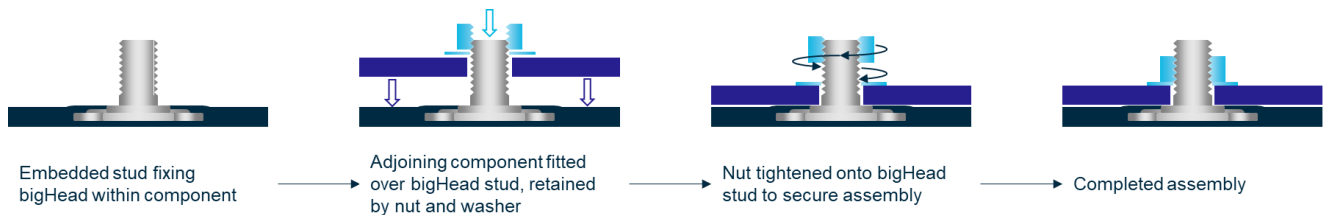
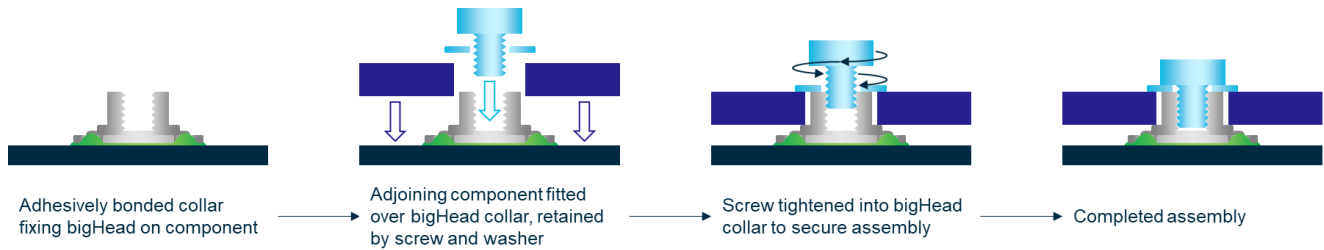


How do I create assemblies with bigHeads? Generic examples...

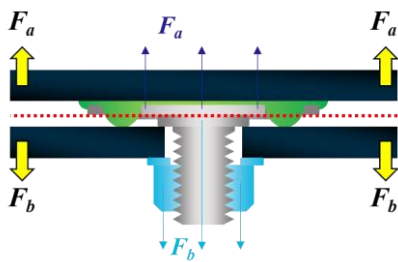
Embedded bigHead with threaded stud fixing



Adhesively bonded bigHead with threaded collar fixing



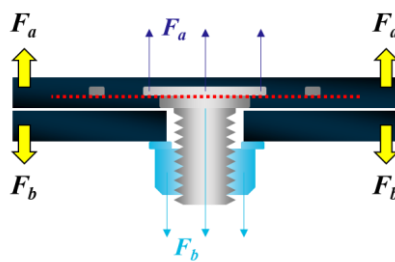
Why do I need to consider the assembly design and conditions?



Application loads: Adhesively bonded bigHead

- Opposing out-of-plane forces on component (F_a) and adjoining part (F_b)
- F_a pulls Head via adhesive, F_b pulls fixing via nut
- Head and fixing forced in opposite direction
- Tensile loading on bigHead welded joint

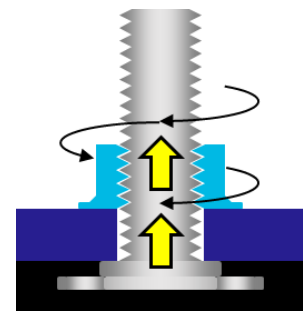
Loading and performance limitations are typically determined by the strength of the adhesive joint between the bigHead and the component, or the welded joint strength of the bigHead



Application loads: Embedded bigHead

- Opposing out-of-plane forces on component (F_a) and adjoining part (F_b)
- F_a pulls component material around Head, F_b pulls fixing via nut
- Head and fixing forced in opposite direction
- Tensile loading on bigHead welded joint

Loading and performance limitations are typically determined by the component material strength or the welded joint strength of the bigHead



Assembly conditions and resultant loading

In the example assemblies above, tightening the parts together during assembly causes a resultant force within the bigHead - we call this "assembly load".

Overleaf, we offer basic guidance on how assembly designs and conditions can affect loading within the bigHead - we offer a detailed guide on "assembly loading considerations and limitations" in our techHub.

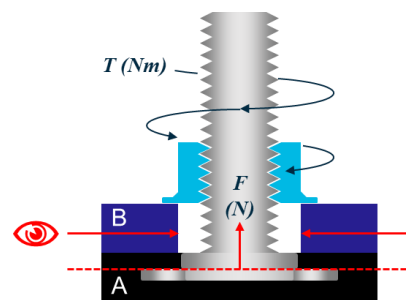
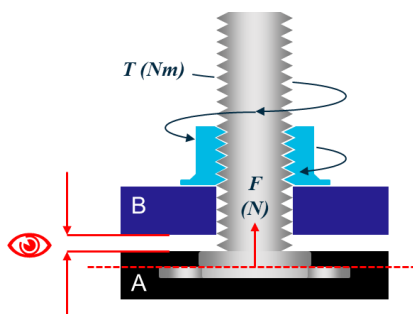
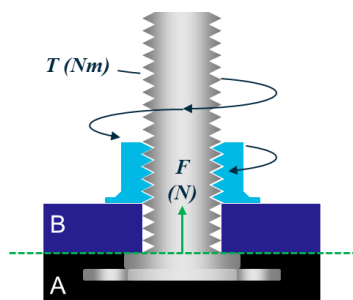
Considering and managing the assembly conditions and resultant load paths is essential for avoiding failure of the bigHead or fastened components during assembly operations

bigHead critical assembly considerations

Quick reference for Core range products



Assembly design awareness



Correct condition:

Adjoining component (B) meets shoulder and clearance hole is smaller than bigHead shoulder diameter

Incorrect conditions:

Gap between component with bigHead (A) and adjoining component (B)

Clearance hole for stud fixing in adjoining component (B) is greater than 80~90% of bigHead shoulder diameter

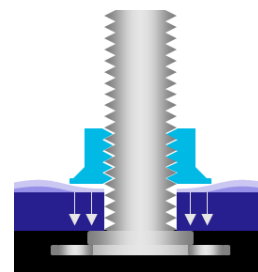
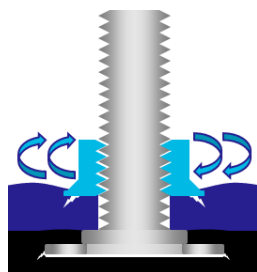
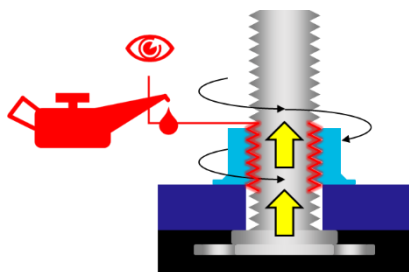
In the correct condition, tightening the nut with torque T (Nm) creates resultant force F (N), which clamps the adjoining part (B) against the fixing shoulder.

Incorrect conditions, especially with stud fixings, very often cause overloading and subsequent failure of the bigHead or failure of the component (A) material during assembly operations; If you are unable to avoid these incorrect conditions in your design, please contact bigHead or your distributor for further information and/ or advice about options for alleviating or managing these conditions.

Optimum or maximum tightening torque T (Nm) for a given assembly design is always dependent on the exact combination of bigHead product, additional fasteners (e.g. nut, bolt, washer), component material and adjoining material, and **should always be determined and validated by appropriate testing.**

Please always contact bigHead or your distributor for further information or advice about tightening torques and assembly testing.

Factors that affect assembly design and assembly operations



Thread friction coefficient and presence of lubricants

Thread friction coefficients and presence of lubricants within the assembly will affect the transfer of radial forces (e.g. applied torque) into axial forces (e.g. resultant forces). Variations in the amount of force transfer may affect the applicability/ suitability of assembly parameters, e.g. tightening torque value, so it is important to always clarify thread friction coefficient values and determine whether lubricants are present within the assembly.

Compression of the assembly materials

Tightening operations on bigHead assemblies may create high levels of compressive clamp force on the assembly materials, with subsequent damage to or failure of the materials. Applications testing is typically required to determine clamp-load behaviour, and appropriate tightening parameters/ profiles for a given material and assembly configuration.

Creep relaxation within the assembly

Creep relaxation is a critical consideration if the materials within the assembly are susceptible to creep under compressive loading (e.g. thermoplastic polymers or polymer matrix composites). Especially if the adjoining component material is known to be susceptible to creep-relaxation, it is imperative to undertake appropriate testing to determine or qualify long-term assembly integrity expectations.