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INSIDE PENNY DAVIDSON'S IRON HORSE

A close look at the National Downhill Champ's bike

It's no secret that Penny Davidson got serious in '93 and set her mind, body and bicycle towards the singular goal of winning the NORBA National Championship Downhill series. Penny's slight build and quiet manner would give most people the impression she was a cross-country racer. A year before they would have been at least half correct. The 29-year-old Davidson is a seasoned cross-country pro who entered downhill and dual-slalom events simply because she liked the speed. It eventually became clear to Penny that her destiny was carving turns and blazing straightaways with the force of gravity on her side of the speed equation. When all the dust cleared at the end of the racing season, Penny Davidson was holding the roses on the podium—the National Champion!

Penny's weapon of choice was a fully suspended Iron Horse (her major '93 sponsor). At the start of the '93 season, only a few pros believed that rear suspension could truly deliver more speed and lower times. By mid-season, however, all the gravity-powered pros were scrambling for a fully suspended ride. Penny, a tactician by nature, had chosen wisely.

Exactly how much credit for the National Championship belongs to Davidson and the degree to which her Marzocchi-suspended, Italian-designed, aluminum Iron Horse deserves credit cannot be determined. Curiosity got the best of us. We telephoned Penny and she agreed to allow the *MBA* crew to test-ride her victorious mount. We decided for authenticity's sake to run the bike exactly as she had last raced it—exact air pressure settings in the shock and fork, the same gearing, tires and pressure, worn-out parts and all. This way we could reproduce (as close as possible) the same experiences that Penny had when we put the speed to her steed.

RIDING IMPRESSION
RIDING THE CHAMP'S BIKE

• The typical NORBA downhill event is a combination of flaming fire roads, with some moderately tight and twisty single-track sections mixed in. All-out speed courses like the Famous Mammoth Mountain Kamikaze are the exception, not the rule. *MBA* happens to have access to a secret test track which emulates the former (not the latter). Our four-mile downhill stretch is the sweetest twist-and-turn trail a dirt cyclist could ever dream about. The trail is located in an area designated for off-road motor use, which means it is virtually deserted midweek. To test the National Women's Downhill Championship bike we selected a run that started with a smooth fire road section with a moderate grade. The midsection of the course was flat-out singletrack with motorcycle-made berms at each turn. The downhill finished with a WFO, big ring rip down a bumpy doubletrack with plenty of opportunity for air time. Sounds pretty fine, eh?

AIMED EARTHWARD

The *MBA* test riders had made their own assumption before riding Penny's bike. We were expecting a soft-riding, stable-feeling bike that (due to the Iron Horse's small frame size) sketched a bit in the fast stuff. The first few trips down the mountain told a slightly different tale. Penny's setup was harsh on the slow stuff, giving the initial impression that compression damping on both ends was too stiff. With each pass and increase in velocity, the suspension rose to the occasion. To fully appreciate The Championship Iron Horse, the pilot is required to keep the speedometer over 25 mph. No problem on fire roads, but on singletrack—whew! Penny must scream on the skinny stuff. Pushing the bike onto the berms with the outside foot allowed the rider to carry a lot of speed through the slower, twisty section of the course.

The Iron Horse's longish 16.9-inch chainstay and short 22-inch top tube length were exaggerated by Penny's full-forward saddle position. This setup put the rider's weight well forward on the bike. This centers the weight of both bicycle and occupant between the wheels, exactly where it needs to be in a corner to give both tires the same amount of grip. The bike can be pushed beyond its limits of adhesion into a comfortable two-wheel drift on any reasonably smooth corner. The downside to Penny's setup was in the power department; her saddle position, combined with the Iron Horse's steepish 73.5 degree seat angle, curtailed the rider's ability to push the pedals while seated. Any serious effort (not simply sprinting out of a corner) had to be done out of the saddle.

FULL SUSPENSION DUTIES

Suspension duties were handled by a Marzocchi XC-400 fork and the Italian company's top-of-the-line air/oil shock in the rear. The fork was set up much softer than any Marzocchi we had ridden with in the past. Fork travel was minimal for a downhill bike, but thankfully showed no tendency to bottom out harshly. However, top-out was a bother at slow speeds. The forks thumped away when things got rocky. The XC-400 had its lockout valving removed and was relatively fast on rebound and compression. This downhill setup helped smooth out braking bumps (not a previous Marzocchi trait). With Penny's regular 50 psi setup, the fork was a little bit harsh on compression (but not necessarily by Marzocchi standards), but soft when compared with the rear shock.

The shock actually had good damping characteristics when activated. The Iron Horse's high-pivot, cantilever beam swingarm requires a lot of air pressure to suspend the rider, and a bit more to eliminate any trace of sag. The no-sag setup is necessary to prevent inch-worming and biopacing with each pedal stroke. Why Penny Davidson liked a relatively soft front end and a hard rear was a mystery to every test rider. The bike felt out of sorts, but the uneven balance, surprisingly, seemed to work fine from 15 to 40 mph. Under braking, the rear shock was useless due to the brake's tendency to further stiffen the suspension. This is a normal reaction on a non-active suspension system. The best technique was to get the bike slowed well before the curves, then coast around, allowing the suspension to do its best when it really counted most. The XTR brakes were barely able to get the bike stopped from flat-out. This may be Penny's National Championship secret—big gears and no brakes.

Penny Davidson's bike did exactly what it was supposed to do. It has obviously been fine-tuned over the complete '93 NORBA series to be pointed downhill at speed. Every test rider had wished for Penny's Mammoth gearing (54-tooth chainring and 11-tooth rear cog) for more top-end—because that is where this unique combination of accurate turning and high-speed suspension would have really begun to shine. •

◄ ***Fast lady: Between stints as a commentator for ESPN, the impressive Penny Davidson put together a string of downhill finishes at the NORBA Nationals in '93, ending the year as the top American woman in the sport of downhill racing.***

UP CLOSE
PENNY DAVIDSON'S IRON HORSE

Construction: Verlicci TIG-welded aluminum; Tapered alloy tubes; high-pivot, cantilever beam swingarm; Silver and blue anodized finish; 1.75" diameter down tube; 1.25" diameter seat tube; 1.5" diameter top tube; Evolution 1.25" head tube/headset diameter.

Components: Complete Shimano XTR group including SPD pedals; 120mm X 10° Control Tech alloy stem and seatpost; Tioga 1.95" Psycho tires (front and rear) and handlebar; ODI Tomac grips; Vetta Ti saddle; 32-spoke Araya RM-395 rims with non-butted 14-gauge spokes.

Bicycle setup: Shock pressure–150 psi; Fork pressure–50 psi; 5° handlebar bend, 22" width; Lockout valving removed from fork; saddle moved completely forward. Pedal release tension set at about half way; Front tire–40 psi; Rear tire–45 psi; Weight as tested–28 pounds.

Frame dimensions: Seat tube length (center to top)–18"; Top tube length–22"; Chainstay length–16.9"; Bottom bracket height–11.625"; Wheelbase–41.5"; Head angle–71° ; Seat angle–73.5° ; Actual frame size–17.5".

Gearing: Rear cogs are 11/28 eight-speed (Action Tek supplied the Ti 11-tooth cog). Front sprockets are 26/36/46, standard-issue XTR rings. Penny uses double and triple setups ranging from 46 to 54 teeth, depending upon the course requirements for each event.

Suspension: Marzocchi XC-400 air/oil fork with 1.75" travel; Marzocchi air/oil shock, non-emulsion type with 1" travel; No lockout valving in front or rear; Rear wheel travel–2.5". ❑