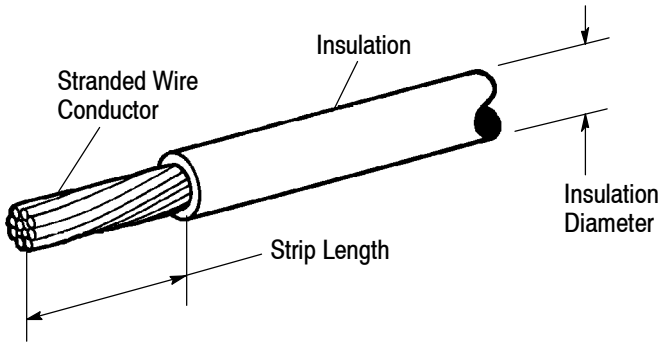
WIRE PREPARATION		
SIZE	STRIP LENGTH ±0.51 [.020]	INSULATION MAXIMUM DIAMETER
18 Solid	12.00 [.473]	2.41 [.095]

Figure 3

C. Wire Selection: Internal Bus Bar Connector (See Figure 4)

The contacts will accept 18 AWG stranded wire. Reasonable care shall be taken during the stripping operation to ensure the connector is not nicked, scraped, or cut.

Note: Not to Scale



WIRE PREPARATION		
SIZE	STRIP LENGTH ±0.51 [.020]	INSULATION MAXIMUM DIAMETER
18 Stranded	16.00 [.630]	2.75 [.108]

Figure 4

3.4. Crimped Contact Requirements

The contact shall be located in desired tooling and crimped according to the instructions.

CAUTION

Wire insulation shall NOT be cut or broken during the crimping operation, nor shall the insulation be crimped into the contact wire barrel. Reasonable care should be taken by tooling operators to provide undamaged wire terminations.

A. Wire Barrel Crimp

The crimp applied to the wire portion of the contact is the most compressed area and is most critical in ensuring optimum electrical and mechanical performance of the crimped contact. The contact wire barrel crimp height must be within the dimension provided in Figure 2.

B. Effective Crimp Length

For optimum crimp effectiveness, the crimp must be within the area shown in Figure 5 and must meet the crimp dimensions provided in Figure 2. Effective crimp length shall be defined as that portion of the wire barrel, excluding bellmouth(s), fully formed by the crimping tool. Instructions for adjusting, repairing, and inspecting tools are packaged with the tools. See Section 5, TOOLING.

C. Bellmouths

Front and rear bellmouths shall be evident and conform to the dimensions given in Figure 5.

D. Wire Barrel Flash

The wire barrel flash shall not exceed the dimensions shown in Figure 5, Section X–X.

E. Wire Location

The wire conductor and insulation must be visible in the transition area between the wire barrel and insulation as shown in Figure 5.

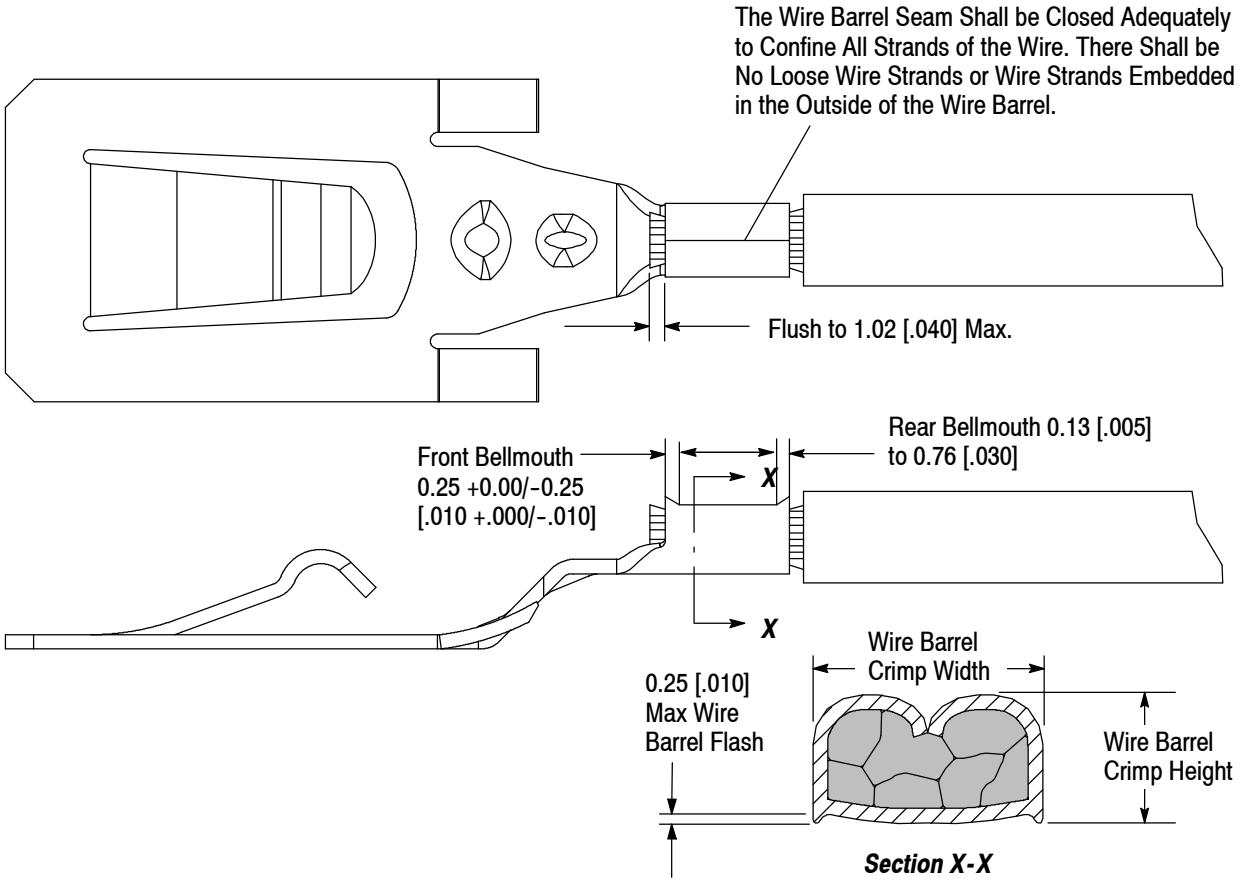


Figure 5

F. Conductor Extension

The conductor may extend beyond the wire barrel to the maximum shown in Figure 5.

G. Wire Barrel Seam

The wire barrel seam must be closed with no evidence of loose wire strands visible in the seam as shown in Figure 5.

H. Twist and Roll

There shall be no twist, roll, deformation or other damage to the mating portion of the crimped contact that will impair usage of the contact. See Figure 6.

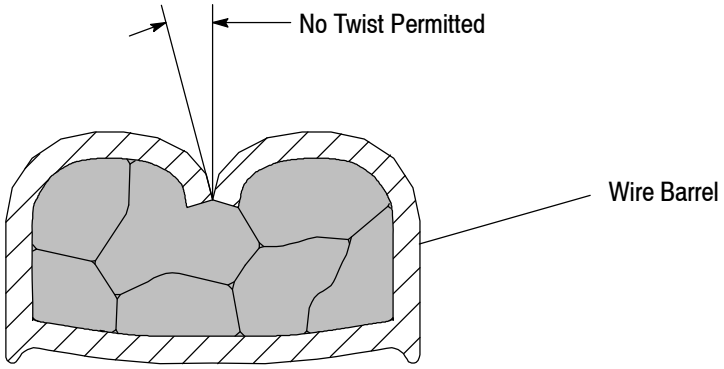


Figure 6

3.5. Contact Insertion for Power-Feed and Load Device Housings

Insert contacts into housings as shown in Figure 7 until bottomed and when an audible and tactile “click” is heard and felt.

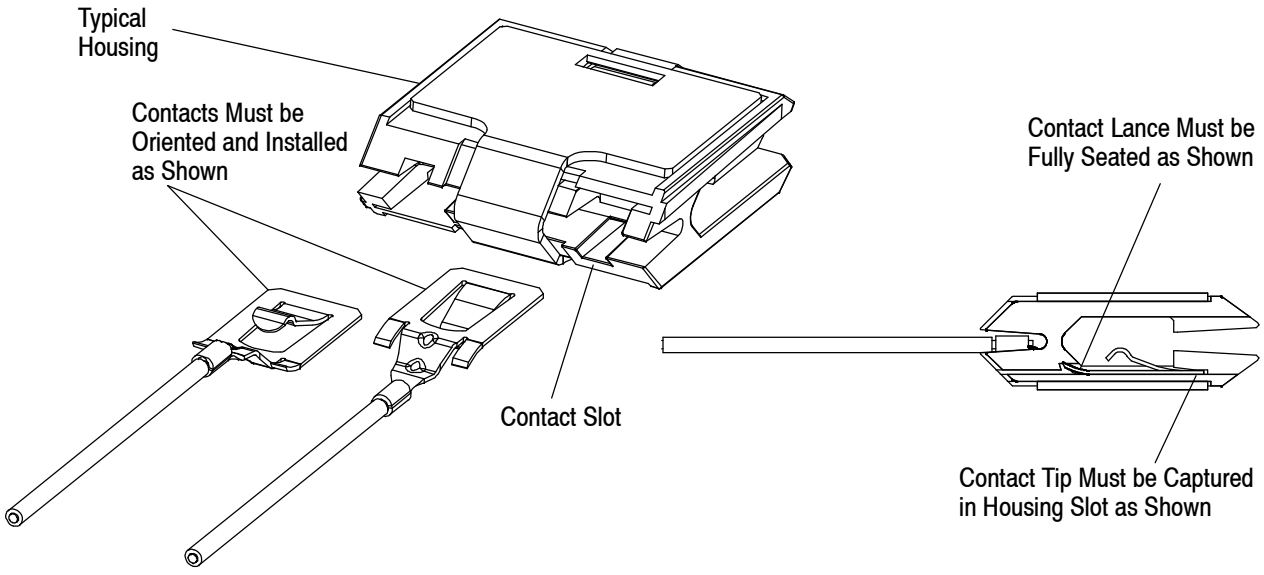


Figure 7

3.6. Housing Insertion Onto Rail

A. Power-Feed

Insert the connector onto the rail. Position the clamp over the housing. The connector’s keying feature must be positioned in bus bar keying feature. Push forward until bottomed on housing and clamp latches with the housing. See Figure 8.

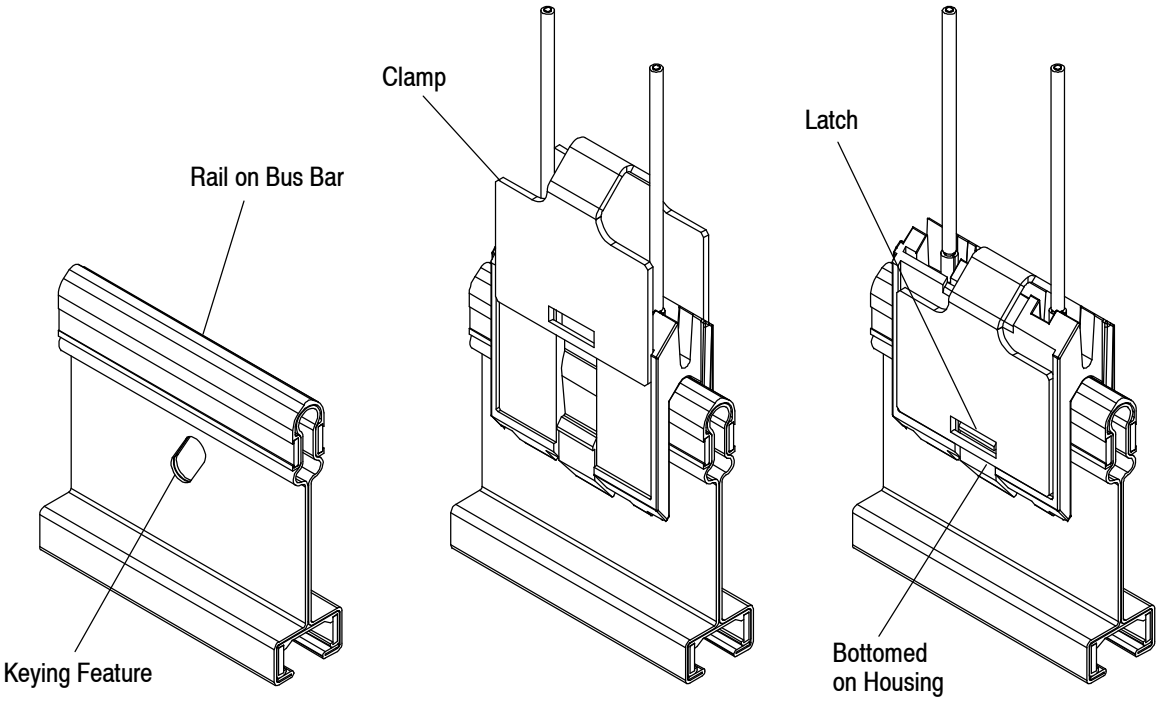


Figure 8

B. Load Device

Insert the connector onto the rail. Position the clamp over the housing. Push forward until bottomed on housing and clamp latches with housing. See Figure 9.

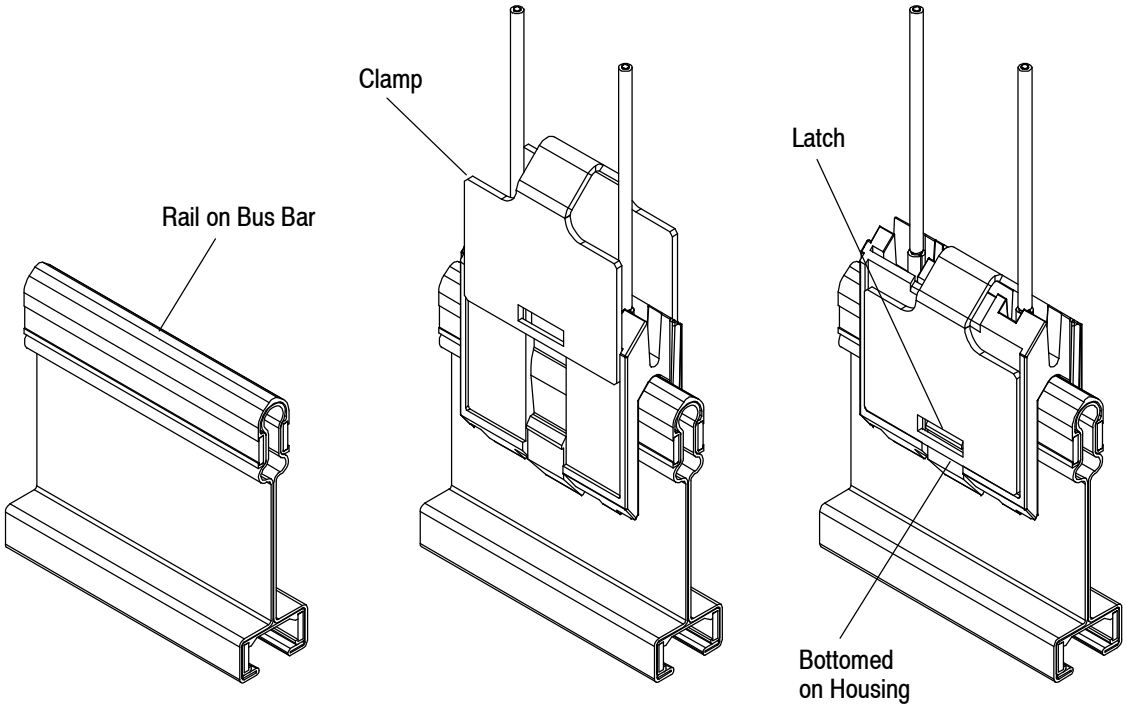


Figure 9

3.7. Installing Wires in Internal Bus Bar Connector

1. Remove the four screws from the connector body and separate the connector halves. See Figure 10.

NOTE

Care must be taken not to disturb the rotator assembly.

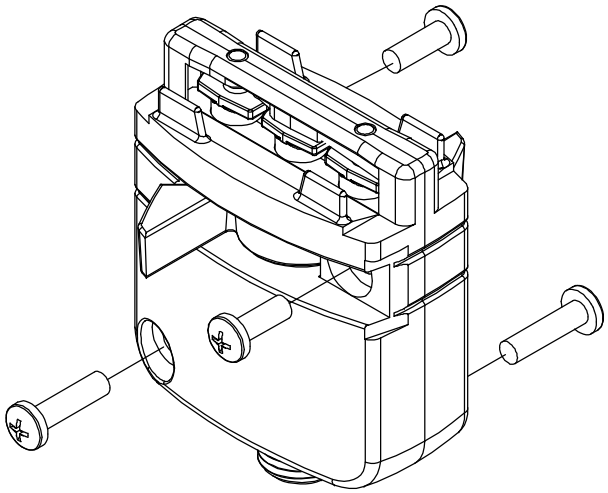


Figure 10

2. The recommended wire strip length is provided in Figure 11. If the optional strain relief is required, insert both wires through the holes in the strain relief plate.

NOTE

The third hole in the strain relief plate is for the guide wire.

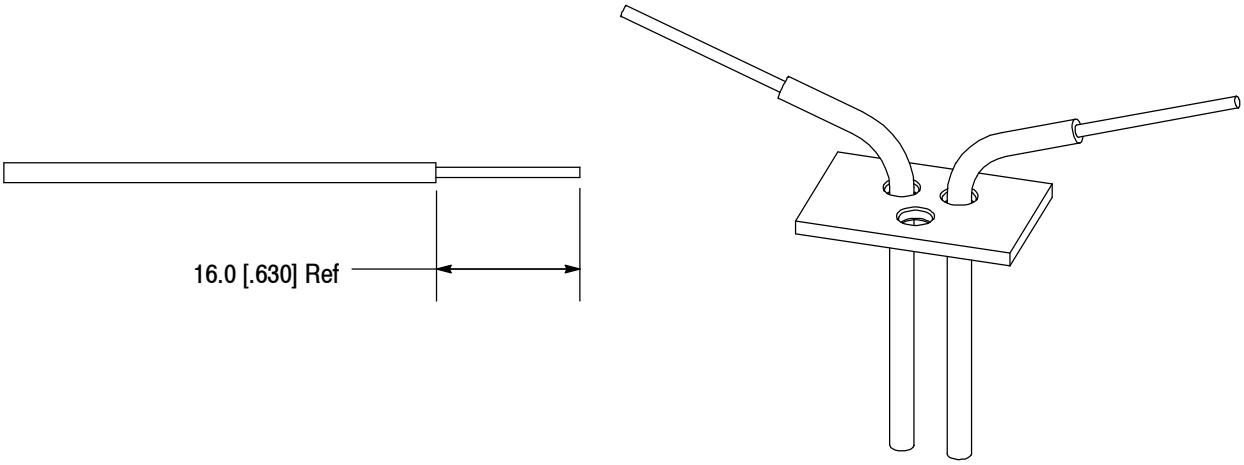


Figure 11

3. Attach one wire to each terminal on the connector half. See Figure 12.

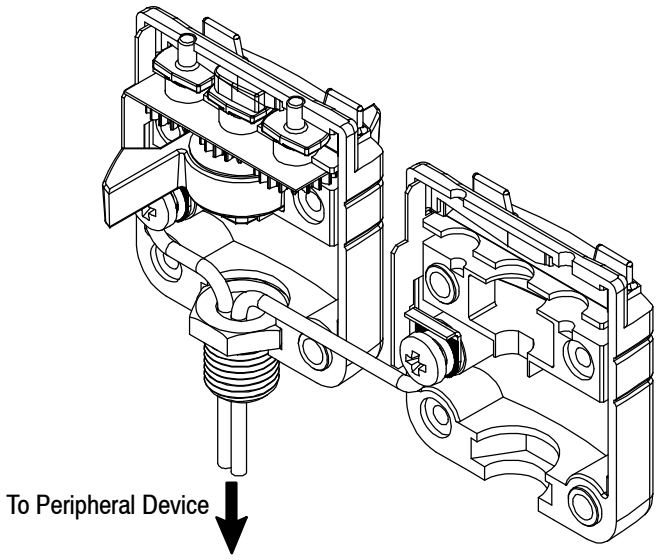


Figure 12

4. Align the connector halves and re-install the four screws to body. Recommended screw torque is 1.8 N●m [15.93 lb-in.]. See Figure 13.

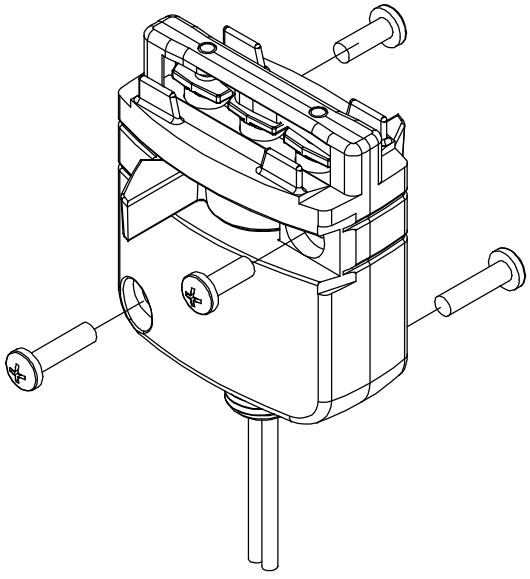


Figure 13

3.8. Inserting Internal Bus Bar Connector on Rail

Insert connector into the silhouette rail with the rotator in the unlocked position. See Figure 14. Turn rotator to lock in position.

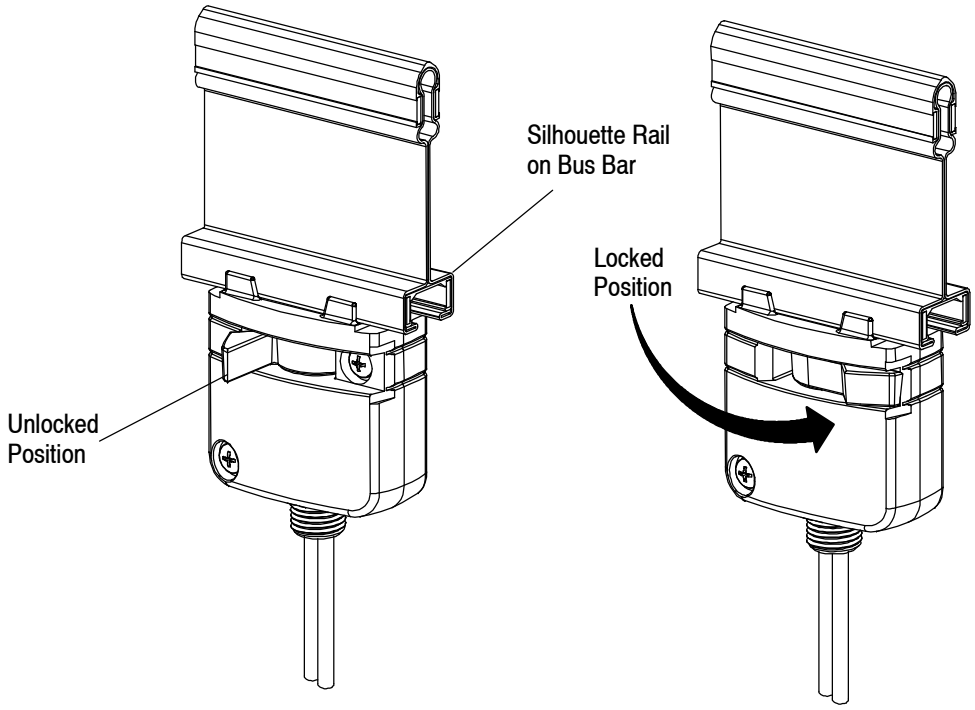


Figure 14

3.9. Fixture Attachment

A. Fixture Layout

Attach the fixture to a supporting plate using the layout provided in Figure 15.

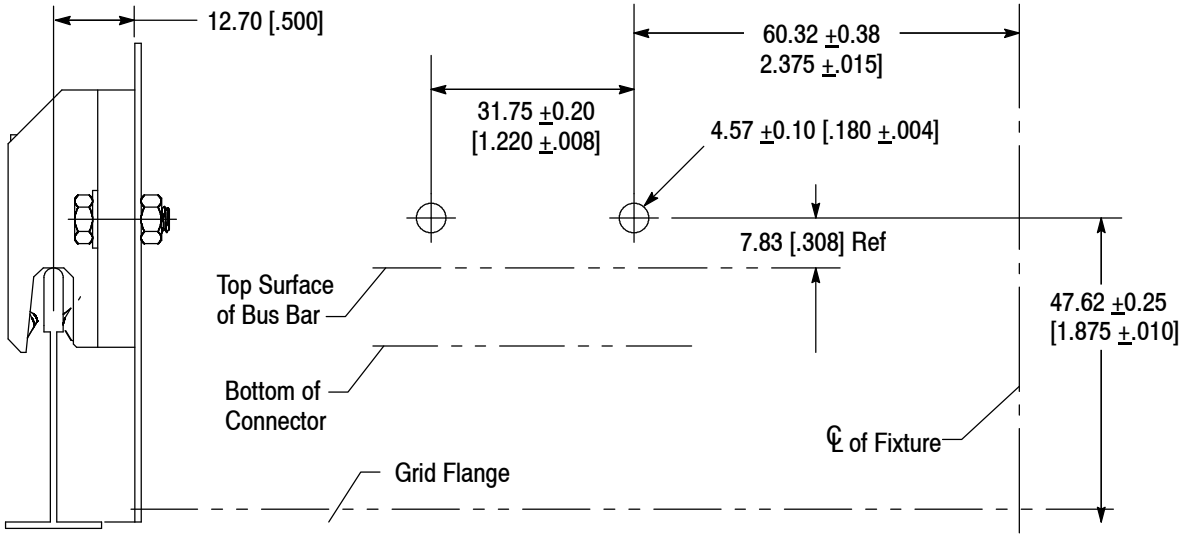


Figure 15

B. Attaching Fixture

Attach the fixture to the supporting plate using the customer supplied hardware shown in Figure 16.

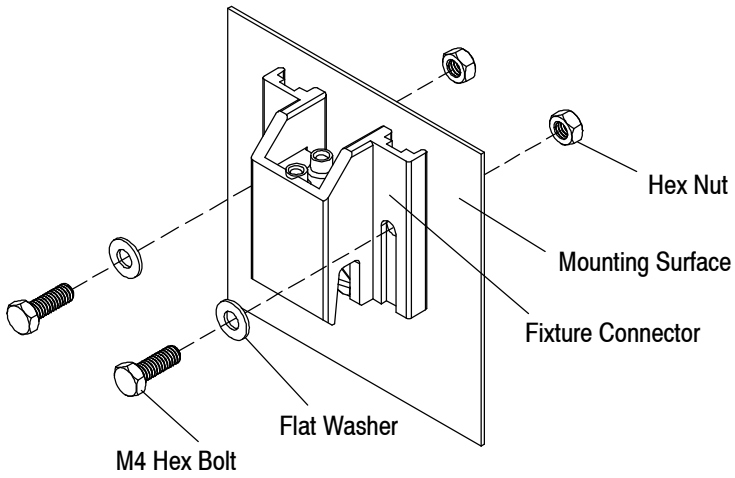


Figure 16

C. Wire Insertion and Fixture Placement

Insert 18 AWG wires from the device into the top of the connector. Wire must be secure in housing with no bare wire visible. Insert the connector onto the rail until bottomed. See Figure 17.

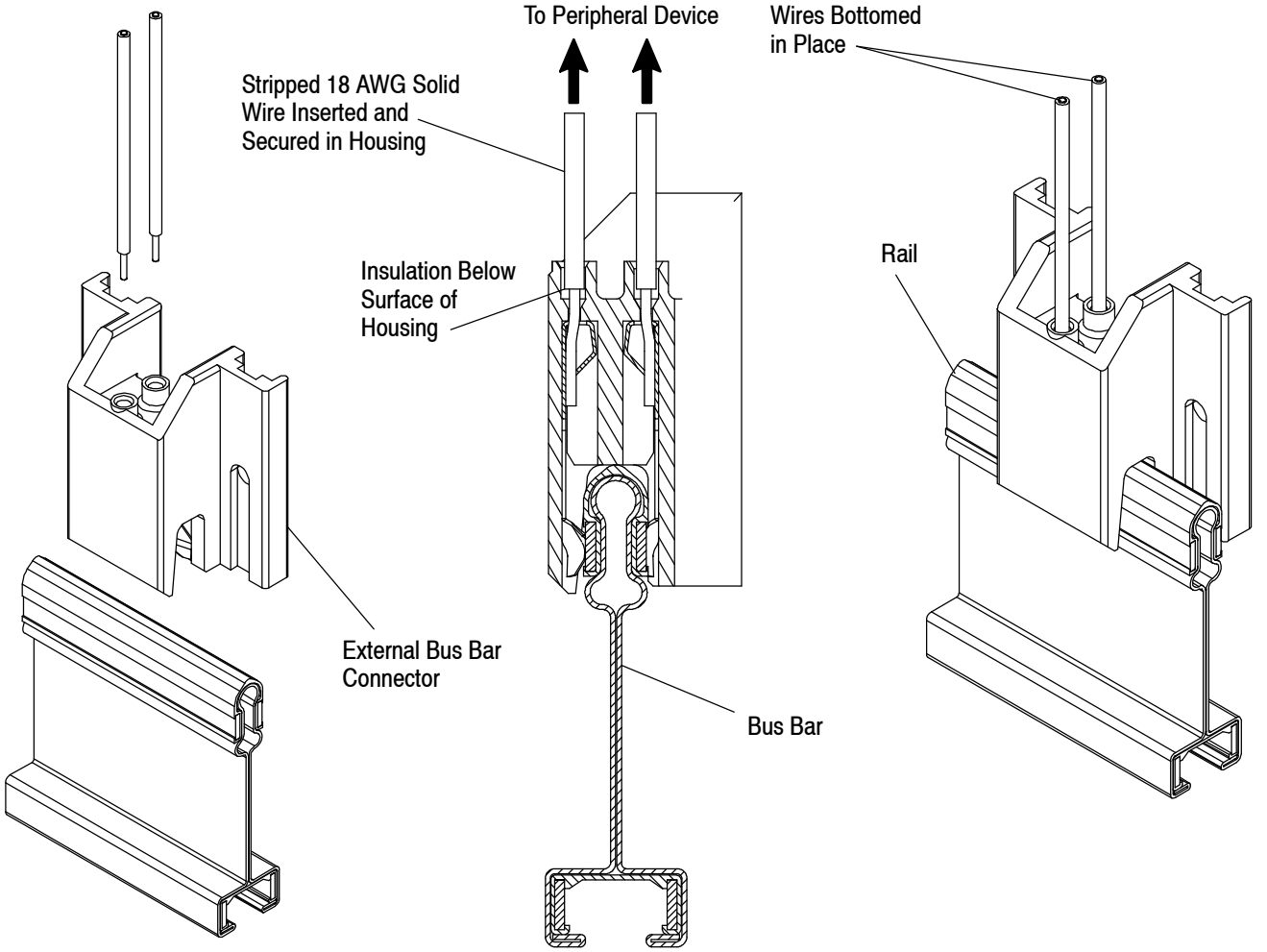


Figure 17

3.10. Repair/Replacement

CAUTION

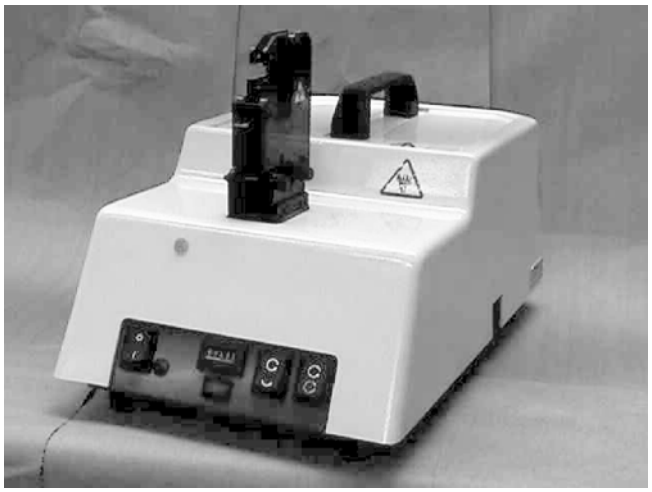
Terminated connectors must NOT be re-used by removing the wires. Defective connectors must be discarded and replaced.

4. QUALIFICATIONS

LVDC Grid Interconnects are Recognized by Underwriters Laboratories Inc. (UL) in File E336634.

5. TOOLING

Figure 18 provides information on tooling used in the termination of this product.



SDE Electric Bench Terminator 1490076-2

Hand Tool 3549402-2

CRIMP TOOLING (DOCUMENT)				
WIRE SIZE	STRIP LENGTH ±0.3 [.012]	ELECTRIC	HAND TOOL	CRIMPING DIES
18	5.08 [.200]	1490076-2 (409-10052)	354940-2	2161410-1
12				2161340-1

Figure 18

6. VISUAL AID

Figure 19 shows a typical application of LVDC Grid Interconnects. 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.

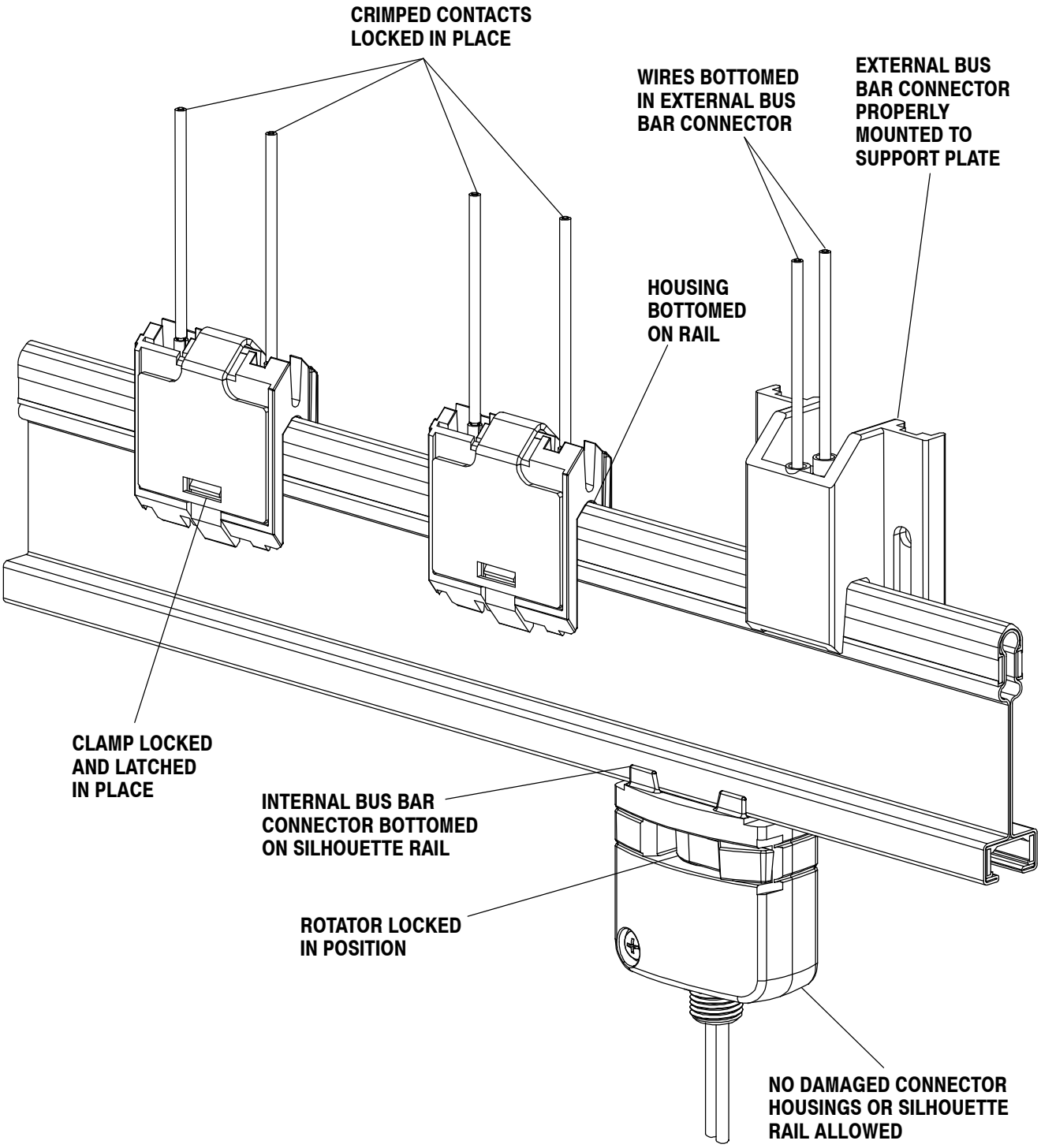


FIGURE 19. VISUAL AID