



AZ100 multizoom microscope helps Joe Gibbs Racing drive for the checkered flag

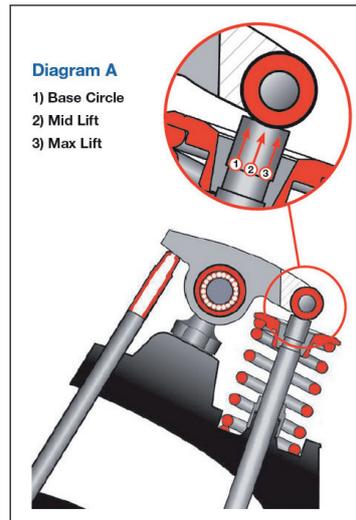
In the high-octane, fast-paced world of NASCAR, there is no room for error – and the Joe Gibbs Racing (JGR) Team is no exception. More than 450 employees work to keep the team in top form, responsible for everything from hand-building engines to moving the entire racing fleet to competitions, which take place nearly every weekend of the year.

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In the early part of 2010, the JGR engineers were facing a problem. The racecar engine's rocker arms – reciprocating levers that convey radial movement from the cam lobe into linear movement at the poppet valve, and are responsible for helping the cars accelerate to their incredible speeds without blowing the engine – were experiencing excessive wear and tear, even though they were coated with lubricants to



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prevent just that type of damage. With their available tools, the JGR engineers could not see how or why the damage was occurring, so they contacted Nikon Metrology to see if they could help solve the issue.

To examine the problematic rocker arms, Nikon Metrology sent the JGR engineers its AZ100 model microscope, a multi-purpose zoom microscope that combines the wide field of view advantages of a stereoscopic zoom microscope with those of a metallographic microscope. The AZ100 system features high-resolution bright field and seamless digital documentation.

JGR engineers used the Nikon AZ100 with its high-resolution Plan Apochromat lens and the digital imaging system DS-Fi-L2 to capture and analyze images of the failed rocker arms. With this system, at 50X magnification, the engineers were able to capture images at a far greater resolution and contrast than with their previous system – and using the Ethernet connectivity of the Nikon DS-L2 Digital Camera Controller, were able to share and evaluate the live images with their vendor/technical partner.

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Through video conferencing and image sharing, it only took the two groups 90 minutes to determine that inclusion and discoloration in the coating were responsible for the rocker arms’ damage – and that the excessive stress and heat placed on these parts were not being properly deflected. Immediately, the vendor/technical partner engineers were able to propose a solution to the problem, whereas with the previous system it would have taken anywhere from two

to seven days to communicate and send the images to the engineers to determine a cause.

Richard Miller (pictured above), quality control engineer for Joe Gibbs Racing, best summarized the teamwork between the two companies by saying, “In this world, it’s all about speed, quality and reliability. Using Nikon Metrology’s equipment, we were able to return our cars and drivers to the track with the speed, accuracy and safety this sport requires.”



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