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 LUMAWISE Endurance S series Receptacle, Sealing Cap, and Module base. This connector system is typically used for roadway lighting and sensing applications, as well as area lighting and sensing applications. The LUMAWISE Endurance S series is supplied as a 4 position contact system with all contacts being pre-installed into both the receptacle and module base assemblies. The LUMAWISE Endurance S Receptacle contacts are wire poke-in style termination contacts, while the mating LUMAWISE Endurance S Module base contacts are blade style contacts with PCB solder tails. Both standard and keyed versions are available which prevent mating to each other.

The LUMAWISE Endurance S Module cover is not supplied with the base assembly, but available separately. It is the responsibility of the customer to provide and install the light or sensor control electronics.

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

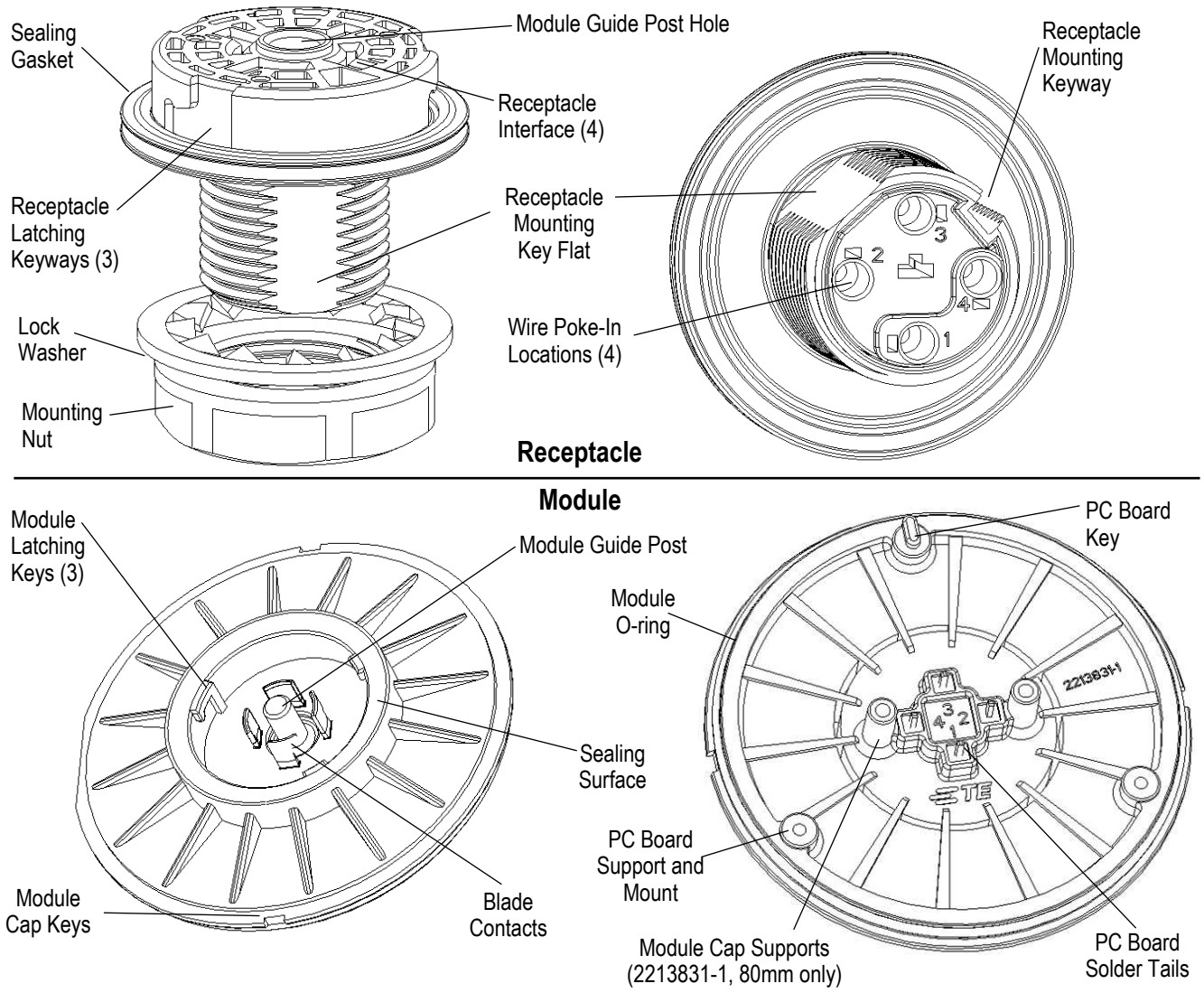


Figure 1a

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TE Connectivity, TE connectivity (logo), and TE (logo) are trademarks. Other logos, product, and/or company names may be trademarks of their respective owners.

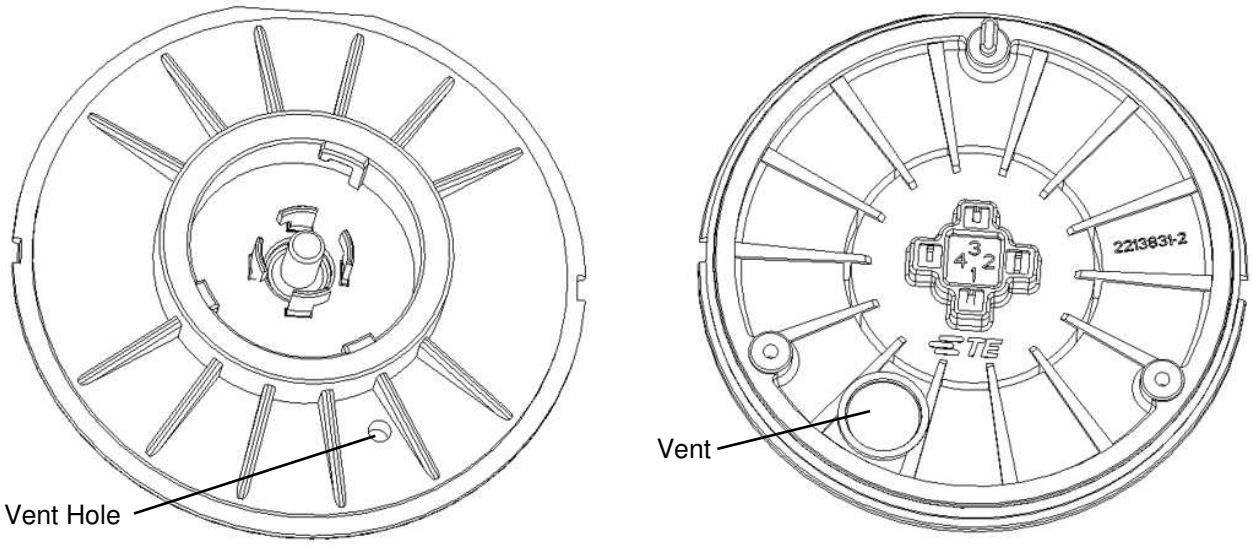


Figure 1b - Vented Module (2213831-2 only)

NOTE: *To ensure the vented features work properly, do not allow any external features or internal components in vented area shown in Figure 1b.*

Caution: During handling, do not touch the vent material. Mishandling could damage the vent.

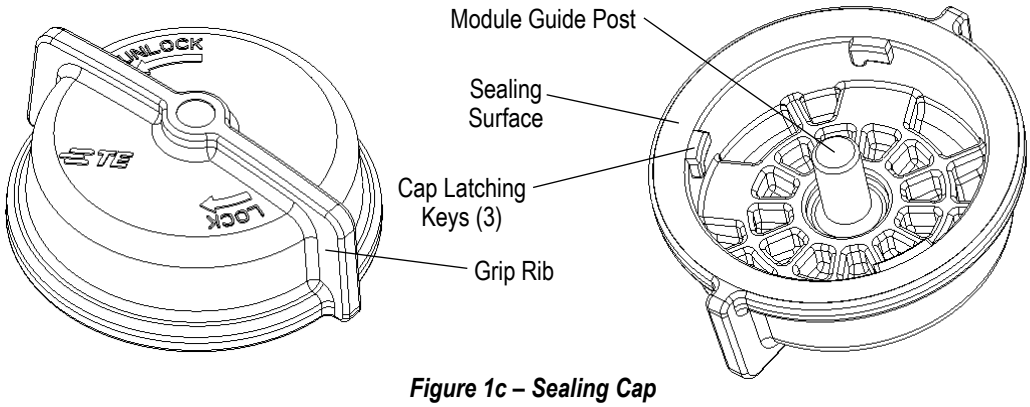


Figure 1c – Sealing Cap

2. REFERENCE MATERIAL

2.1. Revision Summary

Add section 7. Revise section 2.2.

2.2. Customer Assistance

Reference Product Base Part Numbers:
Receptacle Assembly – 2213858, 2343403

Sealing Cap – 2213795, 2341474
40mm Base Assembly – 2213837, 2343405
80mm Base Assembly – 2213831, 2343404
40mm Dome – 2329013
80mm Dome - 2328823

Product Code L937. Use of these numbers will identify the product line and help you to obtain product and tooling information when visiting www.te.com or calling the number at the bottom of this page.

2.3. Drawings

Customer drawings for product part numbers are available from www.te.com. Information contained in the customer drawing takes priority.

2.4. Specifications

Product Specification 108-133073 provides product performance and test information for the LUMAWISE Endurance S products.

3. REQUIREMENTS

3.1. Safety

Perform all electrical wiring of the receptacle with power turned OFF.

3.2. Limitations

The connectors are designed to operate in a temperature range of -40° to 90°C [-40° to 194°F].

3.3. Material

The receptacle housing, sealing cap, module bases, and domes are made of UL 94V-0 and UL UV-f1 rated thermoplastic. The locking nut is made of UL 94V-2 rated thermoplastic. The lock washer is stainless steel. The module blades contacts are made of brass plated overall with tin. Receptacle contacts are made of copper alloy plated with tin overall. Sealing gasket and module O-ring are silicon rubber.

3.4. Storage

A. 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.

B. Chemical Exposure

Do not store or use 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

3.5. Handling

The receptacle assembly is supplied with the sealing gasket installed, with the lock washer and mounting nut bagged separately with the receptacle assembly. Sealing caps are supplied in bulk packaging. Module assemblies are supplied with o-ring and power contacts preinstalled; therefore, take precautions not to damage or misplace parts prior to assembly. Ensure receptacle sealing gasket and module O-ring are present prior to final assembly.

3.6. Receptacle Mounting

A. Mounting

A surface shall be provided on luminaire housing that is ideally flat. If a flat surface is not possible a secondary possibility is to have a flat surface in one direction and a minimum radius in the other of 500mm to mount the receptacle. To provide a water tight mounting seal, the luminaire surface must be free of dirt, debris, or burrs. Sealing gasket provided with the receptacle assembly must be used. Receptacle can be used on a luminaire housing thickness between 1.5mm to 6.0mm. When mounting receptacle assembly, it must not rotate during locking washer and locking nut application. Torque mounting nut within the range of 1.8 to 2.4 N-m using a 27mm hex socket. See Figure 2.

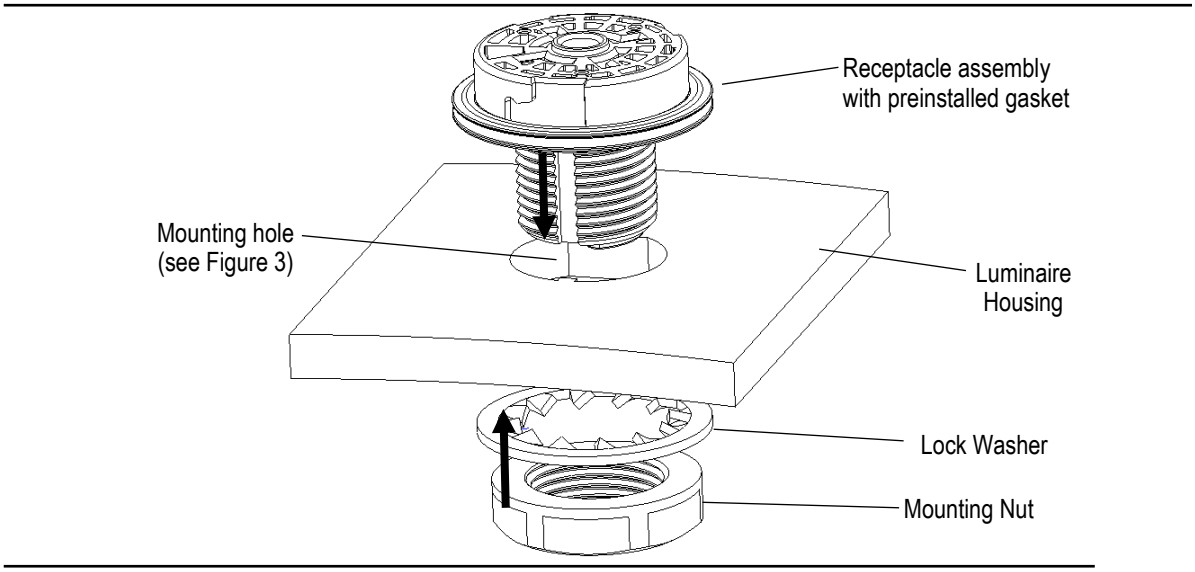


Figure 2

B. Mounting Hole Pattern

The recommended mounting hole is shown in Figure 3. Refer to product drawing for additional details.

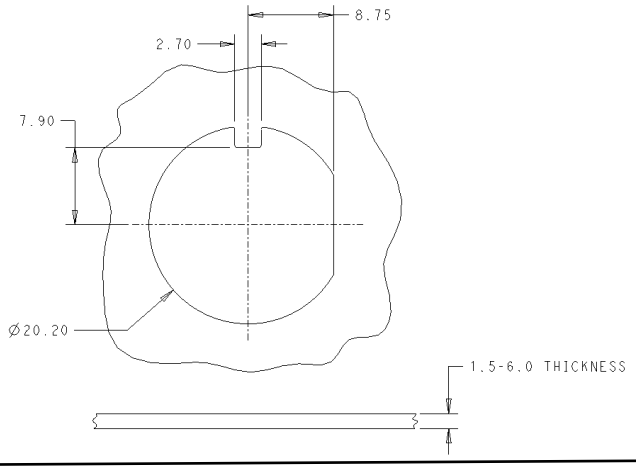


Figure 3

NOTE: Variations to the recommended mounting hole are possible but must be verified by the end user to ensure they do not result in excessive movement of the receptacle assembly during mounting or use. Excessive movement could result in reduced system performance. An absolute maximum hole diameter of 22.0mm should be used.

C. Mounting Location and Orientation

Locate the receptacle in any orientation based on your module operation requirements.

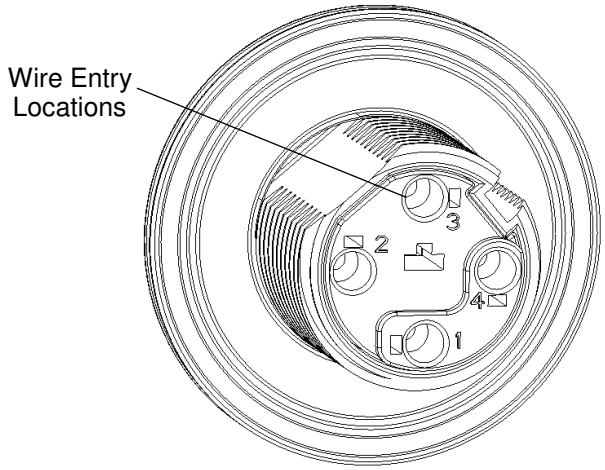
D. Workmanship

The receptacle housing and sealing gasket must not be damaged in anyway. There shall be no nicks or marks on gasket top and bottom surfaces.

3.7. Wire Connections

A. Wire Locations

The receptacle is wired on the bottom side of the assembly; access from the inside of the luminaire. Wire entry locations are labeled 1, 2, 3, and 4. Corresponding contact designations are marked the same on the module bases for PCB alignment. See figure 4.

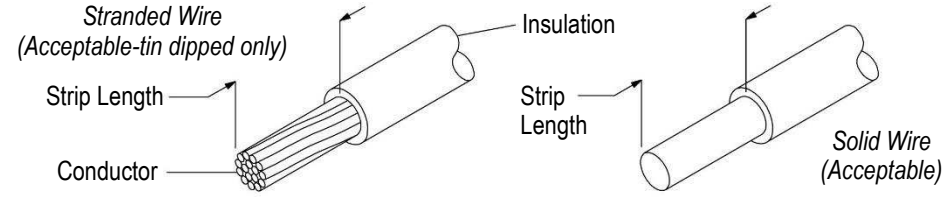


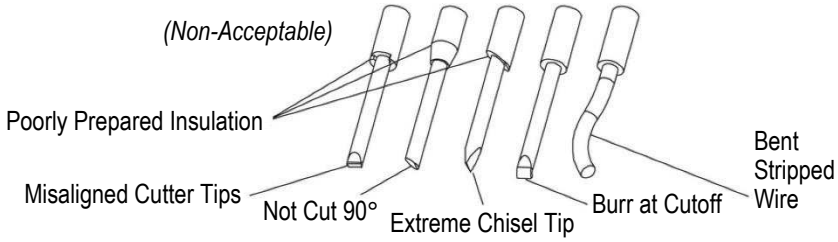
PIN NUMBER	FUNCTION
1	+24V POWER SUPPLY
2	NEGATIVE POLE FOR DALI OR DALI BASED PROTOCOL AND SHARED GROUND RETURN FOR 24V POWER SUPPLY
3	POSITIVE POLE FOR DALI OR DALI BASED PROTOCOL
4	GENERAL DIGITAL I/O (GREATER THAN 7V)

Figure 4

3.8. Wire Selection and Preparation

The receptacle assembly will accept 16 thru 20AWG solid and 18 thru 20AWG stranded tin-dipped copper wire only. The table in Figure 5 provides wire selection for the Poke-In Connectors. See Figure 5.





RECOMMENDED WIRE			
WIRE SIZE	WIRE TYPE	INSULATION DIAMETER	STRIP LENGTH
16AWG	SOLID	Ø2.95 MAX Ø1.90 MIN	11.0±1.0
18AWG	SOLID		
	STRANDED (TIN-DIPPED)		
20AWG	SOLID		
	STRANDED (TIN-DIPPED)		

Figure 5

NOTE
Recommended maximum insulation diameter should be as provided in Figure 5. Wires with larger insulation diameters will not fit within the housing's poke-in hole insulation tunnel. Wires utilizing semi-rigid insulation are recommended to minimize movement of the insulation along the axis of the wire. Movement of the insulation will result in variation of the wire strip length which can lead to incorrect wire termination.

3.9. Wire Termination

The receptacles must be terminated according to the following instructions.

A. Workmanship

CAUTION
The housing must not be damaged in any way. There shall be no bending of the contacts. There shall be no exposed copper wire or broken or bent conductor strands.

B. Wire Insertion

All wires must be pushed firmly inside the contact wire openings. The wires must be fully inserted so that the wire insulation is inserted between three and five millimeters into the rear of the housing. Refer to Figure 6.

C. Wire Termination Depth

The required wire termination depth is achieved when the wire has bottomed in the connector housing. Connector design has an internal wire stop. Refer to Figure 6

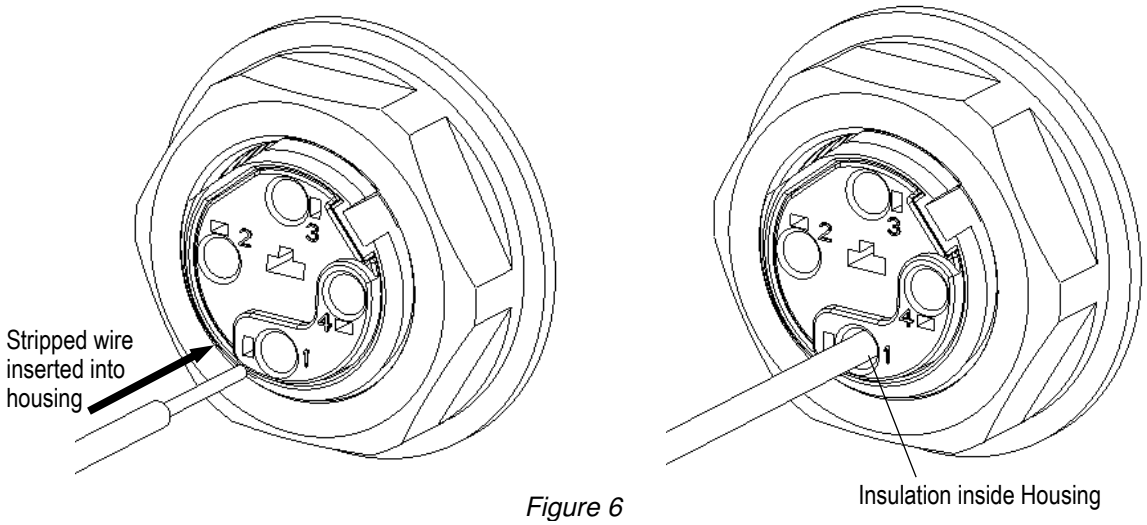


Figure 6

D. Wire Extraction

A fully inserted wire can be extracted from the receptacle using a tool and the release tool window located on the bottom of the receptacle housing. Using tool tip that is 0.8mm x 1.4 mm in cross section and 16.0mm long, insert it into the window (one per wire) and open the contact beams. The wire may then be extracted from the connector along the axis of wire insertion direction. Refer to Figure 7.

CAUTION: *Extraction device to be free from burrs and sharp edges to ensure no damage is done to connector terminals.*
CAUTION: *A new stripped wire must be re-inserted into cavity after extraction of existing wire. DO NOT re-use extracted wire.*

DANGER: *Extreme caution to ensure there is no power in the system prior to insertion of wire extraction device.*
Exercise extreme care to avoid electrical shock or system damage

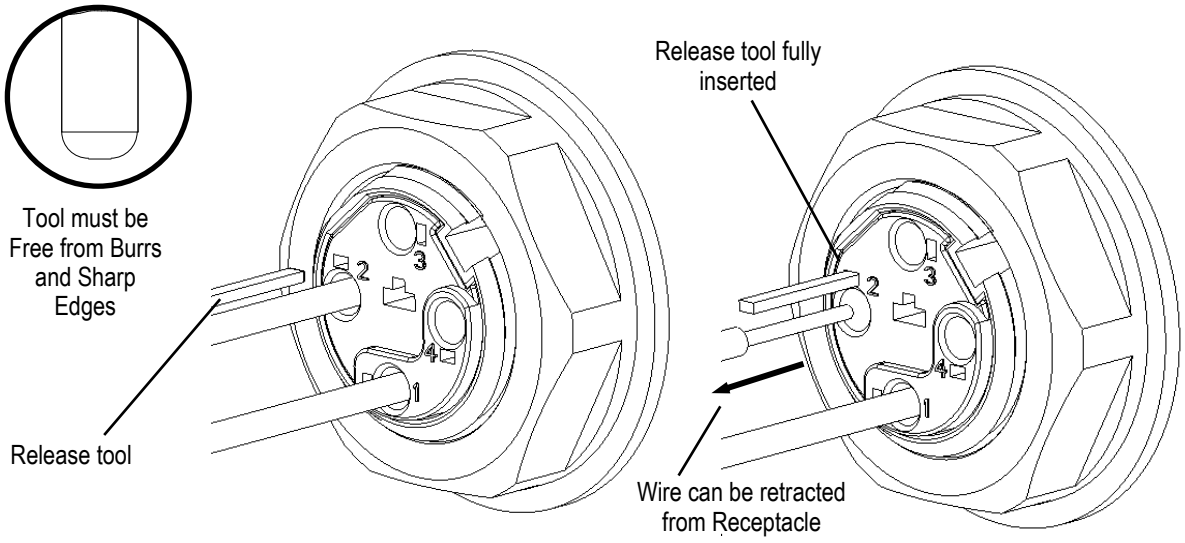


Figure 7

3.10. Printed Circuit (PC) Board Placement and Soldering (Module)

A. PC Board Placement

The solder tails are thru-hole type. The PC Board thru-hole solder tail pattern may be found on the appropriate TE Connectivity customer drawing. The customers populated pc board shall be first positioned onto the power contact solder tails. The PC Board shall be resting on the board standoffs at the tail pillars, additional board standoffs may be at the perimeter if module diameter allows. PC Board to be aligned with PC Board key. Optional mounting holes may be used to secure the PC Board to the module base. Due to the variety of self-tapping screws for plastic, the customer must determine the best-fit hardware for their assembly process. Refer to Figure 8.

B. Soldering

Observe guidelines and procedures when soldering contact solder tails. The connectors should be soldered using acceptable hand-soldering techniques. All solder joints should conform to the Workmanship Specification IPC-A-610, “Acceptability of Electronic Assemblies” and IPC J-STD-001, “Requirements for Soldering Electrical and Electronic Assemblies End Item Standards”.

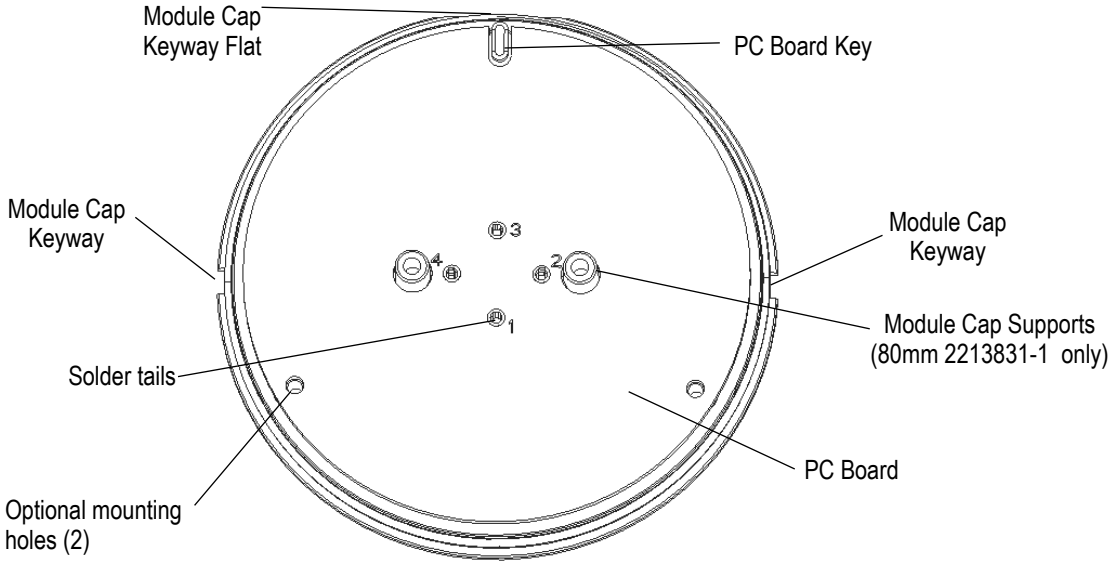


Figure 8

3.11. Module Dome Assembly

Prior to assembly, inspect the module base O-ring for proper placement and damage.

The dome has three raised keys (two small and one large flat) which must be properly aligned with the corresponding keyways in the perimeter of the module base. Always ensure the large flat key of the dome aligns with the large flat keyway on the module base. Refer to Figures 8 and 9b.

An assembly fixture mounted in a small press with an adjustable ram are recommended for assembly. The cover and base must be pressed together squarely. Take precautions not to damage the base assembly and dome during the assembly process. Inspect the dome and module base assembly to ensure the dome latches are fully latched to the base ledge. Refer to Figures 9a, 9b, and 9c.

CAUTION
Hand pressing of the cover to the base is not recommended due to not being able to control simultaneous engagement of all latches. Not engaging the latches simultaneously can result in the O-ring being distorted or damaged.

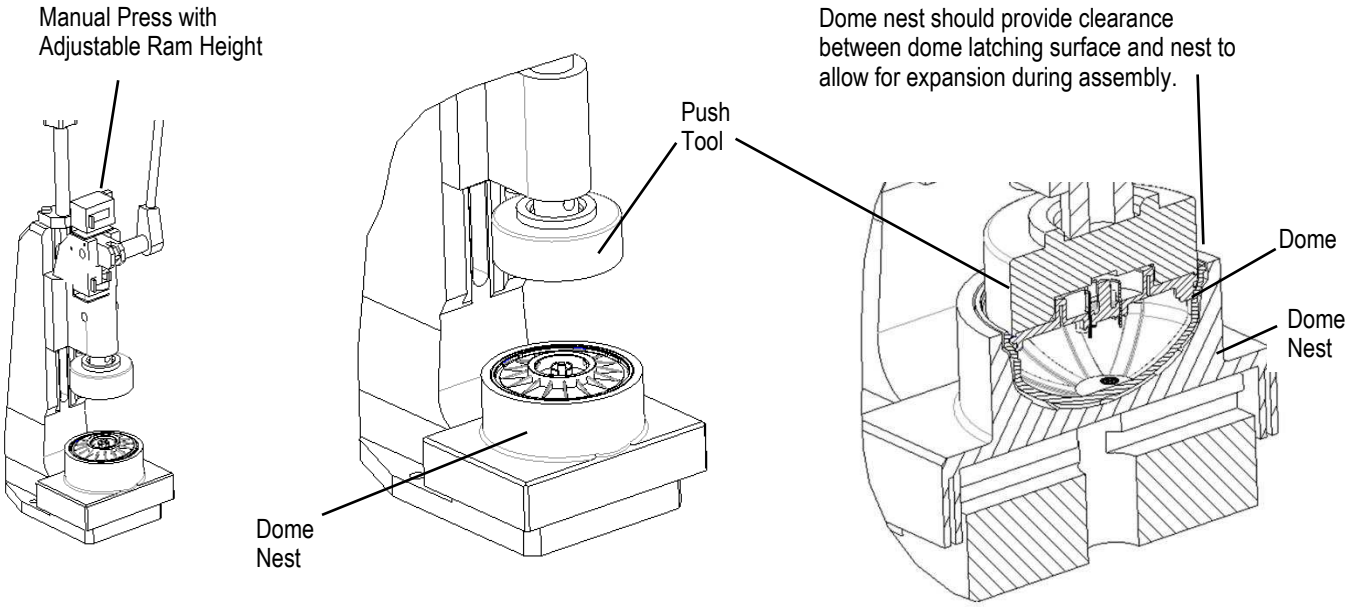


Figure 9a

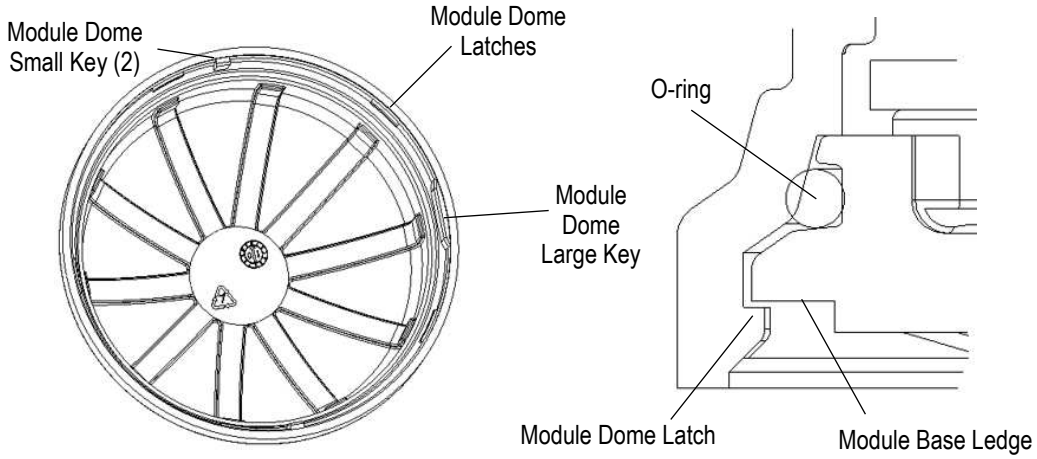


Figure 9b

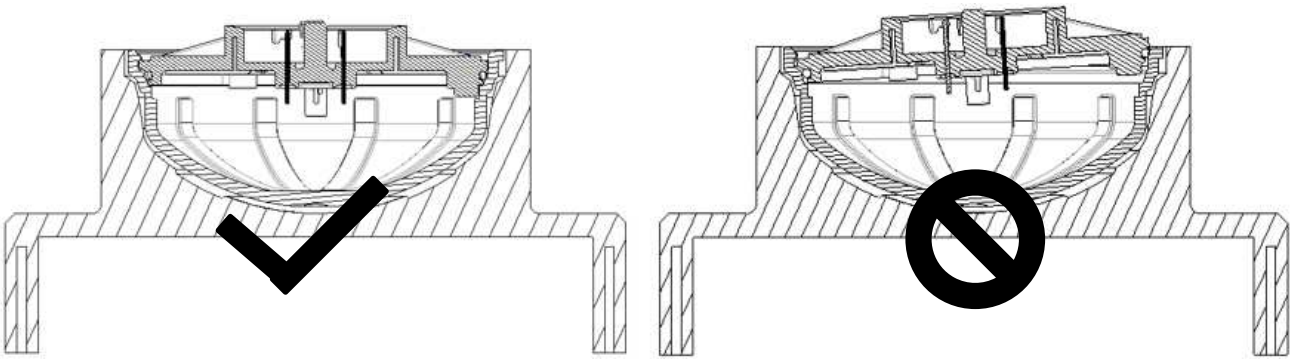


Figure 9c

3.12. Module Dome Design

The interior surface design for the sealing aspect of the module cap may be found on the appropriate TE Connectivity customer drawings. Geometry must be followed to ensure the cap seals with the O-ring on the TE module base and that the dome latches engage the base ledge. Refer to Figure 9.

3.13. Strain Relief

It is recommended that a means be provided to support the wire bundle extending away from the receptacle assembly to prevent inadvertent application of high force to the wire bundle from transmitting into the wire/connector interface. The suggested strain relief method is to use a cable tie and anchor mounted inside the luminaire.

3.14. Mating and Un-mating Module and/or Sealing Cap to Receptacle

Align the Module or Sealing Cap over the mounted receptacle. Based on polarizing features on each, the Module or Sealing Cap can only be installed in one position. Lightly rotate the Module or Sealing Cap until you feel the alignment keys and the blades align to the proper location. After alignment, push downward until the Module or Sealing Cap is bottomed on the receptacles mating face. Then complete mating by rotating Module or Sealing Cap with downward pressure while twisting in a clockwise direction. The Module or Sealing Cap will lock into position with an audible 'click'. To un-mate, gently push down and reverse the aforementioned mating process. Refer to Figure 10.

CAUTION
When in field use it is important that a receptacle is mated to either the specified sealing cap or a module assembly. The receptacle by itself is not a sealed device and would allow moisture to enter the luminaire.

NOTE
It is recommended that the luminaire design incorporates a breathable vent. The use of a vent will help to equalize pressure changes within the luminaire which will intern help to maintain the integrity of the sealing capability of the connector system.

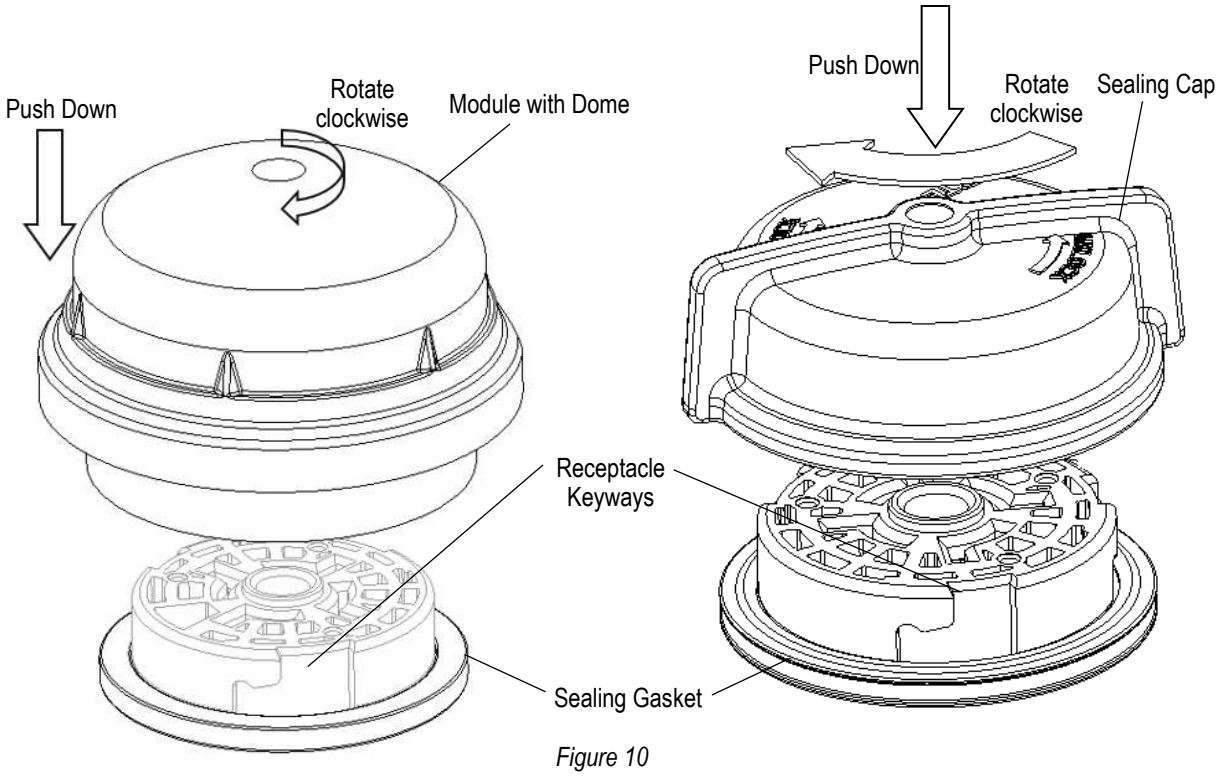


Figure 10

3.15. Replacement and Repair

The contacts and housings are not repairable. DO NOT use an assembly with damaged or defective contacts and/or housings. If damaged, replace the receptacle assembly or module assembly with a new one.

4. QUALIFICATIONS

LUMAWISE Endurance S connectors are component recognized by Underwriters Laboratories, Inc. in File E66375, Volume 7, and have been investigated to CSA International by UL.

NOTE
UL UV-f1 outdoor rated plastics in accordance with UL 746C are used for the LUMAWISE Endurance S connector system.

LUMAWISE Endurance S connectors have been evaluated to IEC-61984 by Underwriters Laboratories, Inc. and is included in CB report certificate US-29611-UL.

LUMAWISE Endurance S standard connectors are Zhaga Book 18 compliant.

5. TOOLING

A customer supplied assembly fixture and a small press is recommended to assemble the cover to the base. The press can be mechanical or pneumatic, but it should be adjustable to ensure cover latch engagement is achieved.

6. VISUAL AID

The illustration below shows a typical application of LUMAWISE Endurance S 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.

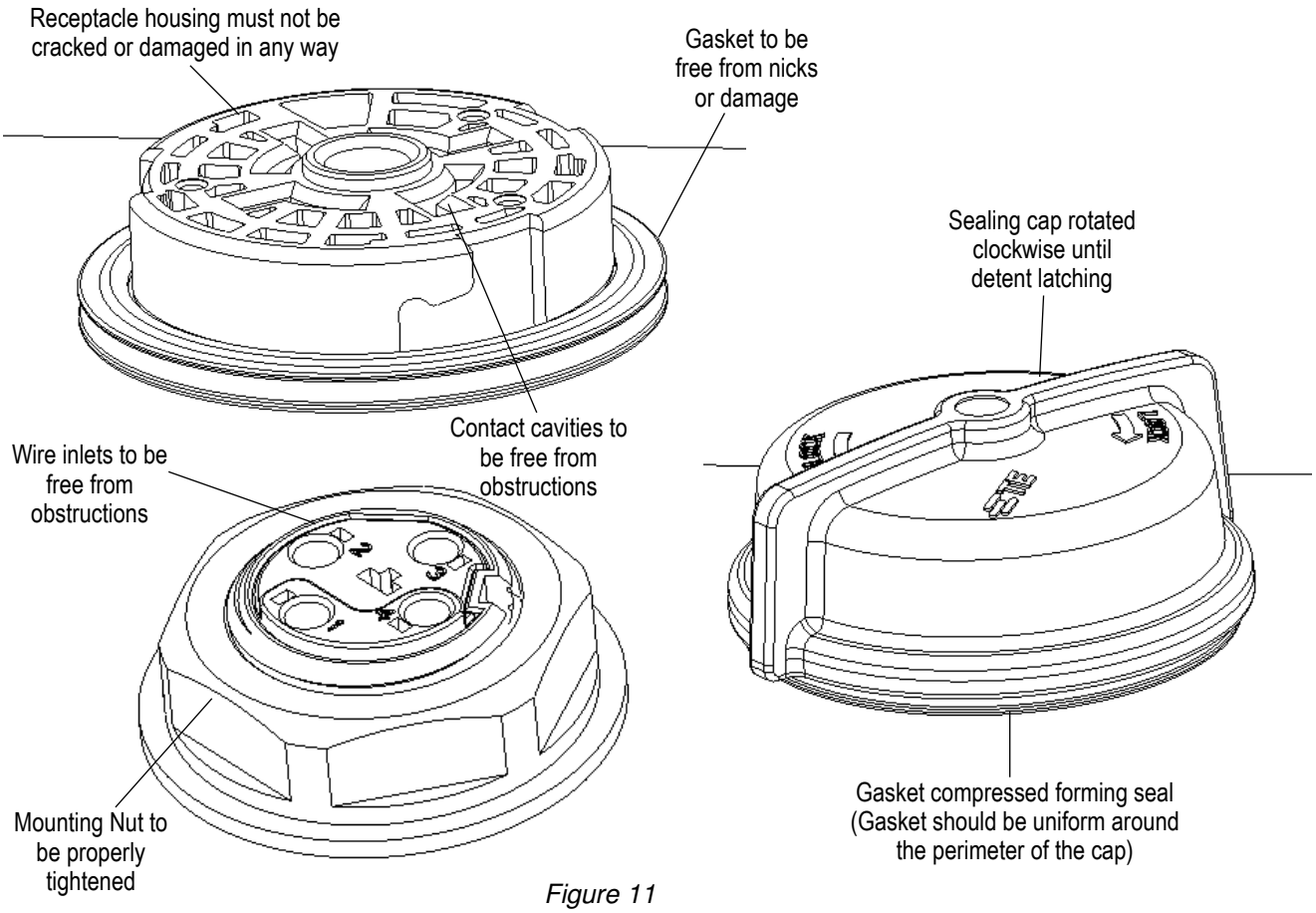
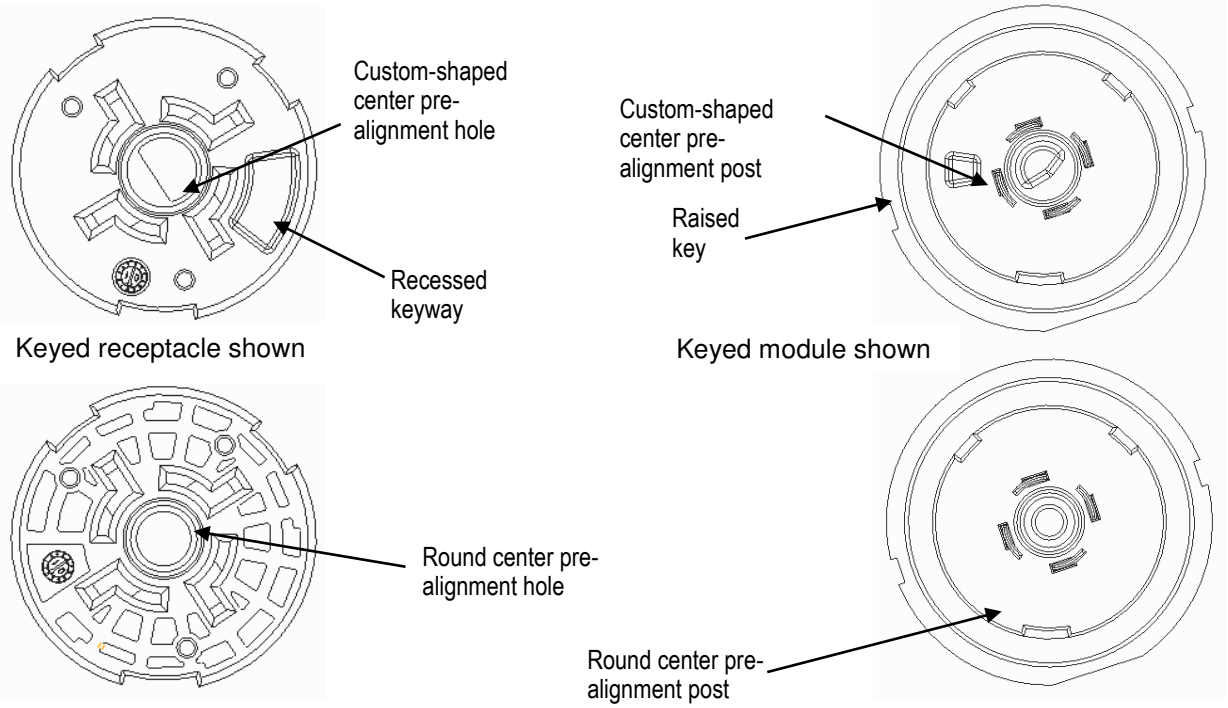


Figure 11

7. ADDITIONAL STANDARD VERSUS KEYED VISUAL AIDS

The additional visual aids that follow detail the differences between the standard and keyed versions. The standard version is Zhaga Book 18 compliant, while the keyed version is not. The standard version will not mate to the keyed version thus preventing mis-mating when two discrete connectors are used on the same system. The keyed receptacle has a recessed keyway that accepts the keyed module's raised key. The custom-shaped center post of the keyed module prevents mating to the standard receptacle's round hole. In turn, the custom-shaped pre-alignment hole of the keyed receptacle will not accept the round center pre-alignment post of the standard module. See figure 12.



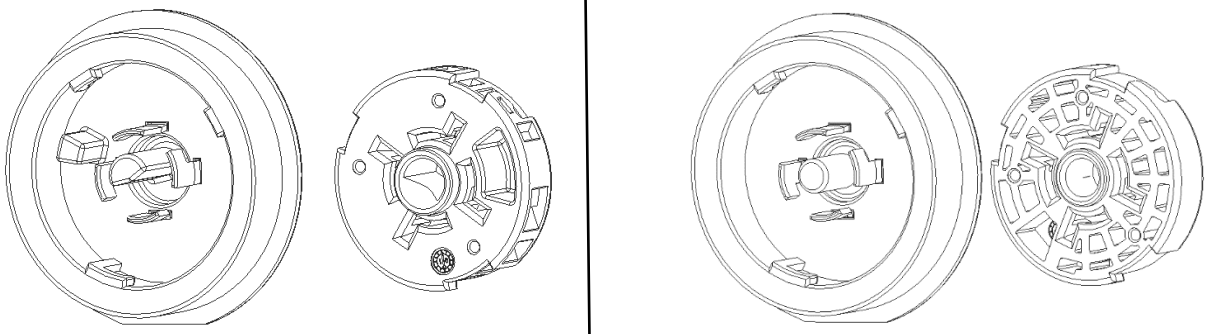


Figure 12