



MARCH 2016

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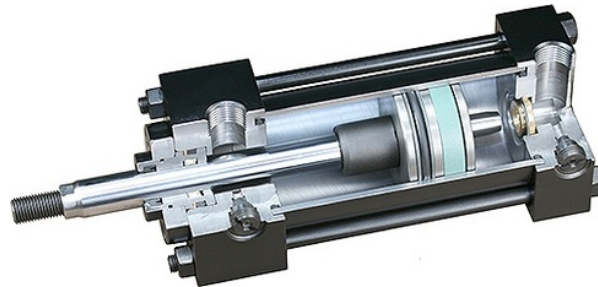
Introducing the Piston Rod -Josh Cosford, operations manager

Hydraulic cylinders are the essence of the fluid power motivation. However, their simplicity often leads us to discount their subtleties of manufacture, often assuming they're constructed of identical stock. You'd be surprised, then, to discover the devil is in the details, and not all cylinders are fabricated equally. One factor often overlooked is the bar stock used for piston rod construction. To help me with the finer points of bar stock, I employed the help of Adam Hart, production planner here at Higginson Equipment.

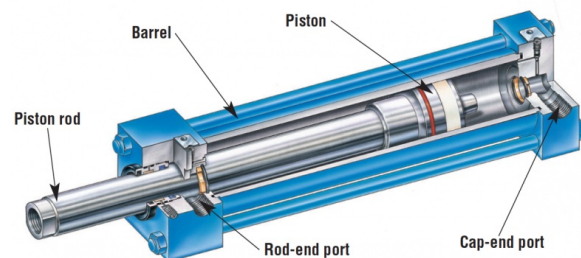
Piston rod stock is nearly as varied as what is produced from the steel industry, but some are more common than others. "The most common bar stock material is 75 KPSI 0.0005" (1/2 thou) chrome plated steel bar," says Hart, who further added, "there are also many other options.

With a steel piston rod, you can increase the tensile strength up to 100 KPSI, and the chrome can be increased to 0.001." He is describing the tensile strength and the chrome plate thickness of the bar stock, which is important because most cylinders spend half their time pulling, and also thicker chrome results in superior corrosion resistance.

Other techniques are employed to strengthen the rod stock. "Most large diameter piston rods are induction hardened which help improve impact resistance," says Hart, and "If an end user keeps breaking male rod threads, sometimes this stronger material can help improve the longevity of the



Regarding cylinder finish treatments, in extreme conditions, such as corrosive or salinated fluid exposure, rod stock can be further upgraded to stainless steel. Hart points out, "Some end users require corrosion resistance for their process, which is where stainless steel steps in. Most grades of stainless steel can have a chrome finish." However, stainless steel is not the only finish available. "Aside from chrome, the only other common finish treatment for piston rods is nitride. This is an extremely durable finish. It is a chemical process that hardens and darkens the material which provides wear and corrosion resistance."



Finally, I asked Hart to tell me what he wishes engineers and end-users would consider when designing and applying a cylinder application. "I would like engineers and end-users to keep in mind, wherever there may be a misalignment issues, a female rod thread with a stud may decrease

cylinder.”



downtime. If you break the attachment off the end of a rod, it is relatively simple to replace the stud and attachment without the need of replacing the entire rod.”

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