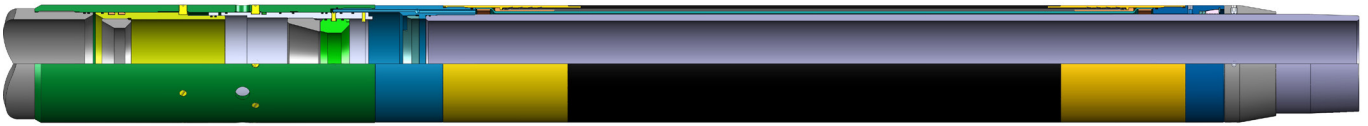


Packer Stage Cementing Collar (PSC)



Forum Energy Technologies' Davis-Lynch packer stage cementing collar (PSC) can help ensure proper placement of competent cement in the intermediate casing string, while expanding the operating envelope in numerous environments. By providing one tool that combines an inflatable packer and a stage cementing collar, the PSC reduces nonproductive time (NPT) and overall well construction costs, while complying with regulatory requirements and minimizing HSE risks.

The packer stage cementing collar has multiple applications:

- Isolate the hydrostatic head of the second-stage cement from the first-stage cement, and from pressure-sensitive zones below it
- Keep cement from falling around pre-drilled or slotted liners
- Selectively place cement across widely separated zones of interest
- Prevent gas migration that can ruin primary cement jobs and lead to annular gas problems at the surface and expensive squeeze work

The packer portion of the PSC tool consists of an inner tube housed and protected by continuous, mechanically end-anchored, spring steel reinforcing strips that are encased in an oil-resistant outer rubber and leafed on top of each other. Expansion is obtained by injecting fluid into the inner tube. This injection forces partial unleafing of the steel strips, which stretches the outer rubber until it effects a full-length seal against the bore in which it is run (cased or open hole).

While the packer is expanding, the bottom end of the element is drawn up on a ratchet-type locking mechanism. This feature keeps the element mechanically expanded so it can provide support in case of hydraulic failure. Once inflation pressure is reached, the fluid injection inlets and opening of the cementing ports simultaneously seal. This action allows the immediate introduction of fluid to the annulus after the packer is set. The inflation of the packer also serves to center the tool in the wellbore, leading to uniform distribution of cement as it exits the casing.

Although the combination packer stage collar serves two purposes, it is only one tool. This means that it can be serviced by one person, which eliminates the cost of the second person who would be required if a stage collar and inflatable packer were individually purchased from two separate companies.

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BENEFITS

- Helps ensure zonal isolation, especially through trouble zones with one easy-to-use tool
- Reduces HSE risks associated with trouble zones and incorrectly placed cement jobs
- Eliminates flat time
- Reduces the chance of remedial squeeze cementing
- Eliminates the need to bump a first-stage cementing plug

FEATURES

- First- and second-stage plugs
- Can be run in sequence
- Compatible in oil- and water-based muds
- Able to pump second-stage cement immediately
- Combines two tools into one

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