

# S4000 ESP Stage

Advanced mixed-flow design

## APPLICATIONS

- 7-in or larger casing
- Conventional land wells
- Gassy production
- Abrasive production
- High-temperature environments

## BENEFITS

- Increased production
- Higher uptime
- Reduced operating costs
- Lower total cost of ownership

## FEATURES

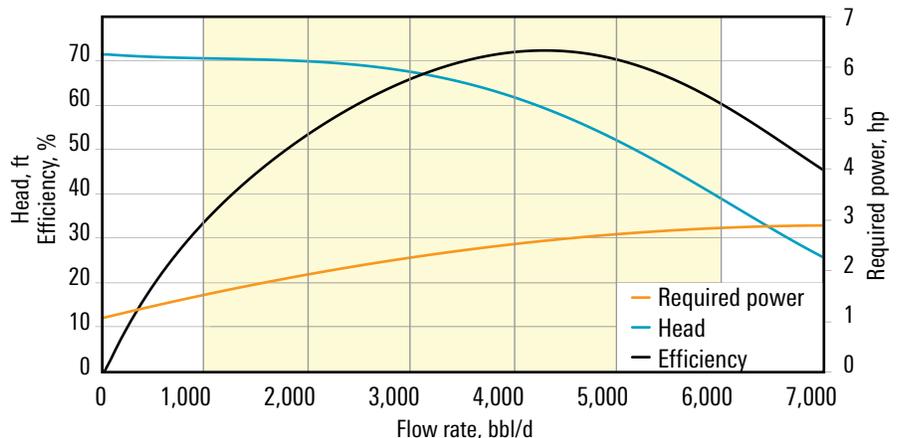
- Enhanced compression design—engineered stack stiffness, shaft play and lift, and radial stability—for greater reliability
- True mixed-flow design
- Wide operating range
- Abrasion-resistant bearing configurations

## Efficient handling of multiphase flow

Proprietary fluid modeling software and optimization processes have been used to create the industry's most advanced mixed-flow ESP stage. The S4000 can handle the lowest flow rate among mixed-flow stages for 500 Series REDA\* ESP systems. It also increases the hydraulic head developed per stage compared with legacy mixed-flow stages, leading to a shorter overall pump length. It enhances efficiency to reduce operating costs and has a wide operating range for maximum flexibility, handling more sand and gas than previously possible. The S4000 is the ideal solution for wells with 7-in or larger casing and target production less than 6,000 bbl/d.

## Design features for improved reliability

Compression construction and factory-shimmed, high-strength shafts increase the applicability and reliability of the ESP. In a compression-designed REDA ESP system, the axial thrust developed by the stages is fully transferred to the high-load-capacity protector thrust bearing to maintain reliability. Additionally, the impellers are ideally positioned relative to the diffuser, eliminating downthrust wear, which is common in floater pumps operating below the minimum operating limits. With innovative vane profiles, the S4000 outperforms other stages in gas-handling ability and abrasion resistance, helping operators extend run life and lower costs.



### Best Efficiency Point

Flow rate = 4,282 bbl/d  
Head = 59.57 ft

Required power = 2.59 hp  
Efficiency = 72.65%

### Specifications for Series 538 Pump with S4000 stages

OD	5.38 in [136.7 mm]
Stage geometry	Mixed flow
Flow range	1,000–6,000 bbl/d at 60 Hz [125–800 m <sup>3</sup> /d at 50 Hz]
Best efficiency point (BEP)	4,282 bbl/d at 60 Hz [567 m <sup>3</sup> /d at 50 Hz]
Efficiency at BEP	72.65%
Head per stage at BEP	59.57 ft at 60 Hz [12.61 m at 50 Hz]
Burst pressure	6,000 psi [41,368 kPa]
Stage metallurgy	Ni-Resist® or 5530 high-nickel, corrosion-resistant alloy
Housing metallurgy	Carbon steel or Redalloy® high-nickel alloy
Shaft material	High-strength MONEL® or INCONEL® 718
Radial bearing material	Tungsten carbide
Pump construction	Compression, factory-shimmed

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