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Connector Assembly and Related Methods

Abstract

A connector assembly includes a connector body and a seal. The connector body defines a cavity and a terminal slot in fluid communication with the cavity. The seal is removably disposed within the cavity. The seal includes a body defining a terminal aperture, a first rib and a second rib extending from the body, and a flap extending from the body. In an assembled configuration, the first rib and the second rib engage portions of the connector body.

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Background/Summary

FIELD

[0001] The present disclosure relates to a connector assembly and more particularly to a connector assembly that may be used in connection with vehicles.

BACKGROUND

[0002] Modern vehicles (e.g., automobiles) rely on electrical wiring and electrical connections to facilitate communication between various electronic components within the vehicle. Connection systems (e.g., connectors and terminals) play an important role in ensuring the integrity of these electrical connections and the reliability and performance of the vehicle. Some connector assemblies use connector bodies and seals to inhibit environmental conditions from degrading the electrical connection between corresponding connectors. In view of the foregoing, while known connector bodies with seals for vehicle connection systems have proven acceptable for their intended purpose, a continuous need for improvement remains in the pertinent art to adhere to the strenuous testing requirements for vehicle connections systems.

[0003] The background description provided here is for the purpose of generally presenting the context of the disclosure. Work of the presently named inventors, to the extent it is described in this background section, as well as aspects of the description that may not otherwise qualify as prior art at the time of filing, are neither expressly nor impliedly admitted as prior art against the present disclosure.

SUMMARY

[0004] One aspect of the disclosure provides a connector assembly. The connector assembly includes a connector body and a seal. The connector body defines a cavity and a terminal slot in fluid communication with the cavity. The seal is removably disposed within the cavity. The seal includes a body defining a terminal aperture, a first rib and a second rib extending from the body, and a flap extending from the body. In an assembled configuration, the first rib and the second rib engage portions of the connector body.

[0005] Another aspect of the disclosure provides a seal for a connector assembly having a connector body. The seal includes a body, a first rib, a second rib, a first flap, and a second flap. The body defines a terminal aperture and has a first sidewall, a second sidewall opposite the first sidewall, a third sidewall extending between the first sidewall and the second sidewall, and a fourth sidewall opposite the third sidewall and extending between the first sidewall and the second sidewall. The first rib extends from the first sidewall and is configured to engage an inner portion of the connector body. The second rib extends from the first sidewall and is configured to engage the inner portion of the connector body. The first flap extends from the third sidewall and is configured to engage an outer portion of the connector body. The second flap extends from the fourth sidewall and is configured to engage the outer portion of the connector body.

[0006] Yet another aspect of the disclosure provides a method. The method includes disposing a seal in a cavity of a connector body, including engaging a first rib and a second rib of the seal with portions of the connector body, and engaging a first flap and a second flap of the seal with additional portions of the connector body. The method includes disposing a terminal in a terminal slot of the connector body and a terminal aperture of the seal. The method includes inhibiting, via the first rib, contaminants from contacting the terminal.

[0007] Further areas of applicability of the present disclosure will become apparent from the detailed description, the claims, and the drawings. The detailed description and specific examples are intended for purposes of illustration only and are not intended to limit the scope of the disclosure.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The present disclosure will become more fully understood from the detailed description and the accompanying drawings.

[0009] FIG. **1** is a perspective view of a connector assembly in accordance with the principles of

the present disclosure.
[0010] FIG. **2** is a front view of the connector assembly of FIG. **1**.
[0011] FIG. **3** is a perspective view of a seal of a connector assembly in accordance with the principles of the present disclosure.
[0012] FIG. **4** is a side view of a seal of a connector assembly in accordance with the principles of the present disclosure.
[0013] FIG. **5** is a front view of a seal of a connector assembly in accordance with the principles of the present disclosure.
[0014] FIG. **6** is a back view of a seal of a connector assembly in accordance with the principles of the present disclosure.
[0015] FIG. **7** is an exploded view of a connector assembly in accordance with the principles of the present disclosure.
[0016] FIGS. **8** and **9** are cross-sectional views of a connector assembly in an assembled configuration in accordance with the principles of the present disclosure.
[0017] FIG. **10** is a flowchart depicting an example method for assembling a connector assembly and for operating the connector assembly in accordance with the principles of the present disclosure.
[0018] In the drawings, reference numbers may be reused to identify similar and/or identical elements.

DETAILED DESCRIPTION

Introduction

[0019] With reference to FIGS. **1**, **2**, and **7**-**9**, an example connector assembly **10** is shown. As will be explained in more detail below, the connector assembly **10** may be installed in a vehicle (e.g., an automobile) to facilitate the transmission of electricity between various electronic components within the vehicle. For example, the connector assembly **10** may be detachably coupled to a mating connector assembly (not shown), such that, during operation, of the vehicle, electricity is transmitted between the connector assemblies and to various electronic components within the vehicle.
[0020] In various implementations, the connector assembly **10** may include a connector body **20**, a seal **30**, and a plurality of terminals **40**, among others. In various implementations, the connector body **20** may define a cavity **50** and a plurality of terminal slots **52**. The terminal slots **52** may be in fluid communication with the cavity **50**. In various implementations, the seal **30** may be removably disposed within the cavity **50**. The seal **30** may include a body **60** defining a plurality of terminal apertures **62**. In an assembled configuration, the seal **30** may be disposed in the cavity **50** such that the terminal slots **52** are aligned with the terminal apertures **62**. Each terminal **40** may be disposed in a respective terminal slot **52** and a respective terminal aperture **62**. As will be explained in more detail below, the seal **30** inhibits contaminants from contacting the terminals **40**.

Connector Body

[0021] In various implementations, the connector body **20** may comprise one or more of a variety of shapes, sizes, configurations, and/or materials. In various implementations, the connector body **20** connects with the seal **30** and the terminals **40**. For example, the cavity **50** of the connector body may receive the seal **30** and each terminal slot **52** may receive a terminal **40**. The connector body **20** is shown including one cavity and eight terminal slots, however the connector body **20** may include more than one cavity and more or less than eight terminal slots.

Seal

[0022] With reference to FIGS. **3**-**6**, an example seal **30** is shown. In various implementations, the seal **30** may include a body **60**, a first rib **64**A, a second rib **64**B, a third rib **64**C, a fourth rib **64**D, a first flap **66**A, a second flap **66**B, a first recess **68**A, and a second recess **68**B, among others. In various implementations, the body **60** may include a first sidewall **70**A, a second sidewall **70**B spaced apart from the first sidewall **70**A, a third sidewall **70**C disposed between the first sidewall

70A and the second sidewall **70**B, and a fourth sidewall **70**D spaced apart from the third sidewall **70**C.

[0023] In various implementations, the first rib **64**A and/or the third rib **64**C may extend from the first sidewall **70**A. The second rib **64**B and/or the fourth rib **64**D may extend from the second sidewall **70**B. In various implementations, the first flap **66**A may extend from the third sidewall **70**C and/or the second flap **66**B may extend from the fourth sidewall **70**D.

[0024] In various implementations, the first rib **64**A and/or the third rib **64**C may extend continuously and uninterrupted along or about the first sidewall **70**A (e.g., along a perimeter of the first sidewall **70**A). In some examples, the third rib **64**C may be offset from the first rib **64**A. The third rib **64**C may be disposed inwards relative to the first rib **64**A. In various implementations, the second rib **64**B and/or the fourth rib **64**D may extend continuously and uninterrupted along or about the second sidewall **70**B (e.g., along a perimeter of the second sidewall **70**B). In some examples, the fourth rib **64**D may be offset from the second rib **64**B. The fourth rib **64**D may be disposed inwards relative to the second rib **64**B.

[0025] In some example configurations, a rib (e.g., the first rib **64**A, the second rib **64**B, the third rib **64**C, and/or the fourth rib **64**D) may define a polygonal-shaped configuration. Alternatively, the rib may define a circular-shaped configuration, an oval-shaped configuration, and/or an oblong-shaped configuration, among others. The seal **30** is shown and is generally described herein as including four ribs, however the seal **30** may include more or less than four ribs.

[0026] With reference to FIG. **5**, in various implementations, the first flap **66**A may extend from the third sidewall **70**C in a first direction **72**A and the second flap **66**B may extend from the fourth sidewall **70**D in a second direction **72**B that is different than the first direction **72**A. In some examples, the second direction **72**B may be opposite the first direction **72**A. Alternatively, the seal **30** may include a singular flap that extends from the first sidewall **70**A, the second sidewall **70**B, the third sidewall **70**C, and/or the fourth sidewall **70**D. The seal is shown and generally described herein as including two flaps, however the seal may include more or less than two flaps.

[0027] With reference to FIGS. **3** and **5**, in various implementations, the first recess **68**A and/or the second recess **68**B may extend through the body **60**, for example, from the first sidewall **70**A to the second sidewall **70**B. In some examples, thermal expansion of the seal **30** may be reduced via the first recess **68**A and/or the second recess **68**B. The seal is shown and is generally described herein as including two recesses, however the seal may include more or less than two recesses.

[0028] In various implementations, the seal **30** may comprise one or more of a variety of materials. In some examples, the seal **30** may comprise a polymer material such as a rubber and/or a plastic, among others. In various implementations, the seal **30** may be manufactured via a molding process. In various implementations, the seal **30** may include one or more poka-yoke features that may facilitate alignment (e.g., centering, etc.) of the seal **30** in the cavity **50**. For example, with reference to FIG. **9**, the seal **30** may include at least one projection **74** that extends from the body **60**. The projection **74** may engage a portion of the connector body **20** (e.g., inner surface **80**B, etc.) to align (e.g., center) the seal **30** in the cavity **50**. For example, the projection **74** may engage the inner surface **80**B and center the seal **30** in an insertion direction of the seal within the cavity **50**. The connector assembly **10** is shown and is generally described herein as including one seal, however the connector assembly **10** may include more than one seal.

Terminals

[0029] With reference to FIG. **9**, each terminal **40** may connect with the connector body **20** and the seal **30**. Each terminal **40** may be received by a terminal slot **52** of the connector body **20** and a terminal aperture **62** of the seal **30**. Each terminal **40** may connect with one or more electrical wires (not shown). Each terminal **40** may connect with a corresponding terminal of a mating connector (not shown).

Assembled Configuration

[0030] With reference to FIGS. **1**, **2**, **8**, and **9**, the connector assembly **10** is shown in the assembled

configuration. As shown, the seal **30** is disposed within the cavity **50** of the connector body **20**. With reference to FIG. **9**, at least one terminal **40** is disposed in a terminal slot **52** of the connector body **20** and a terminal aperture **62** of the seal **30**. In some example configurations, each terminal slot **52** may include a corrugated configuration. The seal **30** inhibits various contaminants from contacting the terminal **40**.

[0031] In various implementations, a contaminant may include a fluid (e.g., water, etc.), a substance, an agent, a chemical, and/or a solid, among others. In accordance with the contaminant contacting the terminal **40**, the electrical connection of the connector assembly **10** may be negatively impacted. For example, the electrical connection may malfunction or fail (e.g., short circuit), may be susceptible to damage (e.g., corrosion), and/or may pose a safety hazard, among others.

[0032] With reference to FIGS. **8** and **9**, in various implementations, one or more inner surfaces (e.g., **80**A-**80**E) of the connector body **20** may define the cavity **50**. In the assembled configuration, the first rib **64**A and the third rib **64**C may engage one or more portions of connector body **20** (e.g., inner surfaces **80**A, **80**D, etc.). The second rib **64**B and the fourth rib **64**D may engage one or more additional portions of the connector body **20** (e.g., inner surfaces **80**C, **80**E, etc.). In some examples, the first rib **64**A, the second rib **64**B, the third rib **64**C, and/or the fourth rib **64**D may be inhibit the contaminants from contacting the terminals **40**. In various implementations, the first rib **64**A and/or the second rib **64**B may inhibit removal of the seal **30** from the cavity **50**.

[0033] In various implementation, the first rib **64**A may operate as the primary component for inhibiting the contaminants from contacting the terminals **40**. The second rib **64**B may operate as the primary component for inhibiting the removal of the seal **30** from the cavity **50**. In some examples, the third rib **64**C and/or the fourth rib **64**D may be operate as redundant and/or secondary components for the first rib **64**A and/or the second rib **64**B.

[0034] With reference to FIGS. **1**, **8**, and **9**, in various implementations, the first flap **66**A and the second flap **66**B may engage portions of the connector body **20** (e.g., at least inner surfaces **80**D and **80**E) to inhibit entry the contaminants into the cavity **50**. In various implementations, the first flap **66**A and/or the second flap **66**B may extend in the Z-direction beyond an engagement location between (i) the first, second, third, and/or fourth ribs **64**A-**64**D and (ii) the first, second, third, and/or fourth inner surfaces **80**A-**80**D, respectively, to shield the engagement location(s) from contamination (e.g., a momentum force of contaminants). For example, the first flap **66**A and the second flap **66**B may shield the engagement location(s) from projectile contaminants. In some example configurations, the first flap **64**A and/or the second flap **64**B may extend from the body **60** (e.g., in the Z-direction) further than the ribs (e.g., ribs **64**A-**64**D) extend from the body **60** (e.g., in the Z-direction). In various implements, the first rib **64**A, the second rib **64**B, the third rib **64**C, the fourth rib **64**D, the first flap **66**A, and/or the second flap **66**B enable the connector assembly **10** to pass various strenuous tests (e.g., salt spray testing, etc.) that are required for connector assemblies in vehicle applications.

[0035] With reference to FIGS. **8** and **9**, in various implementations, the seal **30** is disposed within the cavity **50** via a clearance fit. For example, a void **90** may be disposed between a portion of the seal **30** and a portion of the connector body **20** (e.g., at least inner surface **80**B). The seal **30** is permitted to expand into the void **90** in accordance with the seal **30** undergoing thermal expansion (e.g., exposed to high temperature, etc.). The clearance fit, for example, the void **90** between the seal **30** and the connector body **20**, enables the connector assembly **10** to pass various strenuous tests (e.g., temperature cycle testing, etc.) that are required for connector assemblies in vehicle applications.

Flowchart

[0036] FIG. **10** is a flowchart of an example method **200** for assembling and operating an electrical assembly **10**. The method **200** may begin at **204**. At **204**, a user or a machine (e.g., a robot, etc.) may dispose a seal **30** in a cavity **50** of a connector body **20**. In some examples, disposing the seal

30 in the cavity **50** includes engaging a first rib **64**A, a second rib **64**B, a third rib **64**C, a fourth rib **64**D, a first flap **66**A, and/or a second flap **66**B of the seal **30** with portions of the connector body **20** (e.g., at least inner surfaces **80**A-**80**E of the connector body **20**). The method **200** may proceed to **208**.

[0037] At **208**, the user or the machine may connect a plurality of terminals **40** to the connector body **20** and/or the seal **30**. For example, the user or the machine may dispose each terminal **40** in a terminal slot **52** of the connector body **20** and in a corresponding terminal aperture **62** of the seal **30**. The method **200** may proceed to **212**.

[0038] At **212**, during operation of the connector assembly **10**, the first rib **64**A (i.e., the primary sealing rib) may inhibit contaminants from contacting the terminals **40**. In some examples, the first rib **64**A, the second rib **64**B, the third rib **64**C, the fourth rib **64**D, the first flap **66**A, and/or the second flap **66**B may inhibit the contaminants from contacting the terminals **40**. The method **200** may proceed to **216**.

[0039] At **216**, during operation of the connector assembly **10**, the second rib **64**B (i.e., the primary assembly rib) may inhibit removal of the seal **30** from the cavity **50**. In some examples, the first rib **64**A, the second rib **64**B, the third rib **64**C, and/or the fourth rib **64**D may inhibit removal of the seal **30** from the cavity **50**. The method **200** may proceed to **220**.

[0040] At **220**, during operation of the connector assembly **10**, the first flap **66**A and the second flap **66**B may inhibit entry of the contaminants into the cavity **50**. Then the method **200** may end.

[0041] The foregoing description is merely illustrative in nature and is in no way intended to limit the disclosure, its application, or uses. The broad teachings of the disclosure can be implemented in a variety of forms. Therefore, while this disclosure includes particular examples, the true scope of the disclosure should not be so limited since other modifications will become apparent upon a study of the drawings, the specification, and the following claims. In the written description and claims, one or more steps within a method may be executed in a different order (or concurrently) without altering the principles of the present disclosure. Similarly, one or more instructions stored in a non-transitory computer-readable medium may be executed in a different order (or concurrently) without altering the principles of the present disclosure. Unless indicated otherwise, numbering or other labeling of instructions or method steps is done for convenient reference, not to indicate a fixed order.

[0042] Further, although each of the embodiments is described above as having certain features, any one or more of those features described with respect to any embodiment of the disclosure can be implemented in and/or combined with features of any of the other embodiments, even if that combination is not explicitly described. In other words, the described embodiments are not mutually exclusive, and permutations of one or more embodiments with one another remain within the scope of this disclosure.

[0043] The terminology used herein is for the purpose of describing particular exemplary configurations only and is not intended to be limiting. As used herein, the singular articles “a,” “an,” and “the” may be intended to include the plural forms as well, unless the context clearly indicates otherwise. The terms “comprises,” “comprising,” “including,” and “having,” are inclusive and therefore specify the presence of features, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, steps, operations, elements, components, and/or groups thereof. The method steps, processes, and operations described herein are not to be construed as necessarily requiring their performance in the particular order discussed or illustrated, unless specifically identified as an order of performance. Additional or alternative steps may be employed.

[0044] Spatial and functional relationships between elements (for example, between modules, circuit elements, semiconductor layers, etc.) are described using various terms, including “connected,” “engaged,” “coupled,” “adjacent,” “proximate,” “next to,” “on top of,” “above,” “below,” and “disposed.” Unless explicitly described as being “direct,” when a relationship

between first and second elements is described in the above disclosure, that relationship encompasses a direct relationship where no other intervening elements are present between the first and second elements as well as an indirect relationship where one or more intervening elements are present between the first and second elements. Other words used to describe the relationship between elements should be interpreted in a like fashion (e.g., “between” versus “directly between,” “adjacent” versus “directly adjacent,” etc.). As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

[0045] The term “set” does not necessarily exclude the empty set—in other words, in some circumstances a “set” may have zero elements. The term “non-empty set” may be used to indicate exclusion of the empty set—in other words, a non-empty set will always have one or more elements. The term “subset” does not necessarily require a proper subset. In other words, a “subset” of a first set may be coextensive with (equal to) the first set. Further, the term “subset” does not necessarily exclude the empty set—in some circumstances a “subset” may have zero elements.

[0046] The terms first, second, third, etc. may be used herein to describe various elements, components, regions, layers and/or sections. These elements, components, regions, layers and/or sections should not be limited by these terms. These terms may be only used to distinguish one element, component, region, layer or section from another region, layer or section. Terms such as “first,” “second,” and other numerical terms do not imply a sequence or order unless clearly indicated by the context. Thus, a first element, component, region, layer or section discussed below could be termed a second element, component, region, layer or section without departing from the teachings of the example configurations.

[0047] The phrase “at least one of A, B, and C” should be construed to mean a logical (A OR B OR C), using a non-exclusive logical OR, and should not be construed to mean “at least one of A, at least one of B, and at least one of C.” The phrase “at least one of A, B, or C” should be construed to mean a logical (A OR B OR C), using a non-exclusive logical OR.

[0048] The following Clauses provide an exemplary configuration for a connector assembly and related methods, as described above.

[0049] Clause 1: A connector assembly comprising: a connector body defining a cavity and a terminal slot in fluid communication with the cavity; and a seal removably disposed within the cavity and including: a body defining a terminal aperture; a first rib and a second rib extending from the body; and a flap extending from the body; wherein, in an assembled configuration, the first rib and the second rib engage portions of the connector body.

[0050] Clause 2: The connector assembly of clause 1, wherein: the body of the seal includes: a first sidewall; a second sidewall spaced apart from the first sidewall; and a third sidewall disposed between the first sidewall and the second sidewall; the first rib extends from the first sidewall; the second rib extends from the first sidewall or the second sidewall; and the flap extends from the third sidewall.

[0051] Clause 3: The connector assembly of clause 1 or 2, wherein: the first rib extends continuously and uninterrupted along a perimeter of a first sidewall of the body; and the second rib extends continuously and uninterrupted along a perimeter of a second sidewall of the body.

[0052] Clause 4: The connector assembly of clause 3, wherein: the terminal aperture extends through the first sidewall and the second sidewall; and the flap extends from the first sidewall and the second sidewall.

[0053] Clause 5: The connector assembly of any of clauses 1 through 4, wherein: the first rib is configured to inhibit entry of contaminants into the terminal aperture; and the second rib is configured to inhibit removal of the seal from the cavity.

[0054] Clause 6: The connector assembly of any of clauses 1 through 5, wherein, in the assembled configuration: the flap extends from the body of the seal further than the first rib; the flap overlaps a sealing joint between the first rib and an inner surface of the connector body; and the flap engages a portion of the connector body to inhibit entry of contaminants into the cavity.

[0055] Clause 7: The connector assembly of any of clauses 1 through 6, wherein, in the assembled configuration, the seal is disposed within the cavity of the connector body via a clearance fit.
[0056] Clause 8: The connector assembly of clause 7, wherein: in the assembled configuration, a void is disposed between the seal and at least one inner surface of the connector body; and the seal is permitted to expand into the void when the seal thermally expands.
[0057] Clause 9: The connector assembly of any of clauses 1 through 8, wherein: the seal includes at one recess extending through the body; and thermal expansion of the seal is reduced via the recess.
[0058] Clause 10: The connector assembly of any of clauses 1 through 9, wherein: the connector body defines a plurality of terminal slots; the body of the seal defines a plurality of terminal apertures; and in the assembled configuration, the seal is disposed in the cavity such that the terminal slots are aligned with the terminal apertures.
[0059] Clause 11: A seal for a connector assembly having a connector body, the seal comprising: a body defining a terminal aperture and having a first sidewall, a second sidewall opposite the first sidewall, a third sidewall extending between the first sidewall and the second sidewall, and a fourth sidewall opposite the third sidewall and extending between the first sidewall and the second sidewall; a first rib extending from the first sidewall and configured to engage an inner portion of the connector body; a second rib extending from the first sidewall and configured to engage the inner portion of the connector body; a first flap extending from the third sidewall and configured to engage an outer portion of the connector body; and a second flap extending from the fourth sidewall and configured to engage the outer portion of the connector body.
[0060] Clause 12: The seal of clause 11, wherein: the first rib is configured to inhibit entry of contaminants into the terminal aperture; and the seal includes a third rib extending from the body and configured to engage a second inner portion of the connector body to inhibit removal of the seal from the connector body.
[0061] Clause 13: The seal of clause 12, wherein: the first rib extends continuously and uninterrupted along a perimeter of the first sidewall of the body; and the third rib extends continuously and uninterrupted along a perimeter of the second sidewall of the body.
[0062] Clause 14: The seal of clause 13, wherein the terminal aperture extends through the first sidewall and the second sidewall, and wherein the first flap extends from at least one of the first sidewall and the second sidewall.
[0063] Clause 15: The seal of any of clauses 11 through 14, wherein: the first flap extends from the body in a first direction; the second flap extends from the body in a second direction transverse to the first direction; and in an assembled configuration, the flap and the second flap inhibit entry of contaminants into the connector body.
[0064] Clause 16: The seal of any of clauses 11 through 15, wherein, in an assembled configuration, the seal is disposed within a cavity of the connector body via a clearance fit.
[0065] Clause 17: The seal of clause 16, wherein: in the assembled configuration, a void is disposed between the seal and at least one inner surface of the connector body; and the seal is configured to expand into the void when the seal thermally expands.
[0066] Clause 18: The seal of any of clauses 11 through 17, further comprising a projection extending from the body and configured to engage the connector body to align the seal relative to the connector body.
[0067] Clause 19: A method comprising: disposing a seal in a cavity of a connector body, including: engaging a first rib and a second rib of the seal with portions of the connector body; and engaging a first flap and a second flap of the seal with additional portions of the connector body; disposing a terminal in a terminal slot of the connector body and a terminal aperture of the seal; and inhibiting, via the first rib, contaminants from contacting the terminal.
[0068] Clause 20: The method of clause 19, further comprising: inhibiting, via the second rib,

removal of the seal from the cavity; and inhibiting, via the first flap and the second flap, entry of the contaminants into the cavity.

Claims

1. A connector assembly comprising: a connector body defining a cavity and a terminal slot in fluid communication with the cavity; and a seal removably disposed within the cavity and including: a body defining a terminal aperture; a first rib and a second rib extending from the body; and a flap extending from the body; wherein, in an assembled configuration, the first rib and the second rib engage portions of the connector body.
2. The connector assembly of claim 1 wherein: the body of the seal includes: a first sidewall; a second sidewall spaced apart from the first sidewall; and a third sidewall disposed between the first sidewall and the second sidewall; the first rib extends from the first sidewall; the second rib extends from the first sidewall or the second sidewall; and the flap extends from the third sidewall.
3. The connector assembly of claim 1 wherein: the first rib extends continuously and uninterrupted along a perimeter of a first sidewall of the body; and the second rib extends continuously and uninterrupted along a perimeter of a second sidewall of the body.
4. The connector assembly of claim 3 wherein: the terminal aperture extends through the first sidewall and the second sidewall; and the flap extends from the first sidewall and the second sidewall.
5. The connector assembly of claim 1 wherein: the first rib is configured to inhibit entry of contaminants into the terminal aperture; and the second rib is configured to inhibit removal of the seal from the cavity.
6. The connector assembly of claim 1 wherein, in the assembled configuration: the flap extends from the body of the seal further than the first rib; the flap overlaps a sealing joint between the first rib and an inner surface of the connector body; and the flap engages a portion of the connector body to inhibit entry of contaminants into the cavity.
7. The connector assembly of claim 1 wherein, in the assembled configuration, the seal is disposed within the cavity of the connector body via a clearance fit.
8. The connector assembly of claim 7 wherein: in the assembled configuration, a void is disposed between the seal and at least one inner surface of the connector body; and the seal is permitted to expand into the void when the seal thermally expands.
9. The connector assembly of claim 1 wherein: the seal includes at one recess extending through the body; and thermal expansion of the seal is reduced via the recess.
10. The connector assembly of claim 1 wherein: the connector body defines a plurality of terminal slots; the body of the seal defines a plurality of terminal apertures; and in the assembled configuration, the seal is disposed in the cavity such that the terminal slots are aligned with the terminal apertures.
11. A seal for a connector assembly having a connector body, the seal comprising: a body defining a terminal aperture and having a first sidewall, a second sidewall opposite the first sidewall, a third sidewall extending between the first sidewall and the second sidewall, and a fourth sidewall opposite the third sidewall and extending between the first sidewall and the second sidewall; a first rib extending from the first sidewall and configured to engage an inner portion of the connector body; a second rib extending from the first sidewall and configured to engage the inner portion of the connector body; a first flap extending from the third sidewall and configured to engage an outer portion of the connector body; and a second flap extending from the fourth sidewall and configured to engage the outer portion of the connector body.
12. The seal of claim 11 wherein: the first rib is configured to inhibit entry of contaminants into the terminal aperture; and the seal includes a third rib extending from the body and configured to engage a second inner portion of the connector body to inhibit removal of the seal from the

connector body.
13. The seal of claim 12 wherein: the first rib extends continuously and uninterrupted along a perimeter of the first sidewall of the body; and the third rib extends continuously and uninterrupted along a perimeter of the second sidewall of the body.
14. The seal of claim 13 wherein the terminal aperture extends through the first sidewall and the second sidewall, and wherein the first flap extends from at least one of the first sidewall and the second sidewall.
15. The seal of claim 11 wherein: the first flap extends from the body in a first direction; the second flap extends from the body in a second direction transverse to the first direction; and in an assembled configuration, the flap and the second flap inhibit entry of contaminants into the connector body.
16. The seal of claim 11 wherein, in an assembled configuration, the seal is disposed within a cavity of the connector body via a clearance fit.
17. The seal of claim 16 wherein: in the assembled configuration, a void is disposed between the seal and at least one inner surface of the connector body; and the seal is configured to expand into the void when the seal thermally expands.
18. The seal of claim 11 further comprising a projection extending from the body and configured to engage the connector body to align the seal relative to the connector body.
19. A method comprising: disposing a seal in a cavity of a connector body, including: engaging a first rib and a second rib of the seal with portions of the connector body; and engaging a first flap and a second flap of the seal with additional portions of the connector body; disposing a terminal in a terminal slot of the connector body and a terminal aperture of the seal; and inhibiting, via the first rib, contaminants from contacting the terminal.
20. The method of claim 19 further comprising: inhibiting, via the second rib, removal of the seal from the cavity; and inhibiting, via the first flap and the second flap, entry of the contaminants into the cavity.