

# RUDDER PINTLE SHAFT AND HOUSING REPAIRED WITH BELZONA

ID: 6003

Industry: Marine

Application:

Substrate: Steel

Products: \* Belzona 1111 (Super Metal) ,  
\* Belzona 9411 (Release Agent) ,

Customer Location: Portland, OR, USA

Application Date: November 2015

## Problem

*The pintle shaft had pitting and corrosion present, which also created some wear. The pintle housing on the rudder wasn't as bad, but there was corrosion and rough surfaces visible.*



## Photograph Descriptions

- \* Original condition showing corrosion and damage ,
- \* Shaft showing amount of build up needed and Belzona 1111 applied ,
- \* Belzona 1111 applied to both shaft and housing ,
- \* Completed forming showing perfect mold ,

## Application Situation

Rebuilding a worn pintle shaft and housing on a US Navy ship rudder using both machining and forming techniques.

## Application Method

The pintle shaft was machined down until all the damaged areas were removed. It was then machined with a very rough thread pattern and built up with Belzona 1111. After full cure had occurred, the shaft was then machined to spec. The pintle shaft housing on the rudder was grit blasted to a near white finish. Two generous layers of Belzona 9411 were applied to the pintle shaft and allowed to dry. Roughly 1/2" of Belzona 1111 was applied to both surfaces, shaft and housing, and the pintle shaft was lowered into the housing. A retractable ratchet strap was used to ensure proper depth was achieved where the shaft was to sit in the housing. Belzona 1111 was then allowed to fully cure after carefully wiping away as much excess as possible that squeezed out. The pintle shaft was then pushed out from the bottom using a large hydraulic jack. After the shaft released, and was tested and inspected by ABS, 100% contact between the shaft and housing was confirmed.

## Belzona Facts

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ISO 9001:2015

FS 695214

ISO 14001:2015

EMS 695213

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Welding to rebuild the shaft would have been fairly lengthy and would have risked warping the shaft, resulting in even more time to return it to it's true form. A total of eight 2kg units were used to rebuild the shaft and housing and resulted in a perfect repair that was signed off by ABS representatives. Overall, the repair only took 4 partial days and saved the customer a lot of time and money.

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