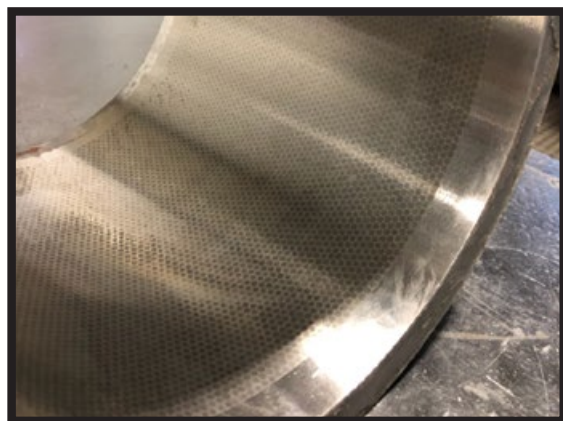
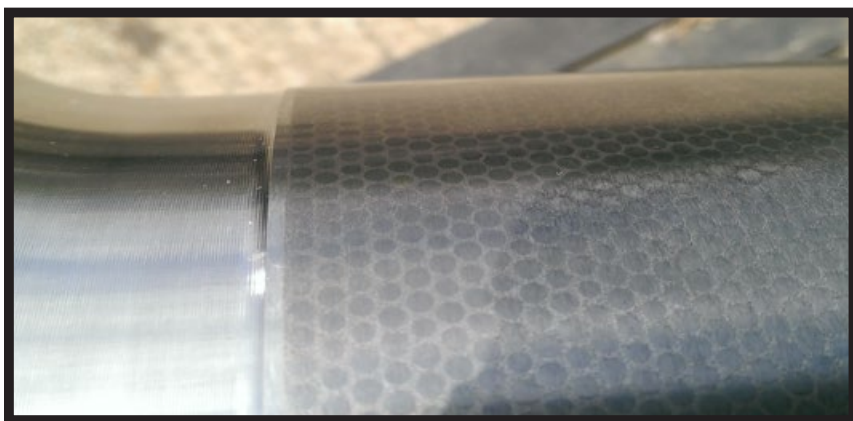




BLACK TIP BEARINGS

Tomahawk's Black Tip bearings are the most wear-resistant and reliable tungsten carbide radial bearing designs on the market today. Combining high-grade alloy steel, tungsten carbide, and corrosion-resistant binder alloys requires advanced manufacturing processes and designs to properly manage both residual stresses and working stresses encountered in use. With thousands of our radial bearings at work in the field, we take great pride in ensuring that the design and construction of our radial

bearings provide the ultimate in reliability and wear resistance. TomaHawk's Black Tip bearings incorporate our own patented design which minimizes the stresses that can cause delamination of the abrasive layer under load, yet maximizes the volume of tungsten carbide.



The cornerstone of TomaHawk's business is our dedicated state of the art manufacturing facility coupled with over 25 years of design and manufacturing experience in the downhole mud motor business. Subsequently, TomaHawk is able to manufacture all of its products "in house" with stringent guidelines for material specifications and overall quality control. Our ISO 9001:2015 certification testifies to an unyielding commitment to quality in everything we design and manufacture. The radial bearing manufacturing facility includes CNC ID and CNC OD grinders, CNC turning and milling, and Induction Brazing. Manufacturing capability exceeds 1500 units per month to meet the growing demand for this product.

BlackTip bearings include a staggered array of spherical inserts combined with our patented sub-surface machining of the steel substrate. This allows the use of higher hardness, more wear-resistant carbide and also prevents the typical onset of surface cracking seen in most tiled bearings during service use. The staggered pattern also ensures that the radial loads are distributed as evenly as possible, unlike the "on-off" loading as often seen in other designs. With empirical data garnered from thousands of documented run hours and almost 10 years of use and refinement, we are confident Black Tip bearings will reduce your cost per rotating hour.

