

Orient Express

2002
Nissan Z



April 2000 - August 2000 Issue 79

Front Cover
Could this be the NEW Z
"Will it inherit the mantle of the 240"



Club Patron :

We are honoured that our club patron is: Steve Millen

Executive Committee:

President:	Julie Pepper	(09) 483 7477
Vice President:	Paul Hansen	(09) 298 5919
Secretary:	Steve Chong	(09) 428 1117
Treasurer:	Rob Chubb	(09) 443 0822
Club Captain:	Hugh Pepper	(09) 483 7477
Social Co-ordinator:	Jonathan Cameron	021 734 860
300ZX Owners Club Representative:	Rowan Hick	021 468 300
Z-Challenge Co-ordinator:	Dee Collins	(09) 636 5443

Technical Advisors:

Auckland:	Greg Gillespie	09) 410 9689
Wellington:	Don McLean	(04) 479 6133

For 90+ 300ZX advice, phone Rowan if you want to be pointed in the right direction.

Magazine Team:

Editor	FloodGate Flexo
Assistant Editor	Paul Hansen

And many thanks to this issues contributors



Please send all magazine articles - adverts etc to Paul Hansen

Please ensure data is sent as email, on disk, actual magazine pages or at the least, typed.

Web Site:

<http://www.zclub.org.nz>

eMail:

hansenhouse@xtra.co.nz

The views expressed in the "Orient Express" are those of the contributors, and do not necessarily reflect the views of the Datsun Z Club Inc., unless stated as a point of policy. The Datsun Z Club Inc. accepts no responsibility for the information or advice given in the "Orient Express" or by club officials or committee. Readers should exercise their own judgement when considering technical matters and modifications affecting their vehicles. It is recommended therefore that if in doubt on any technical matter, owners should consult the official workshop manual for their particular model

Club Events Calendar :

Sunday 20th August

Brunch Refinery Cafe 10.00am
Bookings to Julie Chelsea Business Park or Jonathan or just turn up
Mokia Road, Birkenhead
(old Birkenhead Trust Hotel, near Foodtown)

Sunday 20th August

Trial (Auckland area) Refinery Cafe Noon *Z Challenge Event
Meet & start from Refinery Cafe, Birkenhead

Saturday 16th September

Annual General Meeting & Prize Giving Dinner
Bronze Goat 6.00pm
101 Ponsonby Road, Auckland
(Dinner Tickets from Julie or Paul)

No further reminders will be sent about the above functions so mark your calendar now. It would assist our Social Co-Ordinator with reservations if you indicated your attendance prior to the function.

Race Events Calendar :

3rd September 2000

ClubSport Sprint Manfeild WIMSA 'The Surgery'

17th September 2000

ClubSport Sprint Pukekohe Capri Car Club & SCCNZ

7th October 2000

ClubSport Sprint Manfeild WIMSA 'The Surgery'

23rd October 2000

ClubSport Sprint Taupo Capri Car Club & SCCNZ

24th - 29th October 2000

Tarmac Rally North Island TARGA
(Any volunteers available? we need stage and block marshalls)
- contact Ron Frew
ph 07 824 7143, fx 07 824 5356, email floodgte@wave.co.nz

18th November 2000

ClubSport Sprint Taupo Capri Car Club & SCCNZ

3rd December 2000

ClubSport Sprint Manfeild WIMSA 'The Surgery'

??? January 2001

RACE DAY Pukekohe Datsun 'Z' Challenge

Advertising :

Do you want to advertise your services or products in the Orient Express?

Reach your Target market! 250, that's right, 250 magazines are printed every issue. That means atleast 250 Z owners reading your advertisement.....

Costs

Full Page	\$50 per Issue
Half Page	\$25 per Issue
Quarter Page	\$15 per Issue

Note: This is Negotiable for 3 or more Issues.

Contact Paul Hansen

Membership List

Have you ever wondered if there were other Z Club members in your city or suburb, or members local to you with a similar car? Well, soon enough, you will be able to find out because we propose to publish a membership list in the next issue of the Orient Express. But first, we need your permission, so if anyone does not want particular details to be published, please contact the club secretary - Steve Chong.

He can be reached on:
mobile 025 421 653
ph 09- 428 1117
email schong@xtra.co.nz

or write to us at
Datsun Z Club
P.O. Box 2124-176
Royal Oak
Auckland 1030.

Here is what we are intending to publish:

Name
Phone Number
City/Town/Area of Auckland
Type of car
email address if applicable.

What will not be published:

Your street address.
The registration plate of your car.
How many times you've lost control of your car.

Welcome New Members

We are pleased to say WELCOME to the following new members, and we'll be even more pleased to see you all at the upcoming events (social or racing). Make sure to check our coming events calendar for details and come and meet all the other strange people who own Zeds or who are interested in them.

Bevan Sutton	Auckland	Mazda 323 trurbo
Bob McCarthy	Auckland	260Z
Margaret Campbel Ireland	Auckland	260Z
Ross Cole	Auckland	300ZX
Dave Price	Rotorua	240Z
Andrew Leach	Auckland	260Z
Ted Burton	Auckland	240z
Christina Phillips	Hamilton	240Z
Phil Smurthwaite	Auckland	Nissan Silvia

Coming Issues:

Remember the fascinating series of articles by Clemens who prepared his second generation 300ZX for racing? Well, in the coming issues we'll feature Mike Thompsons car, a second generation 300ZX twin turbo which started life as a standard piece of machinery with about 130Kw at the wheels, and has passed the 200kw mark and is still climbing, power wise of course!

This is a road car, a "daily driver's car"

Follow its progress in the coming articles.

Problems with your mail !!!!!!!

A number of members have reported problems with our club P.O. box, ie they have sent mail to P.O. Box 24-176 Royal Oak, Auckland 1030, only to have their mail returned with the message "no such box" by New Zealand Post.

This seems real odd to us, as we have checked our mail box, and we are receiving mail through it, and we are not owing any money for its rental.

So if you are having problems, please contact Paul Hansen at 33 Rushgreen Ave, Papakura, Auckland or 09-298-5919 or email hansenhouse@xtra.co.nz. <<mailto:hansenhouse@xtra.co.nz>>
Please advise the specifics of the mail problem to Steve Chong, 6B Duncansby Rd, Stanmore Bay, Whangaparaoa or Phone 09- 4281117 (day/evening) or email schong@xtra.co.nz

300ZX Club update:

For the benefit of members who have joined recently, here is a quick rundown on the 300ZX club and an update on its activities.

The 300ZX club is mainly an internet based club providing support which tends to focus on the 1989 on 300ZX. Quite a number of our club members are also members of this club. As with the Datsun Z Club, you don't have to have a Z car to join. Enthusiasm and passion (for cars) is the main requirement. To participate in this club effectively, you need to have internet access and preferably an email address. To join up, go to the club's mailing site at <http://www.egroups.com/group/nz300zx/info.html> and follow the instructions there.

The club has some 80 members, including some from Australia and USA. Although most of the members live around Auckland, about 15% are spread around the country- Whangarei, Hamilton, Ohope, Wellington, Christchurch, Dunedin.

Amongst its activities are: participation in Datsun Z Club events, organising social events, drives, bulk buy discounts- both local and overseas purchases, providing 1989+ 300ZX maintenance and modification advice.

Almost all of its activities and events are organised in a time frame of one or two days, - see the article "Can you participate on an internet mail list server" elsewhere in the issue.

If you want to know more, please contact Rowan Hick at email address rowan@sonic-motorsport.com

300ZX (1989 on) Parts List on CD ROM

Ever wanted to find the Nissan part number of a component on your late model 300ZX? That sort of information can be very useful these days, since you can order parts from many sources, including overseas, and also via the Internet.

While some parts can be cheaper from your local Nissan Dealer, others can be 1/2 the price, postage included, if ordered from the USA.

One of our club members, Chris Calvert of Christchurch has been able to locate a small number of CD ROM's which contains all the parts information for the late model 300ZX, and is prepared to pass a few onto club members at cost (\$24 including postage).

Of course you will need a computer with a CD ROM drive to view the information, as well as an application program called "Acrobat Reader", which converts the information on the CD ROM and displays it. Acrobat reader is produced by a company called Adobe, and may be downloaded from the internet for free. The download site is <http://www.adobe.com>

If you are interested in acquiring this CD ROM, please contact Chris on:

Ph: 03-349 8182 evenings

email chrisc@bcl.co.nz

Nissan presents the first-ever authorized die-cast collectible of the sports car that took America by storm.

D A T S U N[®]
240Z[™]

HAND PAINTED. HAND ASSEMBLED.

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To acquire it, just call 1-800-THE-MINT

The 240Z measures 6 1/2" (16.51cm) long by 2 1/2" (5.72 cm) high. Scale 1:24.



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The collector's choice in Die-Cast.

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Official
Datsun Z Club
Clothing
FOR SALE

Style / Article	Sizes available	Colours	Price
Tee Shirts	M, L, XL, XXL	White, Blue, Red	\$18
Polo Shirts	M, L, XL, XXL	White, Blue, Red	\$25
Sweat Shirts	M, L, XL, XXL	White, Blue, Red	\$40
Jackets	M, L, XL, XXL	Black, Blue, Red	\$75
Badges		Traditional	\$10

These quality items have been embroidered with the clubs emblem and are great value. We've done a limited run so you'll have to be quick! Send a cheque (please add \$2.50 for postage), make cheque payable to Datsun Z Club Inc:

Datsun Z Club Inc, PO Box 24 176, Royal Oak, Auckland

OR buy these items at the next club event, ask for Julie Pepper



THE TYRE COMPARISON PAGES

Using special street legal competition tires that meet the U.S. Department of Transportation (DOT) standards is not only permitted in some classes of competition, it is virtually required to win.

And even for less competitive driver's schools and track days, competition tires are still frequently the tires of choice because they allow the driver to preserve his street tires for the street (or for occasional use on a wet track).

Without a doubt, today's DOT legal street competition tires can outperform all other real street tires when it comes to going fast! These tires are less compromised as they focus on providing more performance.

For DOT legal street competition tires:

Delivering more miles is replaced by delivering more smiles.

Delivering a smooth ride is replaced by delivering instantaneous response.

Delivering traction in all weather conditions is replaced by more grip the dry.

To get a better picture of the performance provided by these DOT legal tires we tested the BFGoodrich Comp T/A R1 and the Yokohama A032R, in the 225/60R16 size on stock (not just stock class...but absolutely stock) BMW 325i cars. We elected not to include the **Hoosier A3SO2 or R3SO2** radials because we feel that they would have been at a disadvantage due to the stock nature of the cars (the Hoosiers seem to come into their own when wide wheels and the vehicle tuning allowed by the more liberal classes has been exploited).

FALKEN

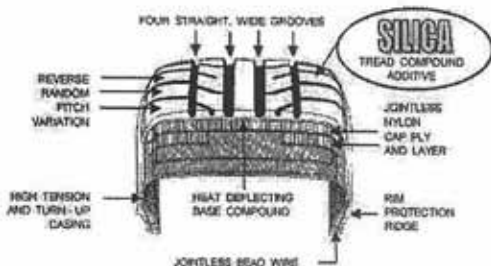
TIRE

The all new GRB II eclipses the GRB to become the "top of the line" Falken Tire New angle tread blocks increase water dispersion for pin-point road handling.

Revolutionary new "silica" tread compound provides extreme road handling ability, with greater adhesion in both wet and dry conditions.

Toe to Toe,
the GRB II
pursues the
better course
in "Ultra High
Performance"

UTQG
- 200AA



Hoosier A3SO2



Falken GRB II





PZero System

PZero Asimmetrico (Asymmetrical)

PZero Direzionale (Directional)

The PZero system is a revolutionary new concept that combines two different tires from a single design concept, for use in tandem or separately, according to the type of car, conditions of use and driving style. This new System heightens performance; in the dry and especially in the wet. Currently used on some of the fastest cars in the world, such as Lamborghini, Ferrari, and the Porsche 911 Turbo.

PZero Asimmetrico (Asymmetrical) - This tire represents the most complete and advanced answer to power control and transmission of torque to the road surface, with specialized features for the maximum in high cornering forces.

PZero Direzionale (Directional) - A front position tire that solves the problem of wet surface roadholding and aquaplaning for high performance cars fitted with wide section width front tires.

Configuration Options:

Directional Front - Asymmetrical Rear For high speed use in variable conditions of wet and dry. This configuration is particularly suited to mid- or rear-engine cars, front engine or rear drive axle cars with up-rated wide section wheels and tires.

Asymmetric Front and Rear For high speed road and/or track use, where the requirement for dry surface performance may outweigh the demand for maximum resistance to hydroplaning in normal use. This configuration is well suited to cars with medium to narrow section front tires and is a must for front wheel drive cars and four wheel drive cars. **UTQG 140AA**



Potenza S-02 Pole Position

Currently, the S-02 is the Potenza butt-kicking, take-no-prisoners max performance tire. For example, the Potenza S-02 is original equipment on the Porsche 911 Turbo.

In the dry, the performance of the S-02 gets better with wear. However, with wear the tire's performance in the wet diminishes. To counter that problem, Bridgestone has developed the S-02 Pole Position. While still governed by the laws of physics, as the tire wears its wet-weather capability is maintained for a longer period of time. Although the tread patterns are similar, the Pole-Position uses technology developed for Formula 1, specifically Long Link Carbon. The Potenza S-02 is covered by Bridgestone's Platinum Pact Warranty. **UTQG 180 AA A**

PZero Asymmetrical



PZero Directional



Pole Position S02





Pilot Sport

Tire Test Results The Pilot Sport is Michelin's new flagship Max Performance tire, a position it achieves through new technology. The Michelin Pilot Sport is designed to be different than the Pilot SX MXX3 in that it also extends the capabilities of exotic and ultra high performance cars and their drivers in the wet, while providing progressive handling, exceptional feedback and refined road manners.

For several years, the Michelin Pilot SX MXX3 has been one of our favorite Max Performance tires for use on dry roads. For that matter, sometimes the Pilot SX MXX3 have been referred to as tires which were capable of providing the performance of racing slicks that had rain grooves cut into them. And while Pilot SX MXX3 tires consistently lived up to their reputation by running many of the fastest lap times of our dry test course, their dry road excellence wasn't balanced with the ride comfort and wet traction.

One of the most obvious features of the Pilot Sport is its directional tread design, or should we say, tread designs. All Pilot Sport tires feature a continuous circumferential center rib flanked by one of two directional tread patterns. Tires in sizes of up to 265 millimeters of section width feature a "V" shaped pattern, while tires of 275 millimeters of section width and wider feature a "W" shaped tread pattern. The continuous center rib sharpens steering response and provides communicative road feel while the swept back lateral grooves efficiently evacuate water from under the contact patch to resist hydroplaning and enhance wet traction, while reducing tire noise on dry roads.

Pilot SX MXX3



The Pilot Sport's tread designs are supported by two belts made of high-tensile, lightweight steel cords which are further reinforced by size optimized, spirally wrapped nylon cord utilizing BAZ (Banded At Zero) Technology to improve quick steering response and resist distortion while they enhance ride quality and high speed durability. Ultra-reinforced sidewalls promote powerful cornering, while Michelin's cable beads help maintain the ideal shape of a running tire for better tire/wheel uniformity.

UTQG 220 AA A

The Pilot SX MXX3 is an Ultra High Performance Z speed-rated tire offering progressive handling with maximum responsiveness on dry roads and superior wet traction for the most demanding owners of the worlds exotic and ultra high performance sports cars. Used as original equipment on the BMW M3, Bugatti, Ferrari, Porsche, and the Toyota Supra Turbo.

UTQG 140AA

	Treadwear	Traction	Temp		Treadwear	Traction	Temp
Hoosier A3SO2	40	A	C	Pilot SX MXX3	140	A	A
Proxes RA-1	40	A	A	PZero Asymmetric	140	A	A
Kumho V700	50	A	A	PZero Direct	140	A	A
Yoko A032R	60	A	A	Pole Pos SO2	180	A	A
Comp T/A R1	60	A	A	Falken GRB II	200	AA	A

Road & Track's rendition of the Next Generation Z,
by Steve Eastwood



Other Wannabe renditions of the Next Generation Z



Jose M. Alonso ©



Fairlady 250Z Turbo

NOTICE OF

Annual General Meeting

OF THE DATSUN Z CLUB (Inc)



WHEN

SATURDAY

16th SEPTEMBER 2000

6.00PM SHARP

WHERE

THE BRONZE GOAT RESTAURANT & BAR

108 PONSONBY ROAD,

PONSONBY

(UPSTAIRS PRIVATE FUNCTION ROOM)

The business to be conducted and the order of business is as detailed in the Constitution and Rules of the Club.

The following will give you some indication of the issues that will be raised or presented at the meeting:

- Voting in of new Executive & Committee Members:
(President, Vice President, Club Captain, Secretary, Treasurer, Patron plus 5 Committee members)
- Club's Financial Statements
- Subscriptions
- General Business

Note: Anyone wishing to:

- a) be on the Datsun Z Club Executive or Committee, or
- b) nominate someone to be on the Datsun Z Club Executive or Committee should complete and submit a nomination form by mail to the Secretary, or contact one of the current Committee members prior to the AGM and advise of any nominations or expressions of interest.

Nominations close 2nd September 2000

AFTER THE MEETING All members and partners are welcome to attend the Clubs Annual Prizegiving dinner. Cost of tickets for this is \$37.50 per head, this includes a quality 5 course meal and corkage. Restaurant is BYO or full licensed.

Tickets are available from Julie (021 854-406) or Paul (298-5919 eve).

This is your chance to have input into your Club

Due to the stepping down of some of the current Committee members, nominations and/or volunteers are needed (and would be appreciated) to fill the vacancies

MORSELS

A fellow called John A Briton called Michael Blake, who lives in Romford, Essex, bought an old black cab for family trips. But he soon had to sell it - he got tired of people hopping in at traffic lights and demanding a ride.

Across the Irish Sea, Sean Macey painted the number of his car on its wheels to deter thieves. He returned from shopping to find his roof rack had been nicked.

A Brazilian who robbed a funeral home escaped in a hearse - with a corpse for company. He told police he discovered the coffin and its woman occupant only when he opened the rear doors to toss in goods he had stolen from a service station.

Police in Preston, in Britain's north-west, put up a \$120,000 speed camera to snap errant motorists. The camera worked well, until someone felled it with a chainsaw and nicked it. Police will install another camera when the budget allows.

A fellow called Michael Blake, who lives in Romford, Essex, bought an old black cab for family trips. But he soon had to sell it - he got tired of people hoping in at traffic lights and demanding a ride.

A man who was caught stealing a car in Italy has been given a three-month jail sentence - from his hospital bed. He was recovering from injuries he received at the hands of the car's owner.



Datsun Z Club inc.

Executive Committee Nomination Form

In compliance with Rule 4, section 3 of the Constitution:

(Nominees for these Executive positions may be drawn from persons qualifying under Rule 3, Sections 1,2,3 and 4. *Nominations shall be made in writing to the Secretary not less than 14 days prior to the date of the AGM* and shall include the nominee's written acceptance of such nomination. In the event of no written nominations being received then, and only then, shall nominations be accepted from the floor of the AGM.)

NOMINATION FOR POSITION OF:

(Please Circle)

- President
- Vice President
- Secretary
- Treasurer
- Club Captain
- Patron

I/We _____ hereby nominate

For the position of _____ on the

Datsun Z Club Inc. Executive Committee.

ACCEPTANCE OF NOMINATION:

Signed: _____

Dated: _____



Must be recieved on or prior to 2nd September 2000

CUT HERE AND FILL IN BOTH SIDES



Datsun Z Club inc.

*Committee Member
Nomination
Volunteer Form*

NOMINATION/VOLUNTEER FOR THE POSITION OF:
(Please Circle)

- South Island Rep Central Region Rep
- Technical Advisor Social Co-Ordinator
- Magazine Editor Assistant Magazine Editor
- Webmaster Z Challenge Co-Ordinator
- Race Secretary Race Day Co-Ordinator
- Race Day Helper

I/We _____ hereby nominate

For the position of (to assist with)

on the Datsun Z Club Inc. Committee.

ACCEPTANCE OF NOMINATION:

Signed: _____

Dated: _____

Must be recieved on or prior to 2nd September 2000

MORSELS

A schoolteacher from Hamburg, Germany, who had to deal with congested traffic and impatient drivers every morning, painted angels all over his Volvo in a bid to keep drivers around him calm.

Police in Cheshire, England, had to be particularly observant at an accident the other day. The two cars which had crashed into each other were identical in make, model, colour, trim and age, and the drivers had the same house number.

The Government of Turkey, pitching to become a member of the European Union and stung by claims from home and abroad that Turkish police are beating up too many people, have asked police chiefs to trial a new stress test. Coppers will now go out on patrol listening to classical music from Mozart and Beethoven. Those who don't find the music calming can expect to be given other duties.

The Italian Government is worried more about road safety than its police force and is introducing tough new traffic laws. One, where couples caught kissing in moving cars face a \$500 fine, is proving fun to flout. A student body said it expected police to turn the other cheek.

A sign at the edge of a 100m cliff bordering a carpark in Canada says: "Going beyond this point will result in death and loss of driving privileges."

CUT-HERE-AND-FILL-IN-BOTH-SIDES



The Great Z Club Magazine Official Interview

(Z Club Member Profile)

Name: Chris Calvert

Date of interview: July 2000

Occupation: Business Computer Engineering Manager, Christchurch

Chris is also a member of the 300ZX Club, and the Internet Z Car Club (USA)

● Tell us about your Zed

I have a 2+2 auto TT manufactured in October 1990.

● History of the Car?

I bought the vehicle 2½ years ago in Auckland. It spent the next few months in and out of the garage as the results of typical Japanese maintenance. Eventually it ended up with another engine and costing me heaps. Had a good few months during which boost jets (a device which increases the turbo boost), a K&N air filter and a new exhaust system were fitted. Then brake failure cost me another few months off the road after which the brakes received new Ultimate brand pads, stainless steel pipe leads on the front (new rubber leads on the rear), Brembo slotted rotors, Motul 600 fluid and a brake stop.

I also imported a set of 245 x 16 inch rims from the US for the rear which now sport Toyo T1-S - fronts to follow later. I also fitted a larger fuel filter and also replaced all injector plugs plus any other brittle connector plug.

I recently removed some of the Exhaust Gas Recirculation and Auxiliary Intake Valve components (disabled anyway until the gearbox is replaced).

During the 2 1/2 years I have repaired/replaced everything faulty, worn or tattered looking on the car. I still need a cut and polish after a respray. The car has been run on synthetic lubricants almost since I have had it and I have water wetter in the radiator.

● When did you join the Z Club and how did you hear about us?

I joined the club in August 1999. I heard about it through the internet and became more interested through the 300ZX branch. But I'm not so convinced yet that it is particularly relevant down here in ChCh.

● Is your car purpose built, street raced, daily transport, business vehicle?

I have been known to race the car on old deserted airfields. It is used as a daily drive when it is running.

● Future Plans?

Ongoing now is a new auto and uprated turbos (43mm compressor wheels and 360 bearings) plus enabling my two extra injectors with a TurboLink. Also replacing ALL hoses (did the fuel hoses last year) and will be removing all water tubing after the turbos taking their outlet straight back into the engine.

I will be doing all of the following over the next year or so. New Tokico 5 way shocks, Apex springs (I have these already), larger oil cooler and auto cooler. Maybe an electric main fan and water spray for the intercoolers. Removing the Hicas (4 Wheel Steering) and replacing a number of suspension bushes.

● **Worst Moment in your Zed?**

Three equal ones.

1. 4 days after purchase when somebody told me that smoke was billowing out of it. (Oil leak onto the exhaust)
2. Spinning out when showing off to a 944 Porsche
3. Brake failure and running into an old Holden

● **Best time you have had in your Zed?**

Every time I am driving by myself in the country (since we have some great empty roads down here) and I have no set ETA time.

● **What sort of events have you been involved with your Zed?**

None. It hasn't been on the road long enough for me to get involved in anything serious.

● **What car would you but if you won lotto?**

If it was a single vehicle I would go to Japan and buy the latest 300 I could find and get it fitted with a few optional extras before bringing it back to NZ.



Choosing the Right Plug for Your Z

By Michael Lee One of the most overlooked and less tended to part of keeping a performance car in tune is the spark plugs. If they are fouled, out of gap, the wrong heat range for your application, or style, problems may arise. Sometimes these problems could be simple: like hard starts in the morning or loss of horsepower (ahhh! We don't want that!). Other times it can be detrimental like the all feared DETONATION (which can scrap a motor within seconds).

The step is choosing the correct heat range. Spark plugs come in many heat ranges so the plug can be matched to the type of use an engine receives.

For most low speed driving or short grocery runs (we do all have daily drivers, right?), the plug electrode must stay hot enough to burn away carbon deposits so a hot range is needed. On the other hand, for high speed driving at high RPM's, a hot plug can glow like a diesel glowplug causing pre ignition and detonation. To prevent this, a cold heat range plug is needed. But the evil to this is, at low speed driving, a cold plug can foul with carbon and become useless.

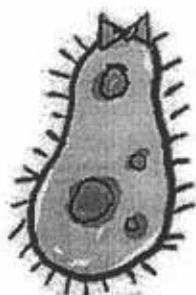
You are the ultimate judge of what kind of driving you do most. How do I choose a hotter or colder plug? Generally speaking, I don't recommend anything but NKG or NKG platinum plugs for your Nissan/Datsun. Don't get sucked into the "Splitfire" or any other style plugs that the current magazine ads hype up. When you use an aftermarket plug, its specifications can be different than your stock one (even with the same heat range). An example would be a shallower plug or an extended plug. Yes these manufacturers claim X amount of gain or self cleaning plugs in their test labs, not in your engine designed by

Nissan.

One theory is an extended electrode puts the plug in the more turbulent section of the combustion chamber, which helps to prevent fouling. In theory this is great, but in your Z this can put the electrode too close to the piston, screwing up the flame propagation and losing power (as much as 4%). NKG plugs were designed for our Z, and generally speaking, the higher the number the colder the plug (i.e. PFRSB 1 1 is hotter than PR.F6B 1 1). Also, when you are adding a turbo, increasing boost, and/or adding Nitrous Oxide you should go to a colder plug. For example, a Z32 running more than Stage4 should consider going to a colder plug, say PFR6B 1 1 (stock for the 132 is PFR5B L 1). The rule of "higher number is colder" only works with NKG. Check the plug manufacturer for their method of denoting hotter or colder plugs.

Finally, don't let the infamous "maintenance free" type plugs fool you. You will usually see this in platinum tipped spark plugs. I was even fooled by my favorite plug manufacturer NKG. You figure by spending \$15.40 a plug anything was possible, right? Wrong, strapping my car to the dyno, with plugs only 10,000 miles old (both NKG and Nissan stated that Platinum tipped plugs on the Z32s were good for 60,000 miles maintenance free) I learned that I lost almost 27 hp. Upon inspection my maintenance free plugs only needed to be regapped since they were out of spec. And there you have it 27 hp, I don't know about you, but that's a lot of power to lose from some fairly new plugs that were just not tended after. If you do a lot of spirited driving and want your Z running at its peak take care of your plugs, they are cheap for the returns they give.

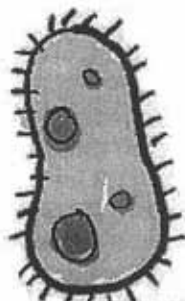
The Evolution Of Man And Woman



Paul,
How did you get to the end
of the alphabet so quickly?

Oh, is that right darling, you
always were a bit of a dreamer
-Z's, Z's, Z's, Z's, Z's, Z's, Z's
a bit like counting sheep

Ooooooh, don't think that's a
good idea, he'd never get
the dishes done.



Mmm,
Well dear, I bought a Zed and I can't
honestly remember anything else.

Lets change the subject!! - A mate of
mine has problems doing the dishes
-Jeez, all ya gotta do is press the
wives button!!!

Offbeat - you betcha

Who's got a cool Groin?

Japanese scientists have come up with a novel approach to feeling fresh on a hot summer's day: underwear that cools the groin. IceTouch, invented by Japanese sportswear maker Mizuno Corp, is made of a mixture of cotton and polyethylene vinyl alcohol. The material keeps the groin about 1°C cooler than conventional cotton underwear, Mizuno claims.

Chateaux Herrings anyone?

The world's first museum dedicated to fermented herring will open in northern Sweden next year. The museum will explain the ancient technique developed by fishermen in the Gulf of Bothnia for preserving herring by adding a small amount of salt then letting the fish ferment.

Beware od Ruskies with BIG ears!!

Cheap glue proved the undoing of a hard core Russian criminal, whose fake ears came unstuck just as he was crossing passport control at the Ukranian Slovak border. He had asked a surgeon to glue on artificial ears for his disguise, but they popped off at the decisive moment. The surgeon had economised using Russian made glue.

Weight Transfer (1 of 2 - Performance Handling)

While the tire has the most profound effect on handling, weight transfer ranks close behind. The amount of weight transfer alters the total traction of the tires. Where weight is transferred affects the handling balance of the car. How quickly weight is transferred is the primary factor relating to responsiveness.

But what is weight transfer? Anytime a force is applied to a vehicle, caused by acceleration, braking or cornering, weight transfer occurs. All forces acting on a body, in our case a vehicle, are considered to be ultimately exerted at the body's center of gravity. In other words, the forces push on the vehicle at the vehicle's center of gravity.

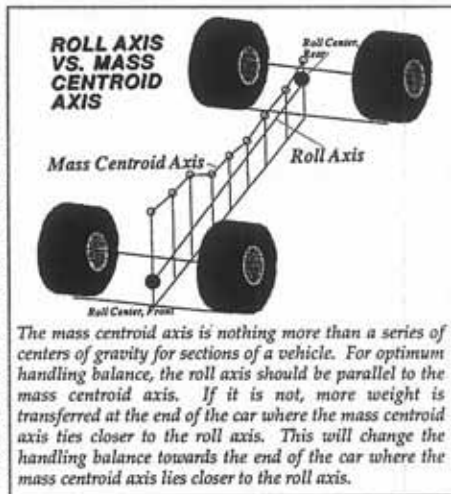
Center of Gravity

The center of gravity is a single point where all of the vehicle's weight is centered. If you could balance a vehicle from its center of gravity, it would hang in perfect equilibrium as long as no force acted on it. It is easier to think of the center of gravity location in the three planes in which we can measure it. The center of gravity location can be measured along the lateral axis (track width), longitudinal axis (wheelbase) and the vertical axis (height above ground).

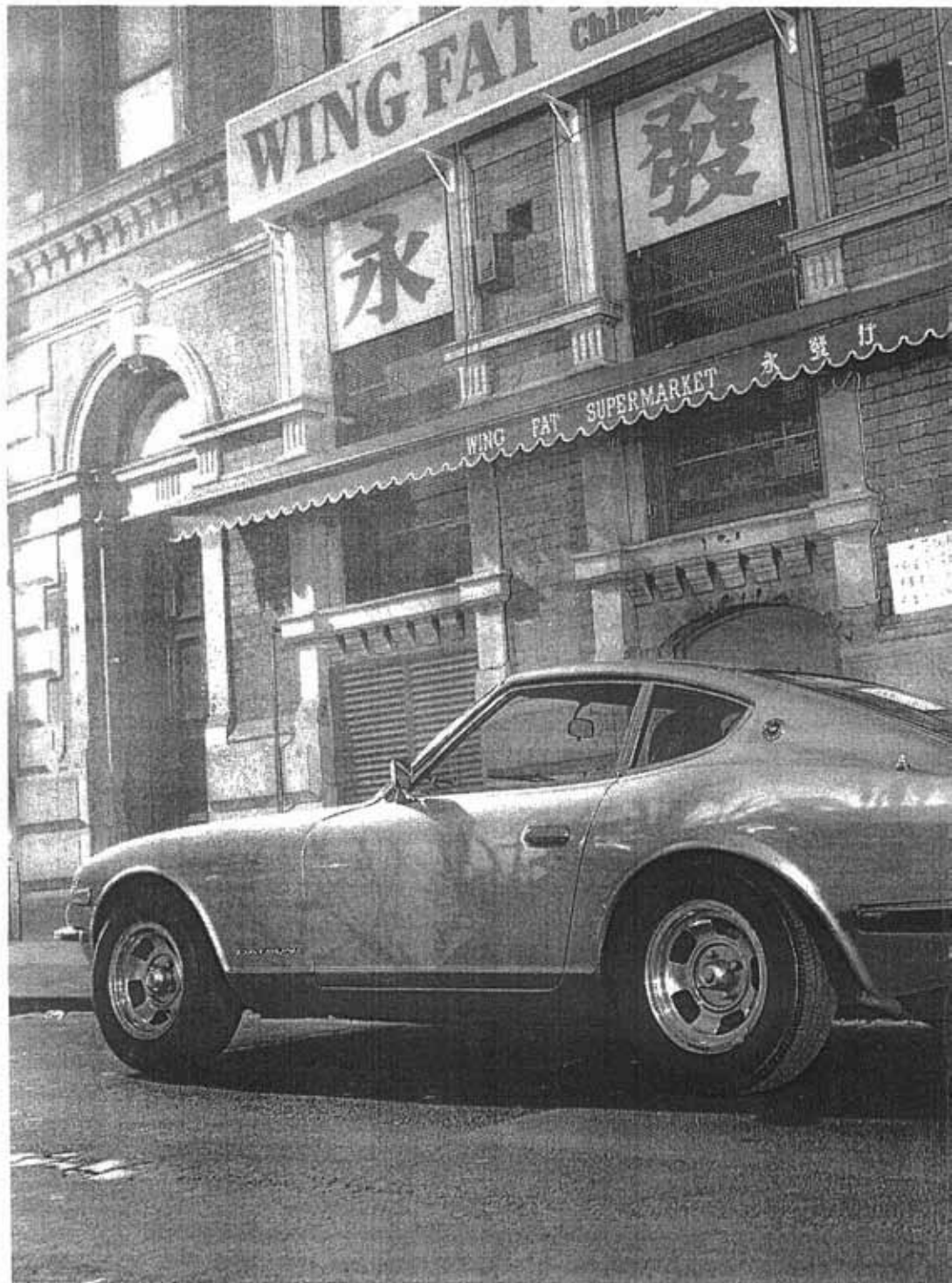
It is easy to determine the lateral and longitudinal balance points. By weighing each of the four corners of a vehicle, we can add the front wheel weights together, and divide by the total vehicle weight. The resulting percentage tells us where the balance point is located along the wheelbase of the vehicle. If the weight on the front wheels is 1,200 lb., and on the rear is 800 lb., the total weight of the vehicle is 2,000 lb. and the percentage of total weight on the front wheels is sixty percent. The balance point, or fulcrum point, of the vehicle lies along the wheelbase at a point sixty percent of the total distance from the center of the rear wheels. If the wheelbase is 100 in., then the location of the center of gravity in the longitudinal plane is 60 in. from the center of the rear wheels.


The lateral center of gravity location is found in the same way by comparing left-side weight to right-side weight. In our example, if the left-side weight was 1,000 lb., with the right side also being 1,000 lb., then the left-to-right weight distribution is fifty-fifty or equal. The location of the center of gravity in the lateral plane is exactly at the halfway point of the track width of the vehicle. Now we have two of the three points for the center of gravity location.

Finding the height of the center of gravity is more difficult, but can be calculated by measuring the front wheel corner weights when the front of the vehicle is elevated two to three feet above ground level. Once we have found the center of gravity height above ground, we have an exact location of the center of gravity. We can learn much about a vehicle with this information, and calculate some of the necessary changes for improved handling.



(continued next issue)





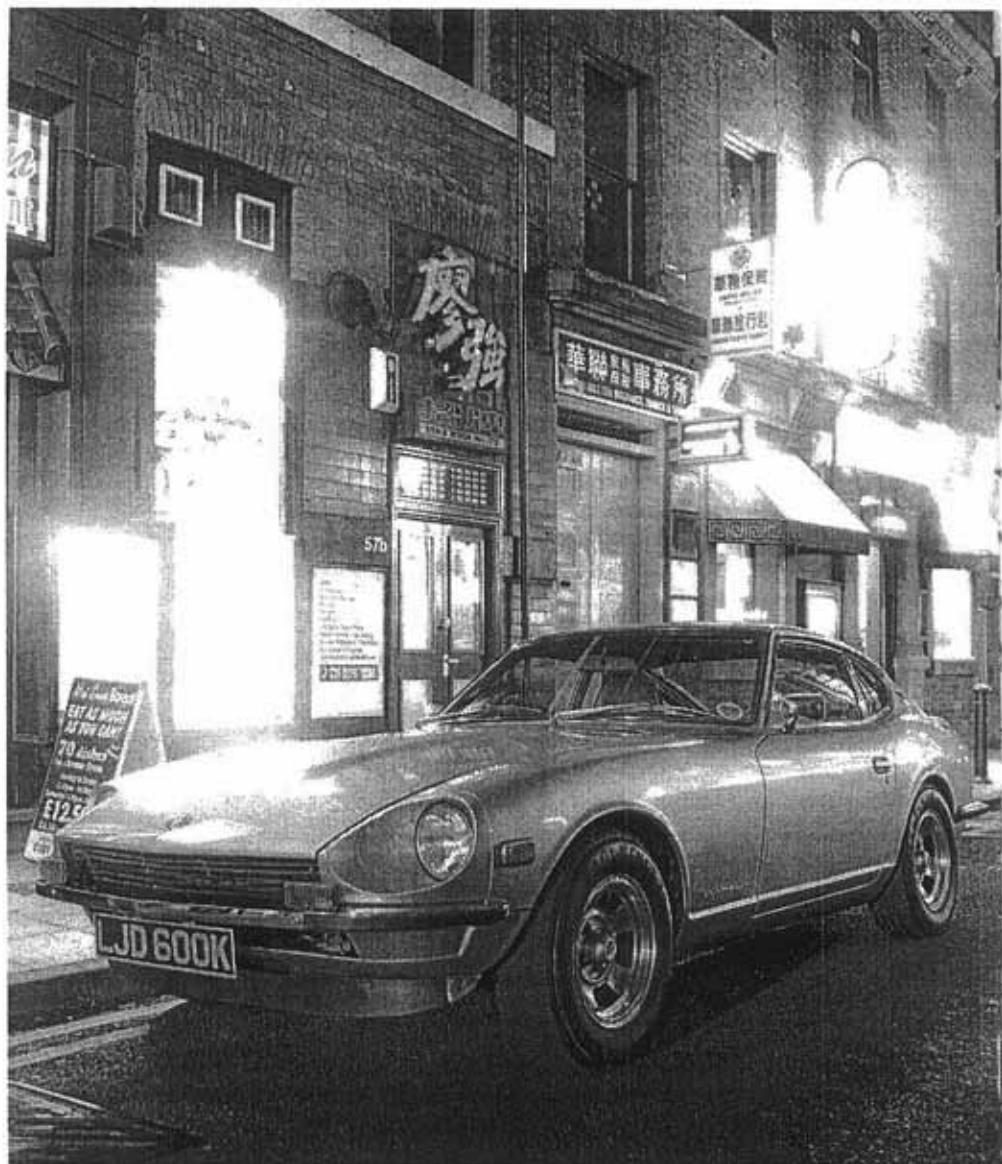
European manufacturers used to dominate the sports car market until Datsun came out of the rising sun with the 240Z

Classic Cars

STREETFIGHTER

Think early Seventies sports car. Chances are that our mind paints a picture of a decade-old design, optimistically facelifted with modernising tweaks to freshen its fading image. With your brain still in visualising mode, conjure up a Japanese car of the same era; typically a small utilitarian transport with frenetic detailing.

Now its easy to imagine the startling effect that the Datsun 240Z must have had when its exotically modern shape



was sprung upon the western world. Its pure lines describe balanced proportions, which were borrowed from the Porsche 911, and the details are handled deftly enough not to distract the eye from the main visual story.

At a time when most sports cars were starting to look slack and clumsy the,

Datsun was taut and sharp like a blade designed to cut through the air. Although the shape had been tested in a fluid tank using coloured dyes to betray turbulence, its 0.436 CD didn't live up to the wind-cheating appearance. But the important thing is that it looks fast and exotic, more like the handiwork of a revered Italian styling house than that of a Japanese



of which would evolve into the 240Z. It may have been conceived in the Sixties, but when the new car appeared at the 1969 Tokyo Motor Show its modern looks consigned most contemporaries into a more primitive past.

Today the 240Z still looks fresh, even though the lines of its exterior metalwork place it exactly in the decade of swanky excess. Open the driver's door and you're invited into a cabin offering more ribbed and textured black plastic than you'll find at a fetish party. A slimly sculptured high back seat encourages a reclined posture, with your legs and arms fully extended to the controls. Nissan had been well aware of North America's important market potential for a new sports car its Fairlady roadster was already selling well there and drew heavily on dealer feedback to ensure that the Z was roomier and well enough equipped to suit American tastes.

mass producer. It's one of the few cars that mass producer. It's one of the few cars that stands up to the 'looks right from every angle' test.

Nissan branded as Datsun for overseas markets bought in an array of contemporary European sports cars in preparation for the 240Z, including a Porsche 911, Jaguar E type and an Alfa Spider, but nobody could accuse the finished article of wearing design cues lifted from any of them. Instead the final form was developed from work done by styling consultant Count Albrecht Von Goertz, who was given his own Datsun design team between 1963 to 1964. His first project, the pretty Silvia Coupe! was too small to grasp success in the increasingly important North American market so it became clear subsequent designs had to carry more interior space.

Although Goertz had laid down the shape for a new two seater sports car before completing his contract, it was chief designer of the new Sports Car Section, Joshihiko Niatsuo, and his team who worked up five different clays, one

From the driver's seat your immediate scenery offers every possible feature guaranteed to delight anyone besotted by sports car imagery. Your hands grasp a slim wood effect steering wheel, its three rakishly angled black satin spokes hole punched for lightness or visual effect, depending on your cynicism levels. Beyond the centre boss boasting a Datsun script, your gaze is drawn into a heavily sculptured dash, where your eyes are treated to every gauge and dial they could wish for.

Lighting and wiper control is offered up on column stalks, but remaining functions elaborate ventilation controls, radio and electric window rockers - are confined within the centre console area. It's all neatly logical compared to the haphazard arrangement of controls that sports car buyers had previously been forced to fumble with. A casual observer might dismiss the style conscious interior as faddish; you have to drive the car to appreciate that it's all a product of careful thought. Very thorough, the Japanese.

If you haven't taken time to read the handbook it may take a while to realise that the cold starting choke is operated by a pull lever positioned to the left of the handbrake lever. Not where you'd expect to look. Once this is discovered, turning the key in the column mounted ignition switch stirs the straight six into a busy burble, at the same time provoking pointers resting in their auxiliary gauges to creep lazily into position.

As the engine warms up enough not to need help from the choke, the exhaust note settles to a loose and easy V8 like note, which must have helped the 240Z appeal to American buyers. Its transatlantic soundtrack comes as a surprise considering that the engine's origins are rooted in Europe. The 2393cc motor that propelled export versions of the car is a six cylinder version of the single overhead camshaft four used in the Bluebird, which itself was based on a Mercedes straight six design. Japanese buyers had the choice of a single overhead cam four or twin cam six, both displacing just under two litres to fall within domestic tax limits.

You ought to be able to use the engine's 1461b ft of torque to propel the Z easily up to speed, if only the throttle pedal wasn't so responsive to the slightest twitch of your right foot. As a result low speed driving demands more concentration than it should if you want to make smooth progress. That sensitivity is more useful when you want to stir the Datsun up, making use of the close ratios in the five speed gearbox to extract the best out of the engine.

Although it's based on the Bluebird design, the 240Z motor's aluminium cylinder head makes use of bigger inlet valves, a higher compression ratio and different camshaft profiles. It means that when your accelerator foot demands wide throttle openings from the twin SU carburettors, built under licence by Hitachi, the engine has the lungs to convert

that extra fuel into grin inducing acceleration.

Speed picks up cleanly and strongly from low revs, but the fun really starts when the needle climbs around the large tachometer, positioned right in front of you, and heads past 3000rpm in search of the orange zone starting 500rpm short of the 7K red line. Oversquare cylinder dimensions encourage high revs, but with peak power on offer at 5600rpm you feel inclined to grasp the wood effect gearknob and seek the next gear rather than wring it out for the sake of it. Your hand feels some resistance before the gate will accept your next choice of ratio, but the change is easy enough not to discourage its use.

The 240Z becomes more rewarding as the pace picks up. During town centre dawdling, it's difficult to enjoy basking in the admiring glances the car's dashing looks command because you're too busy trying to avoid pot holes and other symptoms of our worn out road system, which cause the suspension to crash and bang.

When you learn that Nissan used platform pressings from the Laurel saloon to keep production costs down you start to sniff out a compromise, but that would be doing the



:240Z an injustice. Although the front suspension layout is based on the saloon setup of MacPherson struts located at the bottom by transverse links and torque arms, the rear is also independent with the differential mounted to the bodyshell via a separate subframe and the wheel hubs located by lower wishbones and MacPherson struts.

Out of town the suspension still feels choppy over imperfect B roads, making the rear wheels skitter sideways when you try to corner hard. Because of that the 240Z doesn't really encourage rapid cross country progress until its tyres are given smoother A roads to play on. Here the firm damping and anti roll bar control pays off so that the body hardly rolls when you feed the steering wheel into fast corners. It allows you to concentrate on the messages of accumulating understeer being transmitted through the rack and pinion.

We're talking subtleties that the lightness of the steering allows you to detect, not arms crossed plough on understeer. The engine is positioned far enough back to achieve near perfect weight balance, with 51.4% over the front wheels, so the engine's torque will readily convert the cornering attitude through neutral and into oversteer if you're feeling gung ho. Like many 240Zs, this car was specified with the optional 14inch Wolfrace alloy wheels in place of the standard steel wheels with less than pretty 'dustbin lid' trims. Original steel wheels would have worn 175 section tyres, which must have been easier to dislodge under power than the grippy 195's fitted to this car.

Having discovered that the 240Z works better the faster you hurl it down the road, you'll learn that the principle only applies up to a point. By the time the car is settled into express fifth gear, the nose will have started to feel over light, so that you have to make constant corrections to the wheel to



compensate for the vague floating feeling. It means you can't properly relax and undermines the Datsun's potential as one of those rare cars that delivers under most driving conditions.

Perfection is a bit much to expect, even at the car's high UK launch price of £2288. It pitched the 240Z straight into territory that belonged to cars such as the Lotus Elan and Alfa GTV, which had the benefit of a prestige badge as well as respected sporting capability to help seduce sports car buyers.

But such cars were more uncompromising in their pursuit of ultimate road performance and couldn't have been considered logical alternatives.

Nissan tried to inject more credibility into the badge by campaigning the 240Z in motor sport, but high position finishes in prestigious events such as the Monte Carlo Rally and outright wins in the punishing Safari Rally in 1971 and 1973 failed to turn buyers on to the oriental upstart.

Supply problems didn't help matters, but whatever the reason, the 240Z sold slowly in the UK just 60 units in its first full sales year. The rising sun shone more brightly where the car could be sold at a more competitive price, particularly in North America, which had been its prime target from conception. The story goes that Nissan Japan was unsure how much



to ask for the car in the US, and ended up choosing an average of the predicted prices suggested in magazines following the press launch.

Despite being the biggest consumers for most European sports car manufacturers, Americans were the least inclined to accept that temperamental behaviour was an intrinsic part of owning a charismatic sports car. The 240Z gave them exactly what they wanted sexy styling, sharp handling and a sweet fire breathing engine, but with ample creature comforts, plenty of interior room and Japanese dependability.

By the end of the 1970 launch year there was a six month waiting list and sales peaked in the Z's last year at over 52000. It seemed that America loved the car so much that it was prepared to overlook early problems including crankshaft failure, drivetrain vibration, and water affecting performance of the front disc brakes. Nissan was less forgiving, moving swiftly to eradicate faults before they had a chance to tarnish the car's reputation. It's worth remembering that this was at a time when buyers of the Triumph Stag were treated like development guinea pigs by British Leyland.

The American market does strange things to car manufacturers' minds. It starts off by

embracing lithe sports cars because they offer a crisp and exciting alternative to most domestic products, then it demands that the same cars are bloated out to offer more space and compromised with a rash of irrelevant luxury options to make the car indistinguishable from every other lardy personal coupe.

When the time came to update the 240Z five years into its life, Nissan offered buyers the option of an awkward looking stretched version with two small rear seats, and compensated for powersapping emissions equipment by stroking the engine to just under 2.6 litres. The mid Seventies fuel crisis helped ensure that the 240Z continued to sell poorly in Europe, but to Americans it was still an economical alternative to their increasingly flabby muscle cars.

A different strategy might have helped in Britain. Ford had enjoyed great success by taking its Mustang concept and reinterpreting it as the Capri for Europe. The theory went that by offering endless trim and performance options the car could be all things to all men; from a cheap underpowered runabout capable of little more than posing, through to a hairy performance car loaded with every sporting accessory and cosmetic cue needed to show the world that the driver took his motoring seriously.

The lowly models tended to enjoy the reflected glory from the range topper and ended up selling in the greatest numbers. There was no base 240Z available in Europe, yet there was in Japan. The entry level model to the Fairlady Z range Japanese drivers were less chauvinistic about car names than overseas buyers was powered by a single overhead camshaft 2 litre four and came with a four speed gearbox from the Gloria saloon.

Although tax classifications effectively capped cylinder capacity of the performance Z432



model to under two litres, the six cylinder engine borrowed from the Skyline GT R achieved 160bhp at a dizzy 6000rpm thanks to four valves per cylinder driven by twin overhead camshafts and fed by three Solex Mikuni carbs. Heady stuff or 1969.

If such models were available in the UK, the 240Z might have been viewed differently here and have sold in greater numbers. Just 1611 sold between 1970 and 1974, making them an infrequent sight on Britain's roads when new. Poor body protection means that those numbers have since been ravaged by corrosion, so when you drive one on the road today few of the admiring glances cast over its seductive body show even a glimmer of recognition. Just as contemporary road testers had eulogized the 240Z's exotic car styling 20 years ago, pedestrians assume that you're driving

something Italian and exclusive as you cruise into town. Looking back at them across the

expanse of bulging bonnet you feel you're in something special, and you appreciate that the Nissan design team managed to create a car greater than its mass manufacturer origins and market research led conception would predict.

In many ways the 240Z is an enigma it doesn't come close enough to being a seamless extension of the driver's intent to take on similarly priced sports cars, but neither is it easy going enough to be called a grand tourer. Instead the Datsun achieves the essential compromise on its own terms, which can only heighten its appeal.

Thanks to: owner Mick Hoglinson who runs M & H Car Valeting (01625 575270), the Datsun Z Club (01782 873374), and Honda specialist Mark Warby (01625 574137).

1972 DATSUN 240Z

Engine

Straight six, 2393cc,
Twin Hitachi SU carbs

Power and torque

151 bhp @ 5600rpm
1461b ft @ 4400rpm

Transmission

Five speed manual

Brakes

Front: discs
Rear: finned
aluminium drums

Suspension

All independent,
MacPherson struts,
lower wishbones and
anti roll bars

Weight

22841b (1038kg)

Performance

Top speed 125mph
0-60mph in 8sec

Cost new

£2389

Cost now

£7000

Tires and Traction (PART 2 OF 2)

Percent Slip of a Tire

We have looked at tire slip angle and how it relates to cornering force. Percent slip of a tire relates to straight-line traction while accelerating and braking in the same way that slip angle relates to cornering. Maximum traction, and therefore maximum braking force or acceleration, is directly related to the amount of slip at the tire contact patch and road surface interface during braking and acceleration. Zero percent slip means that the vehicle travels the distance of exactly one tire circumference for every revolution of the tire. One hundred percent slip means that the vehicle travels no distance for every revolution of the tire (massive wheel spin during acceleration, or the vehicle travels any distance without wheel rotation (wheel lock-up under braking).

Maximum traction occurs at around five to ten percent slip for most tires, meaning that for every 100 in. the vehicle travels under braking, the tire rotation is equal to only 90 to 95 in. of travel. Beyond about ten percent slip, traction diminishes, and acceleration or deceleration rates deteriorate.

Tire Contact Patch Area

How large should the area of each tire contact patch be? This is an important question. The initial obvious answer is: as large as possible! But that is not true. Yes, we want a large tire contact patch, but if it is too large for a given car, rolling resistance increases, and may negate any performance improvements added by traction gains. Additionally, as a tire increases in tread width, it becomes more difficult to keep the tire contact patch flat on the ground where it is most needed.

A basic rule of thumb is that as engine horsepower increases, the need for larger contact patches also increases.

Traction Circle

One of the interesting aspects of tire traction is that the rubber molecules at the tire contact patch do not care what direction they are working in. The forces can come from any direction, or more than one direction at a time. The tire will generate a specific amount of traction before it begins to slide across the track surface. Traction can be 100 percent from the side or 100 percent rearward or any combination of the two.

In the case of a tire, the rubber molecules at the tire contact patch do not care in which direction they generate a force. They can do only so much work, and the direction does not matter. The total amount of work done by the rubber molecules at the tire contact patches is represented by the radius of the circle on the traction circle diagram. The resultant force is the maximum work done by the tires, and is represented by any line from the center of the circle to the circumference. If the radius of the line is shorter than the radius of the circle, the tires could do more work. In other words, the car is not at the limit of traction. In reality, the tire can create slightly more traction in the longitudinal direction than in the lateral, or cornering, direction. This would make the circle an ellipse rather than a true circle, with a longer radius in the acceleration and braking directions.

If the force line is along the horizontal axis of the circle, all of the tires' traction is used for cornering. If the line is along the vertical axis, all of the tires' traction is used for straight-line traction as in braking or acceleration. If the force line is not on one of the axes, then we have two forces at work, and can break down the component forces along the vertical and horizontal axes.

MORSELS

A fellow called John Bryant, from South Bend, Indiana, took his dislike of parking wardens to his grave. He had two parking meters set in concrete as part of his headstone. The meters read "expired."

A motorist in Germany was fined \$750 for calling a traffic cop a great crested grebe. Had he called the cop a schweinhund, (pig dog) it would have cost him \$3750. Under Germany's graduated system of traffic fines, the worse the insult the more it costs. Could this be adopted by the New Zealand Government as another revenue gatherer?

Two gendarmes on the beat one evening in Lyon noticed a man slumped at the wheel of a parked car. They banged on the doors and roof but the man didn't stir. So they smashed the windscreen - and found a leaking blow-up dummy the woman owner of the car used to deter car thieves.

General Motors, Ford and DaimlerChrysler will cover health care for same-sex partners of employees in the US. About 4700 are expected to qualify. Employees must prove a "committed relationship" over at least 6 months. Domestic partners of the opposite sex do not qualify.

British woman Sharon Webb is so terrified of reversing her car that she only uses the forward gears. Sharon, from Glastonbury, has been driving for 25 years.

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By combining functions, the tire's total tractive capacity is being utilized. The same principle applies to acceleration while exiting a turn.

Handling Horsepower

Everyone knows that more horsepower means more performance. When an engine creates more power, it accelerates the car faster. Tires create "handling horsepower" in a similar way. Larger tire contact patch areas are the equivalent of increased engine power; softer rubber compounds are like changing camshafts; aerodynamic downforce is like adding a turbocharger or supercharger.

Each molecule for a given rubber compound is capable of doing a certain amount of work for a given vertical load. For cornering, the work the rubber molecule must perform is to carry a given weight around a turn at a given speed. When a vehicle is driven around a corner as fast as possible (at the limit), each molecule at the tire contact patch is working to its maximum. To increase cornering speed, we can either increase the vertical load on the tire (but not increase the weight on the tire since it then has more work to accomplish), or we can increase the number of rubber molecules doing the work (larger tire contact patch area).

To state this more scientifically, the cornering speed of a vehicle around a given radius turn is proportional to the total tire contact patch area of

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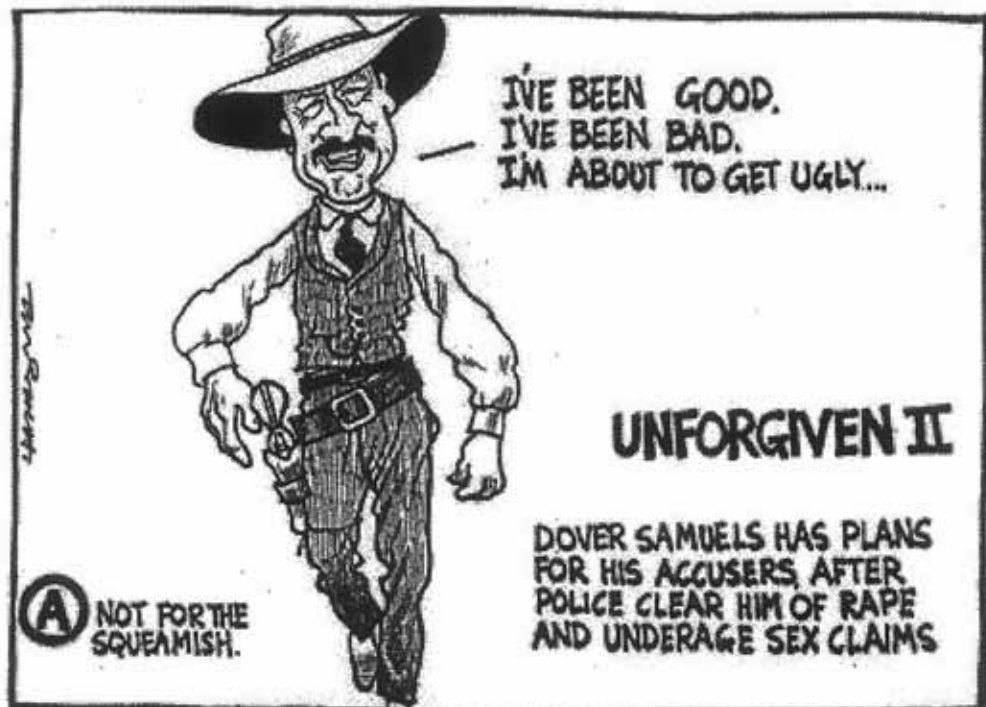
the vehicle divided by the total weight of the vehicle. We can decrease the weight of the vehicle, which allows an increase in cornering speed. We can increase the tire contact patch area, which also allows an increase in cornering speed. While these statements always hold true, two glitches muddy the waters slightly. The first is getting all of the rubber molecules in the tire contact patch working. This is the classic management (driver, test engineer and so on) versus union (the United Rubber Molecules, we will call them) conflict. The second is getting the front URM workers to go on strike at the same time the rear URM workers decide to leave the job. The old balancing act rears it ugly head again. Most of our development time is spent managing rubber molecules. Consequently, we will spend considerable time exploring the methods of rubber molecule management within these pages.

So, if you want more handling horsepower, either use a softer compound tire or buy more rubber molecules. just be prepared! They take considerable time to keep under control.

Front Versus Rear Tire Contact Patch Area

There is a way to determine how large the front tire contact patch area should be relative to the rear tire contact patch area. Begin by asking, How much work do the front tire contact patches perform compared to the work done by the rear tire contact patches? That is difficult to say, but let's start with cornering.

If a car has perfect fifty-fifty front-to-rear weight distribution, then in a steady state turn (no change in cornering speed) the workload is equally split between front and rear tires. If we look at deceleration, the front tires do more work than the rear because weight will transfer from the rear tires to the front tires under braking. How much weight transfers depends on a number of factors we will explore later. During straight-line acceleration, the opposite is true. Weight will



MORSELS

What's the most popular surfing activity on the Internet? Buying books. The second? Comparing car prices. A survey in Europe found that one in five Net users looked for the best price before plunking down a deposit. That worked out at more than two million people in Britain alone.

What do Horowhenua MP Georgina Beyer and a Canadian fellow by the name of Bruce Chapman have in common? Not a lot, other than promoting road safety. Georgina peers out from billboards in New Zealand telling people to "brake on the straight." Bruce tells Canadians not to drink and drive. Or he did until he was arrested the other day for ... drinking and driving.

German insurance companies are getting grumpy with Russia. Most of the more than 3000 cars stolen in Germany last year are now cruising the streets of Moscow. Words have been exchanged in high places. Russia says it will now work harder to stop the trade in stolen cars, mostly Mercs and BMWs.

Across the Irish Sea in Dublin, Sean Macey painted the number of his car on its wheels to, um, deter thieves. But he got back from shopping to find his roof rack had been nicked.

Formula One team McLaren has bought back 16 of its race cars from the Sultan of Brunei, who has been collecting them for nearly 20 years.

transfer to the rear. If the drive wheels are at the rear, then the rear tire contact patches will do more work during acceleration. So, if we have a rear-drive car with fifty-fifty weight distribution and not much horsepower, the total work (that is, work performed while cornering, braking and accelerating) is about equal front and rear.

If you surmised that the front tire contact patch area should equal the rear tire contact patch area in this example, you are correct. In theory, the contact patch area of a tire should be proportional to the total amount of work done by that tire. If the front tires do sixty percent of the work, then they should have sixty percent of the total tire contact patch area, or thirty percent on each front tire.

But wait, you say! Almost all cars come with the same size tire front and rear, but few have fifty-fifty weight distribution. In fact, most cars are front heavy. And wouldn't a front-wheel-drive car have even more work performed by the front tires because they drive the car? Right again! So why don't most cars have larger tires in the front? Two reasons. First is convenience, both for the manufacturer and for the consumer. Who wants to carry two different-sized spares? Second, it would look kind of dumb. Besides, with the rear tire contact patch area proportionately larger than necessary, this car would never oversteer. It would have a basic understeer tendency, which offers improved stability and increased safety margins for the average driver. Let's look at the technical reason for this. If the front tires carry more load, so that while cornering they are doing more work, they will operate at a higher slip angle for a given cornering speed. This means the front tire slip angles exceed those at the rear, and understeer occurs. If a car generates aerodynamic downforce, the estimated aerodynamic load on each tire is calculated for a range of speeds, and the tire contact patch sizes are planned accordingly. Obviously, the design parameters for a production car are very different.

Effect of Tire Pressure on Traction

The pressure in a tire has a big effect on tire traction. The pressure doesn't really affect the grip of each rubber molecule, but it certainly can affect how many of the molecules at the tire contact patch are in contact with the ground. A specific tire on a given car with a given load will have only one correct tire pressure. In practice it is a narrow range of pressure, within about 3 psi. If the tire pressure is outside this range, the tire contact patch is deformed and not fully contacting the road surface. In other words, fewer than the possible number of rubber molecules are in contact with the surface of the road.

If the tire is overinflated, the edges of the tire will lose contact with the surface, and traction is reduced. Fewer rubber molecules are carrying the same load, so the tire will operate at a higher slip angle for a given cornering force, and the maximum cornering force will be

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lower. If the tire is underinflated, the center of the tire contact patch will not maintain optimum contact with the road surface, and again, fewer rubber molecules than possible will be doing the same work, resulting in higher slip angles for the same load and reduced cornering power.

Many autocrossers will chalk their tires to see if they are getting sidewall rollover. If the chalk wears off the tire in the shoulder area where the tread and sidewall meet, then the tire is rolling over onto the sidewall. If this occurs, the solution to the problem is to increase tire pressure until the rollover ceases. While increasing tire pressure will reduce or eliminate tire rollover, it is unlikely that the problem is being solved. The real reasons for the rollover usually do not relate to tire pressure. Wheel width and camber are usually the real causes.

Tire Aspect Ratio and Traction

The aspect ratio of a tire is the percentage of section height (the sidewall) compared to the section (tread) width. If the tread width is 10 in. and the sidewall section height is 5 in. the aspect ratio is 50.

The aspect ratio has little direct effect on traction. The aspect ratio does affect the slip angle, however. A lower profile tire (lower aspect ratio) is usually stiffer, and operates at a lower slip angle for the same load and cornering force. Assuming the tire contact patch size stays the same, the lower aspect ratio tire will operate at a lower slip angle under the same load and cornering conditions. This will affect handling balance if the aspect ratio is changed at only one end of the vehicle.

Tire Camber and Traction

One of the most important suspension settings is camber, or the inclination of the wheel and tire from vertical. Camber is measured in degrees from vertical, with zero camber occurring when the tire is perpendicular to the ground. Negative camber occurs when the top of the tire tilts toward the center of the vehicle; positive camber occurs when the top of the tire tilts away from the center of the vehicle.

The first question to ask is, what camber angle will keep all of the rubber molecules working the hardest? The obvious answer is zero camber. When we need the tires to work, we want the maximum number of rubber molecules in contact with the road surface. For

MORSELS

A Californian fellow in California called Albert Klein has done 299,133km in his 1963 Volkswagen Beetle. She just keeps on going, he said. Of the 56 million cars produced worldwide last year, 12.8 million were right-hand-drive. That's because 23 per cent of the world drives on the left-hand side of the road, including us of course.

A Kansas man who told police he crashed his car after spotting his mother-in-law, said: "I took one glance at her and headed at speed over the embankment in the opposite direction."

Trucks should have their own road network, says an American academic. Professor Kumares Sinha, of Purdue University in Indiana, said roadside beacons, satellite navigation, mobile phone links and cameras would monitor traffic constantly so computers could re-route vehicles. Aucklanders would probably just settle for trucks staying clear of outside motorway lanes.

Fritz Veinter crashed his car into a power pole in Furth, Germany. He was so annoyed, he cut the pole down with a chainsaw. He has been charged with criminal damage.

A driver coasting down a hill in Morez, France, was pulled over by police for speeding. They let him off when he explained he had run out of petrol and was building up speed to get to a garage.

braking, we want all four tire contact patches flat on the road surface; for acceleration, we want the tire contact patches of the drive wheels flat; for cornering we want all four (but especially the two outside) tire contact patches flat on the road. Anything other than zero camber will reduce the effective size of the tire contact patch area and change the loading on each of the rubber molecules at the tire contact patch.

Some molecules will have greater loads, some less. The ones with more load have more work to do, but the rubber molecules' capacity for more traction does not keep up with their increased workload, hence, less traction. This is the single most important area for tuning the suspension to improve handling power.

We have been talking about camber angles in the dynamic state, that is, when we need traction during cornering, braking and accelerating. The other state is called static. The static settings—for instance, when the vehicle is at rest— affect the dynamic settings, but in themselves are not very important. Also, the optimal dynamic camber for different functions is slightly different. For braking and accelerating, zero camber is ideal. For cornering, however, a small (to 1/4 degree) amount of negative dynamic camber actually increases cornering force. The differing needs of straight-line performance and cornering make the set-up job even more difficult. The real problem, however, is controlling camber change during suspension travel and body roll. This problem will receive more scrutiny in the suspension chapter.

Wheel Size and Tire Traction

The diameter of the wheel has no direct effect on traction, but it can change the tire contact patch area size if a lower aspect ratio tire is used on a larger diameter rim, with the overall tire rolling radius remaining constant. This will also affect ride and responsiveness.

The width of a wheel, however, can have a major effect on traction. If the rim is too wide for a given tire, the bead will not seat properly. This can also happen if the wheel is too narrow. All tire manufacturers specify a range of rim widths for every tire. It is crucial to stay within this range for safety reasons.

But what effect does the width of the rim have on the tire contact patch? The rim width will affect the contour of the tire tread, and therefore affect the shape of the tire contact patch. If the rim is too narrow, the tire tread will bow out, and less than the maximum tire contact patch area will meet the road surface. It is unlikely to have a rim too wide within the specified range of rim widths for a given tire size.

After considerable testing, we have found that it is best on most tires to use the widest rim width recommended by the manufacturer for a specific tire. This will optimize the tire contact patch area for that tire, and allow the highest cornering force for that tire. Narrower rims tend to crown the tire too much, hence reducing the contact patch area.

Let's look at the problem from the other side. If you are limited to a maximum rim width because of rules, budget and other factors, then it is usually best to use the smallest-diameter tire that will fit on the rim. In most, but not all, cases, the smaller tire will have a larger tire contact patch area. This will increase cornering force, improve tread wear and allow better suspension settings for overall performance.

We have found that most brands of tires respond in this fashion. However, some tires, due mostly to stiffer sidewall construction, are less sensitive to rim width differences within the manufacturer's specified range. Since high-performance tire manufacturers are constantly changing designs and compounds, it is probably reasonable to follow this rule of thumb.

Rubber Compound and Tire Traction

The compound of the rubber on the tread of a tire makes a large difference in the traction capability of the tire. If the compound is softer, the coefficient of friction is higher and each rubber molecule at the tire contact patch can generate more grip. Overall tire traction will increase, but only if the tire does not overheat.

A softer compound tire will also wear more quickly. In racing, selecting the compound that offers the best grip without overheating, and the best wear characteristics, is one of the true art forms in the sport. For the autocrosser, the softest compound available is usually the fastest, but will wear quickly on the street. For those racing on DOT street tires, often only one compound is available. The tire engineers have made good compromises between grip and tread wear.

The compound of the tire must be compatible with the load carried by the tire and the heat and wear characteristics for a given event. If the right choice is made, the tire will operate in its optimum temperature range without overheating, blistering or wearing out during the course of an event (or between pit stops, as the case may be).

For street driving, harder compounds are needed both for sustained highway driving and for longer tread life. For the dual-purpose vehicle, two sets of wheels and tires will save considerable funds over the long haul. One set is used only for competition, the other, harder compound set for street driving.

Tire Temperatures

All racing and high-performance street tires are designed to operate within an optimum temperature range when driving near or at the limits of the vehicle. If the tire temperature is too low, the coefficient of friction will be too low and maximum traction will not be achieved. If the tire tread is too hot, traction will again be lost, and the tire will wear more quickly, with possible blistering or chunking. Neither is an ideal situation. There are a number of factors that contribute to the operating temperature of a tire.

- Rubber compound.
- Lateral and longitudinal forces, that is, how hard the vehicle is being driven.
- Tire pressure.
- Vertical load on the tire.
- Tire slip angle.
- Contact patch size.
- Weight of the tire.
- Unsprung weight on the tire.

The best tool we have for optimizing suspension set-up, handling

MORSELS

Truckers in the USA have been blamed for the appearance on roadsides of plastic softdrink bottles containing . . . urine. Seems the boys-and-girls, it must be said-in their big rigs, up against tight schedules, are using bottles instead of 'comfort stops' to empty their bladders. They apparently just toss the bottles out of the window, giving a distasteful and whole new meaning to the phrase 'Fill 'er up'. Anyway, the state of Oregon is no one too happy with the practice and has passed a law making it an offence to dispose of human waste improperly. The state also fine and take away the drivers licence of those caught in the act. Police jokers have dubbed the new duty - 'The Pee Patrol'.

Roadside recovery teams are carrying lotions and potions along with tow ropes these days. Staff who man the emergency vehicles are being trained in massage to ease the roadside stress of stranded motorists

A Sydney Morning Herald correspondent reports that the Sunshine Coast drug squad arrested a woman heroin dealer, seizing in the process a car bought with the proceeds of her crime. Nope, it wasn't a BMW, Benz, Jaguar, or even an HSV. Heroin profits must certainly have dried lately. Why on earth would she be driving around in a Daewoo?

MORSELS

Staff at Yosemite National park in California couldn't figure out why bears were breaking windows of parked cars. So, after ruling out the obvious reasons like food, they called in the wildlife scientists. The boffins poored over the problem and then hit upon the answer - far from grizzly it was too. fruit scented deodorisers hanging from rear view mirrors were driving the bears nuts, last year nearly 1400 visitors cars were damaged.

In Japan, the Sports car genre is very hot, simply coming out with a new model guarantees buyers are going to snatch them up (so long as it's not a yank tank) - American sports cars have stirred little excitement - yet another tale against their clunky imageless ugliness. just 287 Corvettes and 30 Mustangs have been sold this year. The Clinton administration said sales of US-made cars had fallen by 29% in the first quarter - Washington says the reason behind the US carmakers difficulty in making headway in Japan is the closed market policies. Washington has obviously got it's head in the sand or are to bigheaded to see the truth - "Yanks" make bombs and sex - ever heard of a sexy bomb?

A churchgoer left a service in Calgary, Canada, to discover his car had been stolen. Police are looking for a fellow who signed the visitors' book, Rob Car.

balance and tire performance is to measure the tire temperature. Tire temperatures give you much information about the tire and set-up of the vehicle, telling you:

- if the car is being driven to the limit by the driver.
- If the compound of the tread is overheating.
- If the handling balance (roll couple distribution) is correct, and if not, which end of the vehicle is likely to be overloaded.
- If the tire pressures are correct.
- if the static camber is correctly set for optimum dynamic camber while cornering.
- If toe-in or toe-out settings are excessive.
- If the rim width is too narrow for the tire section width and sidewall construction.

The collection of pertinent data, as well as the interpretation of this information, will be covered in detail in the tuning chapter.

One important factor concerning racing tires is that they must be designed for a specific car application. If they are not, the chances are that they will never operate within their optimum temperature range. If the correct tires are being run on a given car, and temperatures are too low all around, it is most likely that the car is not being driven to the limits of adhesion (unless the ambient air temperature is extremely low). If the temperatures are out of the optimum range at one end of the car only, the problem lies with the vertical load on the tires at that end of the car.

Most high-performance tires and race tires are designed to operate in the 180 to 230 degree Fahrenheit temperature range as measured in the pits after hot laps or runs. Every tire is slightly different, and for competition purposes, an engineer from the tire manufacturer should be consulted concerning the optimum temperature range for a given vehicle, track and ambient temperature combination. As a point of interest, the actual temperatures of a heavily loaded tire while cornering in a high-speed turn can exceed 350 degrees Fahrenheit.

Tire Slip Angle and Tire Temperature

Most anyone who has raced or attended races has heard a driver complain after the completion of an event that "My tires went off after ten laps." This statement is most often made by the driver who finished second, third or fourth. The tires probably did go off, but if the driver making this statement understood what was being said about his own driving skills by uttering such words, he would probably keep his mouth shut. Earlier in this chapter, slip angles were discussed. As the slip angle increases, so does lateral acceleration or cornering force, until the limit of adhesion is reached. Then cornering force tapers off. Let's discuss further the slip angle versus lateral acceleration graph. The slope of the graph tells us how responsive a tire is. The steeper the slope, the

quicker the response rate. If the response rate is too quick, the driver cannot "feel" the tire as lateral acceleration builds. If the response rate is too slow, the vehicle feels sluggish and slow to steering inputs.

Now let's look at the top portion of the graph, where the limit of adhesion is being approached. If the graph slope was very steep, came to a point and dropped down as quickly, the driver would find it impossible to drive this vehicle near the limits of adhesion. As soon as the limit was reached, any additional slip angle applied to the tire would cause instant loss of traction. It would be almost impossible to keep such a car at the cornering limit. Fortunately, the characteristics of the pneumatic tire are much more subtle than this. The curve begins to flatten as peak cornering force is reached. Once peak force is reached, the curve stays relatively flat for some range of slip angle before cornering force tapers off. This tire shows forgiving handling characteristics. The limit is approached more slowly, and maximum lateral acceleration is maintained over a fairly wide range of increasing slip angle.

The basic shape of this curve is virtually the same for all tires, although the slope of the curve may vary, the slip angle range may shift to the left or right and the peak cornering force may be higher or lower.

Getting back to the hypothetical driver who cooked the tires after ten laps, look at the top portion of the graph. Maximum cornering force occurs over a range of about 5 degrees of slip. The lateral acceleration changes little over this 5 degree range. Do you think there is a difference in cornering speed between 7 and 12 degrees slip angle? Almost none! What do you think might happen to the tires of the driver who consistently drives at 12 degrees after, say, ten laps? The tires are going to overheat! Then they are going to lose grip. Then the car will drop back. Then the driver will bitch about the tires.

The rubber molecules at the tire contact patch are the ones with the real complaint. The driver in victory lane, who maintained about 7 to 8 degrees of slip angle throughout the race, is smiling while he thanks the manufacturer for making such wonderful tires-even though the tire manufacturer probably made wonderful tires for everyone in the race.

What happened here? Two things. First, the larger slip angle means the tire contact patch is turned more than necessary, so that friction is increased, which causes more heat and eventually, the tire overheats. Second, and less significant, is the twist in the sidewall caused by the slip angle. The increased twist caused by the higher slip angle will also cause more heat to build up in the tire. The more skilled, sensitive driver will keep the slip angles at the lowest point where peak lateral acceleration is maintained thus minimizing the possibility of overheating the tires. But is this always desirable?

If you autocross, the problem is different. Overheating tires in a one-minute run is not often a problem. But a lack of heat in the tire is! Remember that traction increases as tire temperature increases up to an

MORSELS

Four-wheel-drive owners who have just returned from camping and coping with the basic toilet facilities at some of the countries more isolated beaches or lakes might like to mark down for future reference the latest American accessory, its a toilet seat called Uncle Booger's Bumper Dumper that attaches to the vehicle's towbar. You um, can sit in comfort while trying to figure out why Uncle Booger invented it in the first place.

It's not nice, the way the humble hedgehog often ends its days, sprawled gutted on the road. So try to avoid running it over next time because it may ultimately save your life. Scientists studying the makeup of the hedgehog's spines - its prickles - believe the honeycomb-like compound is one of nature's greatest cushions. A single hedgehog prickle can apparently absorb and disperse a huge amount of energy. The car industry is looking at how exactly it all works. Not that the family four-door will end up with a long .7bonnet and shuffling along the road covered in prickles - just that carmakers may one day thank the hedgehog for improving safety.

A french woman who failed her driving test for the fourth time ripped up the examiners notes, then jumped out of the car and bared her backside to him. The examiner took a week off to recover.

optimum point. Since this is not a driving book, I won't offer any driving tips. But if you look at the previous two paragraphs, I bet you can find one anyway!

Handling Balance and Tires

Tires have an effect on the handling balance of a car. Let's review the definitions of oversteer and understeer. When the slip angles of the front tires exceed the slip angles of the rear tires, understeer is present. Oversteer occurs when the rear tire slip angles exceed the front tire slip angles. Our goal in tuning the car is to have the handling balance as close to neutral as possible. In other words, the front and rear slip angles should be close to equal.

Tire pressure, tire contact patch area, camber and vertical load all affect the slip angle of a tire. By altering any one of these parameters, we can alter the handling balance of the car. Since tire pressure must be correct to keep the tire contact patch flat on the road, it is not the best tuning tool. Camber is also not the ideal method of tuning for balance, since we want little dynamic negative camber while cornering. Tire contact patch area should be designed into the car properly, or modified within class rules. This is actually a good tuning tool, but rarely can be changed due to tire restrictions and rules. Manipulating vertical load, either aerodynamically or with roll couple distribution, is the most practical method for tuning handling balance. We will explore the methodology in the tuning section.

Responsiveness and Tires

Tires play a major role in vehicle responsiveness. The key tire parameter is sidewall stiffness. As sidewall stiffness increases, the tire contact patch can generate the same cornering force at a smaller slip angle. Since it takes less time for the tire to reach a smaller slip angle, the tire that can generate a given cornering force at a lower slip angle will be more responsive.

The construction of the tire sidewall, the aspect ratio and the tire pressure all contribute to sidewall stiffness. Sidewall construction is difficult to analyze, but a lower aspect ratio almost always increases sidewall stiffness. Higher tire pressures accomplish the same thing. Both will improve responsiveness. Improved responsiveness is one reason that all high-performance tires have low aspect ratios; many race tires have ratios of 35 or less.

Improved response also allows the tire to increase traction during the initial entry phase of a turn. The transition time from straight-line to turning, or from a turn in one direction to the other, is reduced, and more time is spent with the tire operating at the optimum slip angle for maximum traction. In a racing situation, reduced lap times will result

Ride and Tires

Tires have a major effect on ride comfort. The tire works much like a spring, absorbing small bumps and road irregularities. The spring rate of a typical race tire is about ten times the rate of a coil (or leaf) spring on the same car. Passenger car tires have a somewhat softer spring rate.

Two factors in the tire affect the spring rate of the tire. The pressure in the tire raises the spring rate as it rises; increasing the sidewall stiffness will also increase the spring rate. The tradeoff is that the ride will become harsher as the spring rate of the tire increases.

One method to improve the ride of a highperformance low-profile street tire is to run at the lowest pressure recommended by the tire manufacturer when driving on city streets, or bumpy sections of road. For interstate highways or other long trips, the pressure should be increased.

Vertical Load

The key to understanding handling is understanding how load affects tire traction. As load

increases, so does traction, but the relationship is not linear. Traction does not increase as quickly as load, so if load is added to a tire contact patch as additional weight, then the tire generates more traction, but also has more work to accomplish.

The extra work is greater than the extra traction, so there is a net loss in cornering force.

Slip Angle

The slip angle is the angle between the direction the wheel is pointed and actual direction the tire contact patch is moving in. Lateral acceleration increases as the slip angle increases until the limits of adhesion are reached. The lateral acceleration ceases to increase, and finally diminishes with increasing slip angles. When front and rear slip angles are not equal in a turn, there is a handling imbalance. When the front slip angles exceed the rear, the vehicle understeers; when the rear slip angles exceed the front, the vehicle oversteers.

Handling Horsepower

Softer rubber compounds, larger tire contact patch areas, reduced vehicle weight or a combination of these factors will increase the traction potential. The trick is to make full use of the tire contact patches by tuning. Then you must establish an effective handling balance by utilizing the best tire contact patch area at each end of the car, and fine-tuning the roll couple distribution.

Set-Up

Everything done to tune the suspension attempts to keep the tire contact patch working to its fullest. Tire pressure, camber, toe-in or toe-out, rim width and so forth, all must be set to extract maximum traction for competition purposes. For the street, other compromises establish different priorities, including stability, tread wear life and ride comfort. The most useful indicator of tire setup and performance is the tire temperature.

Since the tire is the link to the road surface, the tire has an effect on virtually all of the crucial parameters that affect handling: traction, balance, responsiveness and ride. Understanding how the tire works, and how it affects these parameters, is the key to improved handling performance. And understanding how the driver can affect the tires and, therefore, the handling of a vehicle, is also paramount to a full understanding of the high-performance handling system.

Tire Care

High-performance street tires and racing tires represent a substantial investment. By taking good care of your tires, you will receive optimum performance for longer periods of time, and tire life will increase. Here are some tips to improve tire performance and wear.

- Never drive or park a car on underinflated tires. It is dangerous, can lead to sidewall and tread damage and increased wear, and can upset handling balance if the underinflation is at only one end of the car or at one tire. Even slight underinflation will cause excessive tread wear on the shoulders of the tire.
- Overinflation will cause ride harshness and deformation of the tread, reducing traction because that tire contact patch is smaller, and leading to increased tire wear in the center of the tire tread.
- Excessive camber or toe-in or toe-out on the street can cause excessive tread wear and instability.

- Check tire pressures often on the street, constantly for competition.
- Tires must be balanced properly. Imbalance can cause vibrations and excessive tread wear in spots around the tire. If you feel a new vibration from the tires, have the balance checked immediately. A lost wheel balance weight is probably the cause. This applies to both street and competition situations.
- Routinely check the tire treads for excessive wear, in general and also in areas of the tread, such as the edges or center of the tread.
- Tires lose performance as they harden. Tires harden with age. Ultraviolet light and ozone increase the aging of rubber. If you use a set of competition tires for more than one event, it is good practice to store them off of the car, and keep them in plastic trash bags. This minimizes the effects of ultraviolet light and ozone, thereby increasing the life of the tire.
- Tires in competition get hot. The hot tread surface picks up all sorts of debris. Be careful to remove any debris that may cause a puncture if left on the tread.
- For low-pressure applications, and excessively high speed use of racing tires, consult with the manufacturer of the tire about the need for safety screws in the tire bead. These screws, when needed, are important as the bead may unseat without them. Never install safety screws without consulting with the tire and wheel manufacturers about the need for, type of screws and quantity.
- Never use a racing tire on the street. They are much too fragile for this purpose. Slicks are just plain dangerous on the highway. Always keep a check on tread wear. Never drive on DOT tires when the wear bars are exposed.
- Some DOT tires should be shaved for competition. Shaving sometimes improves traction, but often reduces heat build-up in the tread, and reduces the possibility of chunking, especially in the shoulder area.
- Some DOT street tires should not be used for driving on slippery surfaces, such as ice, snow or rain. The tread pattern was not designed for use in these conditions. This also applies to tires that have been shaved.

PUKEKOHE TESTDAY & SPRINT CHAMPS September 17th SUNDAY 2000

- Documentation - 8.00 to 9.30am. • Scrutineering - 8.00 to 9.30am • Drivers briefing - 9.50am & 10.55am
(Please NB - All drivers must pick up their entry forms from the timing tower prior to being scrutineered)

TESTDAY commences at 10.00am and finishes at 10.50am. Passengers / tutors are allowed, you will also need to wear a crash helmet and overalls. This is an opportunity for testing, tuition and familiarisation of the track

- Timed Practice Sprints from 11.00am to 12.30pm followed by lunch.
- Lunch - 30 minutes.
- Sprints - Five or more lap runs (plus warm up and cool down laps)
- Timed Sprints from 1.00 to 3.30pm.
- TESTDAY resumes at 3.40pm and finishes at 4.30pm
- PRIZE GIVING WILL BE HELD AT 5.00pm in the Jennian Building Timing Tower.



NB. closing date for entries is the 12th September 2000

Entry Fees are as follows (those entering the sprints do not pay for the FunDay)

- TestDay \$35
 - Sprints \$65
- (\$35 deposit with the balance payable at documentation on the day)

Send completed entry form to

Capri Car Club (NZ) Inc
PO Box 172, Ngaruawahia 2171
Attn: Ron Frew (Events Coordinator)
Any Enquiries
ph 07 824 7143 fax 07 824 5356
email: floodgla@wave.co.nz

The Fine Print Page

Membership Discounts

Members of this club are to avail themselves of discounts on quite a number of products and services. The list is ever-changing and at times complex, making it difficult to publish here. The best way is to ask someone of the Committee before you buy

Holders of MSNZ licenses (see below) qualify for a very extensive list of discount items.

Competition Licenses

You do not require a competition license for Motorkhana's, Trials, Hill-Climbs or Sprints, providing these aren't interclub competitions.

Members interested in more serious competition will need to go through a few formalities in order to participate. Following is a brief explanation of what it all means.

ClubSport or Restricted ClubSport License

This is required for participation in club events such as dual drags and sprints. There is no formal testing to obtain this class of license. Simply get a form from the Secretary and send along with the required payment to MSNZ.

National Race

Those who wish to participate in RACING will need to obtain a National Race license. You must first pass a colour blindness test. Study up the rules, then sit the test. This involves calling an examiner listed in the front of the MSNZ book, passing a test on your knowledge of the racing flags and other rules, whereupon you will get your license, then you will be able to enter race events.

Pocket Patches

The Z-Club has embroidered patches available to members at \$10.00 (inc post and GST). Send payment to our postbox.

Flag Marshal's Club

Many of our members who are sports car enthusiasts, though not keen on racing their own cars, find much pleasure and enjoyment in getting involved in the sport as Flag Marshal's.

Very few people would be aware of the fact that every motor race employs as many helpers as there are drivers out there enjoying themselves. You could well be one of those helpers, and you may find it great fun. A stint on the flags is also highly recommended for those of you intending to take out Competition Licenses.

Talk to a Committee Member for more info.

International

Planning a trip overseas? This club keeps contact with dozens of Z Clubs throughout the world, therefore we are able to supply any member tripping off to anywhere (apart from Outer Mongolia!!) [ED..... does that mean there's one in Inner Mongolia??] with a list of contact names and addresses. Visiting these clubs often proves to be the very best way of seeing another country, as well as letting you see first hand how it's done (Z-wise) elsewhere.

Events

The Committee are charged with organising most of the events promoted by the club. This does not mean that you are precluded from setting something up for the rest to enjoy. If planning an event your way looks like a fun thing to do, start setting it up and talk to the events co-ordinator about its feasibility and scheduling.

Address Change

Keeping up with the Gipsy characteristics of a couple-of-hundred Club-Members can be quite a battle. If you're planning to move caravan, why not let us know? it surely makes things a lot easier. Please check that we have your current address, post code and phone number.

FloodGate^o FlexO



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