

## UNIQUE WORM DRIVE OPTION OFFERS SIMPLICITY AND RELIABILITY

The lean, compact (82" unitized width) White Star Quatro™ 4-piston mud pump is also now available with an ultra-efficient worm drive option. This unique unitization option, only available on Quatro quadruplex mud pumps, provides for an extremely compact and simple unitization, while also adding to the long-term durability and reliability of the pump.

Employing worm drive in lieu of traditional mechanical drives eliminates the need for many moving parts often required in pump unitization, such as belts, chains, reduction gearing, right-angle drives, and more. In addition, a worm-drive equipped Quatro provides for the Half-Drive™ option, which acts as a lower gear to reduce the pump discharge by 50% further eliminating expensive transmissions or gear boxes.

The bottom line is that a Quatro with worm drive is a simpler, more reliable and serviceable mud pump design, with fewer parts and assemblies to fail.



## Advantages

- Delivers up to 65,000 hour service life, much longer than pinion and bull gears. Combine the worm drive durability with the Quatro's 40.3% reduction in peak bearing load, and you have a design that redefines "life cycle" for mud pumps.

The power end of the Quatro will last substantially longer than that of any other mud pump, especially in the most demanding drilling conditions. There is a good chance you will retire before you will replace or retire the power end of the Quatro.

- The worm drives included as part of a unitized Quatro mud pump offer gear ratios up to 12.4 /1, eliminating the need for expensive reduction gearing on up to 1800 rpm engines. In addition, the elimination of reduction gearing significantly reduces parasitic loads and improves reliability and efficiency.
- While premium worm gears initially cost more than the conventional pinion and bull gears, the increased capital expense is more than offset by their proven long life, reducing the downtime and maintenance costs associated with belt or chain driven pinion and bull gears.
- In addition, the premium for the Quatro worm drive is further offset by the elimination of costly unitization equipment, along with the maintenance of belts and chains.
- Based on the smooth force provided by the worm drive to the crankshaft, it is likely that the crankshaft or gears will never need to be replaced. However, in the event of a human error, such as dropping a wrench between gear and worm drive, the Quatro's innovative design makes replacement of a worm gear a simple process.

