

Clearance conundrum

Q You recently replied to a reader with advice for installing wheel bearings ("Lost your bearings?" September) wherein the bearing is cooled and the wheel is heated. I have successfully used this method, and the bearings always fall right into place. My latest installation was on a 2004 Suzuki GSX-R1000, but there was one detail that eluded and puzzled me. The factory service manual specifically instructs to install the bearing on one side first, then the bearing on the other side should be installed with "clearance" at the bottom of the bearing bore. No dimension is given to define "clearance." I was unable to determine any clearance with the second bearing, but I was able to spin the front and rear

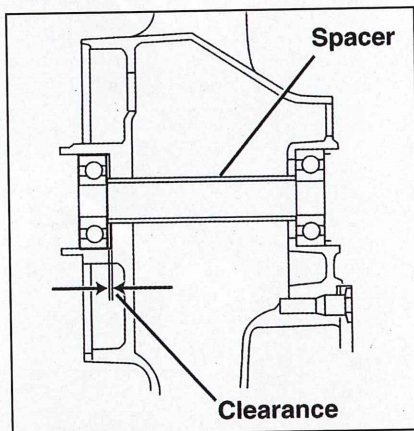
wheels while holding the spacer between the bearings still, my index fingers in the spacer held at arms' length.

This clearance requirement would indicate to me that Suzuki intended for a slight side-to-side preload between the inner and outer races of the wheel bearings. In your experience, is this common, and if so, is there a benefit? On the other hand, if there is no clearance, will the dynamics of the motorcycle be affected? Also, I cannot think of a method to insure clearance without an elaborate fixture; is there a clever shop technique to accomplish it? **Darold Neff**

Submitted via www.cycleworld.com

A That instruction, which appears, along with an illustration, in some Suzuki service manuals, makes sense once you figure out its intention; it just isn't explained very well. The clearance it describes is obtained simply by the installation of the second bearing, not through any other deliberate action on the part of the installer. Here's why: The distance between the inner edges of the wheel's two bearing bores is very slightly shorter than the width of the spacer tube that goes between the bearings' inner races; this prevents the outer race of the second bearing from bottoming in its

bore during installation. Instead, that bearing's inner race bottoms against the spacer tube, which already is in contact with the inner race of the other bearing. The inner races therefore cannot get pinched together and bind up the bearings when the axle is tightened.



This system's biggest benefits occur when the original wheel bearings are replaced—especially as the bike gets older and has had new bearings installed several times. If the axle has ever been overtightened—which is a common occurrence—it can crush the spacer tube enough to make it very slightly shorter.

When that happens with the Suzuki wheels, there's enough clearance between the inside edge of the second bearing's bore and that bearing's outer race to still allow the inner races to bottom on the spacer. But with many other bearing systems, a spacer thus shortened allows the inner races to be pinched out of alignment with the outer races when the axle is tightened, possibly causing the bearings to bind and likely leading to their premature failure. □