



The Kaizen Tapered String Dual Stage Spring Assembly – TSDS

This patented assembly addresses the challenges faced in deep wells that yield significant amounts of liquids and gas. In contrast to the mono-bore dual stage system, which is optimized for low Gas-Liquid Ratio (GLRT) conditions, this design features a lower flow bypass sleeve that enables the plunger to float into the sleeve. This setup facilitates gas circulation around the sleeve's outer slots, minimizing restrictions and enhancing flow, even during closed cycles.

A notable benefit of this system is its ability to reduce the travel length of the plunger, leading to quicker plunger cycle frequencies. Additionally, it requires a lower Gas-to-Liquid Ratio for the plungers to operate effectively. Successfully implemented in the Kingdom of Saudi Arabia, this system has demonstrated considerable production improvements compared to other plunger systems, with average production increases of 25-40% recorded in various well trials.

This system can be installed in a well using standard wireline and can be deployed in a single run operation. It is essential to adhere to proper tubing design criteria to maintain the correct distance between the upper and lower tubing sections for optimal performance. While sizes may vary, common configurations include 2 3/8" lower and 2 7/8" upper or 2 7/8" lower and 3 1/2" upper, with numerous size combinations available.