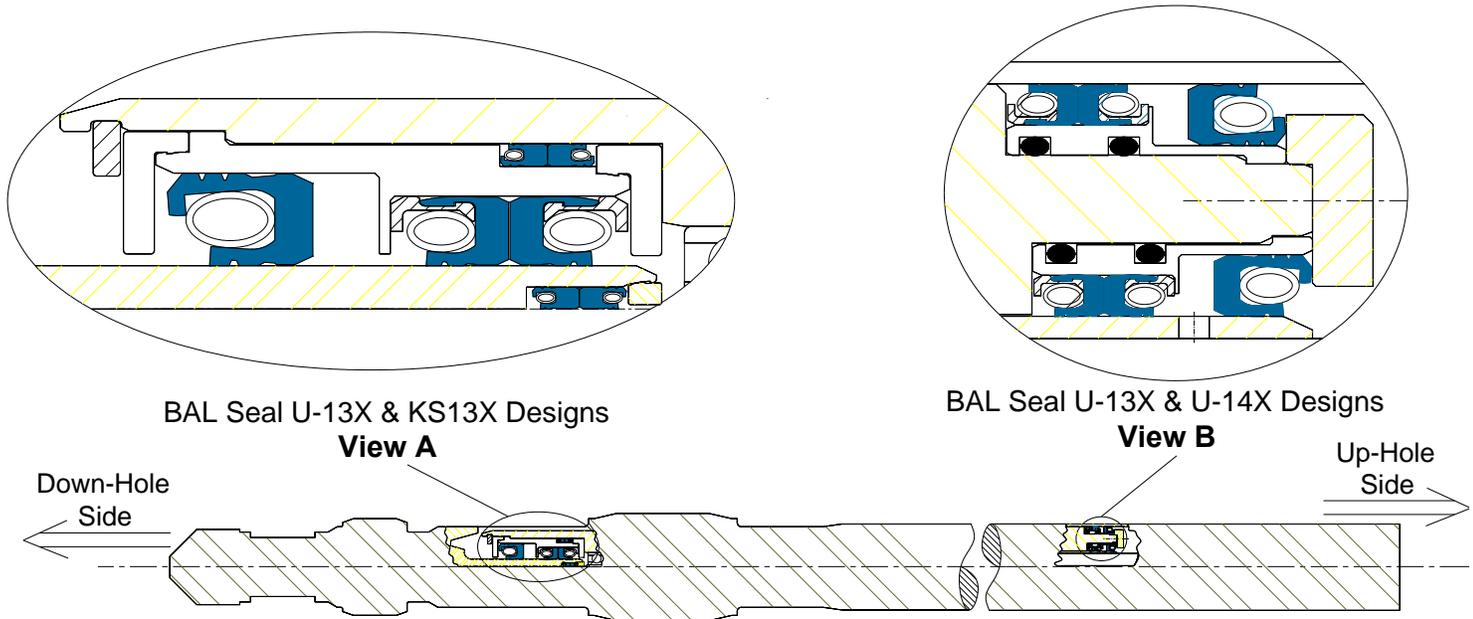


## BAL SEAL® SEALS IN DOWN-HOLE LOGGING TOOLS

The oil exploration drilling industry uses downhole data logging tools in deep drilling applications. These tools contain delicate electronic components that are exposed to harsh and abrasive environments. Sealing technology for these applications traditionally consisted of packings and elastomeric seals. But these types of seals had a relatively short service life, which can result in costly, random operation failures.

Bal Seal Engineering, Inc. has extensive experience with long-term sealing solutions for these applications. For example, the isolation seal system shown below uses a barrier seal to keep the abrasive drill mud away from the second seal, which successfully blocks leakage into the protected pressurized grease pack. The results are optimal reliability and long seal life.



BAL Seal U-13X &amp; KS13X Designs

View A

BAL Seal U-13X &amp; U-14X Designs

View B

Up-Hole  
SideDown-Hole  
Side

### Operating Parameters

Environment pressure:	Down-hole pressure 25,000 psi (1,758 kg/cm <sup>2</sup> )
Sealing pressure:	150-psi differential (11 kg/cm <sup>2</sup> )
Typical speed:	Slow
Temperature:	-40 °F to 400 °F (-40 °C to 204 °C)
Media:	Oil and mud
Additional:	Long seal life, variable pressure and temperature endurance

**Seal Selection:** U-13X, U-14X and KS13X series

### Features:

- Bal Seal series KS13X selected for excellent press-in metal locking ring retention system
- Bal Seal series U-13X and U-14X selected for a higher pressure rating
- Patented, canted coil spring energizer provides near-constant force for long seal life
- Excellent wear-resistant, filled PTFE seal material
- Excellent sealing performance
- Excellent seal material compatibility with various fluids

For more information or assistance, contact a technical representative.

PATENTS: The items described in this page include products that are the subject of issued United States and foreign patents or products where patents are pending, including the following: Patents 6,641,141 B2; 7,210,398 B2; 6,161,838; 5,992,856; 5,134,244  
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Rev.B 8-30-07 (11-276)

Bal Seal Engineering is certified to ISO 9001 | [www.balseal.com](http://www.balseal.com)