



bigHead®

Adhesive bonding of Core Range products



«every bigHead® is perfectly engineered.»

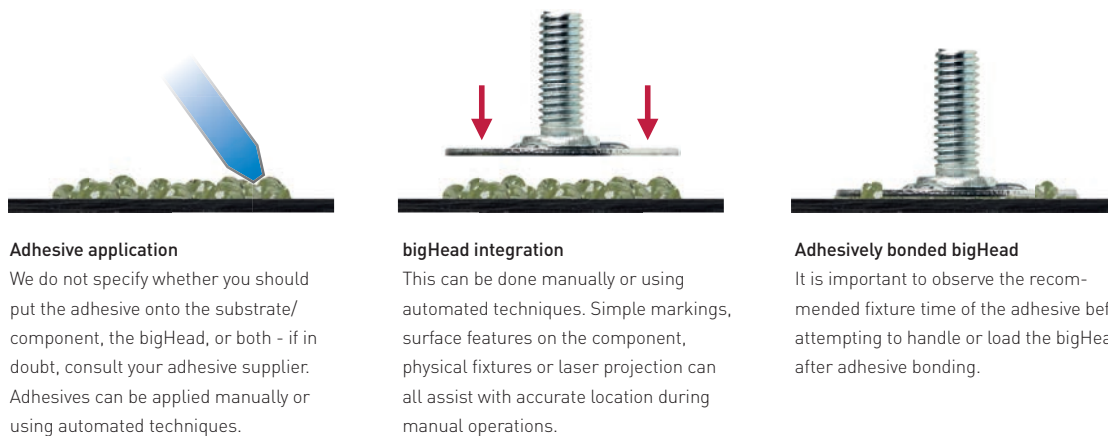


Adhesive bonding considerations



We refer to adhesive bonding as post-process integration; it typically takes place after the component has undergone the principal manufacturing or forming process. Depending on the adhesive used, it is possible to adhesively bond bigHeads prior

to painting or finishing. Whilst we offer guidance relating to adhesively bonding bigHeads, application suitability must always be determined by consultation with the adhesive manufacturer or supplier, or by appropriate testing.

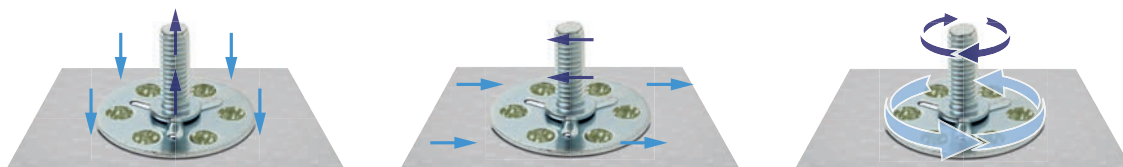


Adhesive application
We do not specify whether you should put the adhesive onto the substrate/ component, the bigHead, or both - if in doubt, consult your adhesive supplier. Adhesives can be applied manually or using automated techniques.

bigHead integration
This can be done manually or using automated techniques. Simple markings, surface features on the component, physical fixtures or laser projection can all assist with accurate location during manual operations.

Adhesively bonded bigHead
It is important to observe the recommended fixture time of the adhesive before attempting to handle or load the bigHead after adhesive bonding.

Generic loading considerations for adhesive bonding



Tensile loading Opposing forces acting perpendicular to the surface plane and along the fastener axis - expect 0.25 kN to 3.75 kN depending on the bigHead & adhesive used.

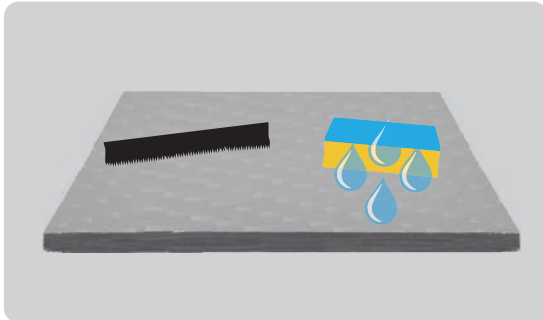
Shear loading Opposing forces acting parallel to the surface plane and perpendicular to the fastener axis - expect 0.1 kN to 5 kN depending on the bigHead & adhesive used.

Torsion loading Forces acting in opposing directions, rotating about the fastener axis - expect 1 Nm to 70 Nm depending on the bigHead & adhesive used.

BE AWARE: this does not imply tightening torque capabilities.

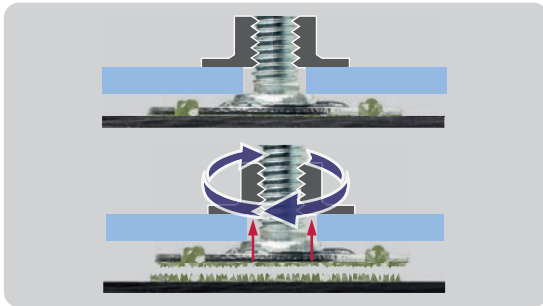
The information within this document is for guidance purposes only and does not constitute a guarantee or warranty of any kind. bigHead cannot accept liability for performance arising from use of these products. Application suitability should always be determined by appropriate testing and evaluation. Drawings and diagrams are for illustrative purposes only and may differ from actual products. For technical inquiries, please contact bigHead on www.bossard.com

Critical issues and guidance topics



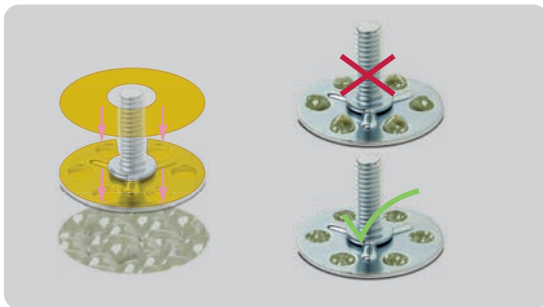
Surface preparation and cleaning

The exact requirements vary between adhesives, but our general advice is to take necessary steps to remove any dust, moisture, release agent or other contaminants from the component surface prior to bonding a bigHead in place. Abrasion is not always necessary, but cleaning is always recommended.



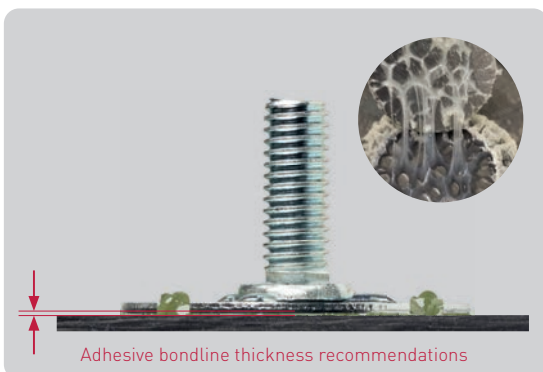
Beware of assembly gaps

The tightening forces generated during assembly can be enough to separate an adhesively bonded 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 the tensile load capability of the adhesive or the bigHead.



Controlling adhesive overspill

Large lumps of adhesive spilling out of perforation holes can interfere with assembly, and increase adhesive wastage. To stop this, we recommended considering the application of a thin (50-100 μm) transparent self-adhesive film on the upper side of the bigHead prior to bonding. We do this with our test specimens, and we are happy to advise on suitable cutting sizes.

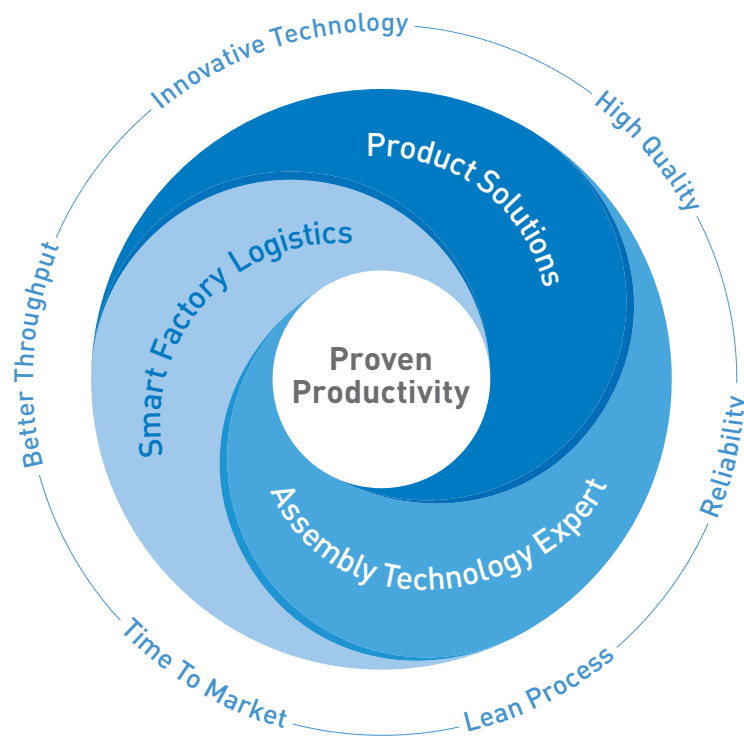


Be aware of factors that affect the adhesive performance and proper cure

Adhesives generally have an ideal bond-line thickness for achieving proper cure and optimum mechanical performance - be sure to maintain this, and observe the adhesive manufacturer's recommended cure parameters when bonding bigHeads. Carbon steel bigHead products are supplied with a Zinc electroplate finish, which can interfere with the cure of some adhesive products - always check adhesive compatibility or perform tensile tests on bonded bigHeads to determine compatibility.

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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