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DSport

IMPORT PERFORMANCE + TECH MAGAZINE

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INTAKE SHOOTOUT
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WHAT FLOPS?



THE CARS

ALL-MOTOR S2000
JDM CLASS-WINNING CIRCUIT S2000
CIRCUIT CHAMPION
500+ WHP STI SEDAN
MARQUE OF THE Z
4-VALVE L28 IN OLD SCHOOL 240Z

THE TECH

INTAKE SHOOTOUT
CROWNING THE KING OF THE CUBES

T&T: '06 CIVIC SI
HEADERS & CAMS NET 20+ WHP

D-SPEC LEVEL UP
MAZDA2 HITS THE NEXT LEVEL

D'GARAGE '11 LINEUP
WHAT'S HERE, WHAT WE HAVE IN STORE

THE SCENE

FORMULA D: RD 1
DRIFT SEASON STARTS WITH A TWIST
PODIUM LITTERED WITH V8s

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ALEXIS KOBAYASHI

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THE OBJECTIVE WAS TO IMPROVE THE L28 TO SURPASS THE PORSCHE'S PERFORMANCE

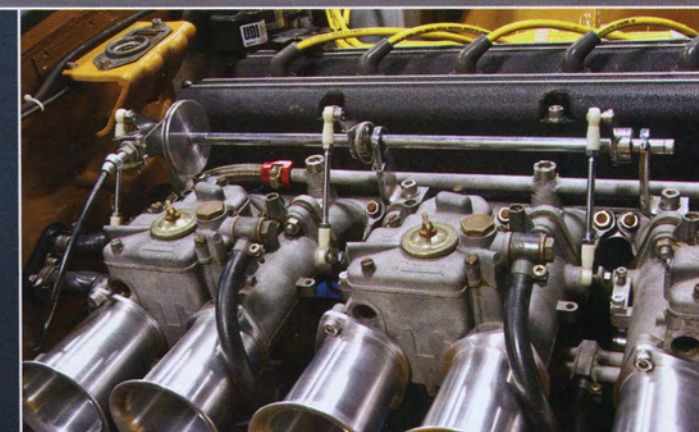


MARK OF THE Z

A Forgotten Challenge Sparks The Rebirth Of This Iconic Legend

Text and Photos by Richard Fong

THE BEST FOR LESS. This desire to offer the best sportscar performance for less money is what drove Nissan's engineers in the 1960's as design concepts came flying off the drafting boards. In 1969, the Nissan S30Z debuted on Japan's showroom floors, the first with the "Z" designation. The design, which introduced the Fairlady Z namesake, featured a 2-liter inline six-cylinder engine with a single over-head camshaft. A five-speed manual





Weber carburetors mate to the head by way of OS Giken aluminum adapters, while Tomitaku's custom linkage synchronizes the carbs to a single throttle cable.

transmission accompanied the 150 horsepower mill as the standard driveline for the rear-wheel drive hatchback. The next year, this model came to American shores as the Nissan 240Z. Various changes and designations were made and by 1978, Nissan's Fairlady 280Z sported a 2.8-liter, single-cam inline six-cylinder engine. Known as the L28, this enlarged mill generated approximately 168 horsepower.

A Rare Gem

The legendary heritage of Nissan's Z is shared with another motorsports legend, OS Giken's president Osamu Okazaki. Okazaki designed the TC16-MAll cylinder head for the Datsun 510 Blue Bird in the early 1970's. This cylinder head featured a pent roof-style combustion chamber and four-valves per cylinder. These TC16-equipped Blue Birds were making around 232 horsepower and were practically unchallenged on the streets of Japan. In the late 70's, Okazaki took it upon himself to improve on the L28 engine of the

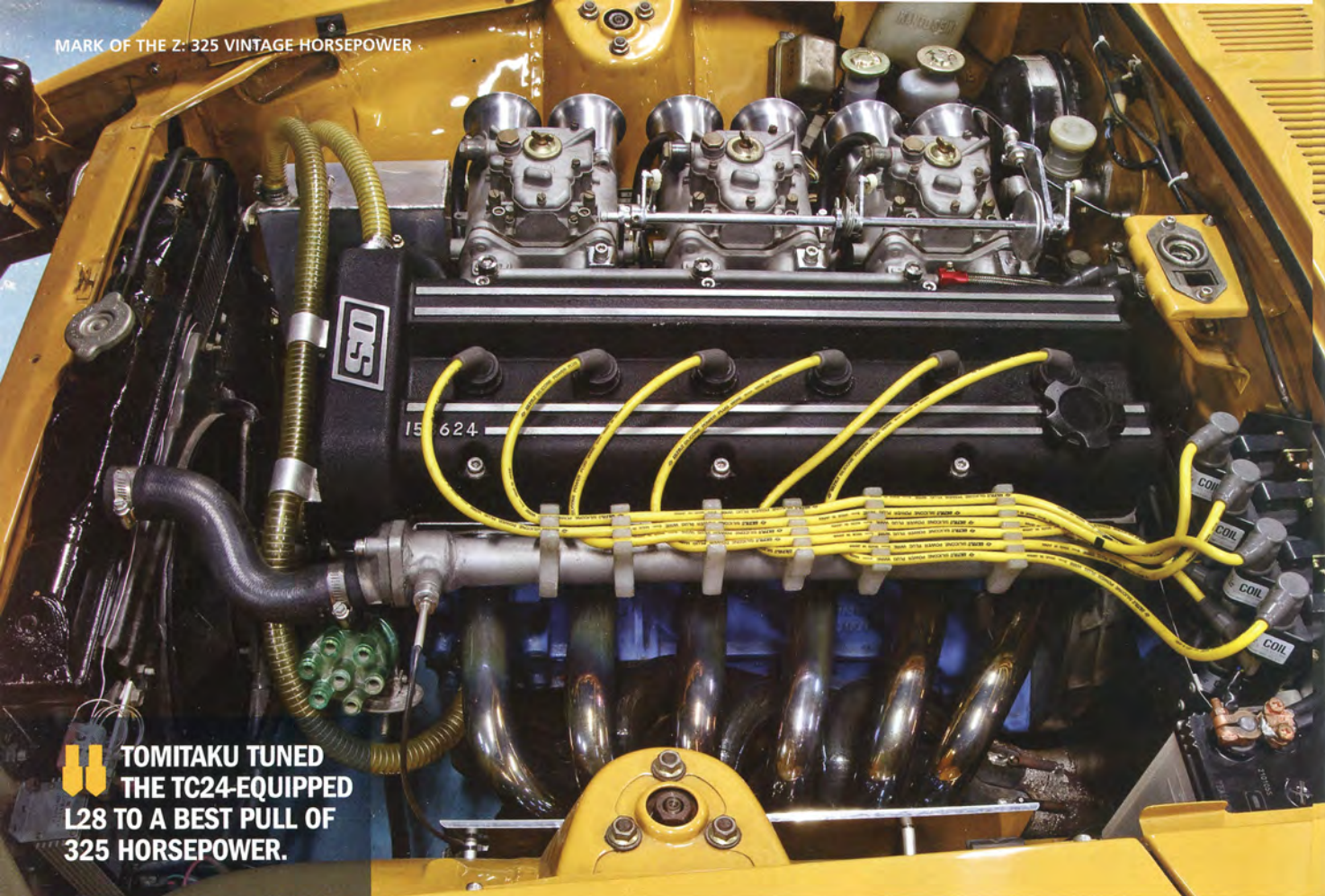
280ZX. The performance benchmark of the time was the 1977 Porsche 930 Turbo, and the objective was to improve the L28 to surpass the Porsche's performance. Okazaki designed a new cylinder head for the L28, dubbed the OS Giken TC24-B1. The total number of heads manufactured was nine. Even so, the heads were sold and promised power was delivered but the comparison between the Z and Porsche didn't happen. At the time, 930 Turbos were exceptionally rare in Japan, making a heads-up comparison difficult to arrange.

Challenge Revisited

Takuya "Tomitaku" Tomimatsu, one of OS Giken's top engineers, has a love for the classics; especially the Fairlady Z. Tomitaku uncovered a veritable treasure trove in an OS Giken warehouse, including a forgotten TC24-B1 cylinder head among other L28 racing components. Not long after, he was reminded of Okazaki's old challenge objectives as he reminisced with classic

OKAZAKI TOOK IT UPON HIMSELF TO IMPROVE ON THE L28 ENGINE OF THE 280ZX





TOMITAKU TUNED THE TC24-EQUIPPED L28 TO A BEST PULL OF 325 HORSEPOWER.

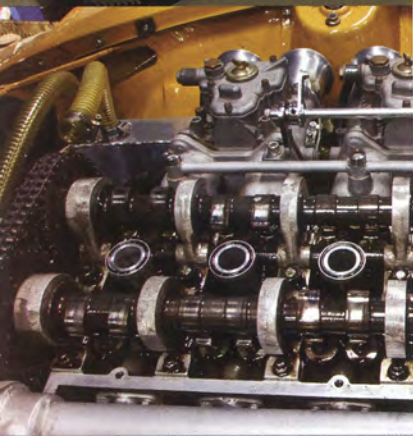
cylinder and Okazaki's pent-roof combustion-chamber design.

Fab Fanatic

Tomitaku's fabrication ability made the build process much smoother, especially since there are few companies that manufacture performance parts for the L28. Induction duties fall on the shoulders of a set of Weber carburetors synced with custom linkage and a custom fuel delivery system. An Ultra CDI dual ignition system supplies the spark energy to the NGK plugs for combustion. On the exhaust side, Tomitaku designed an equal-length stainless-steel header and exhaust system to channel spent gasses to the rear. When rocking the rollers, Tomitaku tuned the TC24-equipped L28 to a best pull of 325 horsepower.

More Than Just Horsepower

A full complement of OS driveline components harness the power of the refreshed and rebuilt L28 engine. An OS R3A triple-plate



car aficionados. He then became obsessed with comparing the 930 Turbo to a Z with a TC24-equipped L28. Given the rarity of the challengers, he had his work cut out. After finally locating and restoring a 1979 Porsche 930 Turbo to factory fresh condition, Tomitaku found a 1974 240Z chassis to build upon. He began building his 240Z contender in the quest to see the challenge come to fruition.

Prize Fighter

Tomitaku wasted little time sourcing an L28 block, the cornerstone of the engine bay. A six pack of OS Giken (OS) 12.5:1 compression forged aluminum pistons filled the cylinders while a set of Tomitaku's own custom-made connecting rods join the pistons to the factory L28 crankshaft. Up top, Tomitaku's custom-made head studs secure the TC24-B1 cylinder head to the block. Long-duration 320-degree camshafts actuate the valvetrain, making best use of all four valves-per-

The TC24-B1-equipped L28 features Ultra CDI ignition coils supplying spark energy to the NGK plugs. Tomitaku fabricated an equal-length stainless-steel header to channel exhaust gasses through a custom exhaust to the rear of the chassis.



(Left) OS Giken's President Osamu Okazaki humbly reminisces about the TC24-B1 development. (Above) He rarely speaks of his personal challenge to beat the 930 turbo, which only a select few in the racing community know or speak of.

OS Giken's TC24-B1 - Proving That Four Are Better Than Two

Nissan's six cylinder, 2.8-liter L28 engine came from the factory with two-valves per cylinder and a wedge-shaped combustion chamber. OS Giken's TC24-B1 cylinder head features dual overhead cams, a pent-roof combustion chamber and four valves-per-cylinder. The volumetric efficiency of four valve-per-cylinder technology along with the pent-roof's combustion chamber quench pads that improve air and fuel mixing and combustion prove an effective combination, elevating the L28 horsepower output. In Tomitaku's case, nearly double the horsepower was generated.



clutch mated to the crankshaft transfers power to the input shaft of an OS SR20DET 5-speed close-ratio gearset. A custom propeller shaft turns an OS R180 Super Lock LSD that splits the power between the RS Watanabe wheels. Vintage Nissan "Sports Option" Mk63 4-piston brakes replace the factory pieces for improved braking performance while Energy

**OF THE NINE TC24-B1 HEADS THAT WERE MANUFACTURED...
...TOMITAKU IS ONE OF THE LUCKY OWNERS**

Suspension bushings and Tokico HTS dampers keep the Yokohama Advan tires planted.

The Verdict

With his S30 build completed, Tomitaku finally had the chance to make Okazaki's personal challenge a reality. He evaluated the S30 and the 930 turbo on the dyno, the drag strip and the street. Tomitaku noted that the S30 bested the benchmark Porsche by 25 horsepower on the dyno and over half-a-second in the quarter mile, validating Okazaki's design and answering the challenge question. Tomitaku comments, "The built L28 with the TC24-B1 cylinder head exceeded the 3.3-liter Porsche engine output without turbocharging and propelled the S30 down the quarter mile in under 12 seconds. Okazaki-san successfully achieved his goal of beating the Porsche. Admittedly, the 930 turbo is a more refined chassis to drive on the streets, but it is more exciting to drive the Z."

Of the nine TC24-B1 heads that were manufactured, many were raced and have since fallen into the depths of obscurity. Only three functioning examples are known of in Japan and possibly in the world, and Tomitaku is one of the lucky owners. He even maintains the other two, keeping them on the road and the racetracks. He was proud to be able to finally bring closure to a challenge that was posed over 30 years ago, showing Okazaki that he succeeded in his venture. Whenever asked about the challenge outcome, the humble and reserved Okazaki just smiles with a hint of pride. 📌

Nissan "Sports Option" Mk63 Brakes

Before Nissan Motorsports International (NISMO) ever existed, Nissan performance fanatics had but a few performance options available from the factory. One upgrade was known as the Nissan "Sports Option" Mk63 brakes. These Sumitomo four-piston calipers were the FIA-approved design that could be found on most of the works 240Z and 260Z rallycars, works circuit cars as well as Skyline, Sunny and Violet race cars. The upgraded calipers employ larger brake pads that offer 50% more pad area than the stock units.



Takuya "Tomitaku" Tomimatsu makes a cameo appearance with his Fairlady.



DEFI gauges, including an 80mm tachometer, fit perfectly in the holes and put a modern twist on a classic dash.

SPEC SHEET

VEHICLE

| | |
|----------------------|------------------|
| Year / Make / Model: | 1974 Nissan 240Z |
| Chassis Code: | S30Z |
| Vehicle Weight: | 2,156 lbs. |
| Weight Bias (F/R): | 51/49 |
| Launch RPM: | 3,000 RPM |
| Shift RPM: | 9,100 RPM |
| Redline RPM: | 9,100 RPM |
| Fuel: | 97-octane |

ENGINE

| | |
|-------------------------------|---|
| Engine Code: | L28 |
| Displacement (cc): | 2,870cc |
| Bore & Stroke (mm): | 87.8mm x 79mm |
| Peak Horsepower (@ RPM): | 320whp @ 7,400 RPM |
| Peak Torque (@ RPM): | 246 lb-ft @ 6,100 RPM |
| Pistons / Compression Ratio: | OS Giken 12.5:1 compression Forged-Aluminum Pistons |
| Connecting Rods / Crank: | Tomitaku Billet-Steel Connecting Rods/ Factory Crankshaft/NISMO Bearings |
| Machine Work: | Tomitaku |
| Camshafts: | OS Giken 272-degree, 11mm lift (IN&EX) |
| Valves / Springs / Retainers: | OS Giken Valves, Springs & Retainers |
| Cylinder Head Mods / Gasket: | OS Giken TC24-B1 Race Head L28 1.2mm Head Gasket |
| Head / Main Studs: | Tomitaku Custom Head Studs |
| Fuel Delivery: | Weber 2-Barrel 55mm Carburetors (x3) Tomitaku Custom Fuel Delivery |
| Ignition: | Ultra C.D.I. Dual Ignition System |
| Spark Plugs: | NGK-R D9EVX |
| Exhaust Manifold: | Tomitaku Custom Header |
| Exhaust System / Downpipe: | Nagase Engine Works/Tomitaku Custom Exhaust |
| Oil System: | Tomitaku 16-Row Oil Cooler Tomitaku Oil Catch Tank |

CHASSIS/DRIVELINE

| | |
|-----------------------------------|--|
| Springs F&R (Make & Rate): | Nissan Race Springs |
| Shocks F&R (Make & Rate): | Tokico H.T.S. Dampers |
| Additional Suspension Components: | Energy Suspension Bushings - Full Kit |
| Transmission: | OS Giken SR20 Close-ratio Gearset |
| Transmission Gearing: | 2.717, 1.722, 1.232, 1.000, 0.835 71B Transmission Case |
| Final Drive: | 4.111 |
| Clutch / Flywheel: | OS Giken R3A Triple-plate Clutch |
| Differential Type: | OS Giken Super-Lock LSD R180 |
| Wheels (Make, Size & Offset): | RS Watanabe 15x7-inch (F), 15x8-inch (R) |
| Tires (Make & Size): | Yokohama Neova 195/55R15 (F), 215/50R1 |
| Brakes (Front & Rear): | Nissan Race Option Mk63 |

INTERIOR

| | |
|------------------|----------------------------|
| Roll Bar / Cage: | Cusco 4-point Bolt-in Cage |
| Seats: | Autolook Bucket Seats |
| Gauges: | DEFI Gauges |

EXTERIOR

| | |
|-------|--------------------------------|
| Hood: | Restored Co. Carbon-fiber Hood |
|-------|--------------------------------|

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| | | |
|-----------------------------------|---|-------------------------------------|
| Restored - Japan +0859.30.2199 | Nissan Motorsports International (NISMO) USA 800.647.7261 | RS Watanabe Wheels +0120.8.11562 |
| Cusco USA 714.907.0033 | Office Tomitaku www.tomitaku.com | Yokohama Tire Corp. 714.870.3800 |
| Energy Suspension 949.361.3935 | OS Giken USA 310.243.1349 | |

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Driven by Nissan

From: Anthony K.

To: inbox@hardmediainc.com

HI DSPORT. I JUST WANTED YOU TO KNOW I think DSPORT is full of useful info, hot models and phenomenal cars. Stories like the KA/SR shootout give me hope and inspiration to build my own cars. I'm a Nissan guy; my first car was an '81 S130 N/A 2+2 and since then I've owned two 280ZXs, two 280ZXTs, a 300ZXT, and two S13s. I've really been hoping that you guys would feature some of the older performance cars, particularly Zs. It would be great to see an S30 or S130 since my budget doesn't let me create the project I would like and I have to settle for seeing an example of someone that can. I'm currently trying to build another older Nissan and could use some pointers or general opinions. I have a few ideas but build progress is slow so any info or response is appreciated. Thank you and congratulations on your 100th Issue!

Hello Anthony and thank you for the accolades. We strive to give you the best possible magazine every month and we're glad our efforts are not unnoticed. We think you'll be particularly excited about the OS Giken car featured in this issue – a classic Nissan at its finest. Also, the return of the KA/SR shootout is just around the corner. We hope that and the rest of the pages in the book are inspirational enough for you to continue your project build.

Tech 101 Homework

From: Devin R.

To: inbox@hardmediainc.com

FIRST OFF, LET ME SAY; I LOVE the magazine. I know you hear that all the time but it is the best import magazine out. Anyway, after reading the TR Transmission 101 section in the Tech 101 Issue and reading about close-ratio and wide-ratio transmissions, I'm still trying to figure something out. I'm targeting 400 whp in my '95 Eclipse GS-T. I'll be running an LSD to help put down the power, but I've also been told that the equal length half-shafts of the AWD transmission will help reduce wheel hop. The AWD transmission has lower gear ratios than the FWD transmission, and the Tech 101 issue states that lowering the ratio of first gear will transfer less torque to the wheels. Would the LSD and the AWD transmission combination help me keep traction and put my projected 400 whp on the ground?

Hi Devin. We're glad to hear that you've found our Tech 101 Issue (April 2011 #101) useful as a reference for your build – that's exactly what we intended it to be. Hopefully, you'll find more information the further along you get in your project. Generating 400 whp in a GS-T will result in EXTREME difficulties in getting the power to the ground. Your best bet is to find a GS-X and harness the AWD traction advantage. If you're married to the GS-T, the equal-length half shafts and an LSD are a must. The actual gearing in the transmission isn't going to be much of a factor, as you are going to be spinning your tires much of the time under WOT operation. Instead of spending time on the transmission gearing, invest in some sticky tires. Either an R-compound or a DOT-legal drag radial would be the hot ticket depending on the use that the vehicle will see. If you are determined to play with transmission ratios, understand that lower gears (with higher numeric values) increase torque at the wheels while higher gears (with lower numeric values) decrease torque to the wheels. Good luck.



ARE THERE ANY questions keeping you up at night? Is there just something you would like to say? Email us. If you include a high-resolution picture, we'll print it with our response. Send emails to INBOX@hardmediainc.com.