



# CUSTOM BEARING Manufacturing



ISO9001  
CERTIFIED



AS9100  
CERTIFIED



NADCAP  
CHEMICAL PROCESSING

Napoleon Engineering Services (877) 870-3200

# SHORT LEAD TIMES, SMALL/LARGE PRODUCTION RUNS

## Complete Bearing Manufacturing

NES's design engineering and manufacturing capabilities provides customers with custom designed bearings without long lead times. Our knowledge and expertise allows us to analyze your application conditions and develop an advanced product that will meet or exceed your needs. NES's unique manufacturing concepts and attention to application demand issues has resulted in solutions for bearing applications from satellite actuation systems, turbomachinery and aircraft engines to cryogenic pumps and drilling rigs.

## Bearing Types & Materials

NES manufactures deep groove ball bearings, angular contact ball bearings, double row self-aligning ball bearings, needle roller bearings and cylindrical roller bearings to custom print requirements. NES uses a wide range of bearing materials to achieve success in your application. Typical ring materials include 440C, Cronidur® 30, XD15NW, BG42, 52100, M50, M50 NiL, Pyrowear® 675, and superelastic NiTiNOL 60. Rolling element material varies from 52100, 440C, Silicon Nitride (ceramic), M50, and Cronidur® 30. Precision machined cages of bronze, steel, silver plated bronze or steel, Nylon 6/6, PEEK, Vespel®, Torlon®, and Phenolic.

## Bearing Modification

NES maximizes existing resources to reduce custom bearing cost and lead-time by utilizing high quality off-the-shelf bearing products as a starting point for modification. When off-the-shelf bearing products do not meet application requirements, NES will modify the product through design and remanufacturing of specific components or characteristics to enhance the capabilities of the bearing.

Precision Modifications include ceramic hybrids, specialty cages, duplexing of ACBB & DGBB, precision spacers for tapered roller bearings, radial clearance changes, anti-rotation holes, grooves, slots, non-standard bore sizes, tapered bore 1:12, oil holes and grooves, special width requirements, and seal/shield additions.

# HIGH TEMPERATURE, CORROSION RESISTANT, HIGH FATIGUE LIFE, and DIMENSIONALLY UNIQUE BEARINGS

## Denali Bearing Solutions

Denali Bearings stand for more than just custom bearings with unique characteristics or features to work in tough applications. Denali Bearings represents our philosophy of retracing the roots of our original bearing manufacturers in the US that placed a tremendous value on service. Where service means picking up the phone in two rings, listening to the customer, making what the application needs through proven engineering and manufacturing solutions, incorporating unique materials, processes and configurations into the design, and having regular communication with the customer about manufacturing status.

## CUSTOM BEARING Solutions

- ✓ Short Lead Times
- ✓ Small & Large Orders
- ✓ Unique Materials
- ✓ Application Engineering
- ✓ Full Product Traceability
- ✓ Made in the USA



✓ ISO9001 CERTIFIED

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## Magnetic Back-up Bearings

Being virtually lubrication and contamination free, magnetic bearings have become viable options for natural gas pipelines, petroleum refining, machine tool operation, and electric power generation. However, for magnetic bearings to be successful a reliable backup or auxiliary bearing must be in place to guard against power or control system failure. It is essential that the magnetic backup bearing performs to the highest standards possible to prevent application failure. NES provides magnetic backup bearings with high speed and load capability using the finest quality materials adding reliability and decreasing down time in the application.



## Turbomachinery Bearing Manufacturing

Bearing manufacturing for turbomachinery requires the use of superior quality raw materials and manufacturing processes; the incorporation of extensive design and project review processes; and support for required material and process traceability. To meet these needs, NES offers complete design, development and manufacturing of custom high-precision ball and roller bearings. The manufacturing process includes close collaboration with an OEM's in-house engineering team, with full project management support from initial concept through final delivery of NES's US manufactured bearings. Typical bearings utilize Cronidur® 30, XD15NW, 52100, M50, and M50 NiL high-life materials and coatings. Supported applications include gas turbines, chemical pumps, AMB systems, steam turbines, valves, downhole drilling, high speed motors, and power generation.

## Custom Engineered Bearings to Fit Your Specific Needs

NES provides custom engineered solutions with shorter lead times and small product runs for a variety of bearing types in need of customization. They include deep groove, angular contact, thrust and self-aligning ball bearings, cylindrical roller bearings and needle roller bearings. Having manufacturing capability to produce this wide range of parts in size ranges from 20mm through 350mm outside diameter provides NES with multitude of options to support the custom bearing user.

## Nitinol 60 Non-Corrosive, Super Elastic Bearing Material

Nitinol 60 is a unique material with the highest corrosion resistance capability of any rolling element bearing material available today. Nitinol 60 also possesses super elastic properties providing significantly higher resistance to true brinelling making it of particular interest to the space community due to launch load conditions. The challenge with this material is holding the bearing during machining. Conventional techniques using magnetism are unusable since Nitinol 60 is completely nonmagnetic. As a result NES has developed proprietary work holding techniques for use with its CNC grinding machines. The nonmagnetic characteristics offer another unique product solution for NES application engineers and their customers.



# Contact Us



Napoleon Engineering Services  
1601 Johnson Street  
Olean, NY 14760  
Phone: (877) 870-3200  
Fax: (716) 372-1448  
sales@nesbearings.com  
www.nesbearings.com

Sole distributor for NES products and services in Europe



Carter Manufacturing Limited  
Phone: +44 (0) 1865 821720  
sales@carterbearings.co.uk  
www.carterbearings.co.uk