

## Tech Data

# Minimizing Galvanic Corrosion



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Galvanic corrosion (or bimetallic corrosion) is the process where dissimilar metals in direct contact with one another and an electrolyte (like water) cause corrosion or oxidation. The metals corrode by creating an electrochemical path that allows metal ions to move from one metal (anode) to the other metal (cathode). The rate and severity of corrosion depend on the strength of the electrolyte, the difference in electrical potential (or position in annodic index) between the metals, and the anode size relative to the cathode.

Electrical separation or transition fittings are not necessary between copper and most copper alloys like brass and bronze. Similar grades of stainless steel connected together, e.g., 304 and 316, do not require electrical separation. Dry systems installed indoors do not typically require electrical separation between dissimilar metals because there is no electrolyte present, but can experience moderate galvanic corrosion in humid or corrosive environments.

The relative size of dissimilar metals also affects galvanic corrosion. A small, more noble (cathode) component in a system is usually acceptable. For example, stainless steel or brass valves are often used in carbon steel pipelines with no adverse affects.

Viega offers a variety of solutions for connecting dissimilar piping systems. In many applications and environments, flanges or dielectric unions are ideal to electrically insulate each material. Viega Transition Couplings are an additional method that is commonly accepted. The Viega System Transitioning Grid on the following page can be used as a guideline for connecting dissimilar piping

materials. Material selection and material transitions are the responsibility of the design engineer and must meet local jurisdiction requirements.

## Viega MegaPress ZL Bronze Transition Couplings

The Viega MegaPress 1/2" to 2" Zero Lead Bronze Transition Couplings are designed to join dissimilar piping systems with a material that can reduce the risk of corrosion. The transition coupling uses Viega's press end technology, eliminating the need for threading or welding and saving valuable time.



### Model 4813.4ZL

The MegaPress IPS x CTS transition coupling can be pressed onto schedule 10 to 40 IPS (iron pipe size) black iron or galvanized steel, or stainless steel pipe. This fitting can transition from IPS pipe to CTS (copper tube size) systems, such as copper, CTS stainless steel or PEX tubing with the addition of a Viega ProPress adapter. This model is available with an EPDM sealing element and is NSF 61/372 listed, allowing use on potable water systems.



### Models 4815ZL/5915ZL

The MegaPress IPS transition coupling can be pressed onto schedule 10 to 40 IPS (iron pipe size) black iron or galvanized steel, or stainless steel pipe. This is available in two models: model 4815ZL, with an EPDM sealing element, NSF 61/372 listed for potable water applications; and model 5915ZL, with an FKM sealing element, for a variety of other applications. For more information about applications, please reference technical documents and installation guides at [www.viega.us](http://www.viega.us).

## Viega System Transitioning Grid

| Pipe Materials                            | Ideal:                                                                              |                                                  | Accepted:                                                                            |                   | If Needed:                                                                            |          |
|-------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|----------|
|                                           | Flanges                                                                             | Dielectric Unions                                | Transition Couplings                                                                 | Threaded Adapters |                                                                                       |          |
| Carbon steel pipe to copper tube          |    |                                                  |     |                   |     |          |
|                                           | MegaPress                                                                           | MegaPress Stainless 304 or 316                   | MegaPress                                                                            | ProPress          | MegaPress Bronze                                                                      | ProPress |
|                                           | EPDM: 4859<br>FKM: 5959                                                             | 316 EPDM: 5159<br>304 FKM: 4159<br>316 FKM: 6859 | 4811                                                                                 | 2967ZL            | 4813.4ZL                                                                              | 2915     |
| Carbon steel pipe to stainless steel tube |    |                                                  |    |                   |    |          |
|                                           | MegaPress                                                                           | ProPress 316                                     | Not available                                                                        |                   | Not suggested                                                                         |          |
|                                           | 4859                                                                                | 4059                                             |                                                                                      |                   |                                                                                       |          |
| Carbon steel pipe to stainless steel pipe |  |                                                  |  |                   |    |          |
|                                           | MegaPress                                                                           | MegaPress Stainless 304 or 316                   | Not available                                                                        |                   | Not suggested                                                                         |          |
|                                           | EPDM: 4859<br>FKM: 5959                                                             | 316 EPDM: 5159<br>304 FKM: 4159<br>316 FKM: 6859 |                                                                                      |                   |                                                                                       |          |
| Stainless steel pipe to copper tube       |  |                                                  |  |                   |  |          |
|                                           | MegaPress Stainless 304 or 316                                                      | ProPress                                         | Not available                                                                        |                   |                                                                                       |          |
|                                           | 316 EPDM: 5159<br>304 FKM: 4159<br>316 FKM: 6859                                    | 2959.5ZL<br>0959.5XL                             |                                                                                      |                   |                                                                                       |          |

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**Viega System Transitioning Grid**

| Pipe Materials                               | Ideal:<br>Flanges                                                                 |              | Dielectric<br>Unions | Accepted:<br>Transition Couplings                                                    | If Needed:<br>Threaded Adapters                                                     |                                                                                       |                                                    |
|----------------------------------------------|-----------------------------------------------------------------------------------|--------------|----------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------|
| Stainless steel pipe to stainless steel tube |  |              | Not required         |    |  |                                                                                       |                                                    |
|                                              | MegaPress Stainless 304 or 316                                                    | ProPress 316 |                      | MegaPress 316                                                                        | MegaPress 316                                                                       | ProPress 316                                                                          |                                                    |
|                                              | 316 EPDM: 5159<br>304 FKM: 4159<br>316 FKM: 6859                                  | 4059         |                      | 5113                                                                                 | 5112<br>5111                                                                        | 4011<br>4012                                                                          |                                                    |
| Models                                       |                                                                                   |              |                      |                                                                                      |                                                                                     |                                                                                       |                                                    |
| Stainless steel tube to copper tube          |  |              | Not available        | Not available                                                                        |  |                                                                                       |                                                    |
|                                              | ProPress 316                                                                      | ProPress     |                      |                                                                                      | ProPress 316                                                                        | ProPress                                                                              |                                                    |
|                                              | 4059                                                                              | 2959.5ZL     |                      |                                                                                      | 4011<br>4012                                                                        | 2912ZL<br>2911ZL                                                                      |                                                    |
| Models                                       |                                                                                   |              |                      |                                                                                      |                                                                                     |                                                                                       |                                                    |
| Copper to PEX                                | Not required                                                                      |              | Not required         |  |                                                                                     |  |                                                    |
|                                              |                                                                                   |              |                      | ProPress                                                                             | ProPress                                                                            | PureFlow                                                                              |                                                    |
|                                              |                                                                                   |              |                      | 2813PZL - Press<br>5013PZL - Crimp                                                   | 2912ZL<br>2911ZL                                                                    | 2811ZL/2812ZL - Press<br>V5011ZL / V5012ZL - Crimp                                    |                                                    |
| Models                                       |                                                                                   |              |                      |                                                                                      |                                                                                     |                                                                                       |                                                    |
| Carbon steel or stainless steel pipe to PEX  | Not required                                                                      |              | Not required         |  |                                                                                     |  |                                                    |
|                                              |                                                                                   |              |                      | MegaPress Bronze                                                                     | ProPress                                                                            | MegaPress                                                                             | PureFlow                                           |
|                                              |                                                                                   |              |                      | 4813.4ZL                                                                             | 2813PZL - Press<br>5013PZL - Crimp                                                  | 4812<br>5112                                                                          | 2811ZL/2812ZL - Press<br>V5011ZL / V5012ZL - Crimp |
| Models                                       |                                                                                   |              |                      |                                                                                      |                                                                                     |                                                                                       |                                                    |

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