

## #1087 - Brite Passivation for Parts Used in Corrosive Environments

### INDUSTRY:

Other - Manufacturer of stainless steel hose reels and components used in marine, pharmaceutical, firefighting and semiconductor applications.

### MFG/METHOD:

Weldment, formed sheet metal

### ALLOY:

304 stainless steel



*Recommended added holes*



*Weld discoloration*

### PROBLEM:

The stainless steel reels that this client manufactures are used in a variety of harsh environments, in which they are exposed to corrosive elements like salty sea air, laboratory chemicals and more. The reels must be able to withstand these corrosive environments without rusting or showing discoloration. These parts are also used in firefighting equipment and marine environments, like on ships and docks.

### SOLUTION:

Electropolishing is an electrochemical method of controlled surface metal removal that allows us to strip away discoloration and increase corrosion resistance. When metal parts are formed and welded, it creates surface imperfections in which corrosive elements settle and begin breaking down the part. The aesthetically-displeasing weld spots on these reels, for example, are sites where corrosion starts to take place. Electropolishing removes these spots as part of a uniform removal of surface metal, leaving behind a passive, shiny finish.

In the case of these reels, we employed our signature Brite Passivation technique, which is a light form of electropolishing. Brite Passivation removed a slight amount of surface metal, including the contaminants and weld spots left behind by normal fabrication. The chromium-rich surface created by electropolishing enhanced corrosion resistance, even in the harsh environments for which these reels are designed.

*Note to Engineer:* After processing, Able Electropolishing recommended future changes to the client's design that would benefit both Able and the client. Able noticed that during the electropolishing process, the center portion of the reel filled up with our electrochemical solution, which would have to be drained. Able recommended drilling small holes on the edge of the center portion of the reel, from which fluid could freely drain. This benefited the construction both during and long after electropolishing, as they would drain any fluid trapped inside the reel while it is in use in different environments. This helped reduce the risk of trapped water or other corrosives inside the reel accelerating corrosion.