

How CHOCKFAST® Helps Maintain Alignment

Technical Bulletin # 639B

Bulletin Description

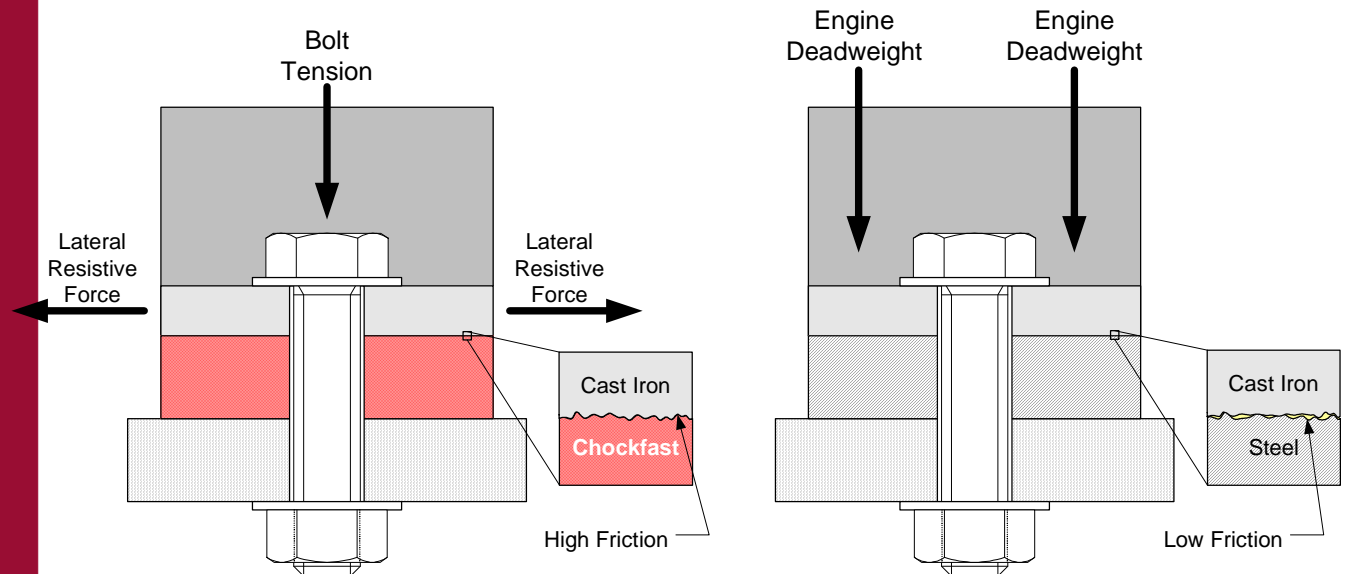
Maintenance of alignment in reciprocating machinery such as large diesel engines and compressors is of critical importance to operators. Without it, the possibility of broken crankshafts, worn bearings and associated machinery downtime greatly increases.

Benefits of CHOCKFAST

With CHOCKFAST Resin Chocks, the maintenance of equipment alignment is improved dramatically when compared to installations that use steel chocks. There are many cases of improved alignment provided by CHOCKFAST when used as a direct retrofit for steel chocks under troublesome engines.

Reasons For Success

The key reason for the success of CHOCKFAST Resin Chocks is that they produce a higher lateral resistive force when compared to steel chocks under cast iron bedplates. The coefficient of friction between CHOCKFAST Resin Chocks and cast iron is 0.7 as compared to 0.15 for steel to cast iron. An independent engine manufacturer during an extensive test program (Sulzer Brothers - Winterthur, Switzerland), established these coefficients. The following examples illustrate the superior total lateral resistive forces derived from the use of resin chocks:



Engine Deadweight plus Bolt Tension work to hold the engine in place.

Friction also helps hold the engine in place.

Friction plus Engine Deadweight plus Bolt Tension = Total Lateral Resistive Force

The higher the Total Lateral Resistive Force, the higher the forces available to maintain alignment.

Because CHOCKFAST fills every little crease and crevice in the mounting foot, the friction between CHOCKFAST and cast Iron is much larger than between steel and cast iron.

ITW POLYMER TECHNOLOGIES

130 Commerce Drive • Montgomeryville, PA 18936 • 215-855-8450 • Fax 215-855-4688

www.chockfastgrout.com



ITW Polymer Technologies
Registered to ISO 9001:2009
File No. A3790



ITW Performance Polymer Europe
ISO 9001:2009
Q 05-120

Examples

Let's compare the total resistive force available from CHOCKFAST Resin Chocks to steel chocks for three Diesel Engines:

Example 1: DRESSER CLARK HBA8

Engine Deadweight = 170,000 lbs.

Hold Down Bolts & Tension Per Bolt = (19) 1-1/2" Main Frame Bolts @ 25,560 lbs/bolt

Assume all load is on (19) - 10" x 10" Main Frame Chocks

Total Normal Load = Engine Deadweight + All Bolt Tensions = 170,000 lbs + 19 x 25,560 lbs. = 655,640 lbs

Total Resistive Force Of CHOCKFAST Resin Chocks To Cast Iron Engine Bedplate = Coefficient of Friction of CHOCKFAST Resin Chocks to Cast Iron x Total Normal Force = 0.7 x 655,640 lbs = 458,948 lbs

Total Resistive Force Of Steel Chocks To Cast Iron = Coefficient of Friction of Steel Chocks to Cast Iron x Total Normal Force = 0.15 x 655,640 = 98,346 lbs.

Forces available to help hold alignment: 1) with CHOCKFAST Resin Chocks = **458,948 lbs.**

2) with steel chocks = **98,346 lbs.**

Example 2: COOPER ENERGY 16V-250

Engine Deadweight = 270,000 lbs.

Hold Down Bolts & Tension Per Bolt = (20) 2" Main Frame @ 45,500 lbs./bolt

Assume all load is on 20 Main Frame Chocks

Total Normal Load = Engine Deadweight + All Bolt Tensions = 270,000 lbs. + 20 x 45,500 = 1,180,000 lbs.

Total Resistive Force Of CHOCKFAST Resin Chocks To Cast Iron Engine Bedplate = Coefficient of Friction of CHOCKFAST Resin chocks to Cast Iron x Total Normal Force = 0.7 x 1,180,000 lbs = 826,000 lbs.

Total Resistive Force If Steel Chocks Used = 0.15 x 1,180,000 lbs. = 177,000 lbs.

Forces available to help hold alignment: 1) with CHOCKFAST Resin Chocks = **826,000 lbs.**

2) with steel chocks = **177,000 lbs.**

Example 3: INGERSOLL RAND KVG-412

Engine Deadweight = 140,000 lbs.

Hold Down Bolts & Tension Per Bolt = (18) 1-1/2" Main Frame Bolts @ 25,560 lbs./ bolt

Assume all load is on 18 Main Frame Chocks

Total Normal Load = Engine Deadweight and Total Bolt Tensions = 140,000 + 18 x 25,560 = 600,080 lbs.

Total Resistive Force Of CHOCKFAST Resin Chocks To Cast Iron Engine Bedplate = Coefficient of Friction of CHOCKFAST Resin Chocks to Cast Iron x Total Normal Force = 0.7 x 600,080 lbs = 420,056 lbs.

Total Resistive Force If Steel Chocks Used = 0.15 x 600,080 lbs. = 90,012 lbs.

Forces available to help hold alignment: 1) with CHOCKFAST Resin Chocks = **420,056 lbs.**

2) with steel chocks = **90,012 lbs.**

CONCLUSION: CHOCKFAST resin chocks provide 4 to 5 times the resistive force of steel chocks.

Date

06/2006

General: Every reasonable effort is made to insure the technical information and recommendations on these data pages are true and accurate to the best of our knowledge at the date of issuance. However, this information is subject to change without notice. Prior versions of this publication are invalid with the release of this version. Products and information are intended for use by qualified applicators that have the required background, technical knowledge, and equipment to perform said tasks in a satisfactory manner. Consult your local distributor for product availability, additional product information, and technical support.

Warranty: ITW Polymer Technologies, a division of Illinois Tool Works Inc., warrants that its products meet their printed specifications. This is the sole warranty. This warranty expires one year after product shipment.

Warranty Claims: If any product fails to meet the above, ITW Polymer Technologies will, at its option, either replace the product or refund the purchase price. ITW Polymer Technologies will have no other liability for breach of warranty, negligence, or otherwise. All warranty claims must be made in writing within one year of the date of shipment. No other claims will be considered.

Disclaimer: ITW Polymer Technologies makes no other warranty, expressed or implied, and specifically disclaims any warranty of merchantability or fitness for a particular purpose.

Suggestions concerning the use of products are not warranties. The purchaser assumes the responsibility for determining suitability of products and appropriate use. ITW Polymer Technologies' sole liability, for breach of warranty, negligence or otherwise, shall be the replacement of product or refund of the purchase price, at ITW Polymer Technologies' election. Under no circumstances shall ITW Polymer Technologies be liable for any indirect, incidental or consequential damages.

Modification of Warranty: No distributor or sales representative has the authority to change the above provisions. No change in the above provisions will be valid unless in writing and signed by an officer or the Technical Director of ITW Polymer Technologies. No term of any purchase order shall serve to modify any provision of this document.

Mediation and Arbitration: If any dispute arises relating to products or product warranties, either the purchaser or ITW Polymer Technologies may a) initiate mediation under the then current Center for Public Resources (CPR) Model Procedure for Mediation of Business Disputes, or b) initiate a non-binding arbitration under the rules of the American Arbitration Association for the resolution of commercial disputes.