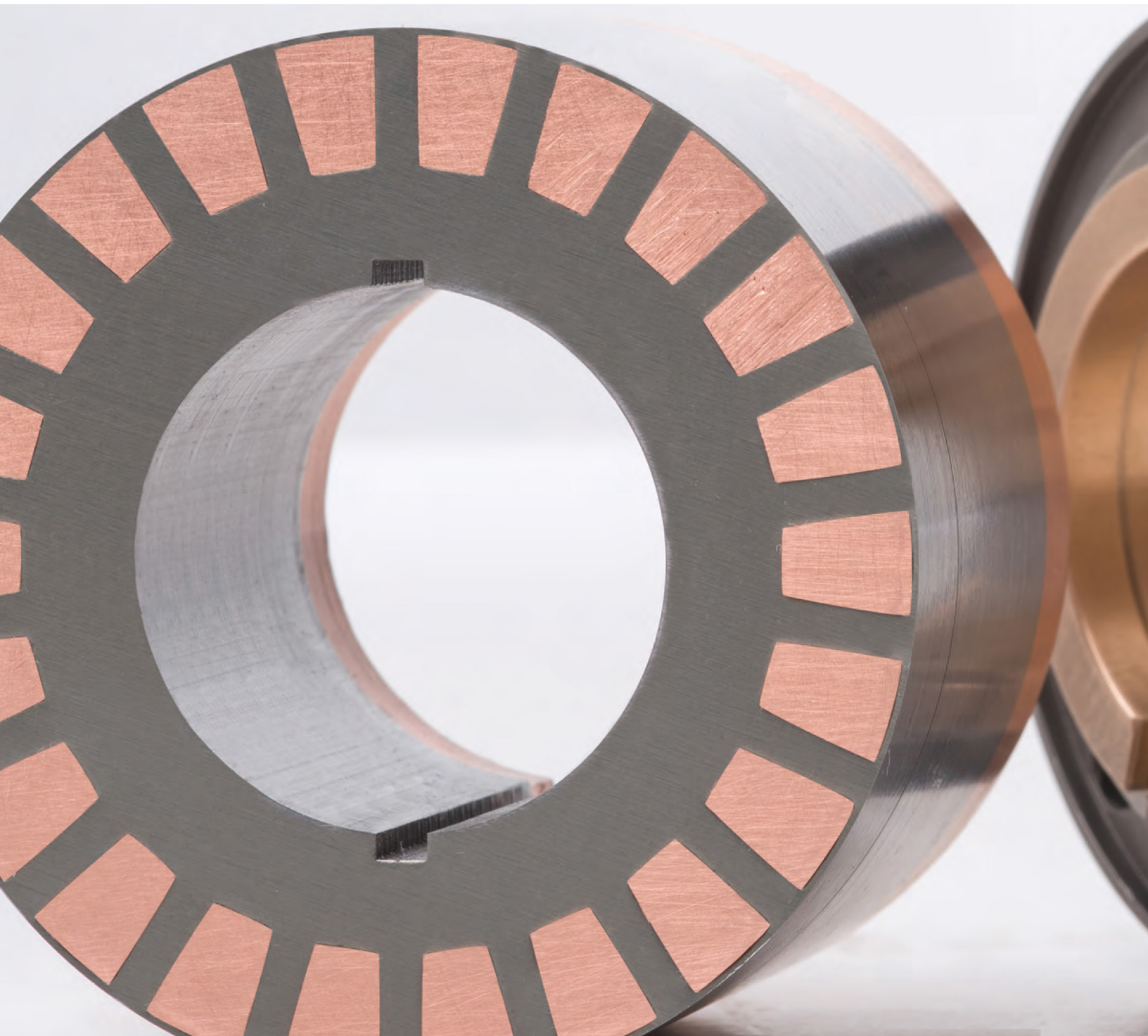




# Corsair™ motors

The new standard for electric submersible pumps



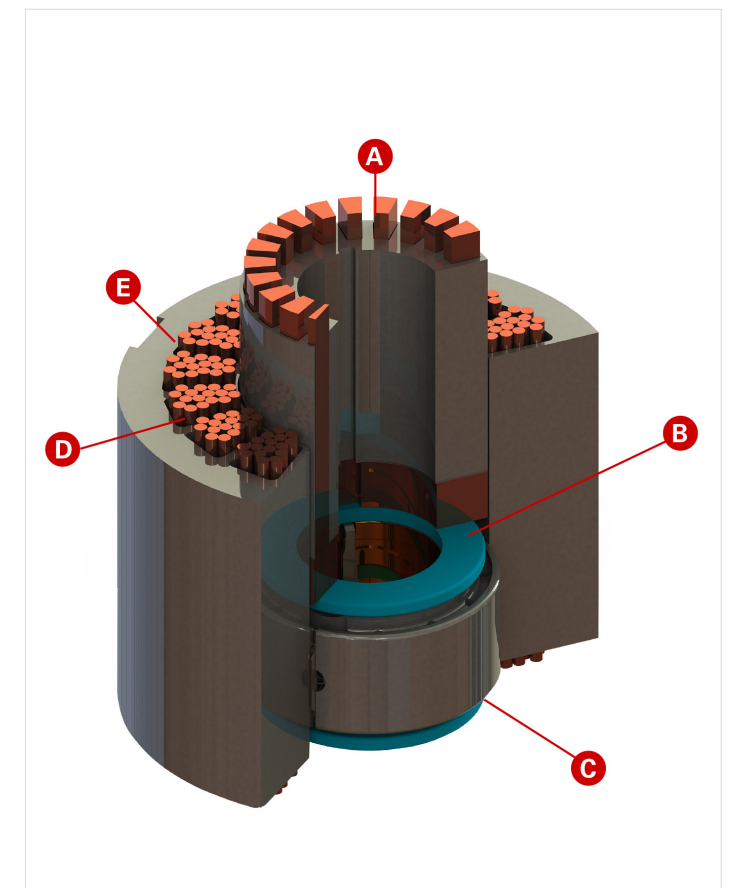
## Corsair™ motors

### Surpassing industry standards in construction and performance

Summit ESP® – A Halliburton Service offers the new standard in electric submersible motors. Corsair™ motors provide the operator with the highest level of performance in the harshest downhole environments. The Summit ESP Corsair motor matches the construction of what the industry has called premium motors.

The Corsair motor can be upgraded to include compliant tungsten carbide bearings and insulation that combines polyimide insulation with PEEK, providing the best of both worlds by combining the dielectric strength of polyimide and the temperature rating of PEEK.

- A. **Shaped rotor bars:** New design utilizes shaped rotor bars, resulting in less current waste and a more efficient motor
- B. **Non-recessed rotors:** More copper eliminates the need for inserting motor bearings into recessed areas – thus reducing friction and heat, and improving reliability and performance
- C. **Self-aligning, wide-profile, Big Foot™ bearings:** Larger wide-profile bearing increases heat transfer, reducing internal motor temperatures. Large wide-profile motor bearing also distributes side loads over larger areas, thus reducing fretting damage in the stator laminations
- D. **Standard double-wrapped polyimide insulated windings:** This feature provides added protection that improves reliability
- E. **Precision hand-wound stators:** These stators allow more room in the slot for additional copper wire, thus increasing efficiencies and performance. Hand-winding also reduces the potential for damaging wire during construction, further increasing reliability and performance





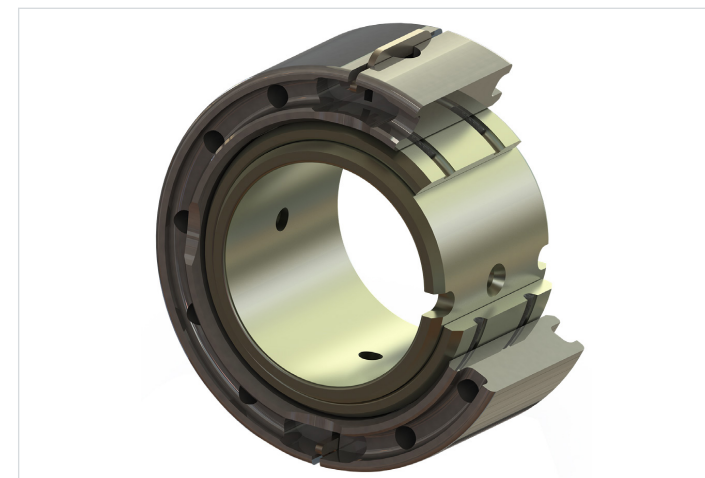
**Corsair™ motor features and benefits: 456 and 562 series**

FEATURES	BENEFITS
Precision hand-wound stators	Allows for more room in slots for additional mag wire, increasing efficiencies and performance. Hand-winding vs. machine-winding allows for exact placement of mag wire at every turn, thus reducing wire-to-wire rub and damage during construction, and increasing motor reliability.
Non-recessed rotors	More copper eliminates the need for inserting motor bearings into recessed areas – thus reducing friction and heat, and improving reliability and performance.
Self-aligning, wide-profile, Big Foot™ bearings	Larger wide-profile bearing increases heat transfer, reducing internal motor temperatures. Large wide-profile motor bearing also distributes side loads over larger areas, thus reducing fretting damage in the stator laminations.
All-steel, closed-slot stator construction	This type of construction optimizes motor performance.
Non-magnetic, positive-locking bearings	This feature optimizes bearing performance during operation.
Shaped rotor bars	More copper provides increased efficiency.
Standard double-wrapped polyimide insulated windings	This standard feature offers added protection and improved reliability.
Head and base bushings made of self-aligning carbide	Exact clearance is maintained because both bushing and sleeve are made from the same material. These self-aligning bushings reduce vibration.
Increased lubrication slots	Custom-blended oils are used with increased-lubrication slots to reduce mechanical wear and improve reliability and runtime.

**Big Foot™ thick bronze sleeve bearing:** Wide-profile, larger bearings increase heat transfer, thus reducing internal motor temperatures while distributing side loads over a larger area and decreasing fretting damage in the stator laminations. Big Foot bearing carriers use positive locking tabs that eliminate spinning inside the stator bore. The bronze sleeve utilizes sled keys that do not require full-length keyways, allowing the sleeve to maintain roundness and concentricity and reducing optional contact between the carrier and sleeve.



**Big Foot™ abrasion resistant bearing:** Can easily be upgraded to the self-aligning carbide option by using the same bearing carrier. Exact clearance is maintained, since the bushing and sleeve are made from the same material. The self-aligning bushings reduce vibration while providing precise concentricity between the carrier, bushing, and sleeve – all while being subjected to harsh environments.

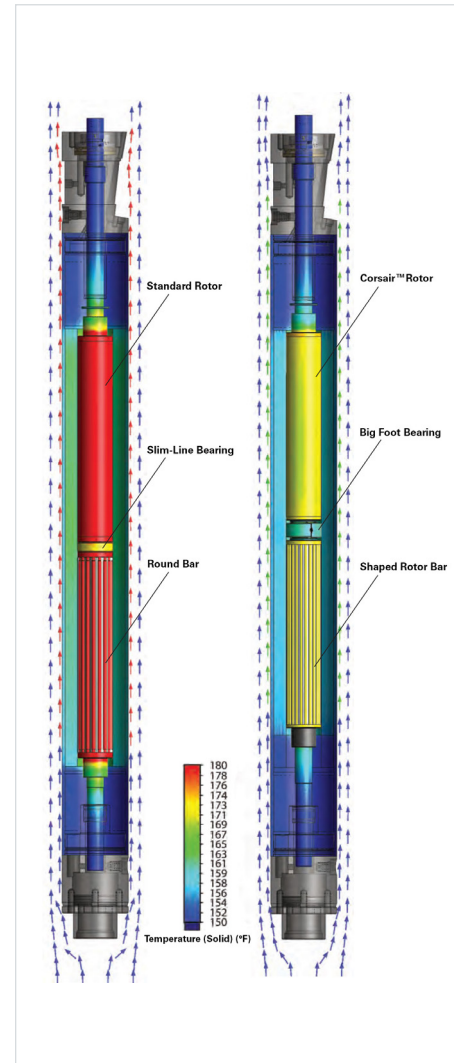
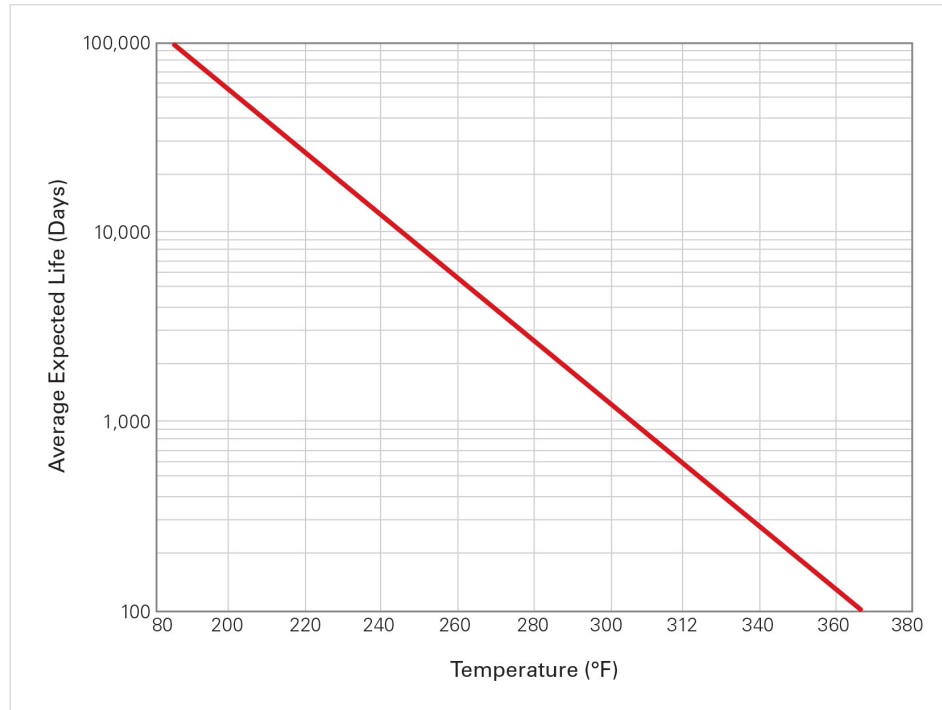


Motor dynamometer test loop: Used for qualification and validation of all motor design implementation.



### Insulation life vs. temperature

**Extending motor life:** The average stator winding insulation life decreases rapidly with increased motor internal operating temperatures. Every 10°C rise in temperature above the insulation material’s rating reduces life expectancy by 50 percent. Consequently, selecting quality insulation materials that can withstand higher temperatures, along with implementing motor design features that can reduce heat generation and buildup, will greatly extend motor life.



**Left - Industry standard motor:**  
456 Series industry-standard motor computer simulation using round rotor bar and slim-line motor bearings.

**Right – Summit ESP standard with shaped rotor bars and Big Foot™ bearings:**  
456 Series standard Corsair™ motor computer simulation using shaped rotor bar and Big wide-profile bearings.



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