

BOSSARD

Proven Productivity



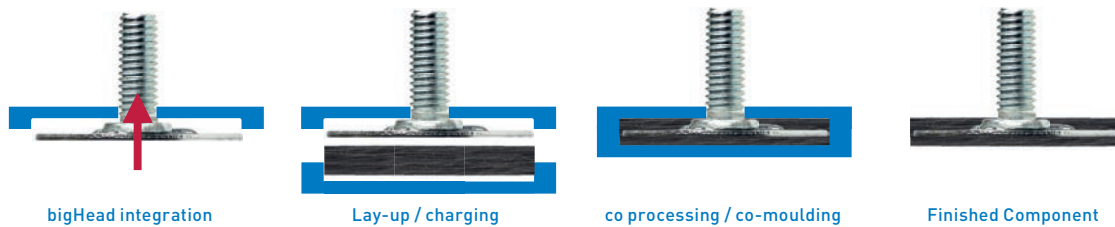
bigHead®

Embedding Core Range products



«every bigHead® is perfectly engineered.»

Co-process integration of bigHeads: generic process types



We refer to embedding as co-process integration; the embedded bigHead and the component materials are processed together within the principal manufacturing or forming process. This ensures the bigHeads are mechanically interlocked into the component material and eliminates the secondary operations associated with post-process fastener installation.



Open and bag lamination processes

Fibre reinforcement materials may need preparation to accommodate the embedded bigHead - this can often be included in cutting/ kitting operations. To avoid secondary operations or re-work, take care to fully seal the threaded sections against resin/ polymer ingress.

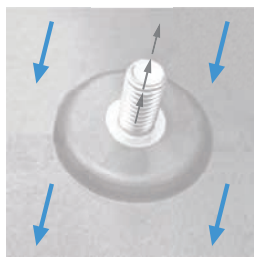
Closed mould lamination processes

In closed-mould processes, part ejection direction and tooling design may prevent integration of bigHeads in certain orientations. Over-patching of bigHeads is a convenient way to achieve embedment and mechanical interlock without disturbing fibre reinforcements of laminate materials.

Closed moulding processes

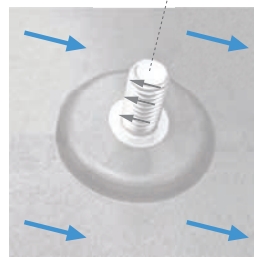
Core range products can be co-processed but may not represent the optimum overall solution, especially for closed-mould processes...
...so we invite you to contact us and ask about our Lean Moulding® solutions if you are considering to embed/ co-process a bigHead.

Generic loading considerations for embedded bigHeads



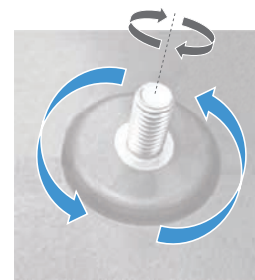
Tensile loading

Opposing forces acting perpendicular to the surface plane and along the fastener axis - expect 5 kN to 20 kN depending on the bigHead & embedment material used.



Shear loading

Opposing forces acting parallel to the surface plane and perpendicular to the fastener axis - expect 3 kN to 20 kN depending on the bigHead & embedment material used.

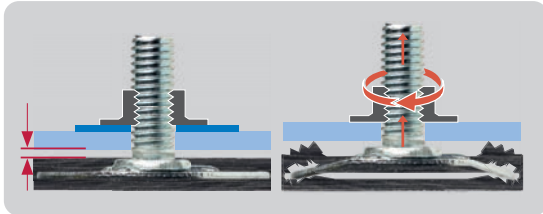


Torsion loading

Forces acting in opposing directions, rotating about the fastener axis - expect 5 Nm to 75 Nm depending on the bigHead & embedment material used. **BE AWARE: this does not imply tightening torque capabilities.**

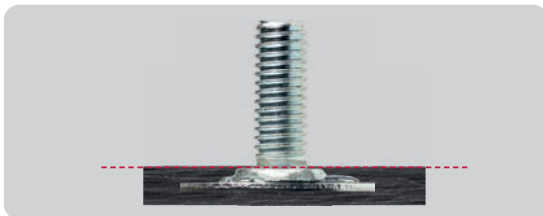
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Critical issues and specific guidance topics for co-processing of bigHeads



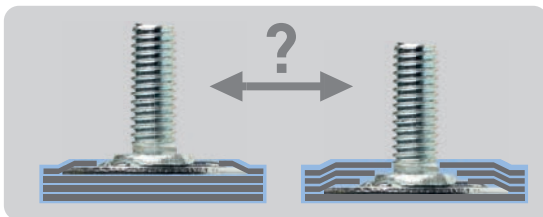
Beware of assembly gaps

The tightening forces generated during assembly can be enough to detach a bigHead from the component surface. To avoid this, especially in cases where there are gaps between the fastened components, ensure that tightening torques do not create resultant forces above loading capability of the embedment material or the bigHead.



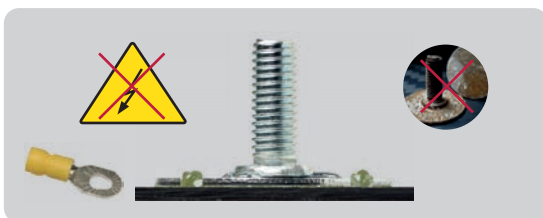
Material shut-off line

A material shut-off against the shoulder face on the bigHead can help ensure adjoining parts clamp against the metallic shoulder material of the bigHead - not the surrounding material. This reduces the chance of overloading the welded bigHead fixing/Head joint during assembly tightening and can help prevent issues with creep relaxation of tightened assemblies.



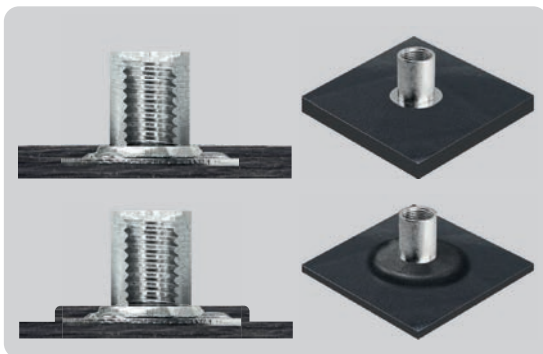
Embedment height effects

You will probably see the biggest benefit to deeper embedment of the bigHead in a tensile loading, or pull-out condition - in shear and torsion loading conditions, deeper embedment may not increase loading capability.



Be aware of electrical and galvanic corrosion implications

This is especially important when embedding bigHeads into materials with carbon reinforcement materials or pigments. If you need a non-metallic coating option, please contact us to discuss options.

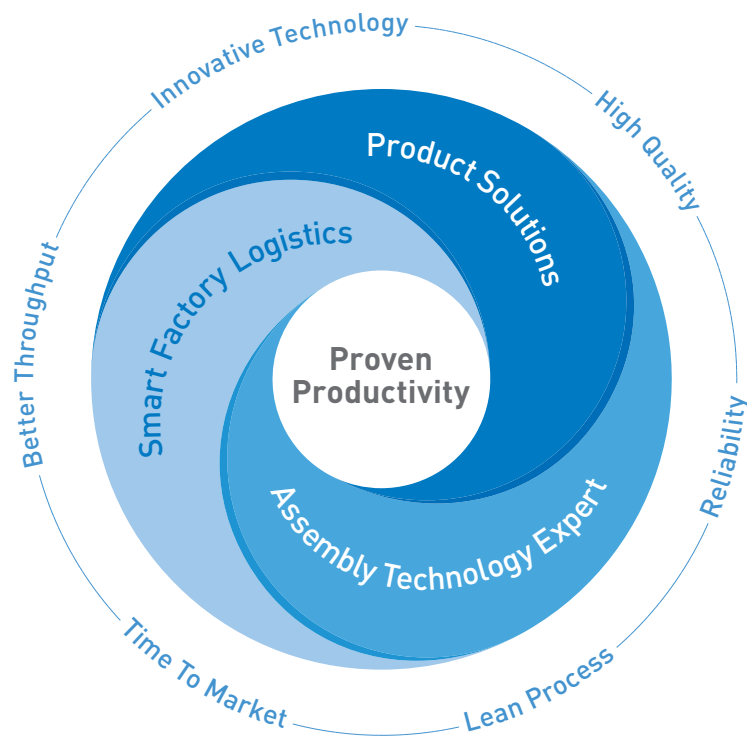


Embedding bigHeads into thick (>3 mm) or thin (<3 mm) section materials

With closed-mould processes, encapsulation of the head in a pocket of material is usually required for material thicknesses of 3 mm or less.

PROVEN PRODUCTIVITY – A PROMISE TO OUR CUSTOMERS

The strategy for success



From years of cooperation with our customers we know what achieves proven and sustainable impact. We have identified what it takes to strengthen the competitiveness of our customers. Therefore we support our customers in three strategic core areas.

Firstly, when finding optimal **Product Solutions**, that is in the evaluation and use of the best fastening part for the particular function intended in our customers' products.

Second, our **Assembly Technology Expert** services deliver the smartest solutions for all possible fastening challenges. Our services cover from the moment our customers developing a new product, to

assembly process optimization as well as fastening technology education for our customers' employees.

And thirdly, optimising our clients' productions in a smart and lean way with **Smart Factory Logistics**, our methodology, with intelligent logistics systems and tailor-made solutions.

Understood as a promise to our customers, "Proven Productivity" contains two elements: Firstly, that it demonstrably works. And secondly, that it sustainably and measurably improves the productivity and competitiveness of our customers.

And this for us is a philosophy which motivates us every day to always be one step ahead.

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