



KEEPING TRACTORS MOVING SINCE 1911 – NATIONAL BRONZE MFG. CO.

Case Study

Bronze Bushings Prove Superior against Plastic Substitutes

Bronze bushings have been used in tractors since the beginning of tractors. One of the reasons for this long history of success is due to the ability of bronze to adapt to contamination in the environment and continue to protect the shaft of the assembly.

Bronze bushings are known as a sacrificial part. This part is sacrificed over time to protect a more expensive and harder to replace component.

For this reason, part of regular maintenance of tractors is to replace the worn bronze bushings with new ones. Over the years the cost of bronze bushings have risen. This is caused by the rise in the market price of copper. After all, bronze is composed of approximately 83 % copper. As copper prices went up, so did the cost of bronze bushings.

Manufacturers over time have attempted to reengineer their bronze bushings and replace them with a

cheaper material. This was the problem faced by one of our customers recently.

His tractor had plastic flange bushings installed from the manufacturer. While plastic is a much less expensive material than bronze, it also fails more frequently. Our customer realized that even though the "price" of the plastic bushings were less the "cost" of using them was much greater.

What we mean by this is while the individual bushing price of the plastic parts were much less expensive than the bronze, the costs incurred by the premature failure of the plastic parts rose well above the initial product price difference.

We suggest that everyone look at all of their costs when deciding on the right bushing material for an application. Take factors into mind such as cost of downtime, maintenance costs of replacing the bushings, as well as the increased chance of accidents due to faulty equipment.



We find that after putting all of these costs into the equation, bronze bushings still hold the test of time as the superior bushing material for many applications.

The flanged plastic bushings in our customer's tractor was just the case. We suggested a new bronze bushing manufactured from oil impregnated bronze. This bushing will add strength and wear resistance to the part as well as self-lubrication due to the impregnated oil in the SAE841 Bronze alloy.



This product being a powdered metal product is generally manufactured in high volume. In order to utilize the benefits of the P/M product and avoid the unnecessary inventory, we machined the replacement parts from oil impregnated bar stock.

Oil impregnated bar stock is produced just for this benefit. This material conforms to the SAE 841 specification and generally is produced in 6 1/2" lengths. This type of product gives customers additional options depending on their needs.

Our customer did not have a drawing for this part. So in order to manufacture an exact replacement, we were sent the old bushings as well as the assembly that they are pressed into. By reverse engineering their current components, we were able to make an exact replacement out of bronze bar stock. Now that the part has been programed into our CNC turning centers, it is very easy to replicate these parts for future use. That's the kind of service that you receive when dealing with a company that combines over 100 years of industry knowledge with the latest state of the art machining equipment.

The new bronze flanged bushings worked out great for our customer. The customer's machined part fit perfectly in the assembly. With the bronze bushings replacing the plastic counterparts our customer can spend more time using his tractor for what it was made to do and less time maintaining it.



CONTACT

National Bronze Mfg. Co.
Roseville, MI 48066
800-875-3558
www.nationalbronze.com
sales@nationalbronze.com
Quality Bronze Products Since 1911

