

Passivation

HC4 Diaphragm Valves

The corrosion resistance of stainless steel is the result of the development of an invisible protective 'passive' film on the surface. The objective of passivation, therefore, is the establishment of a chrome oxide layer on all wetted parts in a safe manner. This treatment is considered especially beneficial in removing particles of iron bearing dust and dirt which contacts the surface during fabrication and polishing operations, and oxide scale residues from welding operations.

One procedure which has been found effective and has been accepted by FDA is shown below.

The wetted parts should not be allowed to dry out as material stain will result. As prevention, deionized water is circulated through the system between degreasing and passivation as follows:

Degreasing

Commercial rust stripper is circulated around the system for one hour at 194°F (90°C).

Rinsing

Deionized water is circulated around the system for 30 minutes at ambient temperature or until the return pH is between 6 and 8.

Degreasing

Rust stripper is circulated around the system for 3¼ hours at 194°F (90°C).

Rinsing

Deionized water is circulated around the system for 60 minutes at ambient temperature or until the return pH is between 6 and 8.

Passivation

Circulate passivation agent (10% Nitric Acid in deionised water) around the system for 2 hours at 95°F (35°C).

Rinsing

Deionized water is circulated around the system for 80 minutes at ambient temperature or until the return pH is between 6 and 8.

Rust stripper is a highly alkaline compound for removing rust, heatscale, paint, phosphate coatings and shop soils from ferrous metals. Typical composition of rust-stripper: caustic soda, alkaline salts, sequestering agents, and anionic surfactants.

The procedure detailed above is a typical method of passivation and is not definitive. However, the most important part of the FDA verification is to prove that the methodology used is consistent in removing all traces of contaminants from the system, rather than the FDA stipulating which chemical and procedure should be used.