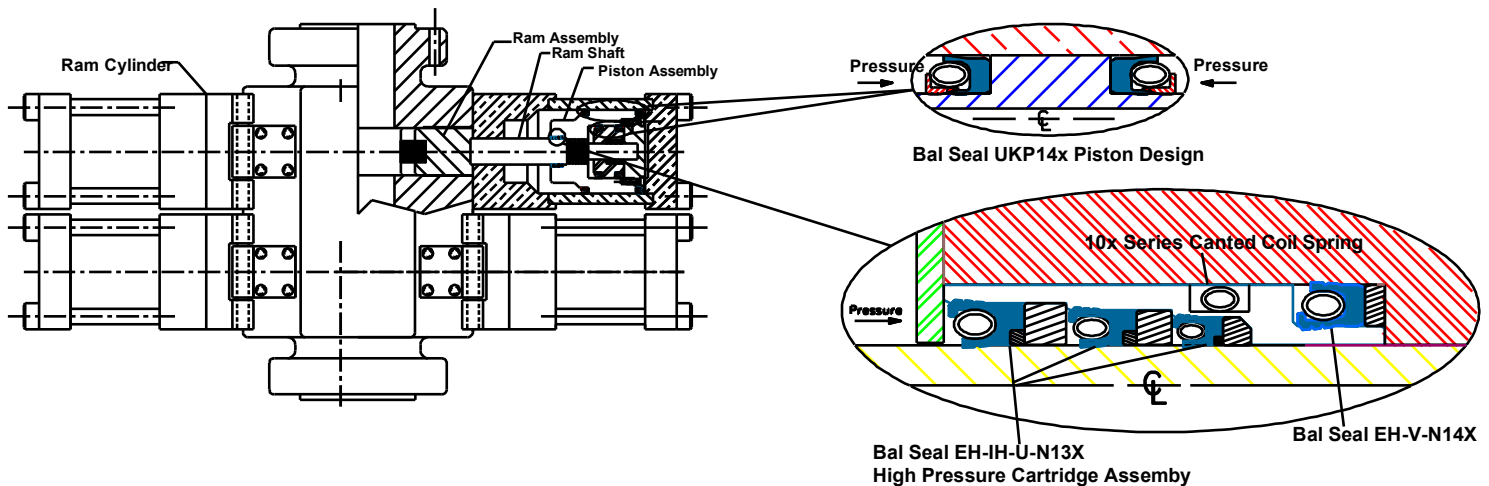


SEALING SOLUTIONS IN BLOWOUT PREVENTERS

Blowout preventers (BOPs) are installed at a wellhead to withstand high pressures; they must operate freely for months to years without any down time. The BOPs must control well pressure, while servicing the drill strings and pipes. Bal Seal® spring-energized seals are used in various critical sealing areas for reliable performance and long life.

Conventional stack packing seals compress against each other under pressure, whereas the Bal Seal seals separate the seal glands and keep them from compressing against their neighboring seals. Because there are no compressive loads, each seal is able to act as a backup to the front seal, providing lower, overall friction and longer seal life.

The cartridge assembly is designed to hold back well-pressure fluids and separate the low friction UKP14X piston seals to effectively hold the ram's opening and closing hydraulic pressure.



Operating Parameters

Environment Pressure:	Well pressure up to 10,000 psi (703 kg/cm ²)
Sealing Pressure:	Up to 5,000 psi (352 kg/cm ²) from hydraulic accumulator
Typical speed:	Slow
Temperature:	- 40° F to 300° F (- 40° C to 149° C)
Media:	Crude oil, drilling mud and hydraulic oil
Additional:	10 to 15 years of life, variable pressure and temperature endurance

Seal Selection: EH-IH-U-N13X, U-KSN14X, EH-U-N14X, and 10X Series Spring

Features:

- Bal Seal unique EH-IH-U-N13X high-pressure shaft wiper seals retained in separate glands
- Bal Seal series U-KSN14X selected for excellent press-in metal locking ring retention system
- Patented, canted-coil spring energizer provides near-constant energizing force for long seal life
- Bal Seal provides filled PTFE materials with excellent wear resistance and chemical compatibility
- Unique seal geometry provides excellent sealing performance
- Bal Seal unique EH-IH-U-N13X selected for securing and sealing cartridge assembly
- Bal Seal canted-coil spring used as centering means to position cartridge assembly in place

For more information and technical assistance, consult the Technical Sales Department.

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 10-19-07 (11-279)

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