

3. OUR PROCESS

a. Rotor housings

Our process for remanufacturing used housings involves several steps and although we will not divulge some of the details of our process we will give a general outline of what is involved.

The housings are first inspected for any obvious flaws or damage that make repairing that specific housing unfeasible, damage such as extreme corrosion of the water passages, large cracks in the casting and severe warping or shrinking of the housing.

The housings are then cleaned and degreased as well as media blasted before being inspected again for dimensional conformity.

We now take the good core and strip the chrome off of the trochoid surface. We DO NOT grind the chrome off or cut the chrome out, we use a non-destructive method that strictly removes 100% of the chrome and does not touch the aluminum or the sheet metal insert. Although this method is more expensive, it is the best (in our opinion the ONLY way) to properly remove and dispose of the chrome for both functional and environmental reasons. Once the chrome is removed we perform a chemical test on the trochoid surface to ensure that there is absolutely no chrome left.

After the chrome is removed we inspect the sheet metal insert for signs of wear or damage and also for any cracks that may be present and we then make any necessary repairs or alterations (mostly for racing) to the trochoid surface.

The housings next gets prepped for coating, this involves a grit blast to the trochoid surface and as well a pre treatment in a special solution that etches the sheet metal and results in an increase in bond strength of the cermet coating.

Depending on the geometry of the housing we are coating, we then apply between 0.007" to 0.018" of cermet A or B coating to the trochoid surface. During each batch we also coat a test coupon for quality assurance. The test coupon permits us to test the coating's bond to the substrate without sacrificing a housing.

The freshly coated housing gets glass beaded for a nice finish and then goes through a 7 step finishing process (not including inspections). The process begins with rough lapping the sides of the rotor housings to remove any excess coating that is protruding from the edges of the trochoid surface. The cermet coating then undergoes a 6 step grinding and polishing process in our finishing machine. This involves a roughing diamond tool to start and the diamond tools get finer as the process moves on towards final polish. In between the roughing

stages and the final stages the rotor to housing clearances and checked in several key areas to ensure that they are within our parameters. In the last step we induce a special finish that is the rotary equivalent to a crosshatch pattern in a reciprocating engine. This proprietary finish promotes break-in and oil dispersion, hence increasing longevity.

The finished housing gets a final inspection for surface finish and all dimensional parameters before being packaged for shipping.

b. End and intermediate housings

The process is very similar for the cast iron plates. We first inspect the plates and then grind off the required amount of material necessary to flatten the part (typically 0.005"). The part is then prepped for coating in a similar fashion as the rotor housings and then coated and finished using our diamond grinding and lapping equipment. The final coating thickness on the plates is about 0.005".

c. Rotors

Our thermal barrier ceramic coated rotors are inspected to ensure that they are dimensionally correct and have proper step clearance on both rotor side faces as well as proper apex seal groove dimensions.

The good core is then cleaned & degreased to remove and oil or impurities. The rotor then gets grit blasted on the rotor faces before having the ceramic coating applied in a controlled environment. The coating is then air dried for 30 min before being cured at 650F for 1 hour. The finished rotor gets inspected for flaws in the coating before packaging and shipping.