



# THE STALWART™ HD STAGE TOOL

## stal-wart

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### Loyal, reliable, and hardworking

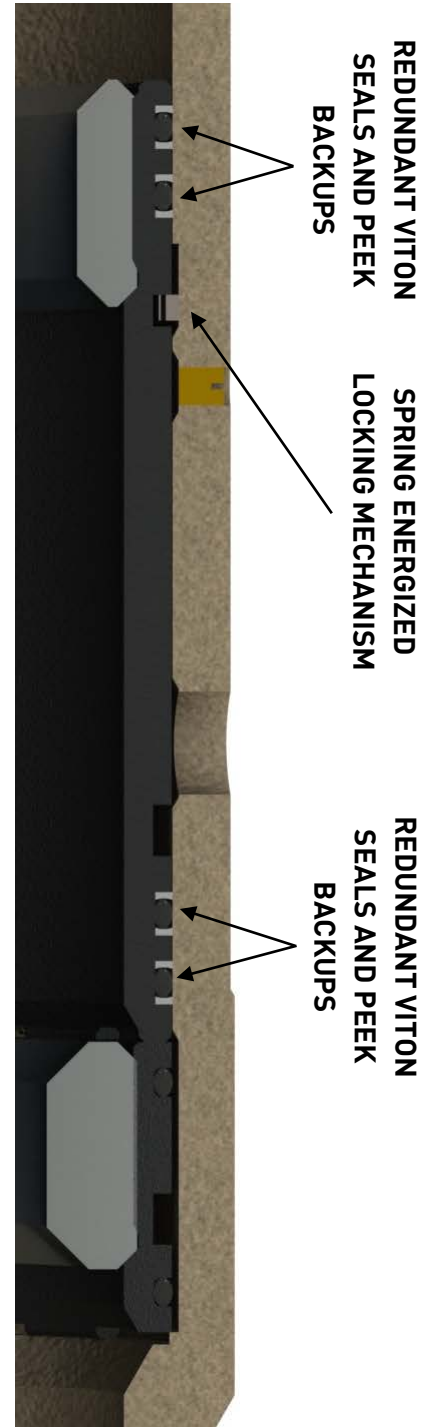
The Citadel Casing Solutions **Stalwart™ HD Stage Tool** is the go-to stage tool for multi-stage cementing where life-of-well integrity is critical to completion and production operations after cementing is complete. The DEVGRU team at Citadel focused on reliability, drillability, and cost-effectiveness when developing the tool. Available in plug operated (shown) or hydraulically operated configurations.

- **HEAVY DUTY “HD” EDITION:** Thicker steel and redundant seals to exceed casing burst, collapse, and tensile strength and is suitable for exposure to hydraulic fracturing operations at up to 400°F.
- **SLEEVE DESIGN:** Internal sleeve design makes the tool suitable for cyclic high pressure loads common during hydraulic fracturing operations. Proven to withstand 10,000 cycles at max pressure without failure.
- **HPHT SEAL PACKAGE:** Redundant viton seals and PEEK backups ensure zero-leakage at maximum pressure for the life of the well.
- **ENERGIZED CLOSURE:** Linear wave spring under lock ring positively energizes the lock ring for guaranteed closure for life-of-well.

<b>Standard Sizes<sup>1</sup></b>	4.500, 5.500, 7.000
<b>Opening Pressure<sup>2</sup></b>	500 psi
<b>Closing Pressure<sup>2</sup></b>	1,000 psi
<b>Total Port Flow Area</b>	3.14 in <sup>2</sup> for 4.500 and 5.500 4.91 in <sup>2</sup> for 7.000

<sup>1</sup>Other sizes available at request

<sup>2</sup>Approximations, actual pressures will vary slightly based on size.



The DEVGRU team at Citadel Casing Solutions is ready and able to customize the exact solution for your unique operation.

For more information, contact Citadel Casing Solutions at:

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