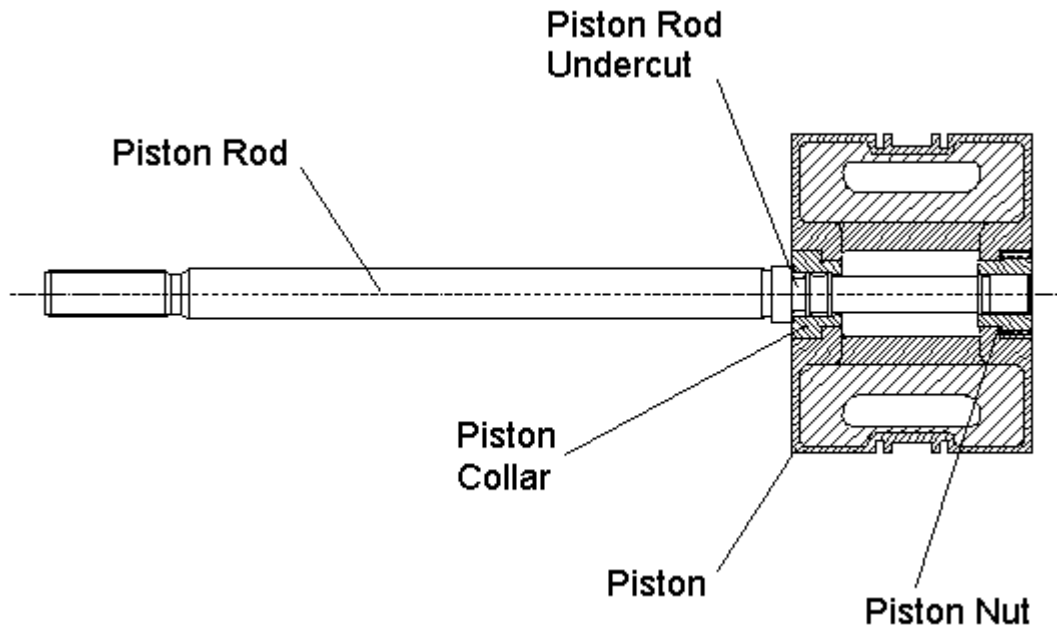


Piston Rods

Piston rods are designed to resist the loading due to gas and inertia rod loads and wear in the packing travel area. All Ariel piston rods have rolled threads to take advantage of the cold working and reduce the stress concentration of cut threads. The rods are designed with an undercut, or "fail safe" section. It is intended that a failure of the piston rod would fail in this section. A failure at this point allows the piston rod to be supported by the rod packing, and prevents the escape of gas from the compressor cylinder in to the distance piece/crosshead guide, preventing further damage.



The piston rod material is ETD 150 or 4150 and is [ion-nitrided](#) in the packing travel area. Ion nitride results in a surface hardness range of 57 to 63 Rc from the surface to a base material hardness of 29 Rc at a depth of 0.008 inches. [Tungsten carbide coating](#) can be provided as an option.

Gases that contain significant amounts of H_2S or CO_2 will require piston rods machined from 17-4PH stainless steel material to reduce the potential for corrosion, due to the creation of sulfuric or carbonic acids. Piston rods of 17-4PH (UNS S17400) are provided in the double H1150 condition with a base hardness of 33 Rc maximum and chromium nitrided in the packing travel area. Chromium nitride provides a surface hardness of 2500 Vickers. The chromium nitride process has a length limitation due to manufacturing constraints. Longer stainless steel piston rods will be tungsten carbide coated. (When the length of the stainless steel piston rod requires the tungsten carbide coating, the performance software will automatically select the coating.)

Ariel piston rods have a surface finish of 7-13 micro inches Ra for ion nitride and chromium nitride hardening processes, and 5-10 micro inches Ra for tungsten carbide surface hardening.