



SOLON® BELLEVILLE SPRINGS MAINTAIN BOLT PRELOAD ON ELECTRICAL CONNECTIONS

INDUSTRY CHALLENGES

Differential thermal expansion (DTE), vibration, embedment relaxation, bolt yield, thermal cycling

Electrical connections are often made up of materials that have various coefficients of thermal expansion. Additionally, the joint materials also carry more current than the bolts. This causes the joint to heat up more than the bolts. The resultant differential thermal expansion (DTE) results in an increase in bolt load, possibly causing the joint components to yield. During each thermal cycle bolt load may be reduced.

In addition, electrical connections may loosen over time due to vibration or embedment relaxation, which is caused by microscopic high points on both the threads and mating surfaces.

As bolt load is reduced, electrical joint resistance increases and causes heat or hot spots. This can result in even higher resistance and the product of which can be a catastrophic failure.

SOLUTION

Solon Belleville Springs counteract the effects of differential thermal expansion by maintaining sufficient load on bolted electrical connections to prevent hot spots during and after temperature cycles. After yield and relaxation of joint components, a Belleville spring maintains a consistent sufficient load on the bolted joint.

Belleville's are used on electrical connections when the components of the connection are made of dissimilar (AL7CU or AL9CU) and similar materials because they maintain the bolt preload even during differential thermal expansion.

Properly used Solon Belleville Springs can reduce the loss of preload by a factor of **5X or more** and greatly reduce the opportunity for a failure.

SOLON ADVANTAGES

- Maintain bolt preload
- Reduce risk of catastrophic failure
- Made in the USA



Solon Belleville Springs



For additional information, please contact Solon Manufacturing Co.
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