

Sipe Savvy

Increase Traction in All Conditions

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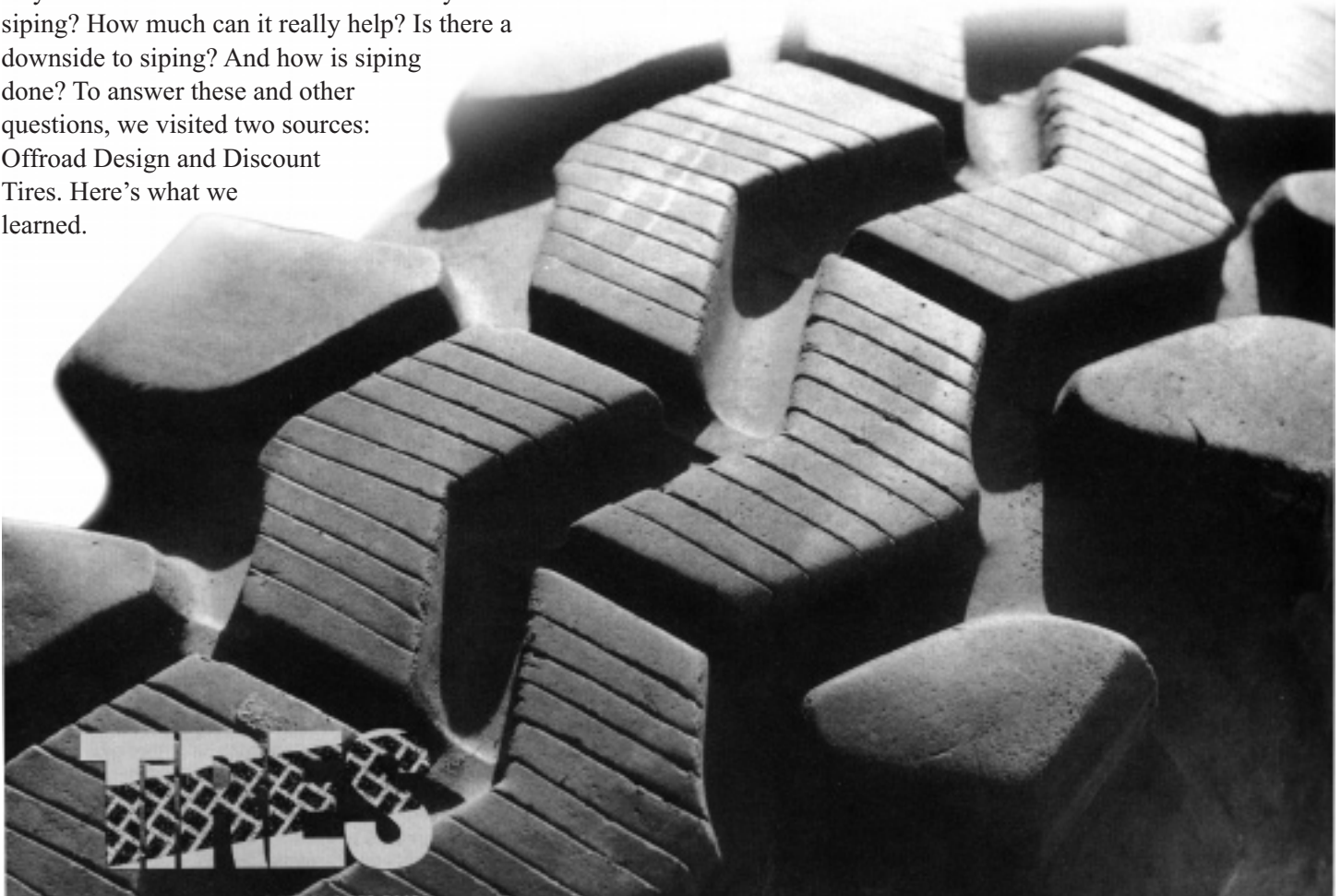
YOU DON'T HAVE TO LOOK VERY HARD to see how many 4xJockeys are shoeing their rigs with big, knobby mud tires for everything from commuting to radical boulder bashing. The hunky meats certainly look cool, and they work extremely well for mud *and* almost every other type of condition. Almost is the key word here. The big, sometimes scary exception is loss of traction on wet or otherwise slick pavement and on ice and snow. Those chunky lugs grab OK in loose or slushy snow, but ice or even just wet surfaces can make you feel a little queasy. In response, increasing numbers of off-roaders are turning to siping as a way to increase traction. But what exactly is siping? How much can it really help? Is there a downside to siping? And how is siping done? To answer these and other questions, we visited two sources: Offroad Design and Discount Tires. Here's what we learned.



Sipes are little cuts or slits found on the tread blocks of practically all street tires and on many all-season 4x4 tires. For example, Michelin's new Arctic Alpine snow tire (left) is virtually covered with sipes. Some mud tires have sipes, but many of the most popular ones do not, such as Interco's Super Swampers (right). Most siping is at a 90-degree angle across the tread.



Lots of 'wheelers swear by siping based on personal experience, but Discount Tires offers proof. The company cites tests on ice by the National Safety Council in which siped tires had 64 percent more breakaway traction (starting from still), 28 percent more spinning traction, and 22 percent better braking compared to unsiped tires. Discount also reports a major airline's tests on ramps flooded with Glycol deicer: Siping increased drawbar pull by 25 percent and braking by 33 percent. Discount Tires' Saf-Tee Siping machine is shown.



TIRE



In simplest terms, siping adds many hundreds of biting edges to the tread. The tread blocks flex under load, when they encounter an obstacle, and even when the tire simply turns. This flex exposes the biting edges that add traction and also squeegees water away to reduce hydroplaning. The same dynamic occurs during braking. Offroad Design's Stephen Watson reports better traction even on Moab's dry slickrock. The owner of this CJ-5 preferred adding sipes for icy roads instead of installing ice studs.



In addition to traction increases, Discount Tires quotes trucking-company tests showing that siping has increased tread life by 15-20 percent. Watson says his siped Swampers last longer too. However, one problem is shown here. Watson suspects that acceleration and torque rock clawing have been tearing away some trailing edges of his siped tread blocks, although we've experienced that on Swampers that aren't siped.

Discount Tires' Saf-Tee Siping machine makes the siping process faster and simpler than doing it by hand. The blade is held very accurately at 90 degrees to the tire's rotation. However, the operator still controls how many sipes per inch are cut and how close the sipes come to the edge of the tread block. You also have the choice of siping the outer lugs or not.



Watson has found that leaving 1/2 inch before the first sipe greatly decreases the block-end-chunk-off problem mentioned earlier. He then spaces the remaining sipes roughly 1/4 inch apart.



Watson sipes his Swampers by hand using a specialty knife that's heated (shown). The knife's hot blade cuts more easily and accurately than a cold instrument could. Both Watson and Discount Tires' crew agree that sipes should be about 1/4-inch deep (give or take just a bit for tread-block height). It's best to make sipes this shallow and then resipe when the tread wears down.



Watson only sipes his Swampers' center tread blocks, not the outer lugs. That's because the outers take the most off-road abuse (arrow) from rock ledges and other obstacles, so he doesn't want to possibly weaken them with sipes.

Electric hot knives are available from larger auto-supply outlets and can be used for both grooving and siping tires. The U-shaped blade can be mounted with its two points down as shown for cutting two sipes at a time. Or the blade can be snapped in half to make one sipe at a time. Watson reports that it takes about an hour to sipe each tire, depending, of course, on the tire's size.



There's no doubt that siping helps traction and braking, especially on wet or icy surfaces, but whether you do it by hand or let Discount Tires do it for you, siping is still partly art and partly science. This siper is in the midst of an experiment to determine whether offsetting sipes increases or decreases tread life as compared to normal siping.