Corsair™ 420 Series EMS Motors

OVERVIEW

Unconventional operators need a motor that effectively operates in 5½-inch heavy wall casing, while meeting minimum horsepower (hp) requirements for new drill applications. The 420 Series motor is part of the Summit ESP® induction line of Corsair™ motors for electric submersible pump (ESP) systems.

The 420 Series motor meets horsepower requirements, eliminates the outer diameter (OD) clearance issues of larger motors, and has the added benefit of induction motors for dynamic loading conditions.

Specifically, the 420 Series motor provides:

- Smooth installation that avoids damage during the installation process or equipment becoming stuck in hole
- The high horsepower necessary for maximum reservoir inflow performance (IP)
- Mitigation of gas slugging by reducing fluid velocity that can lead to ESP loading changes and ESP failure
- Reduced motor operating temperatures in heavy wall casing applications

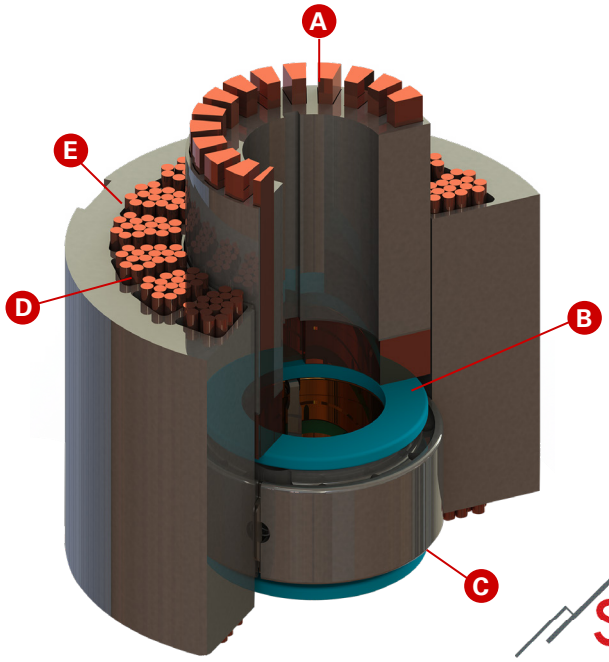
These benefits ensure that the operator receives a reliable ESP motor for 5½-inch heavy wall casing applications that meets the horsepower requirements to maximize IP for the well. This solution also enhances the well's productivity and extends the run life of the ESP.

FEATURES

- Reliable ESP motor with 400-hp maximum
- Smaller motor OD to fit into tighter wellbores
- Conventional induction motor design

BENEFITS

- Proven performance, based on minimal modification of existing Summit ESP motors
- Configurable with existing downhole and surface equipment
- Less heat generation from motor
- Increased efficiency, and lower operating cost



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.

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STANDARD AND OPTIONAL MATERIALS

Component	Standard Materials	Optional Materials
Head/Base	Carbon Steel AISI 1045/1035	Stainless Steel 410/416
Housing	Carbon Steel C45 DOM Tube	Stainless Steel 9Cr1Mo/13Cr
Shaft	Carbon Steel 4140	Carbon Steel 4140
Base Bearing	Tungsten Carbide	Tungsten Carbide
Ring, Retaining	Inconel® 718/UNS N007718	Inconel® 718/UNS N007718
Thrust Runner	Carbon Steel 4140	Carbon Steel 4140
Thrust Bearing - High Load	Bronze Deflection Pad	Carbon Steel Base Peek Thrust Face
Varnish	Polubutediene Thermal Set Varnish	Polubutediene Thermal Set Varnish
Laminations	Semi-Processed Silicon Electrical Steel	Semi-Processed Silicon Electrical Steel
Mag Wire	Soft-Drawn Copper Wire	Soft-Drawn Copper Wire
Mag Wire Insulation	Kapton Double Wrapped	Kapton Double Wrapped
Slot Liner	Polyimide	PEEK
Rotor Bearing	Stainless Steel 304/UNS S30400	Stainless Steel 304/UNS S30400
O-Rings	EPDM	Aflas®
Shipping Cap	Cast Iron F11701	Cast Iron F11701

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Features	Benefits
Outboard rotor bearings with positive lock	Provides additional roto-dynamic stability, which eliminates any potential bearing spin
Optimized stator slot and rotor bar design	Improves power density with better starting torque
Slot liner insulation twice that of industry standard	Reduces phase-to-ground and phase-to-phase electrical shorts
Double-wrap mag wire insulation	Reduces phase-to-phase electrical shorts
Rotors independently positioned along the shaft	Eliminates rotor bearing thrust wear
Optimized rotor diameter and air gap	Offers high efficiency with less slip and heat generation

SYSTEM BENEFITS

- Improved motor durability in mechanical and insulation systems provides longer run life
- High-efficiency design enabled by increased copper content, shaped rotor bar, and long rotor design that reduces operating costs
- Fewer mechanical and electrical losses, resulting in cooler operating temperatures – thus achieving better reliability and run life, and minimizing the need to oversize motors

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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