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JULY 2006

XRAY NT18

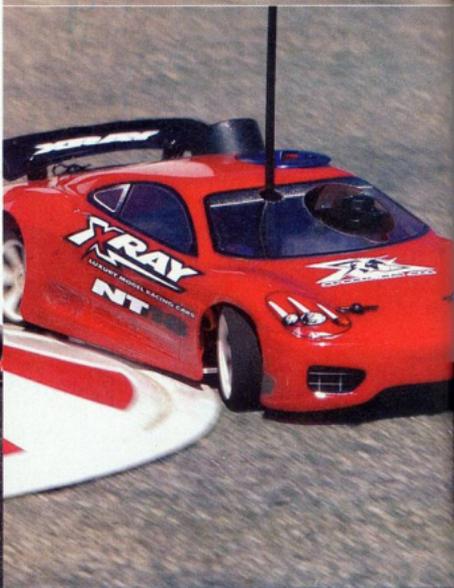
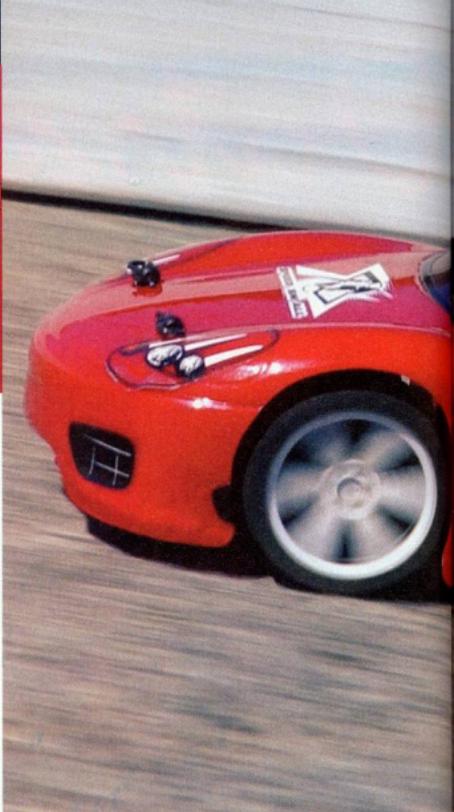
1/18-SCALE NITRO 4WD TOURING CAR KIT

XRAY launches a new category with the first nitro micro RC car

WORDS GEORGE M. GONZALEZ

PHOTOS JASON SAMS & GEORGE M. GONZALEZ

XRAY's NT18 is the first production nitro-powered 1/18-scale micro designed for pavement duty, and it's as sophisticated as any 1/10-scale 4WD nitro sedan. The NT18 shares many of the M18's suspension and drivetrain components—great, if you happen to own both cars. (I do, and I have been a big fan of the M18 for years.) The NT18 is an unassembled kit, so you have to build it yourself, but it includes an XRAY 0.8cc (.049ci) engine and everything that you need to install it. Naturally, I was eager to test it, and I had the NT18 assembled and ready to go in a few hours. I'm sure that you want to know how the car handles as much as I do, so let's get started.





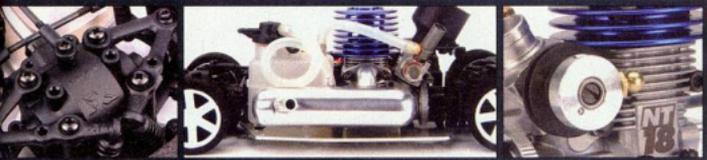
TESTING. ROUND 1

I'll spare you the boring details about breaking in the engine and merely point out that the engine didn't give me any problems burning through the first few tanks of fuel, and the Hudy micro starter box made cranking the engine over easy. After bringing the engine up to running temperature and finding the sweet spot on the needle valves, I had the NT18 screaming up and down my street. The engine wasn't as loud as most .12 engines.

The car accelerated quickly even with the slightly tall stock

gearing, and its speed increased for approximately 150 feet before it reached its radar-confirmed 34.7mph top speed. That's impressive for a car that's about 8 inches long. I'm sure the NT18 will break the 40mph barrier with the optional 25-tooth clutch bell installed. It felt stable at high speeds, and it took off straight and true every time I mashed on the throttle. XRAY has come up with the perfect clutch shoe and spring combination; the clutch engagement was smooth and predictable.

The disc-brake system brought





the car from full speed to a complete halt in less than 10 feet. I set the brake linkage to provide a little drag brake when the servo was in its neutral position. I also had the brake high/low (endpoint adjustment) set at 30 percent, which is more braking than I needed but a good setting for slowing down after high-speed runs.

I saved the kit-supplied foam tires for the track testing and initially installed HPI medium-compound rear and hard-compound front tires that I pirated from my M18. The steering felt very responsive, and the XMS-01 servo had more than enough speed and torque to maneuver the NT18 around with precision. The car turned in almost too well; it required careful throttle control to prevent it from swapping

ends when entering the corners, and plenty of on-power steering allowed it to hold a tight line when exiting them. Switching to softer-compound rear tires would probably make the car a little easier to control in the corners, but it felt good enough for play.

ROUND 2

I headed to Racers' Haven in Bakersfield, CA, to go for some hot laps on the smooth, tight, outdoor on-road track. The track was set up for oval racing, but I added a couple of switch-back turns and a sweeper to make it a technical roadcourse. The stock foam tires slid around hopelessly, so I went back to the pits and pulled out the Paragon Ground Effects traction compound. I coated the rear treads and the inside

edges of the front tires. That did the trick and the car felt hooked up.

The NT18 was quick off the line, but it wasn't as fast as my M18 with a mod motor and 2-cell Li-poly pack. The stock gearing was obviously too high for the track because the car ran out of track before it ran out of legs. Gearing down to a 21-tooth clutch bell should be just about right. I'll order a couple from rcamerica.com.

The car felt a little twitchy at first as I got used to driving between lanes, but after a few laps, I had developed a rhythm. The NT18 had plenty of low-speed steering that allowed it to transition through the tight turns with little difficulty, and it also steered very well under power. The car was starting to feel good, but it wasn't perfect.

I adjusted my radio's steering dual rate to a lower setting and set the exponential to a negative value. I also adjusted the brake linkage to get rid of the drag brake, and I tightened the chassis-flex-adjustment screw to reduce the front-end flex.

The NT18 felt like a completely different car after these adjustments. It still had plenty of steering at low and high speeds, but the rear end wasn't as loose as it had been on previous runs. It felt a little less "nervous" in the corners, so I drove it with more confidence. I think that installing a body with a little more rear downforce, or installing a larger wing on the stock body, is all this car needs to be ready for competition.



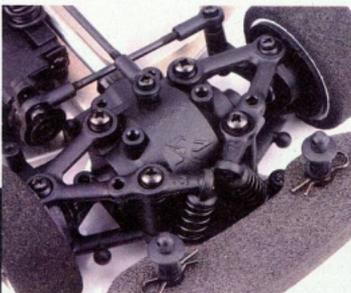
TUNING TIPS

DIFF TUNING

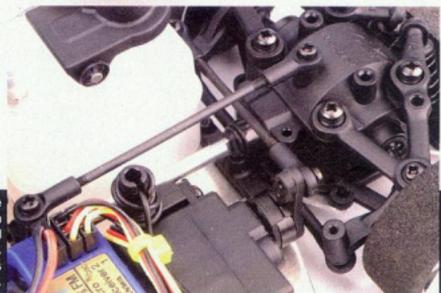
Tune the diffs by putting Tamiya AW grease or Kyosho diff grease on the internal bevel gears. This grease is very tacky and will not be flung off at high rpm. Put it on the diff gears to slow the diff action and divert traction to the front or the rear as needed. For improved on-power steering, grease the rear diff liberally and apply just a little to the front diff gears.

SHOCK DAMPING

Even though the shocks are not oil-filled, you can put thick silicone diff fluid or grease on the shock shafts to provide damping. You'll have to clean the shocks and relube them after every run, but it's worth the effort if you plan to race the car.



The front suspension is a carbon copy of the M18's. Upper and lower wishbones pivot on flanged pivot balls instead of hinge pins. Setscrews threaded into the upper and lower suspension arms allow you to adjust downtravel.



The NT18 has the same pushrod steering system and heavy-duty dual-band servo-saver as the M18. The upper rod brace limits front-to-rear chassis flex.

CHASSIS

» **Swiss T6 7075 machined-aluminum chassis** » **One-piece radio tray** » **Foam bumper**

The aluminum chassis plate is completely countersunk, and the engine-mounting screws are recessed to ensure a completely flat chassis bottom. The engine-mounting holes are slotted to allow fine gear mesh adjustment, and a generous opening under the flywheel allows starter-box wheel access. The chassis has a unique adjustable-flex design. Its front end is partly cut to form a T-plate, and the front suspension is mounted on the end of the flexible plate. Flex is adjusted by an O-ring-supported bar that's mounted across the T-plate. Tightening a center screw stiffens the chassis, and loosening it allows the chassis to flex. To allow the chassis to flex even more to provide maximum traction on loose surfaces, you can also remove a threaded-rod brace that's mounted between the front gearbox and a molded center mount. This is a really cool chassis design; I haven't seen anything like it before.

The electronics are arranged neatly on a one-piece radio tray that can be removed in less than a minute. The tray is designed for microserves, a small receiver and a 4-cell AAA battery pack. I recommend that you buy the NT18 with the optional electronics package; it includes two metal-gear microserves, a NiMH receiver pack and a switch harness, so the only extras you'll need will be a radio and receiver.

DRIVETRAIN

» **Shaft-drive 4WD** » **Laser-cut, hand-ground brake rotor with Ferodo brake pads and steel calipers** » **Full ball bearings**

An aluminum center propeller shaft links the front and rear diffs to provide full-time 4WD. The front and rear bevel-gear diffs have four internal spider gears and two output gears, and the diff outdrives spin on large 8x12 ball bearings for smooth, long-lasting performance. The diffs are not sealed, so they can't be filled with diff fluid, but they're housed inside sealed diff cases to protect them from the elements. An adjustable ball diff and a front one-way are available as options for track tuning.

A 42-tooth, 48-pitch spur gear is attached to the rear pinion-gear shaft that contains a drive cup for the propeller shaft. The brake rotor floats on a plastic hub that's keyed to the end of the propeller shaft. Steel calipers clamp down on the rotor to slow the car. Plastic universal axles drive all four wheels.

SUSPENSION & STEERING

» **Double-wishbone suspension** » **100-percent compatible with the M18** » **Heavy-duty dual-band servo-saver.**

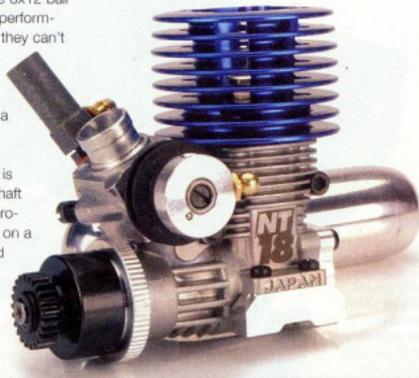
The front and rear upper and lower suspension arms pivot on flanged bushings for ultra-smooth action—no hinges to bend or E-clips to lose. Setscrews can be threaded into the upper or lower suspension arms to make suspension downstop (droop) adjustments. The NT18 has a simple cantilevered suspension system and coil-over friction shocks on every corner. The shocks are not oil-filled, but putting grease on the shock shafts provides damping. Large-diameter (by micro standards) shock springs provide the proper ride height as well as a slight "sag" in the suspension that improves handling. The top mounts are fixed, but two lower shock-mounting positions let you change shock angle. You can easily change the lower shock-mounting position without tools.

The front and rear steering knuckles are identical; with optional steering rods, you can adjust front and rear toe adjustment. Fixed links provide 0.5 degree of front toe-out and 4 degrees of rear toe-in. A simple pushrod steering system provides equal left and right steering throw. The steering system consists of only two links: a threaded steel rod that connects the servo's output arm to the left steering knuckle and a molded center link that connects the two knuckles so that the wheels turn in unison.

ENGINE & ACCESSORIES

» **XRAY 0.8cc engine** » **Aluminum clutch shoes** » **T6 aluminum flywheel** » **23-tooth steel clutch bell**

The XRAY 0.8cc engine is tiny and, dare I say cute; it's small, but it's loaded with features found on larger racing mills. It has a 3-port, chrome-plated brass sleeve with an aluminum



Above: the NT18 0.8cc engine is powerful and reliable. It has a dual-needle slide carb and a big, machined-aluminum cooling head just like larger engines'. The engine does not have a pull-starter, so you'll need a starter box. Right: I mounted the throttle and brake linkages under the servo horn to prevent them from binding against the body. The XMS-01 metal-gear servo has more than enough speed and torque to open and close the carb and engage the brakes with precision.

XRAY NT18

Contact RC America, rcamerica.com
Price \$259 (varies with dealer)

SPECIFICATIONS

Length w/body 9.01 in. (229mm)
Chassis length 8.46 in. (215mm)
Wheelbase 5.90 in. (150mm)
Width (F/R) 3.85 to 3.97 in. (98 to 101mm)/4.09 to 4.21 in. (104 to 107mm)
Weight, as tested 18.88 oz. (535g)

Chassis 7075 aluminum plate with flex-control system

Drivetrain type Shaft-driven 4WD
Clutch 2-shoe aluminum
Transmission ratio 2.5:1
Final drive ratio 4.56:1
Differentials Bevel gear
Drive axles Plastic universal joint
Brake Steel disc with padded calipers

Suspension type Upper and lower wishbone
Inboard camber-link positions (F/R) 1/1
Outboard camber-link positions (F/R) 1/1
Shocks Coil-over friction
Upper shock positions (F/R) 1/1
Lower shock positions (F/R) 2/2

Wheels XRAY 13.6x30.9mm 6-spoke white
Tires XRAY mounted and treaded foam
Body Clear Laxan with window masks, overspray film, decals

Engine XRAY NT18 0.8cc (.049ci)
Construction ABC
Ports 3
Carburetor 2-needle slide
Pipe one-piece manifold and muffler
Fuel tank 30cc

BONUS

- » Powerful, reliable engine
- » Excellent disc-brake system
- » Easy to build and work on
- » Fast and easy to drive

BONUS

- » Body fits poorly
- » Pricey



piston and a lightweight aluminum conrod. A dual-needle slide carburetor allows precise engine tuning, and an 8-fin, machined-aluminum cooling head keeps the engine temps in check. A high-density air filter cleans the air that enters the engine, and the exhaust is routed out through a polished one-piece manifold and muffler. A 30cc fuel tank keeps the engine running for 6 minutes or more, and it features a cap-mounted pressure fitting, internal baffles and a built-in stone fuel filter.

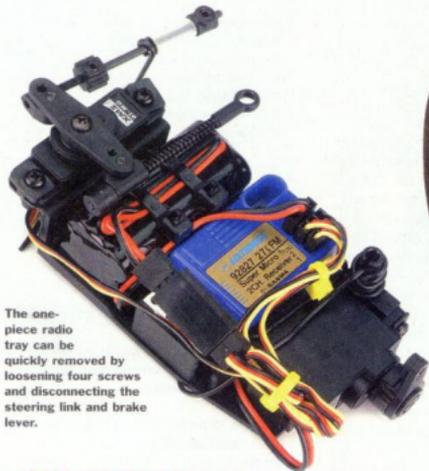
BODY, WHEELS & TIRES

» **Pro-Line 360 Modena body with window masks, overspray film and decals** » **Mounted and trued foam tires**

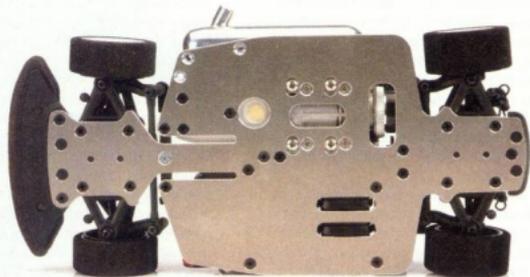
Pro-Line's Modena 150mm, 1/8-scale shell is nice-looking and handles great, but it doesn't fit the NT18 as well as the M18. The NT18 has a wider chassis than the M18, and the muffler and radio tray bind with

the body. Careful trimming is required to make openings for the cooling head, the air filter and the fuel tank, but unfortunately, the body doesn't have trim lines for these nitro-specific items to protrude through, and there aren't any body-post dimples to simplify body mounting. I wish that the NT18T included a body that fit better or, at the very least, arrived trimmed to save us these mounting headaches.

The NT18 uses a two-piece, inner and outer wheel system that's compatible with the HPI Micro RS4. This is a huge bonus because it allows racers to take advantage of all the available Micro RS4 and M18 wheel and tire options. The NT18 includes foam tires mounted and trued on awesome white 6-spoke wheels. You have two front and rear width options: 98mm or 101mm (front) and 104mm or 107mm (rear), depending on how you mount the outer wheels on the inner wheels.



The one-piece radio tray can be quickly removed by loosening four screws and disconnecting the steering link and brake lever.



Above: the 7075 aluminum chassis features a unique flex-control system that allows you to adjust front traction. The front suspension is mounted on a flexible T-plate, and you can adjust flex by tightening or loosening a single screw.

Below: I used a Hudy micro starter box (not included) to crank the engine over. The starter box is powered by a 7.2V stick pack, and a 550-size motor spins the starter wheel. The platform is completely adjustable to accommodate other nitro micro vehicles such as XRAY's soon-to-be-released NT18T micro nitro truck.



Above: the 30cc tank contains enough fuel to keep the engine running for 6 minutes or more. It also has a built-in stone filter to ensure that the fuel that reaches the carb is clean.



Left: the brake rotor is laser-cut and hand ground to tight tolerances, and the steel calipers have Ferodo brake pads for smooth, consistent braking.



ON THE BENCH

The NT18 is easy to build thanks to the bags that contain all of the parts and fasteners to complete each series of steps and to the excellent instructions with 3D illustrations. Take your time when you build the kit, and follow the instructions to the letter. These tips will help:

Thread-lock. Put liquid thread-lock on the clutch nut that threads onto the engine crankshaft, the screws that secure the engine mounts to the chassis and the screws that secure the engine to the mounts. The engine is small, but it creates as much vibration as any other powerplant, so be sure to use thread-lock.

Page 13, step 3, and page 19, step 3. Pay attention when you press the pivot balls into the openings on the suspension arms: some of the balls have flanges, and some do not. Install two flanged balls (flange side down) in the openings on the inside of the suspension arms and one non-flanged ball (large opening facing upward) into the openings on the outer suspension arms.

Page 28, step 6. Do not install the plastic preload spacers (shims) on the front shocks as the instructions direct you to; slide them over the rear shock bodies instead. Doing this will provide equal front and rear ride height.

Page 38, step 12. The throttle and brake linkages bind with the side of the body. To avoid this, mount the throttle and brake linkages under the servo horn instead of on top of it, as directed in the instructions. You'll have to rotate the ball joint that's mounted on the slide carb 45 degrees clockwise to line it up with the throttle linkage in the new position.



YOU'LL NEED

Radio
Receiver
2 microservos
4-cell AAA receiver pack
Starter box
Fuel

Lexan body paint

WE USED

Airtronics M8
Airtronics 92827 27MHz FM
XRAY XMS01-MG
XRAY 700mAh NiMH
Hudy Micro
Blue Thunder 20%
Race Formula
Paetra



FACTORY OPTIONS

- » Adjustable ball differential (hard-coated)—item no. 385001
- » Front one-way differential—385101
- » Aluminum driveshafts (blue)—385201
- » Adjustable toe-in turnbuckle set—383300
- » 6-degree-caster front suspension arms—382106
- » Aluminum suspension blocks (left/right)—382252/382262

KIT RATINGS

INSTRUCTIONS	10
Beautifully illustrated manual with concise building instructions, tuning tips and getting-started info.	
PARTS FIT & FINISH	10
Excellent parts finish, high-quality materials and no trimming or hand-finishing required.	
ADJUSTABILITY & MAINTENANCE	7.5
Limited adjustability in stock trim, but optional tuning parts are available.	

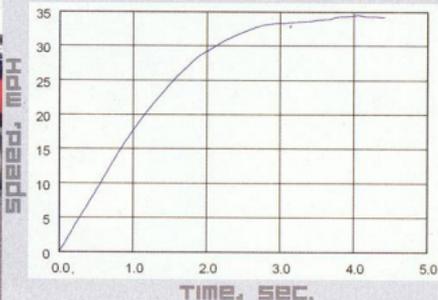
PERFORMANCE RATINGS

	ROUND 1	ROUND 2
ACCELERATION	8	8
Quick off the line thanks to the peppy engine and smooth drivetrain.		
TURN-IN	9	9.5
Turns in very sharply; might be a little too aggressive for beginners.		
CORNER SPEED	8	8.5
The rear end is a little loose with the stock body, but it's manageable with a few radio adjustments.		
ON-POWER STEERING	9	9
The NT18 has plenty of on-power steering that allows it to hold a tight line when exiting corners.		
BRAKING	10	10
The brakes can be set to lock the tires up or to provide smooth, consistent braking.		

RA DAR TESTING

Distance (in feet) traveled in:	0-132 ft. time » 3.7 sec.
1 sec. » 13.6	Time to top speed » 4 sec.
2 sec. » 49.3	Speed at 132 ft. » 34mph
3 sec. » 96	
4 sec. » 145.6	

TOP SPEED
34.5 MPH



THE VERDICT

The NT18 is an awesome micro vehicle. It's fun to build and work on and even more fun to drive. The little powerplant's sound is like music to my ears, and it offers good power and rock-solid reliability. I like that many of the suspension and drivetrain parts are compatible with the M18, whose spare parts and hop-up components are readily available at hobby shops. The car is a little pricey because a starter box is needed to crank the engine over, but not having to mess with a pull-starter rope is worth the extra cost to me. I think that most enthusiasts will agree that despite its higher start-up cost, the NT18 is worth every penny. I think it's one of the coolest vehicles to come around in a long time, and I look forward to putting in more time behind the wheel. **Z**

SOURCES

Airtronics (714) 978-1895; airtronics.net
Blue Thunder, distributed by Horizon Hobby Inc. (800) 338-4699; horizonhobby.com
Hudy, distributed by rcamerica.com
XRAY, distributed by rcamerica.com