



When I said you had to choose between me or the bike, you didn't have to answer so quickly. I'll miss you...

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- ▶ Triumph's Daytona 675R
- ▶ Camping 101—Tent Shopping

Motorcycle

CONSUMER NEWS

42-06

PERIODICALS MAIL

Kaizen Motorsports Sparkplug Indexing Washers

WHEN YOU ARE building your own engine on the workbench, as I have been for the past few months, you begin to notice all sorts of things that might add to performance. Like a racer, you may decide you don't want to leave any detail to chance, but find a way to tweak every possible item of any consequence so that it will be in the best possible arrangement.

Spark plug indexing washers are just such an item. Racers worldwide know about them and use them. Perhaps, if you've never heard of them before, you'd like to understand why you might want to use them, too?

Although the sparkplug was one of the fundamental items in the development of internal combustion engines, first patented in 1898, the actual job of igniting a swirling fuel-air mixture under high pressure in a hot combustion chamber has never been very easy to accomplish. From a tiny spark, barely longer than the thickness of a fingernail, a kernel of fire must grow across the full diameter of the chamber in a mere milliseconds in order to produce the driving force that moves our machines.

Misfires happen constantly, maybe just one in a hundred combustion cycles, but enough to cost power, increase emissions and waste fuel. Although all sorts of fanciful alternative ignition systems have been proposed to correct this inefficiency, none have managed to replace the basic sparkplug.

If you take a look at your engine's cylinder head, many of you will find that your sparkplugs are not simply screwed vertically into the center of the head, but they angle in from the side. When this is the case, the orientation of the spark



Both sparkplugs in this chamber could be helped by realignment, but the one on the right is too shrouded to be fully effective.

gap—exactly how it is presented to the contents of the cylinder—can have a significant bearing on the growth of an effective flame front.

Because the majority of sparkplugs still use a ground electrode that bends from the shell of the plug over the insulated center, if this ground electrode faces the center of the cylinder, it can, in effect, shroud the spark, making it more difficult to ignite a rapid burn. See the photos for how this might look inside

your engine. The odds that your stock plug(s) are perfectly misaligned in such a way as to block the flame front are not great, but the possibility exists. And even if their alignment could only be improved slightly, copper indexing washers are the preferred method.

We got ours from Kaizen Motorsports, based on the size we needed (10mm) and the price (\$29.95). Other sources are out there, a few clicks away on the internet.

For a delivered price of \$35.56, including shipping and handling we received a selection of five thicknesses in packages of eight that included .01mm, .02mm, .04mm, .32mm, and .62mm. Because our sparkplugs use a 10mm x 1mm thread, these sizes will cause a rotation of the plug from its stock location in percentages of 1%, 2%, 4%, 32% and 62%, and a combination of sizes will allow virtually any realignment you can imagine.

Since you don't want to remove your cylinder head to see the orientation of the stock plugs, you can use this easy method: Simply remove the plug and place a piece of tape along the side opposite the ground electrode. Mark that point with a line, and re-torque the plug in its hole. You can now visualize what correction would be needed to achieve the ideal alignment.

If you are the sort that likes to have an engine run as perfectly as possible, indexing washers are a trick you may choose to use. For the rest, at least you know what extra efforts the fast guys are making to run at the front.

—Dave Searle

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