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Tire Changing
(Part Two)

THE “ART” OF TIRE

PART TWO by Paul H. Smith

In Part One we discussed the best practices for removing a tire in the field. This installment discusses getting tires and tubes back on the rim. Whether it's fixing a flat, replacing a worn tire, or swapping it with another type, these are skills you're going to need when riding the roads of the world.

Replacing the tire

Keep this in mind when replacing a tire—almost all tires have directional indicators. Find it and make sure that you're mounting the tire onto the rim in the direction of forward rotation. If you're remounting the same tire, also use your grease marker indication (see Part One) to relocate the tire's original position at the valve stem. If it's a new tire, look for a painted spot on the bead, usually white, red or yellow. This spot indicates where the tire manufacturer wants the valve stem located to aid in the optimized balancing of the wheel.

Using a generous amount of tire lube around *both* the metal rim and the bead of one side of the tire, position it over the rim (noting correct rotation) and the location of the valve stem. The rim should be up on the makeshift platform, as indicated in the removal instructions. Using your knees and hand pressure, push a section of the tire over the rim. Then, with your knees forcing that section of the bead into the trough, use your hands (sometimes a foot is necessary) to slip the remaining section of the bead over the rim. Depending on the stiffness and weight of the tire, this procedure usually requires a little manhandling, but is relatively easy to do. You may also use tire irons if necessary.

Got tube? If you're working with a tubed tire, this is when it will be inserted into the tire. We recommend that you partially inflate the tube, before it's inserted, and liberally rub talcum powder completely over its surfaces. Then, deflate it, work the valve stem through its hole in the rim, and *loosely* place a locking nut to hold it in place—about a



Most tires have a direction of rotation indicator imprinted on one of the sidewalls, normally in the form of an arrow. Few things are more infuriating than discovering you forgot to pay attention to the arrow until after the tire has been mounted.

half an inch from the rim. Work the remainder of the tube into the tire. The talc allows the tube to more easily “float” against the rubber of the tire, and helps to prevent binding—which can result in a pinch that will puncture it during the remounting process. Once the tube is fully inserted, check the valve stem so that it is centered through the rim's hole (you may have to shift the tire over the rim to reposition the stem), and verify that the valve moves easily up and down through the hole. If it doesn't, it's binding somewhere. Recheck your work. But, do not tighten the nut yet.

Lube both the remaining rim and tire bead. With the tire still on the blocks, and similar to the removal procedure, with the valve stem farthest away from you, use the levers to pry the bead over the rim nearest you. With about a third of the bead over the rim, use your knees again to push the bead into the rim's trough. With a little more manhandling, you'll now be able to lever the remaining bead, working it up towards the valve stem where a final pry (and lube!) will get you there.

CHANGING



Although we didn't have a chance to test it, Grant Johnson (of *Horizons Unlimited*) insisted that we include a comment on *Motion Pro's BeadPro*. Grant says, "It's easily my new favorite bead breaker, they work so well you'll wonder what all the fuss was before them."



When working with inner tubes, a liberal dosing of talcum powder will make the tube less prone to binding within the tire. Talcum powder allows the tube to slip around within the tire, so it's less likely to be pinched by tire irons, and much easier to shunt the valve stem into place.

Pay special attention to how the levers feel, because you don't want to pinch the inner tube. This will damage the tube and necessitate a repair, i.e. starting ALL OVER again. So, be careful of that tube! The talc really does make it easier. After the beads are over the rims, you may need to shimmy the tire back and forth along the rim a wee bit to center the valve stem if you're working with a tubed tire. (For tubed tires, lock the valve stem nut *after* the bead is set, not before.) The valve stem itself can be tricky, so pay particular attention to it being straight, and make sure that it moves easily back and forth within the exit hole of the rim. If it doesn't, it's binding somewhere, so address this before continuing.

Now for perhaps the most difficult part of the entire procedure—"seating" the beads. Both tubed and tubeless wheels have grooves around the outer rims against to which the tire's beads must be seated. In the case of tubeless tires, this creates an airtight seal. There's a very distinct and loud DOUBLE POPPING-PING! sound that occurs when the air pressure is increased to a point where both beads seat correctly. The trick is that if any of the conditions necessary for the seating the beads are *not* met, then you'll not hear those distinct DOUBLE POPPING-PING! sounds.

Here are a couple more observations: After the tire is back on the rim, return it to the blocks and with heavy motorcycle boots, straddle and step onto the tire around the rims of both sides, to flex and knead it. This seems to make the tire more pliable and prone to easier seating. And, after you've done this, apply plenty of lube to both rims and the bead areas of the tire.

The next secret is getting enough air VOLUME into the tire to seat the beads. The faster you get air into the tire or tube, the more likely it is to expand against the rim and seat the beads. In a shop where you have access to an industrial air compressor, this is relatively easy to do. But, in the field, methods to create high volume air pressure require ingenuity. You can run your portable electric pump forever and not make this happen, and a manual pump makes this job all but impossible. So, how to do it?

Basically, there are three extremely workable methods: Using high capacity CO₂ 45-gram cartridges seems to be the method of choice. However, cartridges are expensive and, in the field, not readily available. Plus, it typically takes up to three canisters for big enduro back



Left When feeding a tube back into its tire, start by inserting the valve stem. Screw the locking nut on so that it barely clears the top of the stem. The valve stem should move easily up and down within its exit point on the rim. The nut will be tightened down at a later step in this process.

Right One of the best airing up tricks around, Dave Petersen's "DonorHose" utilizes air from the other tire (which has been over inflated to 50psi for this purpose) to more quickly and economically reinflate the tire and seat the bead on this *Big GS*. Read this article for more specific information on how it's done.

tires, such as the *TKC80* on the *BMW R1200GSA*. And, that's assuming all conditions are met to seat the bead! Lots of experimenting and asking around led us to discover *BestRest Product's DonorHose* as a truly ingenious workaround. It works by over-inflating the bike's *other* tire, then using a specially constructed long hose to re-inflate the tire you're working on. Essentially, you pump up the good wheel's tire to 50 psi, and then use the extra pressure that this generates to quickly push air into the new/ replaced tire you're seating. In the process, you'll often have to repeat the over inflation process at least a couple of times, especially for the big tires. But, it will get the job done... eventually. Having an electric pump makes the process a little more palatable when using the *DonorHose*. Interestingly, the *DonorHose* itself weighs less than a single CO₂ cartridge. And, we tend to favor it because it can be used indefinitely.

If you cannot get the bead to seat, the final solution is a device like the *BeadSetR*. It's based on the bodger technique of using a ratchet strap around the circumference of the tire to squeeze the bead against the lip of the rim. But, *BestRest's* modified kit works soooooo much better than a regular ratchet strap.

By the way, don't attempt seating the bead of a tubeless tire with the valve core in the stem. It restricts airflow too much, and won't do the job. But, because airing up a tire in the field uses so much energy, and tends to be a slow process, you can "cheat" by holding a finger over the stem's hole between attempts, and again before reinserting the valve's core. It's not a flawless technique to save air, but it'll speed things up considerably.

If you've heard the DOUBLE POPPING-PING! sound, it's likely that your tire is properly seated. Just to be sure, give it a visual check. Tire manufacturers build in a relief ring that follows the rim.

This ring should be evenly spaced around the rim. If it's not, try breaking the bead and reseating it. We found that when the bead wouldn't seat properly, that it was often necessary to break a partial seating and work the tire by pushing it down around the rim with riding boots. Typically, if you hear *only* a single POP! or there's only a partial seating, you'll cure it by adding more air. Always try adding more air (a lot of it!) before resorting to reworking the bead. This is again where familiarity plays an important role, and why practicing at home will pay big dividends.

Wheel balancing

Wheel balancing may be the weakest link in the entire procedure, and we've not been entirely happy with any of the solutions available. The best field method seems to be *Dyna Beads*. But, they're clumsy and expensive (although considered by some to be superior to lead weight balancing when installed correctly). If you carry stick-on lead balancing weights, there's a bodger fix of using the mounted wheel on its axle to get it, more or less, in the ballpark, but you'll still need to find a shop to have the balancing finalized as soon as possible.

Dyna Beads, though, are somewhat of an enigma in the world of wheel balancing. A visit to the forums on the web will reveal ongoing opinion wars as to whether they work or not. Those who've mastered *Dyna Beads* swear by them, and claim the smoothest ride they've ever experienced on a motorcycle.



Two "Must-Own" DVDs on Tire Changing



The Achievable Dream Series: Tire Changing
By Grant & Susan Johnson
HorizonsUnlimited.com
MSRP: \$24.99

Motorcycle Tire Changes & Repairs
By David Petersen
BestRestProducts.com
MSRP: \$10.00

Traditional lead weight wheel balancing being performed by Curtis Smith of *Eurogeek Motosport*, in Flagstaff, AZ. While learning about *Dyna Bead* techniques, I was forced to resort to the traditional default method. The culprit turned out to be not using enough *Dyna Beads* to do the job correctly.

To find out more, visit **BestRestProducts.com** and read what Dave has to say. Installation is somewhat difficult and it'll typically take incremental installation of the beads to find the correct amount. Likewise, changing/repairing tires is a delicate situation when beads are involved. Technically, you can reuse the expensive beads, but it's a real hassle. For some, lead weights may be a more workable solution, but they also require special skills to properly install in the field.

And... there you have it!

The ability to change tires in the field is an expertise that no adventure motorcyclist can do without. It's almost always messy, a lot of work, and difficult to do. But, when the alternatives are slim, you'll be glad you invested the time to learn. Keep in mind that if you're not riding solo, only one rider needs to be the tool mule. And, aside from the practical applications, you'll save a small fortune being able to change tires on your own. **ADV**

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