

## #1093 - Electropolishing Stainless Steel Fluid Control Device

### INDUSTRY:

Fluid Controls

### MFG/METHOD:

Machining and welding

### ALLOY:

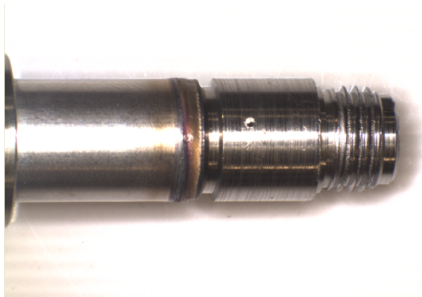
430/303 stainless steel

### PROBLEM:

This Able Electropolishing client experienced corrosion issues with welded 303/430 stainless steel components of a fluid control system. Though these stainless steel alloys may be easier to machine than 304 or 316, they are not typically as corrosion resistant. Once machined, the surfaces of parts like this may be left rugged. This makes them susceptible to trapping moisture, while shop dust, contamination from tooling and more can become embedded in the smeared, superficial outer layer of material. Similarly, corrosion tends to show up early on in a heat-affected zone, like a welded area.

The client's machined and welded part is used in hot water and steam applications. Originally, the manufacturer was relying on stainless steel passivation in order to increase corrosion resistance. Systems using these passivated parts were installed across the country, however, some users still experienced corrosion because of the quality of their water.

### Before:



### After:



### SOLUTION:

Able Electropolishing recommended improving corrosion resistance through our electropolishing process. Unlike stainless steel passivation, electropolishing is a controlled material removal process that actually strips away the problematic, rugged surface layer of metal. By eliminating this rugged outer surface, we removed the areas that previously harbored the moisture and contaminants that contributed to corrosion. Electropolishing also improves the chrome-to-iron ratio on the surface, restoring the passive layer that naturally occurs on stainless steel. The client ultimately switched from stainless steel passivation to electropolishing in order to improve the corrosion resistance and product durability for their part.