



ADVANCED SEALING TECHNOLOGY

MECHANICAL SEAL RESERVOIR

Dual mechanical seals require that a barrier or buffer liquid be introduced between the seals for cooling and lubrication. The most economical and commonly used method to provide this liquid to the seal is a reservoir piped to the seal. The reservoir can be used in remote locations without elaborate piping systems.

A dual seal with barrier fluid pressure greater than process pressure is often called a double seal. This mode of pressurization prevents leakage of product into the reservoir or to the environment. Reservoir pressure is usually maintained at 15-30 psi (1-2 bar) greater than process pressure. Nitrogen or compressed air available in the plant are common sources of pressure.

If process pressure exceeds buffer pressure, the seal is said to be operated as a tandem seal. The reservoir may be pressurized to split the pressure loading between the inboard and outboard seals or to force buffer liquid between the outboard seal faces for lubrication. Any product leakage is contained by the reservoir.

A process fluid that is pumped as a liquid but exists as a gas at atmospheric conditions, such as a light hydrocarbon, may be sealed using a dual seal with an unpressurized buffer fluid. An immiscible buffer fluid such as diesel fuel is used. Any product that leaks through the inboard seal bubbles up through the buffer liquid in the reservoir, where it can be vented to a flare or vapor recovery device.

Since the AST 80 has a double-balanced inboard seal, it may be pressurized as either a double or tandem seal.

INSTALLATION:

Locate the reservoir not more than four feet (1.2 m) from the seal, with the center of the reservoir sight gauge 36 inches (90 cm) minimum above the centerline of the pump shaft. Mount the reservoir to a rigid support where the sight gauge is easily visible for inspection and where the fill ports are accessible. Use 1/2 inch 300 series stainless tubing to connect reservoir to seal. Slope lines up from seal.

Fill the reservoir to the center of the sight gauge. This provides enough barrier liquid to allow for losses, while leaving headspace in the reservoir to allow for thermal expansion. Eliminate any air trapped in the seal or piping by loosening the fittings on the seal gland temporarily.

MONITORING:

Reservoir pressure variation caused by thermal expansion is normal. Rising liquid level in the reservoir indicates leakage of product past the inboard seal of a tandem seal. If the level drops slowly, the barrier liquid should be replenished. Rapidly dropping liquid level without visible leakage of the outboard seal or piping indicates inboard seal leakage into the product. 03 00