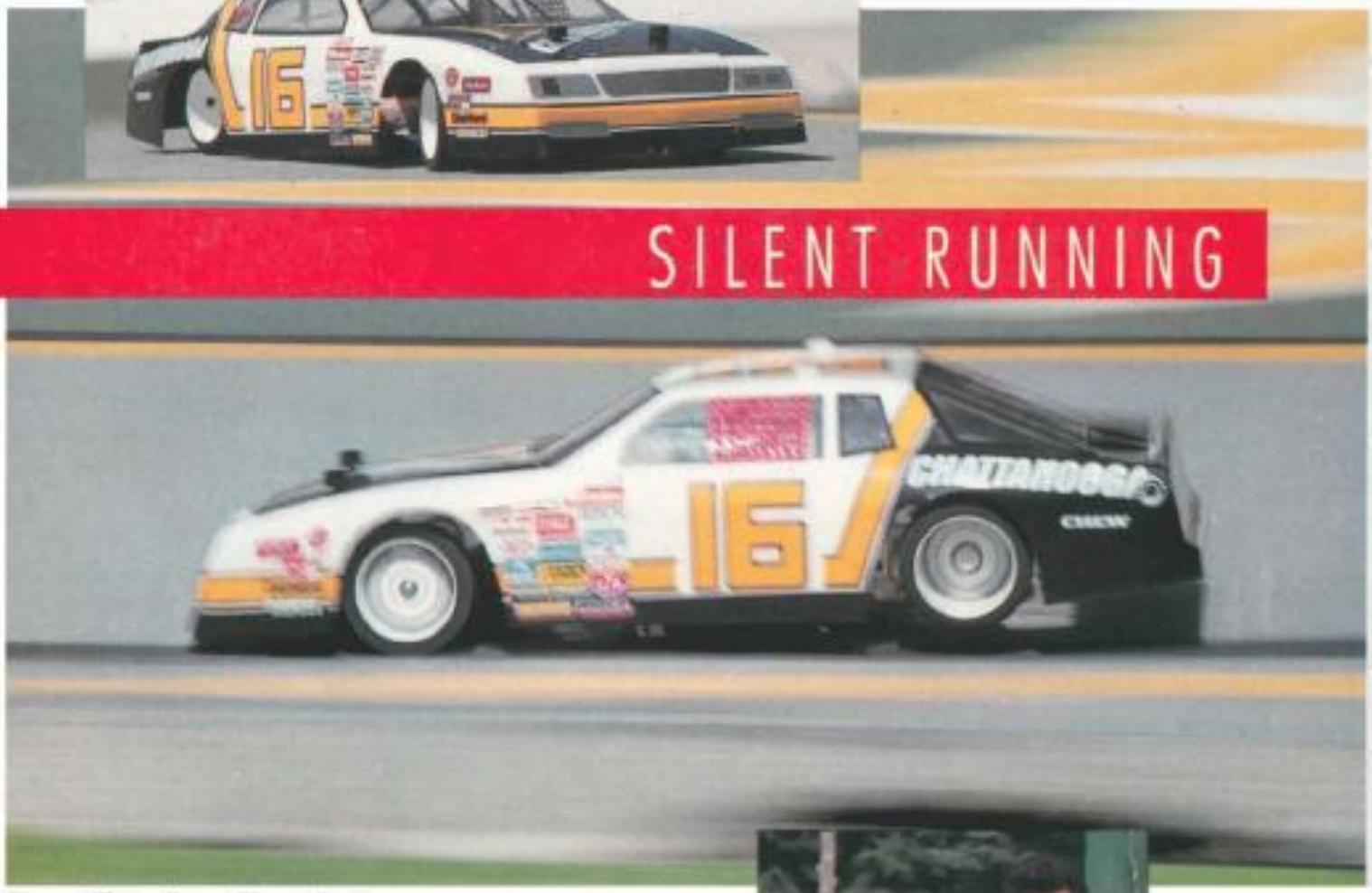
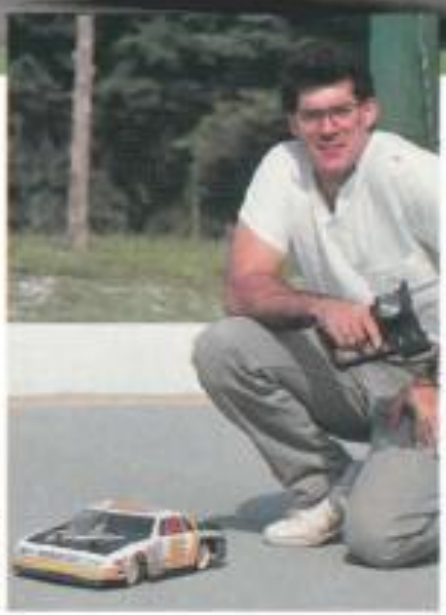
## SILENT RUNNING



# DELTA VILLAIN



by JOE BRUNI

DELTA'S* NAME is synonymous with high performance, and the company has been a major presence in the hobby industry for many years, providing precision parts and cars in every R/C scale. Its newest venture is the creation of a highly competitive, 1/10-scale, on-road electric car—the Villain. This car represents the culmination of many years of research and development. The Villain's design fuses the most advanced, race-proven technology into one great racing machine.

THE KIT: Delta offers two versions of the Villain kit, and there's a variety of options, e.g., a complete Hyperdrive Belt System from S.S. Industries*. The major difference between the two versions is in the front suspension group. One version offers a crossbar, or static, front-suspension system, while the other offers a totally adjustable front-shock suspension system. Both kits include the same extensive number of high-performance features.

The Villain's main chassis plate is composed of a graphite composite, flat-pan-style chassis that seems to be standard on all today's top 1/10-scale on-roaders. To this is coupled a unique rear drive pod. The lightweight, aluminum pod is pre-drilled


to accommodate a motor for the included direct-drive (spur-to-crown) gear, or the more advanced optional hyperdrive belt system. The pod also houses a bullet-proof aluminum rear axle that's mounted via precision ball bearings. Another interesting feature is that the rear diff hub slides onto the rear axle riding on another set of ball bearings, thus allowing not only the non-diff wheel to spin smoothly, but also allowing the diff side to spin smoothly and so dramatically decreasing rear-axle friction.

The drive pod is mounted on an impressive bridge system. Connecting the bridge to the rear pod are three Delta, oil-filled, coil-over, spring rear shocks. The kit also has a shock-resistant Kydex front bumper, four nylon body mounts, two servo mounts and four pre-trued and mounted Delta Track Magnet tires. This all adds up to a winning combination that's hard to beat.

ASSEMBLY: Putting the Villain together took me only 5½ hours from box to track. You'll need some basic tools, e.g. a screwdriver (I use a cordless electric screwdriver), needle-nose pliers, regular pliers, and some good-quality thread-locking compound. The kit's only flaw is the assembly manual, which contains highly detailed mechanical drawings, footnotes, a complete parts legend and numbered steps, but is incorrect in places, periodically sending me off on a wild goose chase for unknown parts.

Following Delta's advice, I first boiled all the nylon components for approximately 45 minutes (see my article on dying nylon parts in the February '89 issue of *Car Action*).

I'll highlight only the most important areas of the kit. Start with the rear power pod: Essentially, its construction encompasses attaching the shock-mounting hardware to the pod, and that's one area where the thread-locking compound is essential if you want to avoid later mishaps caused by loosening of the parts.

After completely assembling the rear pod, move on to the rear axle. As previously mentioned, the rear axle is made of solid aluminum, and it houses many of the essential components. Mount the diff hub in the way that suits your rear drive system (optional hyperdrive or conventional rear pinion/

*The Villain's "bridge system" suspension provides dampening for upward and downward and side-to-side pod movement.*

## DELTA

### VILLAIN

| | |
|---|---|
| **Type** | On-road |
| **Scale** | 1/10 |
| **Sug. Retail Price** | $359 |

**DIMENSIONS:**

| | |
|---|---|
| **Overall Length** | 15 inches |
| **Width** | 8.5 inches |
| **Height** | 2.5 inches |
| **Wheelbase** | 10.5 inches |
| **Front Track** | 7 inches |
| **Rear Track** | 6.75 inches |

**WEIGHT:**

| | |
|---|---|
| **Gross (w/bat.)** | 48 ounces |

**BODY:**

| | |
|---|---|
| **Type** | Not included |

**CHASSIS:**

| | |
|---|---|
| **Type** | Flat pan |
| **Material** | Graphite |

**DRIVE TRAIN:**

| | |
|---|---|
| **Primary** | Pinion/spur |
| **Transmission** | Direct drive |
| **Differential** | Ball type |
| **Bearings** | Ball bearings |

**SUSPENSION:**

| | | |
|---|---|---|
| **Front:** | **Type** | Coil spring |
| | **Dampening** | None |
| **Rear:** | **Type** | T-plate |
| | **Dampening** | Triple oil-filled, coil-over shocks |

**WHEELS:**

| | | |
|---|---|---|
| **Front:** | **Type** | BBS style nylon |
| | **Dimensions (DxW)** | 2x1.125 inches |
| **Rear:** | **Type** | BBS style nylon |
| | **Dimensions (DxW)** | 2x2 inches |

**TIRES:**

| | |
|---|---|
| **Front/Rear** | Foam |

**ELECTRICS:**

| | |
|---|---|
| **Motor** | 05/540 (not included) |
| **Battery** | Saddle pack (not included) |
| **Speed Controller** | Electronic (not included) |

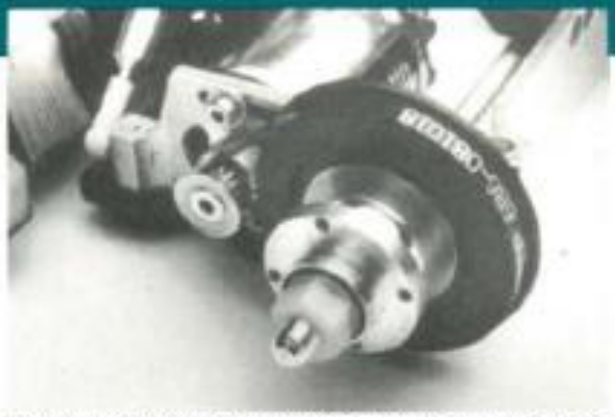
**OPTIONS AS TESTED:**

Futaba Magnum Jr.; Novak NESC-4 electronic speed control; Twister Stock motor; Hyperdrive belt and pulley system; Sees mag wheels; TMS slicks; SCR battery.

**COMMENTS:**

An exceptionally responsive, fast, on-road performer. The car handled equally well on an indoor carpet roadcourse and on an outdoor asphalt roadcourse. The low center of gravity allows the Villain to be driven deeply into the turn. The optional Hyperdrive belt-and-pulley system made the car purr like a kitten. The manual is substandard and confusing at times. All told, Delta has a real winner on its hands.

# VILLAIN



*Included with the Delta Villain is the whisper-quiet 5.5. Hyperdrive belt-drive system. To accommodate this system, the rear pod has extra-long slots on both sides.*


*The front suspension is the reliable crossbar design that allows on-the-spot caster adjustment. Note the sharp-looking TMS spoked aluminum wheels and rubber tires.*

spur) you choose. My kit included the hyperdrive system, so I mounted the differential hub on the left rear of the pod. The easiest way to mount the axle is to first put the ball bearings into the pod, then slide the axle through, position the right rear hub, apply thread-locking compound to the Allen screw and tighten the hub securely onto the axle. Now put the pod on its right side, perpendicular to your workbench, and assemble the diff components.

I'll now look more closely at the "heart" of the Villain's advanced design: the bridge system. To understand the importance of the bridge, we must review what it's made of. Just visualize any simple bridge design. There's a main bridge plate that's like the deck that runs through a normal bridge, and it's coupled to two A-shaped bridge uprights that are attached securely to the rear part of the main chassis. The rear upright is the mount for all three rear shocks, while the front A-bridge is for mounting the antenna. Though not mentioned in the manual, I used the bridge plate, sandwiched between the A-shaped uprights, as a mounting site for an electronic speed controller. Attached to the bottom of the bridge plate is a flat graphite T-plate, which is suspended by two unique monoball-and-cup mechanisms. These monoball-and-cup mechanisms move freely on a fixed axis and act as the main pivot point between the rear power pod and the main chassis plate.

For this review, I chose Delta's front crossbar suspension. This system is similar to those used on many other on-road cars, and its main component is a tubular aluminum bar that extends across the front of the chassis. At each end of the crossbar, insert the two steering kingpins, then slide on the two nylon steering blocks. Two small springs mount on top of the steering blocks and provide just the right amount of suspension for the front wheels. Connect the bar to the chassis by sliding it through the two support blocks that are mounted to the chassis. One of the two blocks is slotted, and this allows adjustments to be easily made.

According to the manual, one of the blocks should remain loose to avoid tweaking the crossbar, but after extensive driving, I discovered that tightening the bar at both block sites improves handling tremendously.

A set of nylon body mounts is included, as are four Delta track-magnet tires that are mounted on BBS-style wheels and accurately pre-trued.

PERFORMANCE: To run your Villain, you'll have to supply any 2-channel car radio, a motor, a speed controller, a saddle-pack battery and a body. For this report, I chose a Futaba* Magnum Junior 2-channel pistol-grip radio coupled to a Novak-4* electronic speed controller. For maximum power and speed, and to stay within the confines of the ROAR stock class, I installed a hot Twister* stock motor and a set of six, matched, Sanyo* SCR batteries in a saddle-pack configuration.

I topped off the Villain with an MRP* Monte Carlo body and finished it to resemble the Chattanooga Chew stock car. For this, I relied on Pro-Cut* Decals and Eric Goldschrafe, who did a great paint job. I also used a product called Slip Stream from Paragon Racing Products*. It's a two-part cleaner and wax that enables you to remove all excess oils and dirt from Lexan and apply a shiny coat of wax.

Since I compete on both indoor and outdoor on-road racing circuits, I decided to test the Villain on both turfs. If you're a New Yorker and want to compete at an indoor carpeted facility, then Island Hobbies in Hauppauge, NY, is the place to go, and that's precisely where I went for the first part of my track test.

For proper battery charging, I chose a Model Craft* Pro-Tech digital 700 AC/DC charger, which features automatic trickle, AC/DC power, discharge and an LCD meter that can register either amps or volts. After a quick charge to the SCRs, I wheeled the Villain to the starting line and "floored it." At first, I heard only the sound of diff kicking in, and then the car shot around the turn like a stone from a slingshot.

But wait a minute! What happened to the sound of those gears grinding away? Not here, pal—we're talking *hyperdrive!* This baby purrs like a kitten. On about the fourth lap, I noticed that the car's rear end was too soft in the corners, so I rolled into the pits and quickly readjusted the rear shocks by tightening the spring load. Then I rolled onto the track for 7 minutes of fast oval racing. Even though I'm accustomed to the Island Hobbies racetrack, I tend to catch a wall here and there, but the Delta held together extremely well.

The outdoor facility was larger and more difficult because it's a roadcourse with multiple hairpin turns. No matter

## DELTA VILLAIN

(Continued from page 164)

to dive confidently into each hairpin turn; sliding slightly, but there was never even a hint of traction loss (excellent center of gravity and balance). As well as this, the Villain was very fast down the long straightaways, and this allowed me to complete more laps than I've ever done in 4 minutes—with more battery energy to spare.

I give the Villain an A+ for this track report, and I'm extremely impressed with the optional S.S. Industries Hyperdrive System. It's not only extremely quiet, but it also seems to run very efficiently. Subsequent tests with some very hot modifieds also showed good results with the Hyperdrive, so dispelling the myth that the belt can't take the big-horsepower motors.

Partly owing to its three-shock rear suspension, the Villain is reasonably easy to dial-in, and although the shocks are a pain to assemble, they can cure slight handling problems very easily. If the car is pushing too much, you can "jack" the weight to the front end for improved steering. "Tweaking" for different types of tracks is as simple as turning a shock spring collar, instead of working with two

## DELTA VILLAIN

(Continued from page 174)

screws to make adjustments.

The Villain has good potential, but, just as with any other car, you must spend time with it and learn what works and what doesn't. When you've done that, this car will be brushing fenders with the best of them. It's reasonably durable, and this allows it to take the lumps as well as the rest of them. When you do eventually break a part, however, you could also break into a sweat trying to find the part under the Delta header card, but parts are available if you look. Because Delta manufactures parts for many other on-road cars, many of them are interchangeable with those on the Villain. By consulting knowledgeable people in a hobby shop, you should be able to find the parts you need, even if they don't bear the Delta name.

**Here are the addresses of the companies mentioned in this article:*

***Delta Manufacturing,*** *27 Racecar Ct., Lorimor, IA 50149.*

***S.S. Industries,*** *3230 Howard Nickell Rd., Fayetteville, AR 72703.*

***Futaba Corp. of America,*** *4 Studebaker, Irvine, CA 92718.*

***Novak Electronics, Inc.,*** *128-C E. Dyer Rd., Santa Ana, CA 92707.*