



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 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 the TE Solderless LED Socket, Type LS. This socket provides an integrated electrical and optical solution for the Philips Lumileds LUXEON S LED. The socket enables power to be brought to the LED by using an IDC contact to terminate the wire. The socket also has features to mount the reflectors from TE, Fraen, and Ledil. The LED Socket, Type LS is mounted using three No. 4 or M3 screws.

The LED Socket, Type LS consists of a LED locator which helps to orient the LED and keep it in place till the socket is screwed down. The socket has a pre-staged stuffer which accepts UL 1007/1569 24 AWG wire. The wires are terminated by pushing the stuffer down.

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.

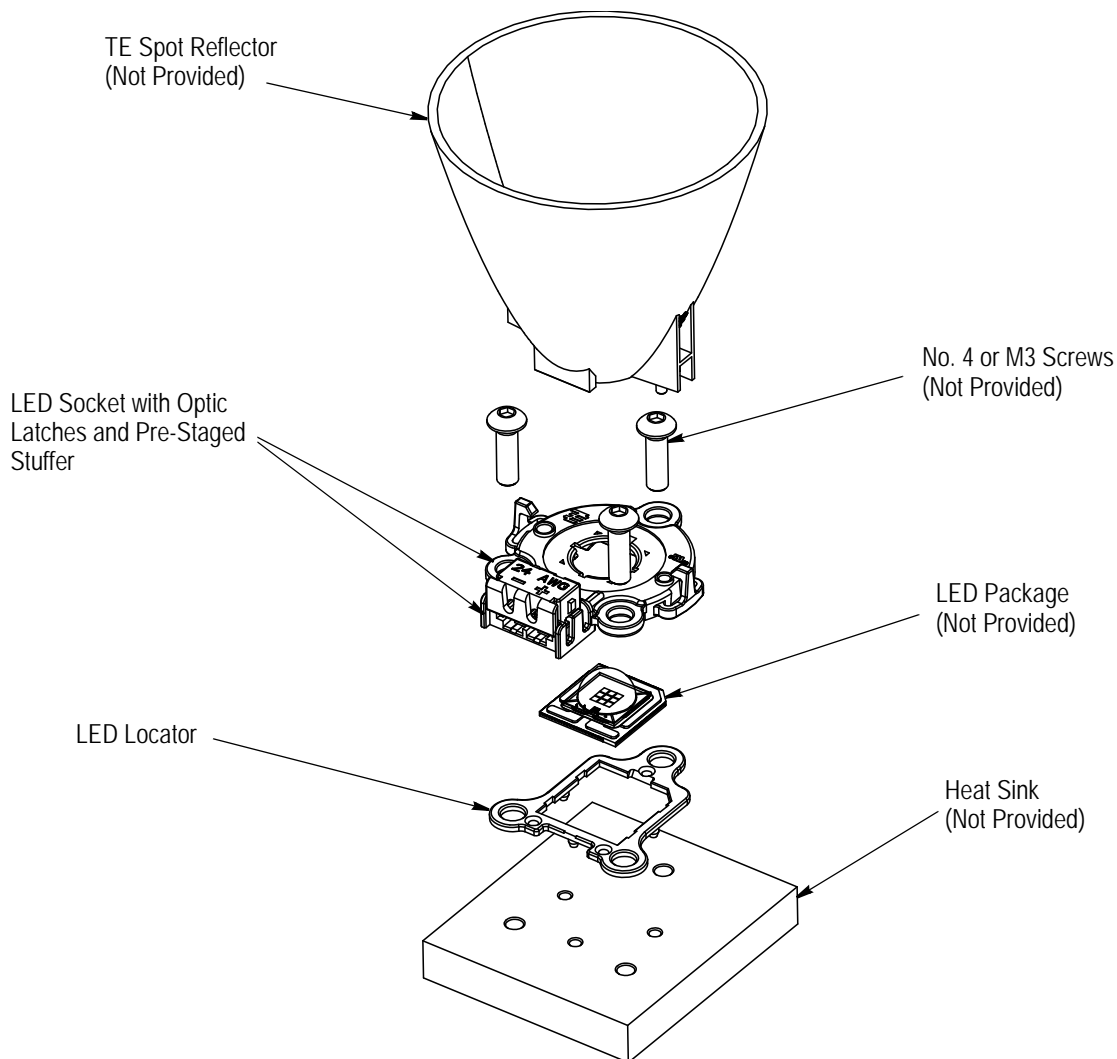


Figure 1

Philips, LUXEON, and Ledil, are trademarks of their respective owners.

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- Added or changed text in Sections 1 and 5; and Paragraphs 2.2 and 3.5.E
- Updated artwork in Figures 1, 7, and 11
- Updated table in Paragraph 3.5.D and added new NOTE and CAUTION in Paragraph 3.5.D

2.2. Customer Assistance

Reference Base Part Numbers 2154235 and 2154430, and Product Code L836 are representative numbers of the LED Socket, Type LS. 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 the Tooling Assistance Center or Product Information number at the bottom of this page.

2.3. Drawings

Customer Drawings for specific products are available from the service network. The information contained in 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. Safety

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

3.2. Storage

A. Shelf Life

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

B. Chemical Exposure

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

3.3. Features

The LED Socket, Type LS has a pocket in the housing which captures the LED substrate and enables the socket to be properly aligned with the LED. The socket is offered with and without latches for the optics. Sockets without the latches can be used by customers who do not intend to use an optic or want to use their own optic. The socket has three mounting holes and can be mounted using three No. 4 or M3 screws.

3.4. Heat Sink Layout

The mounting holes in the heat sink must be precisely located to ensure proper placement and optimum performance of the connector. See Figure 2.



Figure 2 represents a typical heat sink layout for this product. For dimensions and hole pattern layout for specific product, obtain the appropriate customer drawing through your TE Representative or refer to the telephone numbers at the bottom of page 1.

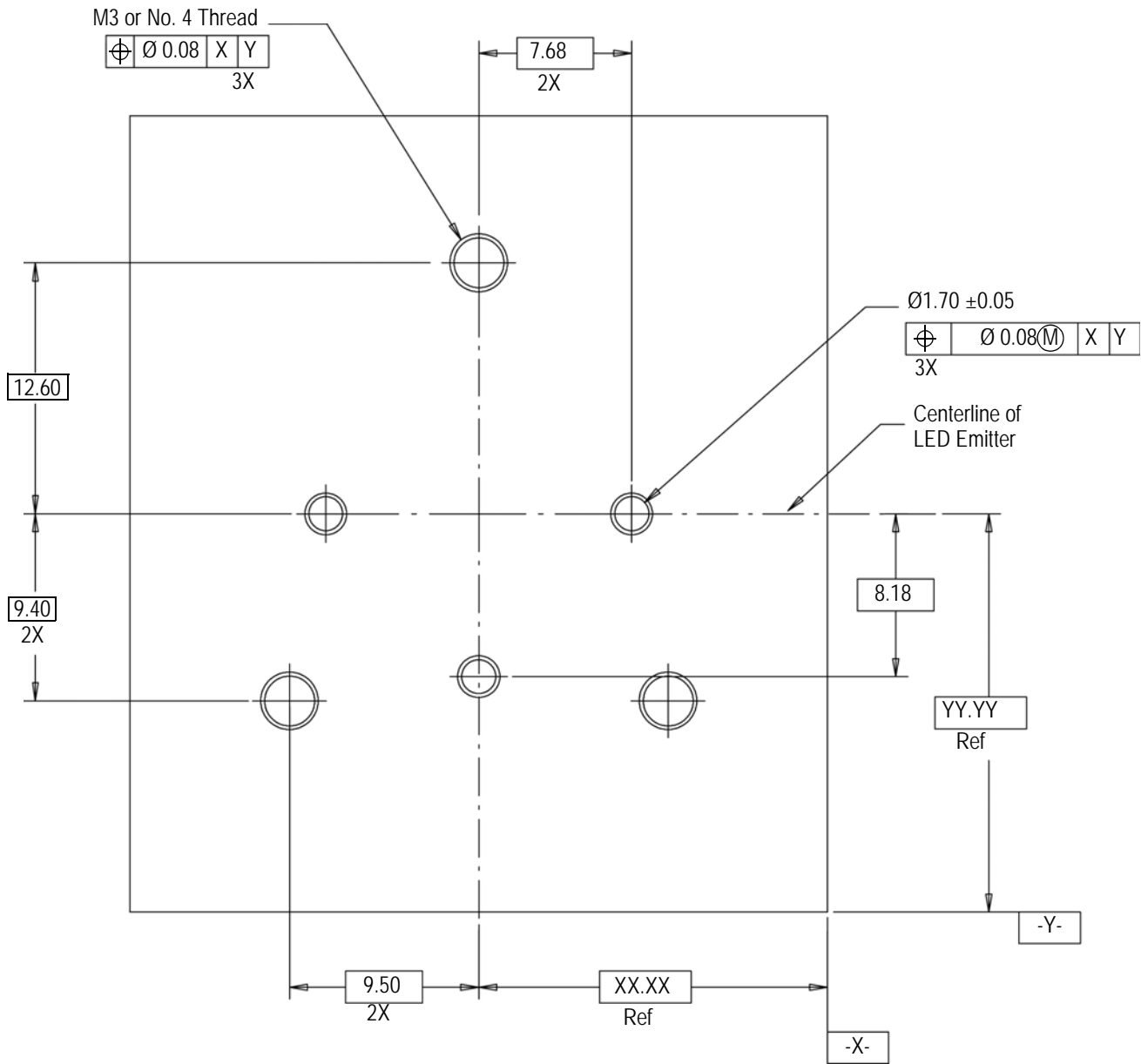


Figure 2

3.5. Mounting the LED Socket, Type LS

A. Preparing the Heat Sink

Refer to Figure 3 for applying the LED locator and the Thermal Interface Material (TIM).

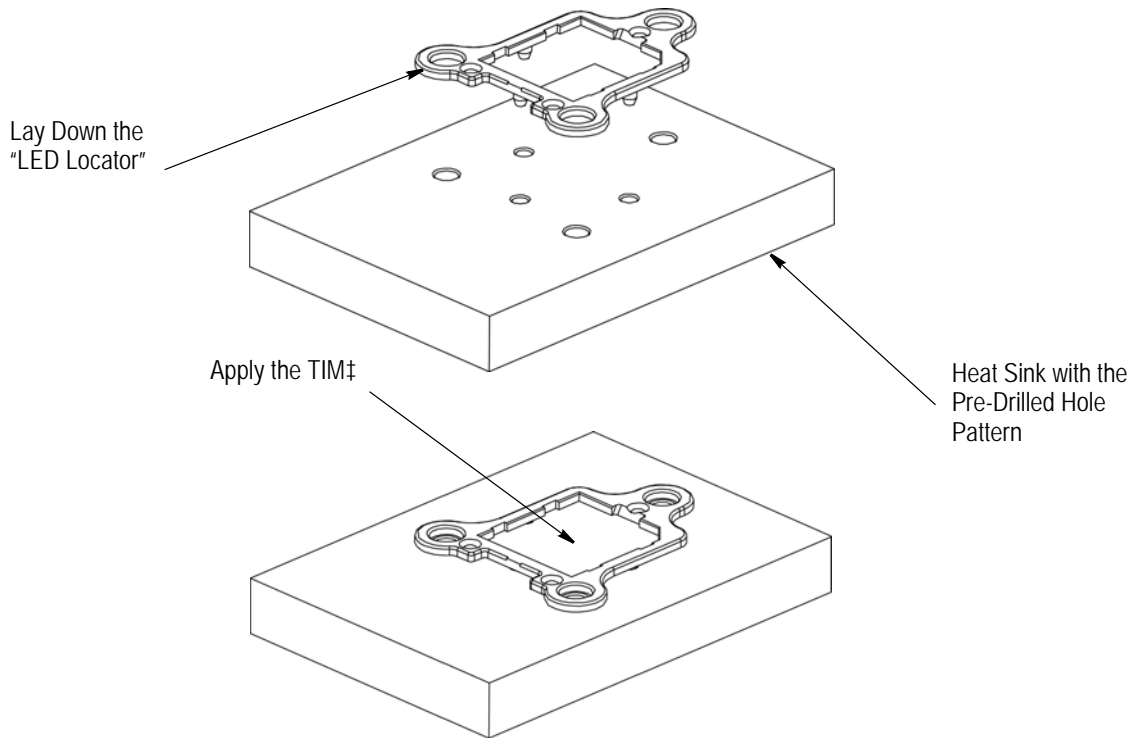
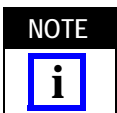


Figure 3



Refer to LUXEON S LED Datasheet for recommended TIM.



The LED Socket, Type LS can accommodate TIM thicknesses from 1 mil to 10 mil.

B. Aligning the LED

Refer to Figure 4 for aligning the LED on the heat sink.

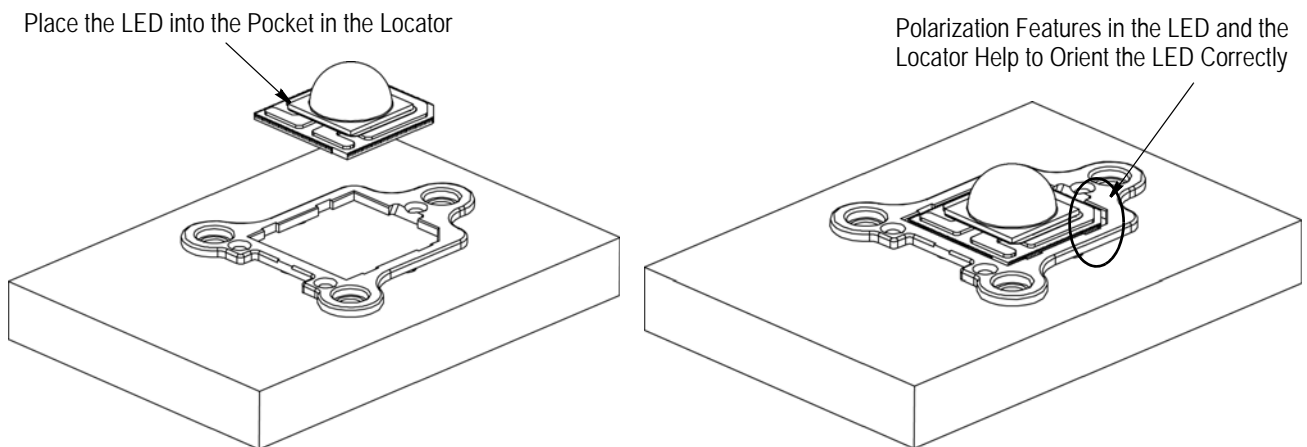


Figure 4

LUXEON is a trademark.

C. Mounting the LED Socket

Refer to Figure 5 for information on mounting the socket.



When pushing down on the socket, care must be taken to not damage the LED and the latches on the socket.



To protect against corrosion, screws from ferrous metals (other than stainless steel) should be zinc plated or have an equivalent protective coating. TE recommends using button head screws. The use of flat head screws is not recommended.



The recommended screw torque is 0.28 to 0.45 N•m [2.5 to 4.0 in.-lbf].

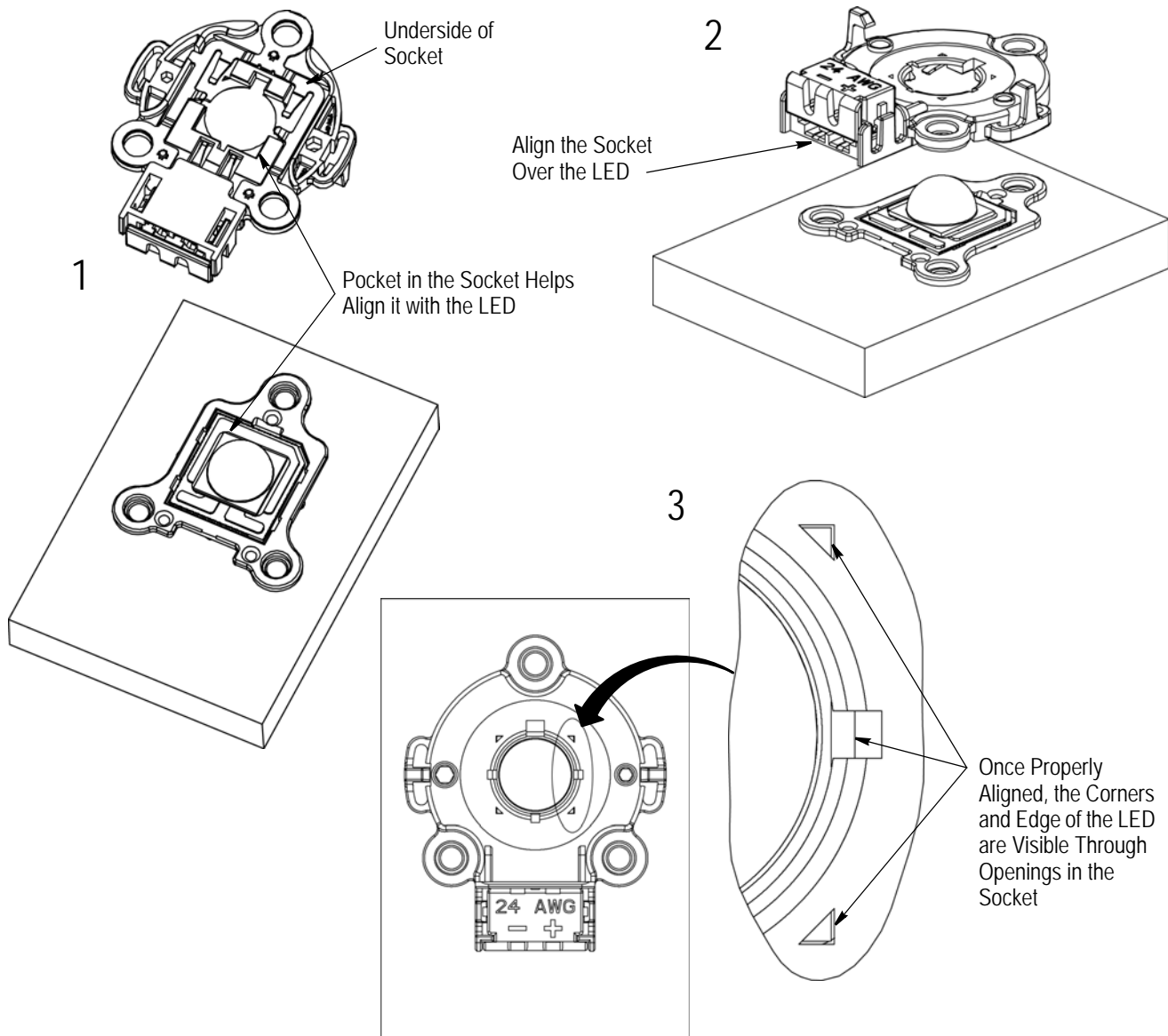


Figure 5 (Cont'd)

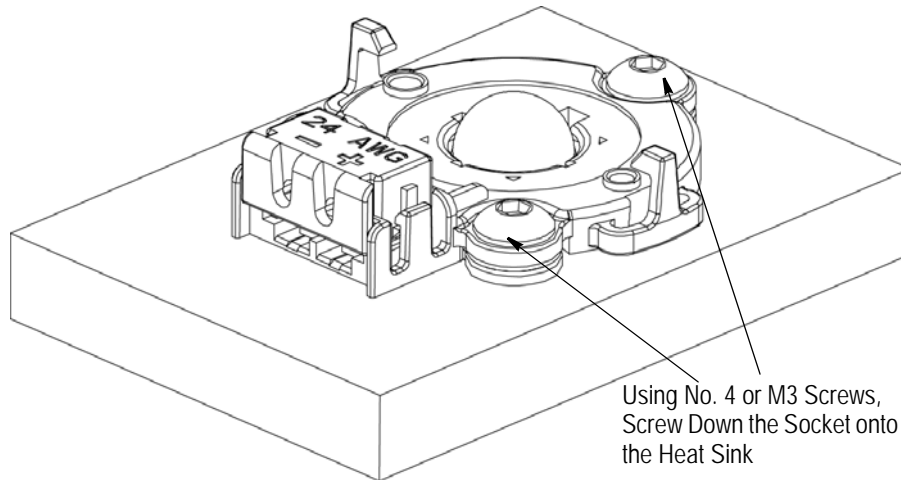


Figure 5 (End)

D. Terminating the Wires

The following wire types are recommended for use with the LED Socket, Type LS. The maximum insulation outside diameter to be $\varnothing 1.60$ mm.

| WIRE GAUGE | UL STYLE | CONSTRUCTION |
|------------|----------------|----------------|
| 24 | 1007/1569/3266 | Stranded, 7/32 |
| 24 | 1007/1569/3266 | Solid |

Refer to Figure 6 for information on termination of the wires.

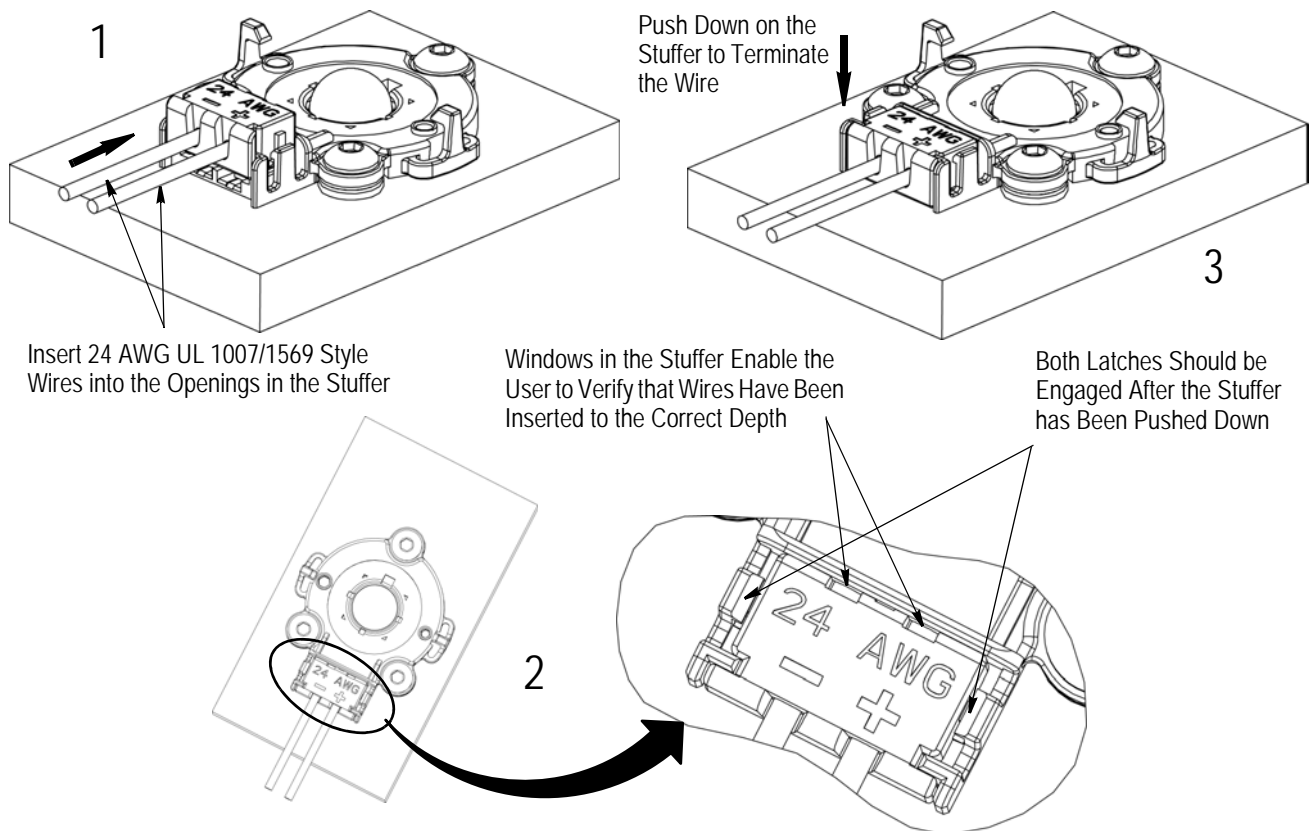


Figure 6



TE recommends the use of parallel action flat nose smooth jaw pliers or a small arbor press to ensure that the stuffer is terminated parallel to the bottom of the socket or heat sink mounting surface.



Failure to engage both latches on the wire stuffer could result in intermittent electrical performance.

E. Mounting the Optics

The LED Socket, Type LS has snap features which allow for easily attaching of the TE spot optic (1-2154430-1), Venla-Series of reflectors from Ledil, or R50 LS1-C from Fraen. In addition to the snap features, the socket also features press-fit holes to ensure that the optic is secured adequately.



The socket must be secured in place with the screws before the optics can be attached.

To attach the optics, align the snap features on the socket with corresponding features on the optics. Once aligned, push the optic down until the latches have snapped into place. See Figure 7.

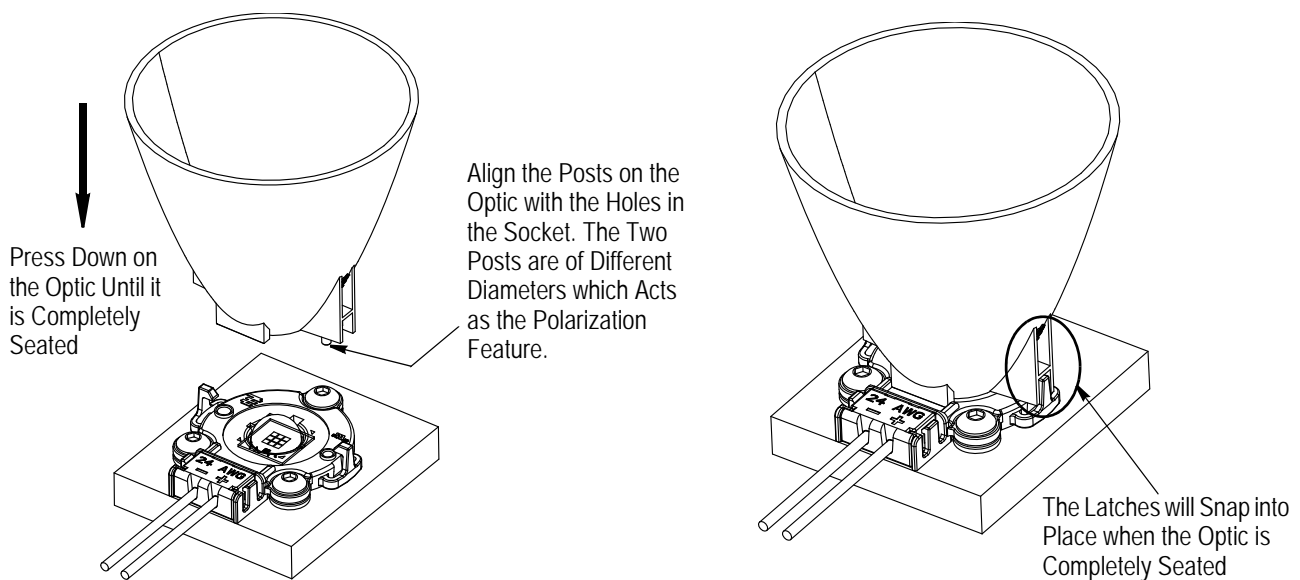


Figure 7



If the optic needs to be removed, pull the optic in the upward direction. Do NOT twist the optic.

3.6. Access for Attaching Thermocouples

The LED Socket, Type LS has an opening for easy attachment of a thermocouple, which allows the temperature of the LED to be measured. Refer to Figure 8 for the recommended region for attaching the thermocouple, and for the size of the opening. Before attaching the thermocouple, make sure that the socket is mounted to the heat sink, and that the screws are tightened to the correct torque values.



The thermal adhesive should be confined to the opening, or the socket performance could be affected.

NOTE


Refer to the Luxeon S application brief for recommended thermocouples, thermal adhesives, and case temperature.

CAUTION


If using an accelerated curing method for the thermal adhesive, make sure that the temperature does not exceed the rated temperature of the LED Socket, Type LS.

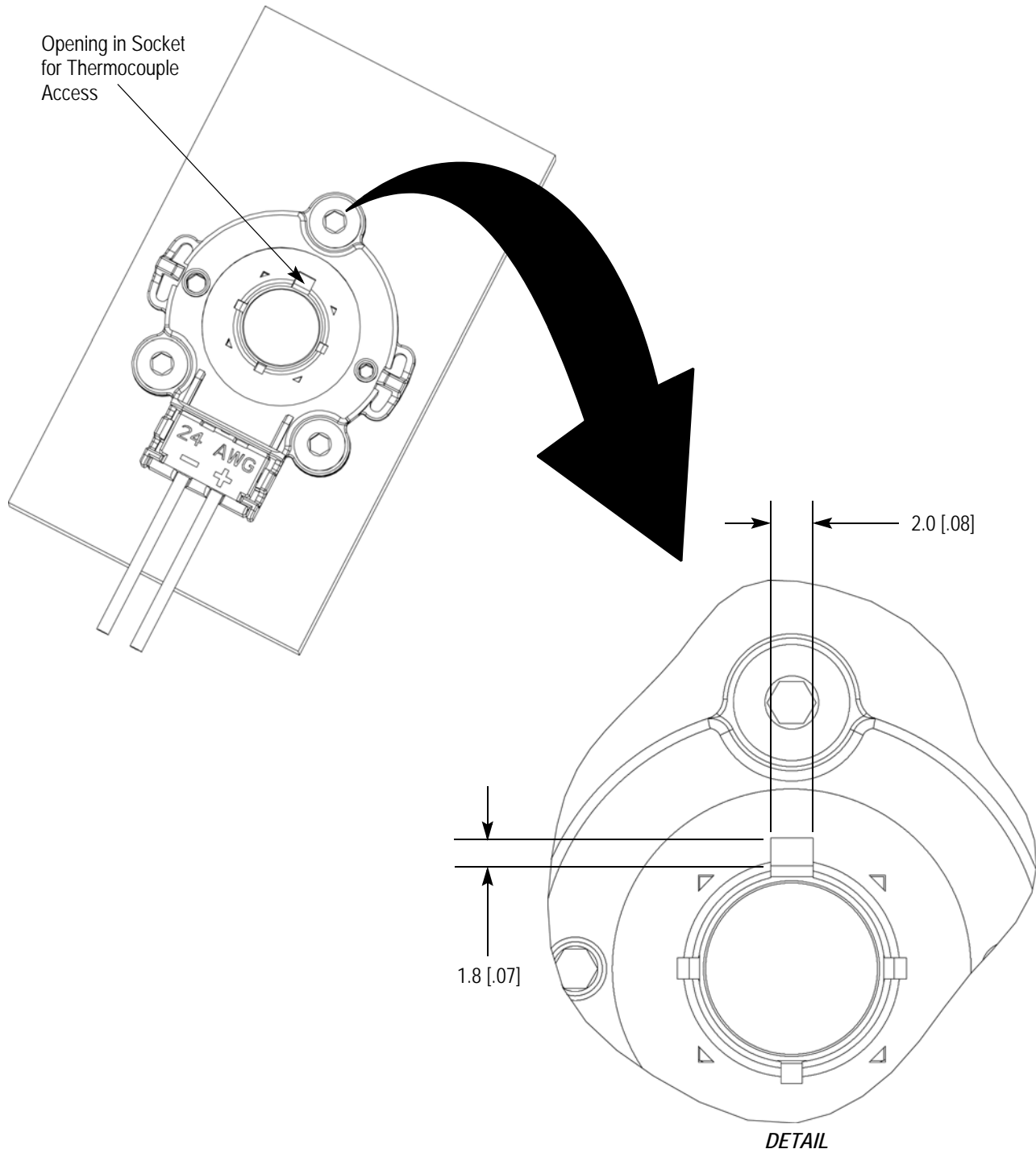


Figure 8

3.7. Repair/Replacement



Damaged parts should not be used. Such components should be removed, discarded and replaced with new components.

3.8. Replacing the LED

To replace the LED, first un-mount the socket while taking care to not damage the optic latches and the contact beams. The locator has a slot in it which allows for the removal of the LED using a thin blade tool. See Figure 9.



Refer to the Luxeon S application brief regarding the recommended handling procedures for the LED

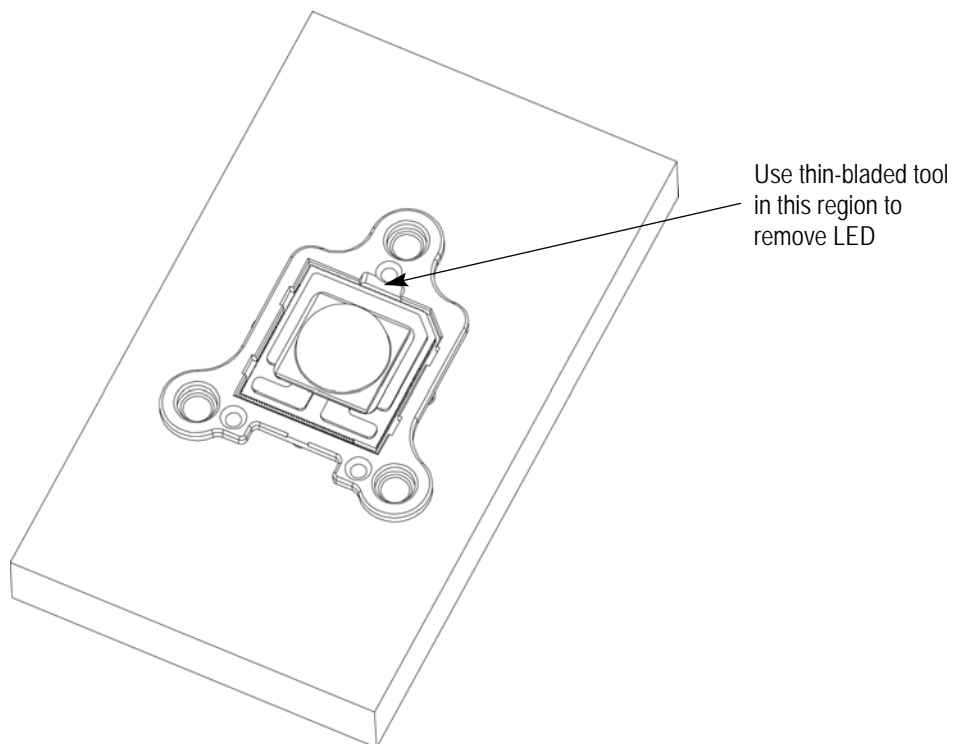


Figure 9

3.9. Using the Transfer Punch Guide

A transfer punch kit (2154473) is available to help customers in their prototyping efforts. The kit consists of a punch guide and a 5/64-in. transfer punch. The transfer punch guide can be used to mark the location of the hole pattern needed to use the LED Socket, Type LS. To use the Transfer punch guide, refer to Figure 10 and proceed as follows:

1. Mark the desired location of the Optical Center on the heat sink.
2. Align the transfer punch guide over the optical center with the help of the hole in the punch guide.
3. Secure the transfer punch guide in place with the help of clamps or double sided tape.
4. Using a 5/64-inch transfer punch, transfer the location of the hole pattern onto the heat sink.
5. With the hole pattern transferred onto the heat sink, the holes can be drilled using a drill press.



The transfer punch guide should not be used as a drill guide.

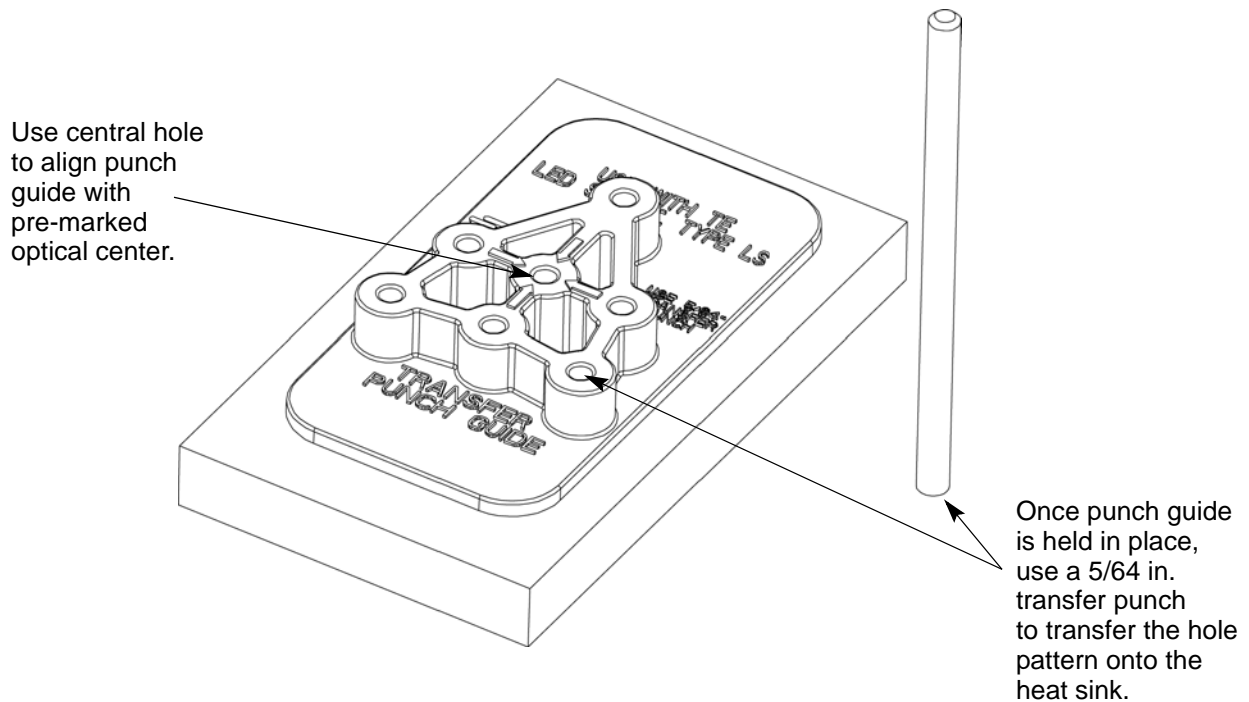


Figure 10

4. QUALIFICATION

The LED Socket, Type LS is Underwriters Laboratories Inc. UL/CSA International Recognized in File E28476, Vol. 10, Section 12.

5. TOOLING

A torque driver is required to properly tighten the mounting screws and parallel action flat-nose pliers or a small arbor press is needed to press down the wire stuffer as shown in 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.

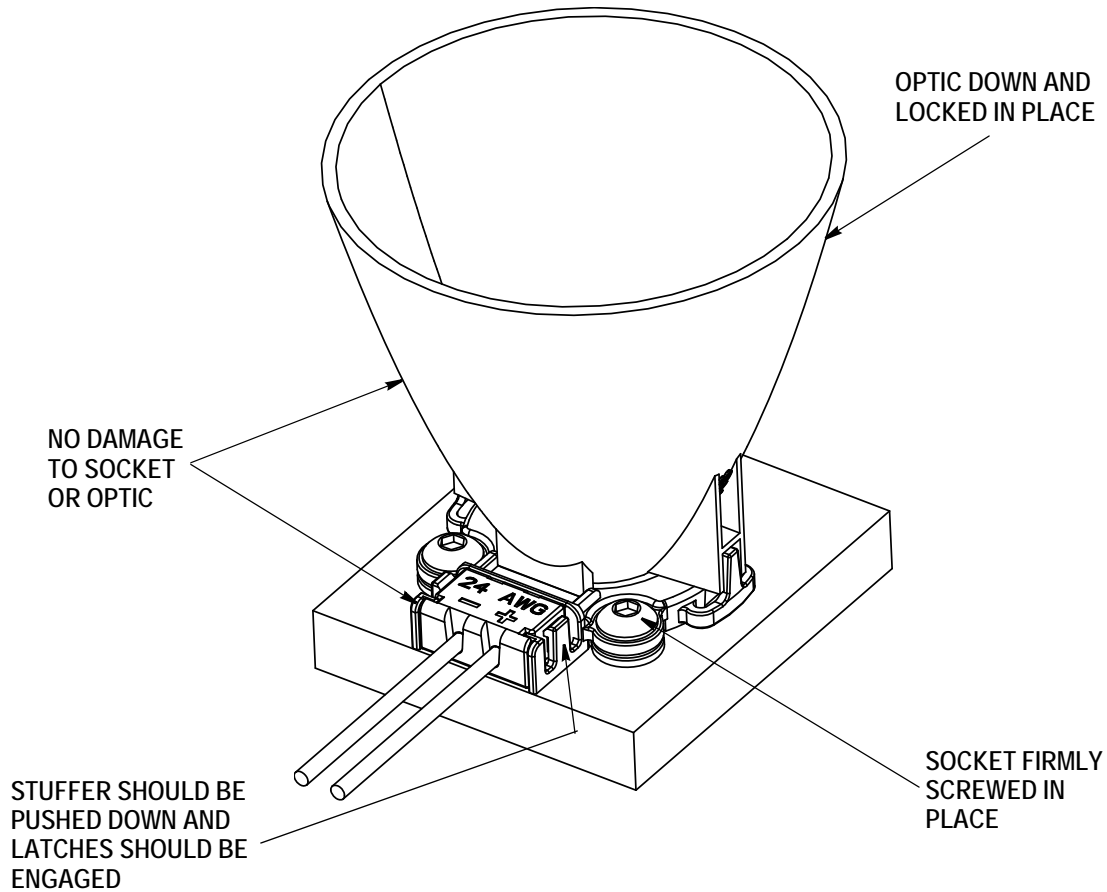


FIGURE 11. VISUAL AID