design FAQs

Custom Bearings

FREQUENTLY ASKED QUESTIONS

Q: What are the benefits of custom bearings? What advantages do they give engineers and the companies for which they work?

A: Custom bearings let engineers design and use components tailor-made for their specific applications. Such bearings can have longer working lives or better resist corrosion, thanks to bearing material chosen to resist contaminants in an application's working environment. This reduces replacement and maintenance costs. Custom bearings can be produced with greater load ratings than 'standard' selections. They can also be made smaller or lighter to make installation easier. And from a market perspective, they can capture aftermarket replacement business for the OEM.

Q: What features or materials can be incorporated into custom bearings that you won't find in standard offerings? And why would designers want those materials or features?

A: The reasons for getting custom bearings are typically to solve specific problems or meet unique needs. For example, special features can be added to give bearings that are typically not re-greasable a re-lube capability. Customizing standard bearings by using a different steel alloy can increase shock resistance and solve fracturing problems. And specifying polyurethane outer races can prevent damage to items that come in contact with the bearings.

Q: Do custom bearings need custom seals and shields? Are there custom seals and shields that provide more capabilities than standard ones? Can you describe some of these capabilities and how the seals and/or shield provide them?

A: The addition of custom seals or changing the shields from standard can certainly have a significant impact on improving bearing life. Custom selections can help in elevated temperature applications or high-moisture conditions. Changing from seals to shields can offer lower starting torque and reduce overall rolling friction.

Q: What kind of lubricant do custom bearings require?

A: Selecting the proper lubricant can be an important factor in a bearing, custom or standard, achieving its optimum life. To select the right lubricant, maintenance personnel should determine the ambient and peak temperatures and other environmental operating conditions that will help in making the best choice.

Q: Are custom bearings less likely to be defective "out of the box"? In other words, do custom bearings have higher quality than standard versions?

A: The quality control processes used to manufacture standard and custom bearings are the same, but custom versions can have tighter tolerances if they are specified by the customer. Sometimes a standard bearing may appear to be faulty when it is being improperly used. In those cases it is just a matter of pinpointing the necessary changes to optimize the bearing for that specific application.

Q: Can custom bearings be made of any material, be any size, and have specific performance parameters? Can they be ordered in any volume? Is there a minimum or maximum order size?

A: Any material available in bar stock, metal or plastic, can be used for bearings. This includes 300 series stainless steel, tool steels, and alloys, as well as Acetal, Nylon, UHMW, polyurethane, and other polymers. And any material can be turned into a bushing or the outer race, or even rolling elements. Many custom bearing makers are limited to making bearings 12 inches in diameter or less, but others can make larger ones. There are firms, including Carter Manufacturing, that will make only one or two bearings if that is all a customer needs or supply OEMs tens of thousands of bearings per month.

Q: What are the cost differences between standard and custom bearings?

A: It depends on quantity and what is special about the bearing. When volumes are high enough, costs for custom bearings will approach those of standard catalog items. If the custom feature can be produced by modifying an existing standard part or component, costs and lead times are quite reasonable.

Q: What is the average time range between ordering and delivery for custom bearings? Is that much longer than the delivery times for standard bearings?

A: It depends on quantity and what is 'special' about the bearing. A bearing with custom inner and outer races and plating may take eight to ten weeks. It is possible for some bearing makers to quote expedited service. Relatively simple custom orders involving small modifications can ship in as little as two weeks. Each job should be assessed beforehand to provide the most accurate delivery and cost information to the customer.

Q: How fast can a firm get replacements for custom bearings? Do you suggest companies that purchase enough spares for repairs and replacements?

A: Companies usually do not stock custom bearings, so lead times for replacements are typically the same as for original orders. If the original product had a longer lead time, customers are reminded that they might want to have some spares on hand. Many customers have a grasp of their usage and place blanket orders. The bearings are delivered intermittently so they do not have to deal with excessive amounts of inventory

Q: Can custom bearing manufacturers handle testing and certification requirements?

A: Every company is different. Some, like Carter, are ISO 9001 certified and can handle stringent testing and certification requirements for aerospace and custom military bearings.

Q: When a designer or company deals with a custom bearing manufacturer, do they just specify what they want, or does the bearing maker supply an expert to help design and specify the best, most economical component/bearing that will handle the job?

A: It is a team effort. The customer has the expertise with their equipment and applications. The bearing maker has the knowledge to suggest bearing improvements to solve specific problems whether that's a lower cost bearing or one with an extended life in a harsh environment. Working together, they usually come up with an optimal solution. ■