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Best Practices for Tightening Bolted Flange Connections Utilizing a Torque Wrench with an Extension

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ABSTRACT

Bolted flange connections are widely used in the transportation, power generation, and chemical production industries. The goal of these connections is to contain the media within the bolted flange connections with minimal leaks. While there is increased focus in the industry on general flange assembly best practices, there is little to no focus on flange assembly best practices involving extension tools. In the circumstances, extension tools could be required to reach the fasteners to apply a predetermined torque. Yet, how do we know the torque set on the torque wrench is the same torque transmitted through the torque wrench and the extension to the fastener? Does the length of the extension and torque wrench matter, or does the orientation or angle of the extension in relation to the torque wrench affect the resultant torque?

This paper will explore the variables which affect the applied torque when using an extension tool and detail the best practices to utilize when using this system to tighten bolted flange connections. With the data collected for this testing, end-users will gain a better understanding of the variables affecting the applied torque when using an extension and methods of ensuring the proper torque is applied to each fastener.

