

# THE PERFECT



By Ryan Scott

**P**OSSIBLY THE MOST intriguing ingredient in the development of aftermarket per-

formance is the amazing diversity.

One tuner's idea of a perfect ride can be diametrically opposed to another's.

While one may describe Ralph Friend's 1993 RX-7 as ridiculous excess, another may think niceties

like the full stereo and interior take away from the car's performance prowess.

Then some others, like myself, think that Ralph and

Groundzero Motorsports have compiled an amazing combination of performance, comfort, and looks.

I might even go so far as to call Ralph's car, perfect.

# FD?



Photos By Bryan Friend



But like every exceedingly tuned car, the project didn't just come together overnight. For Ralph, the center of his tuning efforts was dictated by the choice of turbo. "I've tried four different turbos to get the power to the level I wanted." And of course a change of turbo isn't a simple plug and play operation. Each turbo will have its own unique flow characteristics, which mean unique tuning requirements. "It took around 6 months to get the car rolling, and about a year to work out the bugs." Which actually is a testament to the capability of the team at Groundzero. Very few tuners in the World can lay claim to developing over 700hp on a 13B-REW block, and this project was done almost completely in-house.

'Hold on there, 700hp you say?' Actually it's more like 800hp. Ralph's RX-7 has produced a max of 712 rwhp @ 32psi on a T72 Q-trim, 1.15 A/R divided turbo built by XS Engineering. And that number was produced without the help of nitrous. When I asked Ralph "Have you ever even used the nitrous?" His reply gave even more appreciation for his tuning skills, "No, it's crazy enough as it is, it's stupid. I think it's time to take the nitrous

out. I run 25psi on the street minimum, I have a 22psi spring in my wastegate. I was going to use it to spool the turbo, well, turbos are getting so good that we don't need it. Now with this GT wheel that'll spool even faster and flow more, I think it's time to get rid of it and re-do the interior." I keyed on the words GT wheel, "so you're getting a new turbo?" I asked. "Yea, I think it's called a PT70GTS, 70mm GT wheel, so it's a lot more aerodynamic and efficient than the T72, and will flow 10% - 15% more. The car should be pretty much dialed as it is, so it'll be running by Monday." I'm writing this on Friday.

In talking with Ralph, I almost feel a bit stunned at how easy he makes it all sound. But I know it's anything but easy to squeeze these kinds of astronomical number from a 13B, so there must be some secrets. As we know, in a rotary, fueling and tuning is everything, and Ralph has paid special attention to the fuel system. "We sumped the stock tank, and run that into a pressurized surge tank. This keeps me from popping a motor by running the tank to low and getting fuel starvation. All it takes is a second and your motor is gone, the surge tank keeps the fuel flow consistent." Well, there's one secret. "Other than that, we run the Magnaflo 600 pump, it'll flow some ungodly amount. We run a -12 and split into pair of -8's that run into both rails, and then a -8 return. Running into both ends of the rails keeps the pressure constant." There's another secret, or more accurate, just tedious attention to detail. And even with all this fuel system overkill, Ralph says his main problem with each new turbo is getting the fuel system to keep up. "Right now we're adding two new injectors. With our 850cc x 2 primaries, and 1600 x 2 secondaries at 68psi base pressure, we were running 100% duty cycle at 32psi of boost. So we're producing a totally new intake manifold that will allow us to plumb in a couple more secondaries. For the GT turbo, I'll probably run 4 1600 secondaries, and drop the rail pressure back down to 45psi or so."

Of course there's more to making 700hp than just fuel system and turbo, you still have to tune, and you spark still plays an important role. Ralph

**Free Parts Catalog**  
Parts & Accessories  
For Your RX7  
1979-1995  
**Victoria British**  
Call Toll Free  
1-800-255-0088  
**Order Catalog & Parts online**  
**www.VictoriaBritish.com**



uses the tried and true combination of a Power FC and the Datalogit. To get the low impedance 1600cc injectors to work, Ralph put his electronics degree to good use. "I just put some big heatsinks on the output transistors to keep them cool, and that did the trick." All the tuning is done by Ralph either on his in-house Mustang chassis dyno, or on the street. Mixture is monitored by a FJO wideband. Ralph says that he's done a lot of research into proper turning, "I've ran EGT's on both front and rear rotor, and the rear seems to run 250 degrees hotter because of the manifold layout and more air into the rear." So with his newest turbo setup Ralph has developed a manifold that he says will equalize flow from the front and rear rotors, and hopefully keep the mixtures even. "Every motor I've blown has been the rear rotor, so we made this manifold to keep that from happening."

More examples of iniquity can be found in the ignition system. Ralph found that the car was easier to tune with no wasted spark, and by having no split timing. "I tie the trailings together, and run no split. I ran the car





on the street this way for a year and a half at 25psi, and it just seemed easier to tune.” Other pieces used are a pair of MSD HVC ignition boxes, combination of MSD coils and stock coils, and a B&M NuVolt to raise the voltage to 22v.

Everywhere you look on this car, you see meticulous detail. Since the car is driven on the street, Ralph didn’t want something that would rattle his teeth. He opted for adjustable HKS coilovers, which give the car a very livable feel on the road. Paired with that are Cusco strut tower braces to keep everything square, and Racing Beat sway-bars front and rear. Stopping a car with this much power can be a chore, Ralph uses Brembo rotors and Hawk pads on all four corners. The wheels of choice are Mehrak MK Sport alloys, 8.5x19” front and 10x19” rear rolling on Pirelli P-Zero rubber. A Kaaz differential helps put all the power to the ground, as well as a MazdaSpeed twin-disc clutch.

An aspect missing from most RX-7’s is a stereo, instead most owners opt for a spartan interior to save every possible ounce. But with this kind of power, what’s a few extra pounds? Apparently Ralph likes to hear notes other than just a raspy rotary at 8,000 rpm’s, his car is sporting a show-quality mobile entertainment system as well. For the fabrication Ralph turned to Chris Church of Stereo King. The core of the system is the Alpine CD player and DVD player. A 6.5” Alpine LCD monitor is mounted on the dash, and in addition to movies can display the output from his Power FC and FJO wideband. MB Quart 5 1/2” coaxials fill the front doors, with a MB Quart tweeter on the a-pillar. Behind the seats, two MTX 10” subs have been mounted in a custom formed fiberglass and 1/2” MDF enclosure, all covered with a custom vinyl-wrapped trim piece. The floor of the hatch area was rebuilt with 1/2” MDF and fiberglass, to which a pair of MTX amplifiers are mounted. Finishing off the install are a pair of MB Quart 4” coaxials powered by the head-unit for rear fill.

Of course no car this caliber would be complete without proper attention to the exterior. Ralph chose a full C-West body-kit, with custom treat-



ment to the nose, molding out the front signal lights. Side skirts and rear bumper were also molded into the car for a seamless appearance, and the entire package was finished off with charcoal grey paint, with a hint of blue pearl. The car comes together into one stunning package.

Ralph described the car as a R&D testbed. "We try a lot of new things with this car, I've learned a lot about how to tune other customers cars from this project." And from talking with him, it sounds like the project is still ongoing. Groundzero Motorsports is right next door to Pineapple Racing, another respect rotary engine builder and tuner, and together they work on many innovative pieces. Ralph says that he likes to put new things on the car, and let his son, Bryan, test them out on the road. "He's a great driver, if he comes back with a smile on his face, then I know I'm onto something good."

Sounds like Father and Son are having a ball with the car. "I just get barrels of race gas delivered to my house, so I can open it up whenever I want." And after talking with Ralph about his creation, I can say that his attitude is inspiring. Ralph almost giggles just thinking about how much fun the car is, but like any hardcore tuner, the work is never done. I'm personally looking forward to more good things from Ralph and the crew at Groundzero.

### Special Thanks:

Chris Church at Stereo King; Rob at Pineapple Racing



**Atkins Rotary.com** **CAMDEN SUPERCHARGERS**

- >Engine Rebuild
- >Parts
- >Performance
- >Stock Parts
- >Race Applications
- >SuperChargers

**And More**

**NEW ROTARY OVERHAUL VIDEO AVAILABLE!**

**16715 Meridian East Bldg K-A Puyallup, WA 98375** **(253)-848-7776**  
**Info@AtkinsRotary.com**