

A seal assembly for a pump comprises a gland housing mounted to the pump casing. A staging flow pathway is defined within the gland housing with multiple seal chambers. A seal stage is positioned in each seal chamber, each having a static sealing element and a rotating sealing element, the sealing elements engaging one another to form a fluid-tight seal. A rotor assembly pumps coolant through the gland housing. Fluid passing through the staging flow pathway is accelerated by an acceleration surface of the rotor assembly. An inlet passage feeds coolant fluid into the staging flow pathway and past the acceleration surface.