

Technical Bulletin # 643E

Bulletin Description

There are a number of combinations and methods of installing CHOCKFAST grout to mount equipment. The method chosen usually depends on the type of equipment, the loads, operating temperature and mounting arrangement. There is, however, one standard or preferred method of grouting that ITW Polymer Technologies feels is optimal for most integral gas compressor engines. The Preferred Chock Design for new engine / compressor installations or repairs under old engines has the following components:

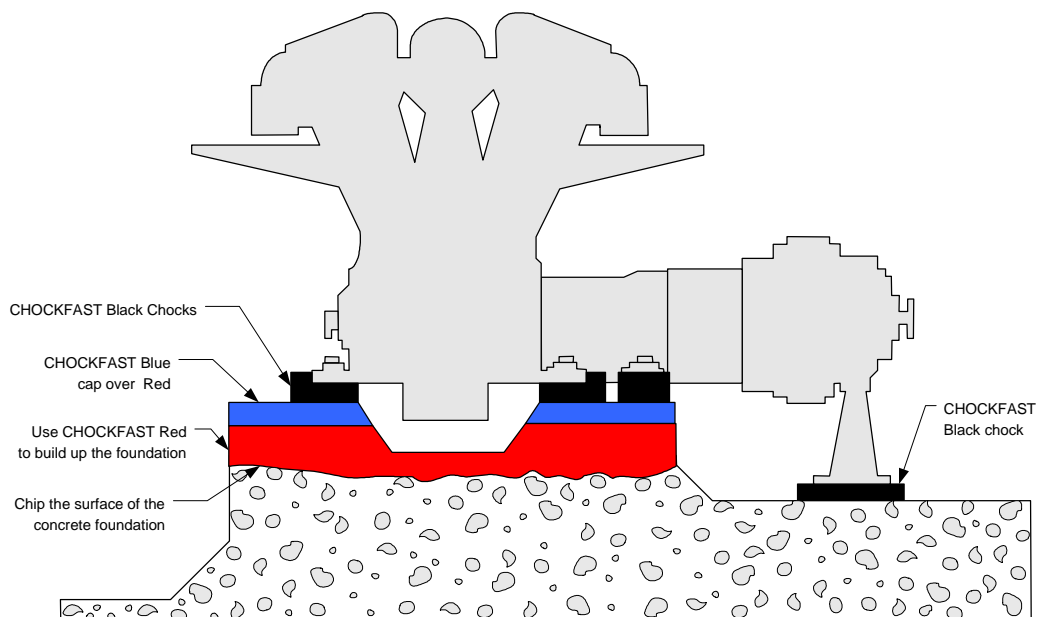
- CHOCKFAST Red or Red SG, if necessary, to bring the foundation up to the appropriate level.
- CHOCKFAST Blue to provide a high-strength, temperature resistant cap on top of the CHOCKFAST Red.
- CHOCKFAST Black or CHOCKFAST Orange as individual chocks around the anchor bolts.

Design For New Engine Foundations

Pour the new concrete foundation to within 3-1/2" (90 mm) of final height of the bottom of the engine bedplate. Allow the concrete to cure for at least 21 days under proper temperature and moisture conditions so it achieves full strength.

After the concrete is completely cured, divide the foundation into controlled sections with maximum dimensions of 1-1/2" (40mm) thick x 42" (1.1m) long x 42" (1.1m) wide. Closed-cell neoprene foam works well as an expansion joint. Mix and pour the CHOCKFAST Blue 1-1/2" (40mm) thick over the concrete to provide a high-strength cap. Allow the grout to cure at least one day. (Please see Bulletin No. 642 entitled "CHOCKFAST Installation Procedures" for additional information on constructing forms, mixing and pouring CHOCKFAST.)

After the CHOCKFAST Blue has fully cured, build a mold under the engine and on either side of each anchor bolt for the CHOCKFAST Black. Each chock will be approximately 2" (50mm) thick and will typically extend the full width of the baseplate. The length of each chock is determined based on the Total Chock Area that will keep the Total Chock Loading (deadweight plus the sum of all bolt tensions) \leq 500 psi (35 kg/cm²). Use either the engine manufacturer's recommended bolt tension or the Rule of



ITW POLYMER TECHNOLOGIES

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

www.chockfastgrout.com



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ITW Performance Polymers Europe
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Q 05-120

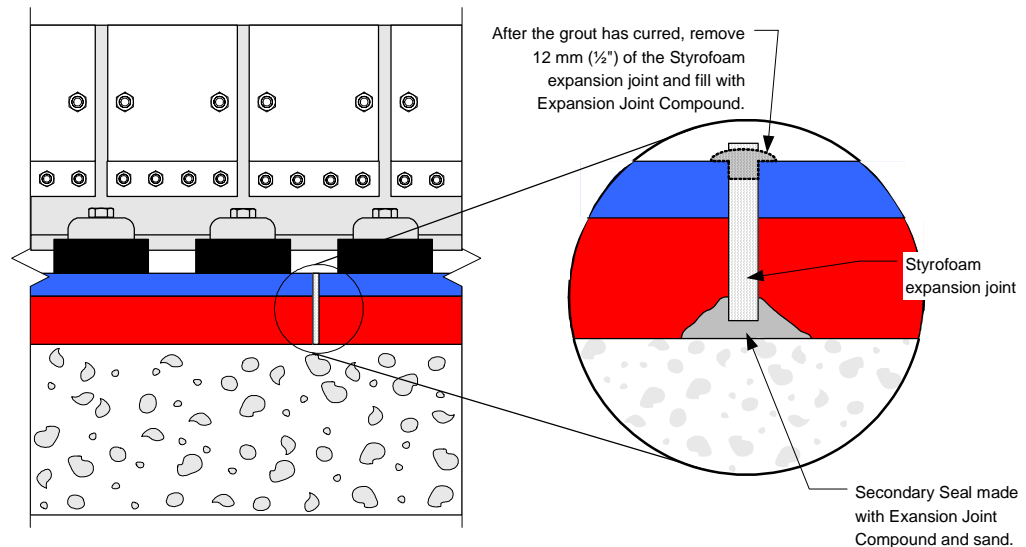
Thumb that says the sum of all bolt tensions must be ≥ 4 times the deadweight of an integral gas compressor engine or $\geq 2\text{-}1/2$ times the deadweight of a standard diesel engine.

After final check of machinery alignment mix and pour CHOCKFAST Black into each as directed. CHOCKFAST Orange may also be used to create the individual chocks.

Design For Rebuilt Engine Foundations

Chip out all oil saturated and cracked concrete until strong, clean concrete is exposed. Build a form around the foundation so the CHOCKFAST Red rebuilds the foundation to within 3-1/2" (90 mm) from the machinery bedplate surface to allow capping with CHOCKFAST Blue and CHOCKFAST Black epoxy chocks.

Create controlled sections on top of the concrete by dividing the area to be filled with expansion joints. When using CHOCKFAST Red, the maximum recommended size for each section is 18" (450 mm) thick x 7' (2.15 m) long x 7' (2.15 m) wide. Expansion joints can be made quickly and easily with 1" (25mm) thick closed cell Styrofoam sheet or 3/4" (18 mm) redwood. Expansion Joint Compound should be used to seal the top and bottom of expansion joint. Wait between consecutive layers until the underlying layer has cooled back to below 85°F (29°C) or ambient.



After the underlying layers of CHOCKFAST Red have cured, pour a CHOCKFAST Blue cap 1-1/2" (40mm) thick over the top of the Red. CHOCKFAST Blue should be poured in controlled sections with maximum dimensions of 1-1/2" (40mm) thick x 42" (1.1m) long x 42" (1.1m) wide. Closed-cell neoprene foam expansion joints or anchored with Expansion Joint Compound slurry are used. (Please see Bulletin No. 642 entitled "CHOCKFAST Installation Procedures.")

After a final check of the machinery alignment subsequent to pouring CHOCKFAST Blue, 2" (50mm) thick CHOCKFAST Black chocks are poured. When this CHOCKFAST has completely cured, back out the jacking bolts and torque the compressor's anchor bolts should be tensioned to either the manufacturer's recommendation or the Rule-of-Thumb that the total bolt tension ≥ 4 times the deadweight of the complete compressor should be used. In both cases, the total static load on the chocks (deadweight plus total bolt tension) 500 psi (≤ 35 kg/cm²).

NOTE: There may be reasons to deviate from this standard such as lack of sufficient bedplate area or unusually rough running that require higher loading. **Please consult the CHOCKFAST representative or ITW Polymer Technologies before deviating from the standard recommendation.**

CHOCKFAST Orange can be used in place of CHOCKFAST Black. In fact, CHOCKFAST Black superceded Orange for standard compressor installations, as CHOCKFAST BLACK is easier to use and provides improved heat dissipation in the foundation. CHOCKFAST Orange is available for special applications where its lower viscosity and variable hardener ratio are advantageous. Standard pour thickness for Orange is 2" (50mm) and loading parameters are identical to CHOCKFAST BLACK.

Alternative Designs

As you can see from the above, soleplates or rails are not included in the Preferred Design. Soleplates, however, may already exist or be required by the customer as part of a new or repair chocking. When soleplates are required they can be grouted in place using CHOCKFAST Blue following the Preferred Design in other respects and allowing 1-1/2" (40mm) of grout under the soleplate. Existing soleplates that are still securely grouted can have steel chocks replaced by CHOCKFAST BLACK or CHOCKFAST ORANGE.

If changes in cross section have to be made to accommodate jack pockets, pipe lead-throughs, etc., it is important that no sharp corners be created in the CHOCKFAST. At least 2" (50mm) radius curves should be used. Similarly, all soleplate or rail edges immersed in the CHOCKFAST should be radiused. It is prudent to put a divider where a crack may be initiated.

Special circumstances may require other methods to be used. The CHOCKFAST system is versatile, but only experienced persons should consider departing from ITW Polymer Technologies' recommendations.

There are times when continuous grouting under the equipment bedplate is required rather than individual chocks. In these cases there is typically a concern over the inherent rigidity of an engine. When continuous grouting is required for integral gas engine compressors or diesel engines, ITW Polymer Technologies recommends using CHOCKFAST Blue for the final 1-1/2" (40mm) grouting layer directly in contact with the bedplate. Controlled sections should be used as described previously and CHOCKFAST RED should also be used if deeper repair is necessary.

***NOTE:** The above parameters are the parameters within which we like to operate and they provide for an inherently conservative design. There are circumstances, such as unavailability of bedplate area, which cause loadings to rise. **Please contact ITW Polymer Technologies with regard to special circumstances.**

Date

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