

2018 2FO shoe family

Foot-Out, Flat-Out. That's what 2FO stands for, and yeah, acronyms are a pretty corporate thing, but it has a nice ring to it, doesn't it?

In 2014, we introduced the 2FO family with two gravity shoes, the Flat and the Clip. They were ventilated, they drained water, they had a "landing strip" cleat pocket that made clipping in and out incredibly easy, and there was an incredible pedal/shoe interface that made them a quick favorite amongst riders. Since we're Specialized and we have access to some amazing technology, both passionate, intelligent people and superlative athletes started working on the new additions to the 2FO family. We approached this in a way that only we could—flat pedals/shoes and science. I know...nerds. Flat pedal shoes are supposed to be for the "core" riders, the smashers, the Sam Hill types. But after over 18 months of testing, retesting, shredding, cutting, and hucking, it's finally time to bring you the new 2FO flat shoe family: The 2.0 and 1.0.

CONNECTION

In 2014, the 2FO flat was our first attempt at making a true flat pedal riding shoe with technical innovations in materials, ventilation and outsole design. But in our opinion, there was room for improvement. The grip was good, but not great, and the pedal feel left something to be desired. It was a good lesson in learning, so we packed our bags and headed to the Sunshine Coast in B.C., Canada to work with the Coastal Crew (Curtis Robinson and Dylan Dunkerton) to work on the new and improved shoe family.

Rubber compound—it's critically important to flat pedal shoes, no surprises there. When talking about rubber, durometer is a word that gets thrown around, so let's talk compound. SlipNot® was developed in conjunction with our tire team, and together, we went back to the drawing board and tested over 12 variations of rubber compound to get to the new SlipNot® 2.0 compound. We knew it had to tick ALL of the boxes, not the standard "two out of three," and the result is better grip in all conditions—wet, dry, hot, cold, plus it's more durable! It has all the things you could want in a shoe.

The lug pattern is also new, and it's almost as important as the rubber compound. The shape, size, spacing, and orientation of the lugs (the pattern on the bottom your shoes) dictate the mechanical grip's ability between your shoe and the pedal. This was poured over for some time, since refused to just create a smattering of cool shapes and dots for the hell of it. Instead, we designed numerous samples to find a pattern that would conform and maximize mechanical grip. And this meant creating a whole new design where the pins are under the weight of a rider, the way that force interacts with the outsole. Now, the lugs are holding on for you, so it grabs the pins as they're weighted.

Last, but certainly not least, comes the pedal feel. You can really feel the pedals now. But like the children's book *Goldilocks*, there's a balance to strike between feeling too much and not enough. So guess what? We made more and more samples and did more and more testing. It took awhile, but we discovered a nice balance of being able to feel your feet and where you are on the pedals, without being so soft that your feet cramp on long descents. And we did this through an EVA foam in the midsole. This foam has a huge impact on the ride qualities of the shoe. In fact, we found it had almost a bigger impact on the overall characteristics than the rubber compound. Too firm = no pin penetration, no pedal feel, and lack of grip. Too Soft = cramping feet and quite often prematurely shredded rubber. So, to the whole *Goldilocks* thing, the new 2FO shoes are just right.

COMFORT

Shoes are important, but all too often, sacrifices are made to make them look cool, or to ride well, or to just be comfortable. Never do you get all three features in one shoe, though. That is, you guessed it, until now. We made sure that all the important performance bits were complemented with a shoe that you wouldn't want to take off. Riding or not. Now, you get the same wet weather performance as the previous model, ventilated tongues to keep your feet cool, laces that give you control of your fit, and a look that's just cool.

Bottom line, these shoes aren't just performance gravity or trail shoes, they're casually styled using technical materials. They're comfortable, so comfortable I bet that you'll be caught wearing them to get a beer, or staying in them post-ride, probably more than once.

Comfort can also be the things that you can't see. This shoe, even though it's a flat pedal shoe, has all of the Body Geometry features that our performance road and mountain bike shoes have. Injury prevention and performance benefits aren't just for clip-in shoes:

1. Forefoot Varus Angulation—the medial side of the forefoot is 1.5mm thicker than the lateral. This angulation helps correct for valgus forefoot collapse, which eventually works up the chain and results in the knee falling into valgus, which often results in knee pain.
2. Longitudinal Arch Support—arch collapse has similar results to forefoot collapse. The collapse works its way up the chain and causes the knee to fall medially. Our shoes ship with our "red" insole which is our lowest amount of arch correction. And while many riders will need more arch support, this ensures that all riders can use the shoes out of the box.
3. Metatarsal Button—this is the little bump in the middle of our insoles. This works to help spread the metatarsals apart and prevent toe numbness that may happen when the shoes are tied too tightly.

PROTECTION

Rocks, roots, pedals, cranks, and (insert your own shoe ruining nemesis here) are always out to try and smash your feet and break down your shoes. We thought about that when we went to the drawing board: How can we make a more protective and durable shoe? We know that flat pedal shoes get more abused than their clip counterparts, so we built in a little extra "oomph" when it comes to protection and durability. There is flat-pressed foam in the forefoot, so next time you try and do a drive-by kicking on a baby head rock, you won't find your toe nails in your socks. Mud and cranks also seem to wreak havoc on shoes, so we've bolstered the medial protection to keep your ankles from getting smacked. We also brought in some technology from

our performance shoes, which means ceramic printing a thin, transparent layer of ceramic beads to protect the shoe collar from getting shredded to a pulp.

Questions?

So, you said you could measure how feet and pedals interacted and how EVA had a large affect on the characteristics of the shoe, do tell...

We did measure and could measure those inputs, and we worked primarily with the Coastal Crew to go through this process. To start, we had a high-tech pressure mapping system (insole) that could measure the smallest changes in pressure underfoot. This allowed us to analyze what really happened in rough sections of trail, g'ing out in turns, and even popping off the lip of a jump. With the samples in hand, we did back-to-back testing of the different densities of EVA foams (with the same rubber compound) to see how those affected grip (perceived vs. real), as well as how the shoe would react on the pedals to those forces above. After reviewing the data, we found that the EVA played as big a role in grip as the compound. The EVA needs to be soft to subsequently accept the rubber deformation due to the pins. It's important that these two materials (the rubber and the EVA) work together for the best pedal connection.

Who did you work with on development of the Shoes? You mentioned The Coastal Crew?

Yes, the Coastal Crew played a huge part in the development of the shoes. We spent many days in Canada at the Coast Gravity Park where we could have controlled test sessions, making the shoes the only variable on every occasion that we tested. This gave us a huge amount of confidence in the decisions we were making and the feedback we were getting. Curtis Robinson and Dylan Dunkerton were also both great at articulating feedback and getting us to where we are now.

So that's it?

No. After the testing sessions were done, and we had a good idea on what direction we wanted to go in, we had dozens of shoes made for wear testing with athletes all over the globe. This ensured that the feedback we were getting was relevant to a large group of riders, and more importantly, that the shoes weren't going to fall apart.