

## Not Just 52100 Needle Rollers

### The Challenge:

Racing on land and offshore presents some of the heaviest duty performance environments in which bearings and their components perform. A major racing and aftermarket customer needed a solution to catastrophic needle roller failures in racing engine valve lifters due to high temperatures and severe impact loading. Traditional rollers shattered and generated additional engine damage.



### Analysis:

Although not at all a typical failure, Koyo engineers found the customer's rollers were shattering due to the relatively brittle nature of standard through hardened 52100 steel when placed under high temperature, low lube, and high impact loads.

### Koyo's Solution:

Using their extensive knowledge of materials, Koyo engineers recommended a tool steel with optimized thermal treatment which dramatically improved needle properties to better withstand the high temperature loading experienced in racing engine valve lifters.

Koyo engineers also designed an optimum roller contour to better distribute contact stress over the roller length.



### Result:

After converting to the tool steel rollers, roller shattering was eliminated. The customer has subsequently expanded this solution to other applications where high temperature due to inadequate lube flow was an issue.



## Solutions For Demanding Applications