

Construction News - Engineering

Overhead connections FAQs

- > Compression Sleeves and Parallel Groove Clamps (PG Clamps) are now the preferred connections on the Essential Energy network
- > CEOM7106.20 sheets 1 and 2 show the standard connector options
- > PG Clamps are to be tightened by hand with the MSR-Spanner Ratchet Wrench. Tightening with a rattle gun/impact driver can damage both the clamp and the conductor.

Background – what happened?

From 30 September 2020 Essential Energy made the move away from the use of AMPACT wedge clamps on the network. The preferred method of joining for non-tension connections is now PG Clamps or Compression sleeves depending on the application. [Construction News 20-08](#) was issued detailing the change.

Since communicating the change last September, there has been a rise in queries on the use of PG Clamps from regions that predominantly used AMPACTS. We have collated these questions and provided answers to clear up any concerns and misconceptions.

Frequently Asked Questions

Q. Are all Essential Energy approved PG Clamps “Tinned”?

A. All PG Clamps Currently listed on the Approved Material List (CEOM7004) are Tinned.

Q. Can “Tinned” PG Clamps be used on bi-metal and copper to copper connections?

A. Tinned PG Clamps are to be used for bi-metal connections where split bolts are the preferred copper to copper connection, for more information refer to CEOM7106.20

Q. Is there any difference when we are connecting Aluminium to copper or steel to copper?

A. The preferred connection for Aluminium (AAAC/AAC or ASCR) to copper is the use of PG clamps whilst the preferred connection for Steel (SC/GZ or SC/AC) to copper is split bolts.

Q. Can PG Clamps be reused multiple times?

A. No. PG Clamps are a one-use item and must be replaced any time a new connection is being made.

Q. How many PG clamps do we need to apply per connection?

A. Essential Energy’s requirements are consistent with other electrical networks within New South Wales and Queensland:

- > 2 PG Clamps are required for all HV actives
- > 2 PG Clamps are required for HV and LV neutrals
- > 1 PG Clamp is required for LV actives.

Q. Does the number of bolts in a PG clamp (i.e., single, double, or triple bolt) make a difference to the number of PG clamps required per connection?

A. No, the above requirements are to be followed regardless of number bolts the PG contains.

Q. Does current carrying capacity of conductor and PG clamp need to be considered when making a connection?

A. Based on our in-house QA lab testing in Port Macquarie and manufacturer testing, PG clamps are expected to handle the same load currents and fault currents as the conductors they are designed to connect.

Q. Can PG clamps be used on subtransmission conductors?

A. The preferred connection method is compression sleeves. If you require further clarification contact David O'Brien.

What do you need to do?

Essential Energy staff and Accredited Service Providers (ASPs) are to familiarise themselves CEOM7106.20 and CEOM7302.06 for the type of connector and requirements for connecting overhead conductors.

When installing a connector on Essential Energy's network the following steps should be followed to create an effective connection:

> **Scratch brush the conductors' surfaces till clean and shiny as shown in Figure 1.** There is no requirement to scratch brush the connector.

There are two different scratch brushes available in the Essential Energy Stores as shown in Figure 2, **this is to prevent cross contamination between the metals.** The black scratch brush (Catalogue number 84011012) is for use on Copper conductors only. The white scratch brush (Catalogue number 814690) is intended for use on Aluminium conductors only. **Other tools such as pliers, should not be used in place of a scratch brush** as they will do more damage to the conductor and lead to reduced life of the connection.

> **Apply the appropriate grease for the conductors being connected.**

Grease helps to create a low resistive contact and seals the connection from contaminants such as rain and dirt. Both Alvania AL300 (Catalogue number 282184) and Alminox (Catalogue number 282180) can be used on both Copper and Aluminium connections. It is however preferred that Alminox is used for Aluminium connections and Alvania AL300 for Copper connection as the properties of the grease suit these connections better.



Figure 1 – Scratch brush comparison



Figure 2 – Grease and Scratch brushes available

When working aloft around overhead connections, please remember to check all connections on the pole to ensure we capture any faulty connections before they fail.



More information is available on [Standards Online](#). If you have any questions, please contact: David O'Brien, on 02 6588 6782 or Stephen Palmer, on 02 6589 8712.