

High Strength Friction Grip (HSFG) bolts



What are HSFG bolts?

High Strength Friction Grip (HSFG) bolts are high strength steel bolted connections whose bolt shanks contain a pre-induced tension. This ensures that it is the friction between the two steel plates that will carry any external loads. They are also known as 'slip-resistant' connections, because the connection is so tight that there is no slip between the plates.

HSFGs adhere to the AS 1252.1:2016 standard, which outlines the specifications and characteristics of high strength structural bolt assemblies.

Applications of HSFG Bolts

They are commonly used in construction, such as steel bridges, which experience a lot of cyclic loading or vibrations. The preloaded tension means that the tension doesn't fluctuate as much as an ordinary steel bolt, giving it better fatigue resistance. The connections here would be permanent, so once tightened, the bolt can't be reused.

How are HSFGs different from normal bolt assemblies?

The primary difference is that HSFGs work through friction provided by the pre-induced tension, whereas normal bolts work via shear stress in the bolt shank. As a result, HSFGs are used for permanent connections, unlike regular bolts which can be removed.

HSFGs are used for specific applications (e.g. exposed to a lot of vibrations) only, unlike ordinary bolts which are multi-purpose.

HSFG and k-classes (K0)

These bolted connections depend on a specific predetermined minimum preload.

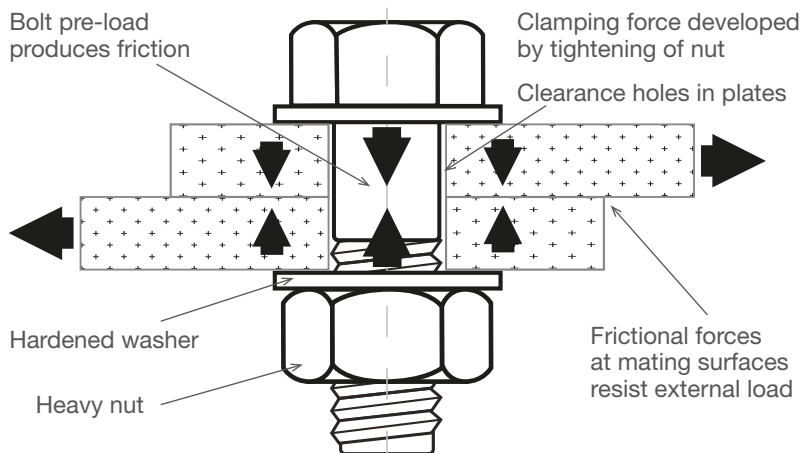
The torque needed to tighten any bolted connection is calculated according to the formula:

$$T = F \times D \times K$$

Where T= torque, F= tension needed for bolt, d= diameter of the bolt. There will be a certain amount of energy lost due to friction during tightening, which is what the 'k' factor accounts for. Each k-class of bolts, would have a certain range of k values.

The k-class of a HSFG bolt refers to the torque needed to tighten the bolt. Here, K0 means that there is no specific k-value for the torque to be determined.

How HSFG Bolts work:



① The data provided in this document is for general guidance only and should not be solely relied upon when working to stringent specifications. We recommend consulting with qualified experts regarding any technical queries. This information may change without written notice.