

Orient Express

A man with a shaved head and sunglasses stands on a gravel path at a racetrack. He is wearing a black t-shirt with a white logo that says 'THE STIG' and a pair of grey plaid shorts. He is holding a red flag in his right hand and a green flag in his left hand. In the background, there is a paved racetrack, a grassy area, and a fence. A checkered racing flag is leaning against a wooden post to the left of the man.

The official newsletter of the Datsun Z Club Inc.
P.O.Box 24-176, Royal Oak, Auckland, N.Z.

Issue 78, October 2010

"QUALITY, PERFORMANCE, RELIABILITY"

Visit our new shop!

We have moved to:

**Unit 5/ 4 Clemow Drive,
Mt Wellington, Auckland**



The World's most winning
supplier of hoses and fittings.



Silicone Performance Hoses
for Coolant and Charge Air
Applications



High Performance Swaged
Stainless Steel Brake
Line Systems



Oil Coolers for Performance
and Motorsport

ALERT
MOTORSPORT

Ph: 09 970 9560
www.alertmotorsport.com

Orient Express

06/10/10

Issue 78

Club Patron:

We are honoured that our club patron is:

Steve Millen

Committee:

President:	Dee Collins	09 636 5443
Vice President:	Dale Maxwell	09 634 3338
Secretary:	Murray Chapman	09 535 7279
Treasurer:	Judith Horne	09 488 0336
Club Captain:	Kelvin Healy	09 534 7045
Events Coordinators:	Brian Schou	09 266 5132
	Sheryl Schou	09 266 5132
	Imogen Hewlett	027 289 8440
	Bernie Kant	027 508 6675
Wellington Coordinator:	Mike Cartmer	027 442 5750
Membership Coordinator:	Andy Mygind	027 475 7744
Website Admin's:	Luke Pascoe	09 296 2961
	Mike Lucas	09 427 5534
Technical Advisers:	Dave Turner	021 266 9671
	Anthony Baker	027 497 6951
Magazine Editor:	Luke Pascoe	027 426 6649
		luke@pascoe.net.nz
		24 Wellington St
		Papakura
		Auckland

<http://www.zclub.org.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 of car.

Contents

Committee.....	1
Zeditorial.....	3
Coming events.....	4
Importing a 350Z from Japan.....	7
The Mangawhai/Waipu Cove Run.....	10
Kaiaua Fish & Chip Run/Trial.....	13
Torque and Horsepower - A Primer.....	15
July's Sub Zero Trial.....	21
Flag Signals.....	23

Zeditorial

Lets start with the cover shall we?

You'll know from recent media that despite the claims on Matt's T-shirt his is not, in fact, the Stig. What he is, though, is a charismatic car lover and erstwhile assistant to the committee. Very useful he has been, when what was needed was a loud voice and a lot of enthusiasm!

Matt is also a lover of women (who isn't?) or rather one particular woman and to that end will very soon (possibly before you read this) be bound in (un)holy matrimony to Nina.

Congratulations Matt!

Moving to things vehicular; hopefully by now you've heard of NIZFEST. If not, you should go to www.nizfest.co.nz RIGHT NOW!

If however, you've lost both your hands in a nasty band-saw accident and are physically unable to type that address into a computer with your disfigured stumps, I'll lay it out for you.

Simply put NIZFEST aims to be the biggest celebration of Nissan in kiwi history.

It all starts on Saturday at Hampton downs. There will be racing, a monster truck, Nissan trade and club displays (of which this club will be one the best) and shops so you can buy stuff!

Following on on Sunday will be the annual Z Club Drags at Fram Autolite Dragway at Meremere. Besides the drags there'll be a burnout competition, a bikini comp, more trade displays and a car show.

You NEED to be there. Seriously. Entries for racing and drags are open now on the Nizfest website.

It's not too far away now, November 20-21, so go and figure out your accommodation now!

See you there.

Luke aka. 'Pest'.

Coming events

Annual General Meeting! (and monthly committee meeting)

When: Thursday 4th November 2010, 7.30pm

Where: South Auckland Car Club Rooms, 1 Great South Rd, Papakura

A.G.M. 2010, open as always to all club members. **Please attend and contribute to the operation of the club**, let your voice be heard.

We will also hold our regular committee meeting for routine business.

NIZFEST! Display and Race Day, Hampton Downs.

When: Saturday 20th November 2010

Where: Hampton Downs Raceway

This is going to be big! The first NZ Nissan festival celebrating all things from our favourite factory.

Displays from many Nissan club, including ours! Many retailers will be there too.

Track time is available all day to those who have a need for speed.

See www.nizfest.co.nz for full details.

NIZFEST! Drag Day, Meremere

When: Sunday 21st November 2010

Where: Fram Autolite Dragway, Meremere

How much: \$80 per driver.

Day two of the NIZFEST festivities will be held **by us** at the Meremere drag strip.

Open to all entrants, this will be a great mix of marques and models.

Get your entry in as soon as possible!

Monthly Z Club Committee Meeting

When: Thursday 02 December 2010, 7:30pm

Where: South Auckland Car Club Rooms, 1 Great South Rd, Papakura

This is our regular monthly committee meeting, open to all members.

Club ZX-mas Party - Brigham Creek Restaurant

When: Sunday 5th December, 2010, 11am

Where: Brigham Creek Restaurant, 164 Brigham Creek Road, Hobsonville, West Auckland

Telephone: 09 416-7369

Website: www.thebrigham.co.nz

What to bring: Full tank of petrol, money for meal, friends & family, gold coins for our club charity - St Johns.

Event Organiser: Stuart & Judith

Last time we were at the Brigham it was for our extremely successful 40th anniversary lunch. We had a ball so we had to go back!

This time it's to celebrate Christmas and we want everyone to be there!

There will be a vehicle display again so shine your beasty and bring it along.

Monthly Z Club Committee Meeting

When: Thursday 06 January 2011, 5:30pm

Where: South Auckland Car Club Rooms, 1 Great South Rd, Papakura

This is our regular monthly committee meeting, open to all members.

Galaxy of Cars & Z Club Concourse d' Elegance 2011

When: Sunday 5th February 2011

Where: Motat 2, Motions road, Western Springs, Auckland

How much: Drivers of show cars = free, (2010 prices were \$8 p.p., \$2 child - prices will be confirmed closer to 2011)

Things to bring: your lunch and refreshments, gold coins for gold coin donation for our charity St Johns.

The Galaxy of cars 2011 is on again at Motat and the Z Club plan to be there!

Not only will we be hosting a club display, it'll double up as our annual Concourse d' Elegance so make sure your ride is extra-extra-shiny!!

Gates open 7:30am, all cars to please be there by 9:45am. Drivers are asked to leave vehicles on-site till 3pm. **(Please note if you arrive early you shouldn't be stuck in the bulk of the traffic that arrives after 8.30am).**

This is another fabulous event to diarise, so many stunning cars, and that's not only the Zeds.

ELECTRICAL CONTRACTORS

- ⊞ All aspects of residential, commercial and industrial electrical services.
- ⊞ MASTER Electrician, ECANZ member
- ⊞ No job too small. Free quotes
- ⊞ 24 hour call out. Quick response
- ⊞ Safety checks – detailed electrical inspections and written reports available.
- ⊞ Supply and installation of residential integrated sound, TV and data systems.
- ⊞ Heat pumps/Air-conditioning and ventilation. We recommend, supply and install high quality Mitsubishi Electric Heat Pumps as well as Hitachi, Gree and LG units. We are able to supply these units to Z Club members and associates at trade prices.
- ⊞ Do you have an electrical problem? We can offer no obligation, practical advice and ideas. Give us a call.

Anthony Baker

Z Club member (for 20 years!)

(09) 410-2929 or 0274 976-951
Email: baker.electrical@xtra.co.nz

Importing a 350Z from Japan

Why do it the hard way you may ask? Surely easier to browse TradeMe or cruise through all the car yards along Moorhouse Avenue in Christchurch on a Saturday morning. Plenty of Zeds in both those places. And besides, I would be behind the wheel in a matter of days compared to what seemed like an eternity waiting for a Zed to arrive on a slow boat from Japan. Why would you do it?

My problem was that I had seen a yellow Zed (it turned out to be a 370Z) in a Nissan TV advert back in 2009 and quickly formed the mental image of me behind the wheel, and the yellow Zed in the garage. Surely it's the car that matters most? The motor, the shape, the pedigree, the year, and the features must all be more important than the colour!

By now I imagine you think my answer to the question "What kind of car do you drive?" would be "Oh, a yellow one." Well you'd be wrong, because there's a little more going on up top! I really liked the look of the Zed in yellow, but I wouldn't be seen dead driving around in a custard square underpowered hatch. On the other hand, a sporty, powerful, and stunning car looks fantastic in yellow (*I wholeheartedly agree, ed.*).

So having seen a flashing glimpse of yellow on the TV I went down to the local Nissan dealer the next day for a closer look at the object of my desire. If they'd had a yellow one on display I may just have bought it there and then. It was however a red one, and more importantly had a number in the region of \$72,000 on it. Foolishly I convinced myself that a yellow one would be cheaper, but after coming to my senses it was clear that a plan B was required.

Now you don't see many 350Z's in Christchurch, but I had always been impressed by the unique design features, powerful stance, and general presence of them. So there my crusade on TradeMe and Moorhouse Avenue began. Surprisingly there were quite a few 350Z's down Moorhouse Avenue, and even more on TradeMe. While there were a few red or blue ones, and plenty of greys and silvers, there was but one yellow one on TradeMe. Having recently also found the Z Club website, I found out from Bronzee that the yellow car was in fact silver underneath. For me that was a show stopper. Bronzee also came through with the encouraging information that the yellow 350Z was only made for a short time in 2005 as the 35th Anniversary model, and that there was only one in NZ as far as was known. Plan B was beginning to look as likely to succeed as Plan A.

Having narrowed down the target to a short production run in 2005, the next step was to learn more about these cars on the net. In doing so I found a website that

covers the major daily auctions in Japan. So for months I looked for the elusive car on this site. The plan was that Martin, a car dealer client of mine, would get his contact in Japan to check it out and bid on it for me if it was in good shape. Not once did a yellow 2005 35th Anniversary Ultra Yellow 350Z put in an appearance. So having resigned myself to ditching the yellow part of the dream, I placed a few bids on a red and then a blue 2005 350Z. Luckily I was outbid.

Having taken pity on me my better half adopted another approach, and found THE CAR on the website of a car yard in Tokyo. I realise now that I should have just asked her to find me one in the first place. She always finds things that I swear are not there when I look. Like matching socks in the morning. Yes I must have been having a boys look all these months!



Spot the Zed!

So the next problem was how to establish that the car was any good and hadn't been wrapped around a lamppost and straightened out. The photos on the website showed that at least two of the wheels were curbed and in need of repair, but everything else looked OK. Martin was able to call on another local contact he had who routinely sources specific cars out of Japan. They were able to obtain a history for the car, and did the deal with the car yard at a reduced price for me. More detailed photos showed the other two wheels were in a similar state, however I was

told these could be fixed for about \$150 per wheel back in NZ.

My client was then able to arrange for shipping to NZ, and told me that the car was on the Trans Future 7 vehicle transport ship out of Tokyo. What a blast! I had found the car I had wanted all along and it was now on a ship headed my way. About a week later Martin called me up to say a package had arrived. It was the service log, car manual, and Bose instructions. Plus there was a key. I had a key but no car to go with it.

I tracked that ship via the net through three ports in Australia, through Auckland and finally on to Lyttelton. As we live across the harbour from Lyttelton, my better half took exquisite pleasure in calling me at work on a Friday morning to tell me she could see my car coming up the harbour, in a sense. I told her I knew that because I had been staring fixedly at the harbour web-cams all morning waiting for the ship to hove into view. What I didn't mention was that the web-cams appeared to have frozen, but I remained hopeful they would burst into life at the critical moment. They didn't!

So on Saturday morning we drove around to the road overlooking the port, and in amongst hundreds of cars awaiting collection was the Ultra Yellow Zed. Strangely it took us virtually no time at all to spot it!

On the Tuesday afternoon Martin called me say it had arrived, so straight after work I shot around to the yard for the introduction. Even though it was covered in coal dust from the port, it looked stunning! Ultra yellow paint,



Here it is on the lot in Japan as we found it.

heated black leather seats, mint floor mats, heated wing mirrors, 7,000 red-line with horses to burn! Putting it up on the hoist showed that it had Bilstein suspension all round, with the stock shocks and springs lying unused in the boot in mint condition. Wednesday saw the car going smoothly through compliance, and me in Auckland all day on business, so I didn't get to pick it up until Thursday

The six speed manual took some getting used to after driving an auto for years, but I just love it now.

So if there is a message in this story, it is that if you are looking for a unique car, one that appears to be unobtainable just ask the wife. She'll find it for you - straight after she locates that missing sock!

Andy a.k.a. "netrover"

The Mangawhai/Waipu Cove Run

Sunday 18th April 2010

The day dawned fine with a forecast for good weather and they got it RIGHT.

We headed off with time to spare!! and on entering the Motorway at Manukau met Luke and Rachel and formed our convoy of two Z's up to the meeting point at the Silverdale Truck Stop.

We were the first two cars to arrive and managed to find a park. These were in short supply as a local Hot Rod Club has a meeting here once a fortnight. Some beautiful cars to view and some people have such amazing talent with paint. Some wonderful designs on several Hot Rods. Blow you away with just where to start first!!!

Z's started rolling in and jostling for spots to park. Plenty of Oohing and Arhing and chatter and then it was time for departure of the 18 cars that had assembled.

Forms signed and Mangawhai HERE WE COME!!



We divided into two groups being such road conscious folk, and headed North. A pretty scenic drive then the twisty roads brought out the 'BOY' in the front runners. Soon they were nowhere to be seen. The opportunity to blow out the cobwebs was too much to resist!!

After a bit of a detour (pre GPS days) we found the Smashed Pipi Café for lunch.

The Z's lined up in the car park is what it's all about!! We pile into the Café and promptly rearrange the furniture to suit ourselves and proceed to order lunch. Good conversation with plenty of noise from 36 people was had. Anticipation for visiting the Chocolatiere just up the road was high and we walked up there after eating lunch. Yummy Yummy I love chocolate. Free tasting was an unexpected bonus and I think we all bought some of the handmade chocs to take home?? or eat in the car.

A cruise to the beach for the required Photo shoot and the usual hilarity and jostling of cars to get the 'Right' look proceeded.

New members Jet'aime and Brooke were having trouble with their smart looking Blue 260Z. They got it restarted and decided to head back to Auckland whilst it was running. Hope it's up and running well again.

We continued the drive up to Waipu but as it was getting late we didn't tarry and headed back our separate ways to home. We took Highway 16 to avoid the end of school holidays traffic and caught up with Richy and Tina in their beautiful Silver 350Z.

For a car of nearly 40 years the old 240Z is still a breeze to drive on these back country roads. Love it. The motorway is boring and I search out roads that you can 'drive' on and not just watching out for the 'crazies' around you!!!

The drive to Mangawhai was just great and good to see so many members enjoy the day.

Brian and Sheryl Schou a.k.a. "Us2"

A bloke's wife goes missing while diving off the West Australian coast. He reports the event, searches fruitlessly and spends a terrible night wondering what could have happened to her. Next morning there's a knock at the door and he is confronted by a couple of policemen, the old Sarge and a young Constable.

The Sarge says, 'Mate, we have some news for you, unfortunately some really bad news, but, some good news, and maybe some more good news!'. 'Well,' says the bloke, 'I guess I'd better have the bad news first?'

The Sarge says, 'I'm really sorry mate, but your wife is dead. Young Bill here found her lying at about five fathoms in a little cleft in the reef. He got a line around her and we pulled her up, but she was dead.'

The bloke is naturally pretty distressed to hear of this and has a bit of a turn. But after a few minutes he pulls himself together and asks what the good news is.

The Sarge says, 'Well when we got your wife up there were quite a few really good sized crays and a swag of nice crabs attached to her, so we've brought you your share.'

He hands the bloke a sugar bag with a couple of nice crays and four or five crabs in it.

'Geez thanks. They're bloody beauties. I guess it's an ill wind and all that... So what's the other possible good news?'

'Well', the Sarge says, 'if you fancy a quick trip, me and young Bill here get off duty at around 11 o'clock and we're gonna shoot over there and pull her up again!'



CLUB NZ

GET ZED CLUB GEAR

BLACK Z CLUB TEE SHIRT

S, M, L, XL, XXL

\$38.00 MEMBER PRICE **\$34.00**

100% cotton, pre-shrunk, embroidered logos

BLACK EMBROIDERED CAP

ONE SIZE FITS ALL

\$15.00 MEMBER PRICE **\$13.00**

ZED CLUB KEYRING

QUALITY DESIGN

\$17.00 MEMBER PRICE **\$15.00**

BLACK Z CLUB CREW SHIRT

XS, S, M, L, XL, XXL

\$77.00 MEMBER PRICE **\$65.00**

Crew neck, polo style, machine washable

BLACK Z CLUB RALLY JACKET

S, M, L, XL, XXL

\$119.00 MEMBER PRICE **\$105.00**

Wind and water resistant, breathable, fleece lined, fully lined, fully featured, machine washable

All prices include GST

Email apparel@zclub.org.nz with sizes, numbers and delivery address and we will email invoice and payment instructions

Apparel is sent NZ Parcel Post at cost, no freight if collected from Newmarket, Auckland or at Auckland based Z Club Event

Buyer must pay post both ways for size changes.

Kaiaua Fish & Chip Run/Trial

Sunday 16 May 2010

Andy (cn_md) and I have never done a trial before so we weren't quite sure what to expect. Come Sunday morning we were ready and geared up to go. Andy picked me up from my house at 8am - which is rather early for us I must say - and we headed south to Drury. Despite a full day of rain yesterday the Sun looked like it was holding up, however marginally.

When we reached BP Drury it was five past and to our surprise we did not see anyone. We were a little bit worried but refused to believe the group already left. "We are only five minutes late" Andy said. I tried to ring Imogen but she didn't pick up, I txted Nathan confirming the meet up location was indeed BP Drury and he replied yes. Now for those wondering now why it takes two hours to travel from West Auckland to Drury...well it doesn't. The meet up time was 10am not 9am, so no we weren't five minutes late, but rather fifty five minutes early. As the co-pilot of the day in charge of the navigation side of things, this was obviously the fault of the pilot/driver.

Eventually people turned up. Following a brief chat, some form signing and coins emptying we were given two sheets of directions and off we went. We were released one by one so we couldn't cheat. Of course following the car in front was not something Andy and I had planned, neither was the shock on our face when we realised we need to actually do a genuine trial. Greg did not have a co-pilot so he followed us. This definitely did not give me additional pressure to not get lost.

We left BP, which was a good start, and headed south on the motorway. Instructions told me to take the first exit and Andy did just that. We were then told to make a turn left on to the next road and we did just that. When the next set of directions did not match with what was happening outside I got a little worried. Eventually we pulled over, Andy ran to Greg who pulled over behind us and explained the situation. I will make it clear now, by no means were we lost before the fourth set of instructions, we were merely trying to come up with a situation where we could involve Greg. Greg told us to just continue and hope we will see the next instruction. We did that and sure enough whatever we were looking for came up.

Other than the little hiccup at the beginning everything went surprisingly smooth. Andy and I managed to answer all the questions and took all the photos requested. Eventually we ended up at Clevedon historic house, and from there we went to the Kaihua Fisheries for lunch. By noon the Sun fought off the clouds and the weather was superb.

All the trial forms were handed back and marked. Unfortunately I misinterpreted two questions and as a result of that left out two photos. When the results were out, Andy and I actually came second out of four participating teams. Pretty good for our first trial I thought; especially since we missed out two photos. Then when first place was announced, it was actually a tie, tie between three teams!



Paulson a.k.a. "Pilotp"

Torque and Horsepower - A Primer

From Bruce Augenstein, rba@augenstein.ultranet.com

As written for the "Datsuns.com". home page (<http://www.datsuns.com/>)

There's been a certain amount of discussion, in this and other files, about the concepts of horsepower and torque, how they relate to each other, and how they apply in terms of automobile performance. I have observed that, although nearly everyone participating has a passion for automobiles, there is a huge variance in knowledge. It's clear that a bunch of folks have strong opinions (about this topic, and other things), but that has generally led to more heat than light, if you get my drift :-). I've posted a subset of this note in another string, but felt it deserved to be dealt with as a separate topic. This is meant to be a primer on the subject, which may lead to serious discussion that fleshes out this and other subtopics that will inevitably need to be addressed.

OK. Here's the deal, in moderately plain english.

Force, Work and Time

If you have a one pound weight bolted to the floor, and try to lift it with one pound of force (or 10, or 50 pounds), you will have applied force and exerted energy, but no work will have been done. If you unbolt the weight, and apply a force sufficient to lift the weight one foot, then one foot pound of work will have been done. If that event takes a minute to accomplish, then you will be doing work at the rate of one foot pound per minute. If it takes one second to accomplish the task, then work will be done at the rate of 60 foot pounds per minute, and so on.

In order to apply these measurements to automobiles and their performance (whether you're speaking of torque, horsepower, newton meters, watts, or any other terms), you need to address the three variables of force, work and time.

Awhile back, a gentleman by the name of Watt (the same gent who did all that neat stuff with steam engines) made some observations, and concluded that the average horse of the time could lift a 550 pound weight one foot in one second, thereby performing work at the rate of 550 foot pounds per second, or 33,000 foot pounds per minute, for an eight hour shift, more or less. He then published those observations, and stated that 33,000 foot pounds per minute of work was equivalent to the power of one horse, or, one horsepower.

Everybody else said OK. :-)

For purposes of this discussion, we need to measure units of force from rotating

objects such as crankshafts, so we'll use terms which define a *twisting* force, such as foot pounds of torque. A foot pound of torque is the twisting force necessary to support a one pound weight on a weightless horizontal bar, one foot from the fulcrum.

Now, it's important to understand that nobody on the planet ever actually measures horsepower from a running engine. What we actually measure (on a dynamometer) is torque, expressed in foot pounds (in the U.S.), and then we *calculate* actual horsepower by converting the twisting force of torque into the work units of horsepower.

Visualize that one pound weight we mentioned, one foot from the fulcrum on its weightless bar. If we rotate that weight for one full revolution against a one pound resistance, we have moved it a total of 6.2832 feet (Pi * a two foot circle), and, incidentally, we have done 6.2832 foot pounds of work.

OK. Remember Watt? He said that 33,000 foot pounds of work per minute was equivalent to one horsepower. If we divide the 6.2832 foot pounds of work we've done per revolution of that weight into 33,000 foot pounds, we come up with the fact that one foot pound of torque at 5252 rpm is equal to 33,000 foot pounds per minute of work, and is the equivalent of one horsepower. If we only move that weight at the rate of 2626 rpm, it's the equivalent of 1/2 horsepower (16,500 foot pounds per minute), and so on. Therefore, the following formula applies for calculating horsepower from a torque measurement:

$$\text{Horsepower} = \frac{\text{Torque} * \text{RPM}}{5252}$$

This is not a debatable item. It's the way it's done. Period.

The Case For Torque

Now, what does all this mean in carland?

First of all, from a driver's perspective, torque, to use the vernacular, RULES :-). Any given car, in any given gear, will accelerate at a rate that *exactly* matches its torque curve (allowing for increased air and rolling resistance as speeds climb). Another way of saying this is that a car will accelerate hardest at its torque peak in any given gear, and will not accelerate as hard below that peak, or above it. Torque is the only thing that a driver feels, and horsepower is just sort of an esoteric measurement in that context. 300 foot pounds of torque will accelerate you just as hard at 2000 rpm as it would if you were making that torque at 4000 rpm in the same gear, yet, per the formula, the horsepower would be *double* at 4000 rpm. Therefore, horsepower

isn't particularly meaningful from a driver's perspective, and the two numbers only get friendly at 5252 rpm, where horsepower and torque always come out the same.

In contrast to a torque curve (and the matching push back into your seat), horsepower rises rapidly with rpm, especially when torque values are also climbing. Horsepower will continue to climb, however, until well past the torque peak, and will continue to rise as engine speed climbs, until the torque curve really begins to plummet, faster than engine rpm is rising. However, as I said, horsepower has nothing to do with what a driver *feels*.

You don't believe all this?

Fine. Take your non turbo car (turbo lag muddles the results) to its torque peak in first gear, and punch it. Notice the belt in the back? Now take it to the power peak, and punch it. Notice that the belt in the back is a bit weaker? Fine. Can we go on, now? :-)

The Case For Horsepower

OK. If torque is so all-fired important, why do we care about horsepower?

Because (to quote a friend), "It is better to make torque at high rpm than at low rpm, because you can take advantage of *gearing*."

For an extreme example of this, I'll leave carland for a moment, and describe a waterwheel I got to watch awhile ago. This was a pretty massive wheel (built a couple of hundred years ago), rotating lazily on a shaft which was connected to the works inside a flour mill. Working some things out from what the people in the mill said, I was able to determine that the wheel typically generated about 2600(!) foot pounds of torque. I had clocked its speed, and determined that it was rotating at about 12 rpm. If we hooked that wheel to, say, the drive wheels of a car, that car would go from zero to twelve rpm in a flash, and the waterwheel would hardly notice :-).

On the other hand, twelve rpm of the drive wheels is around one mph for the average car, and, in order to go faster, we'd need to gear it up. To get to 60 mph would require gearing the wheel up enough so that it would be effectively making a little over 43 foot pounds of torque at the output, which is not only a relatively small amount, it's less than what the average car would need in order to actually get to 60. Applying the conversion formula gives us the facts on this. Twelve times twenty six hundred, over five thousand two hundred fifty two gives us:

6 HP.

Oops. Now we see the rest of the story. While it's clearly true that the water wheel

can exert a *bunch* of force, its *power* (ability to do work over time) is severely limited.

At the Drag Strip

OK. Back to carland, and some examples of how horsepower makes a major difference in how fast a car can accelerate, in spite of what torque on your backside tells you :-).

A very good example would be to compare the current LT1 Corvette with the last of the L98 Vettes, built in 1991. Figures as follows:

Engine	Peak HP @ RPM	Peak Torque @ RPM
-----	-----	-----
L98	250 @ 4000	340 @ 3200
LT1	300 @ 5000	340 @ 3600

The cars are geared identically, and car weights are within a few pounds, so it's a good comparison.

First, each car will push you back in the seat (the fun factor) with the same authority - at least at or near peak torque in each gear. One will tend to *feel* about as fast as the other to the driver, but the LT1 will actually be significantly faster than the L98, even though it won't pull any harder. If we mess about with the formula, we can begin to discover exactly *why* the LT1 is faster. Here's another slice at that formula:

$$\text{Torque} = \frac{\text{Horsepower} * 5252}{\text{RPM}}$$

If we plug some numbers in, we can see that the L98 is making 328 foot pounds of torque at its power peak (250 hp @ 4000), and we can infer that it cannot be making any more than 263 pound feet of torque at 5000 rpm, or it would be making more than 250 hp at that engine speed, and would be so rated. In actuality, the L98 is probably making no more than around 210 pound feet or so at 5000 rpm, and anybody who owns one would shift it at around 46-4700 rpm, because more torque is available at the drive wheels in the next gear at that point.

On the other hand, the LT1 is fairly happy making 315 pound feet at 5000 rpm, and is happy right up to its mid 5s red-line.

So, in a drag race, the cars would launch more or less together. The L98 might have a slight advantage due to its peak torque occurring a little earlier in the rev range, but

that is debatable, since the LT1 has a wider, flatter curve (again pretty much by definition, looking at the figures). From somewhere in the mid range and up, however, the LT1 would begin to pull away. Where the L98 has to shift to second (and throw away torque multiplication for speed), the LT1 still has around another 1000 rpm to go in first, and thus begins to widen its lead, more and more as the speeds climb. As long as the revs are high, the LT1, by definition, has an advantage.

Another example would be the LT1 against the ZR-1. Same deal, only in reverse. The ZR-1 actually pulls a little harder than the LT1, although its torque advantage is softened somewhat by its extra weight. The real advantage, however, is that the ZR-1 has another 1500 rpm in hand at the point where the LT1 has to shift.

There are numerous examples of this phenomenon. The Integra GS-R, for instance, is faster than the garden variety Integra, not because it pulls particularly harder (it doesn't), but because it pulls *longer*. It doesn't feel particularly faster, but it is.

A final example of this requires your imagination. Figure that we can tweak an LT1 engine so that it still makes peak torque of 340 foot pounds at 3600 rpm, but, instead of the curve dropping off to 315 pound feet at 5000, we extend the torque curve so much that it doesn't fall off to 315 pound feet until 15000 rpm. OK, so we'd need to have virtually all the moving parts made out of unobtainium :-), and some sort of turbo-charging on demand that would make enough high-rpm boost to keep the curve from falling, but hey, bear with me.

If you raced a stock LT1 with this car, they would launch together, but, somewhere around the 60 foot point, the stocker would begin to fade, and would have to grab second gear shortly thereafter. Not long after that, you'd see in your mirror that the stocker has grabbed third, and not too long after that, it would get fourth, but you'd wouldn't be able to see that due to the distance between you as you crossed the line, *still in first gear*, and pulling like crazy.

I've got a computer simulation that models an LT1 Vette in a quarter mile pass, and it predicts a 13.38 second ET, at 104.5 mph. That's pretty close (actually a tiny bit conservative) to what a stock LT1 can do at 100% air density at a high traction drag strip, being power shifted. However, our modified car, while belting the driver in the back no harder than the stocker (at peak torque) does an 11.96, at 135.1 mph, all in first gear, of course. It doesn't pull any harder, but it sure as hell pulls longer :-). It's also making *900* HP, at 15,000 rpm.

Of course, folks who are knowledgeable about drag racing are now openly snickering, because they've read the preceding paragraph, and it occurs to them that any self respecting car that can get to 135 mph in a quarter mile will just naturally be doing this in less than ten seconds. Of course that's true, but I remind these same folks that any self-respecting engine that propels a Vette into the nines is also making a whole bunch more than 340 foot pounds of torque.

That does bring up another point, though. Essentially, a more "real" Corvette running 135 mph in a quarter mile (maybe a mega big block) might be making 700-800 foot pounds of torque, and thus it would pull a whole bunch harder than my paper tiger would. It would need slicks and other modifications in order to turn that torque into forward motion, but it would also get from here to way over there a bunch quicker.

On the other hand, as long as we're making quarter mile passes with fantasy engines, if we put a 10.35:1 final-drive gear (3.45 is stock) in our fantasy LT1, with slicks and other chassis mods, we'd be in the nines just as easily as the big block would, and thus save face :-). The mechanical advantage of such a nonsensical rear gear would allow our combination to pull just as hard as the big block, plus we'd get to do all that gear banging and such that real racers do, and finish in fourth gear, as God intends. :-)

The only modification to the preceding paragraph would be the polar moments of inertia (flywheel effect) argument brought about by such a stiff rear gear, and that argument is outside of the scope of this already massive document. Another time, maybe, if you can stand it :-).

At the Bonneville Salt Flats

Looking at top speed, horsepower wins again, in the sense that making more torque at high rpm means you can use a stiffer gear for any given car speed, and thus have more effective torque *at the drive wheels*.

Finally, operating at the power peak means you are doing the absolute best you can at any given car speed, measuring torque at the drive wheels. I know I said that acceleration follows the torque curve in any given gear, but if you factor in gearing vs car speed, the power peak is *it*. An example, yet again, of the LT1 Vette will illustrate this. If you take it up to its torque peak (3600 rpm) in a gear, it will generate some level of torque (340 foot pounds times whatever overall gearing) at the drive wheels, which is the best it will do in that gear (meaning, that's where it is pulling hardest in that gear).

However, if you re-gear the car so it is operating at the power peak (5000 rpm) *at the same car speed*, it will deliver more torque to the drive wheels, because you'll need to gear it up by nearly 39% (5000/3600), while engine torque has only dropped by a little over 7% (315/340). You'll net a 29% gain in drive wheel torque at the power peak vs the torque peak, at a given car speed.

Any other rpm (other than the power peak) at a given car speed will net you a lower torque value at the drive wheels. This would be true of any car on the planet, so, theoretical "best" top speed will always occur when a given vehicle is operating at its power peak.

"Modernizing" the 18th Century

OK. For the final-final point (Really. I Promise.), what if we ditched that water wheel, and bolted an LT1 in its place? Now, no LT1 is going to be making over 2600 foot pounds of torque (except possibly for a single, glorious instant, running on nitromethane), but, assuming we needed 12 rpm for an input to the mill, we could run the LT1 at 5000 rpm (where it's making 315 foot pounds of torque), and gear it down to a 12 rpm output. Result? We'd have over *131,000* foot pounds of torque to play with. We could probably twist the whole flour mill around the input shaft, if we needed to :-).

The Only Thing You Really Need to Know

Repeat after me. "It is better to make torque at high rpm than at low rpm, because you can take advantage of *gearing*." :-)

Thanks for your time.

Bruce

Taken from <http://www.zhome.com/ZCMnL/tech/torqueHP.htm>

July's Sub Zero Trial

Or should that be brass monkeys!! The frozen over window washer buckets at the gas station & abundant ice, are we brave, acclimatised Aucklanders going to require Arctic attire to compete in this trial?! Na,... we've got heated seats!

Nathan & I convoy over with Russell & Julie and their immaculate '97 Z32 to meet the other popsicles and our trial master Keith at the Bombay McD's, with promise of some Targa stages to enjoy.

We're released off to Bombay township car by car. Turning down into Medhurst Road, if we slow down, will the others will think we're lost? As one Z goes flying past. That was almost so cunning, you could string a tyre from a tree and call it a clue... With a very carefully worded "go back" up, as the others go flying past, we quickly swing the Z in the opposite direction and we're off back up the hill again. Oh, the intricacies of the English language. Our trial master must have been taking lessons from Dr Evil.

We arrive at Mercer for morning tea with the Waikato crew who'd started their part of the trial with Dianne at Huntly.

Second set of instructions, then ready steady, go!! So who was John's wife and daughter? It's glorious sunshine, no stormy weather in the dead of a wintery night, for this cemetery! So I quietly scramble over the fence at the Eastern end trying not to alert the others, answered, then clamber back over the fence. Rats! The others bound towards me from the Western end. But not fast enough! Haha! We're off, facing the right direction for a quick escape. Ooops, sorry did we block you on the way out?! Hey, all's fair in trialing.

How many schools are there in that neck of the woods Keith?? Did we go past every single one?

OK, own up, who bribed the local farmers??!! This must be the obstacles component to the course, very large, slow, immovable chicanes! No ripple strips here. Just stuck behind a well placed, horse float at 25-40kms speed for about 4kms over narrow, twisty roads, then the farmer moving his mummy cow's with calves (in trailer) and accompanying skittish steaks to be!! Snails ain't got nothing on us! Shhh, maybe I was secretly wishing we could whack it into Hummer mode. All this in 10 minutes.

Not to mention the flighted wildlife, almost diving on the car a few times and rounding a corner to find a large bird feeding on road kill. The trial had it all, including ice on the roads first thing to keep us on our toes!

Jackie, Tony's wife and co-pilot proved her sense of direction wasn't as rubbish as she thought, or were you hustling us like an avid pool player?! Hope you called in on that bet with your friends Jackie!

Top points to Keith & Dianne for organising the fabulous weather!!! Fantastic roads, and the well placed & thought out questions, not to mention the complexity of two different start points, one at Bombay and the other at Huntly, all arriving at Mercer, then off again for the next bunch or roads and clues en-route to Rangiriri.

Results from the day

First equal.....Tony and JackieImogen and Nathan.....Brian and Sheryl.

Second equal.....Colin and Jennie Russell and Julie

Imogen a.k.a. "Bronzee"

Flag Signals

It is now part of the requirements for a racing license that a knowledge of motor racing flag signals be demonstrated. So just to ensure that you know them, we have printed below the official MANZ test paper: The correct answers will be published at a later date.

Please select the correct meaning of the following flags:

Black with orange disc:

- a) They've found the Japanese flag that John lost in his toolbox somewhere.
- b) Beware of smoke from Graham's tyres drifting across the circuit.
- c) Drive faster - your fuel tank is on fire and the flames are threatening to catch up with you at any moment.

White:

- a) A warning to all tow-trucks, ambulances, etc. to be prepared to brake suddenly as there is a Jowett on the course.
- b) Be alert for snow-drifts at the hairpin.
- c) The Ferrari Club have observed Glen's practice sessions and wish to capitulate without battle.

Black and White diagonal halves:

- a) It's getting very dark at the hairpin, so be even more careful in those snow-drifts.
- b) Your impression of Fangio taking Nuvolari on the parabolica at Monza in 1952 has been greatly admired by the Clerk of the Course.
- c) Could that Jowett please pull into the pits the next time round please, the race finished an hour ago and they've already packed the chequered flag away.

Black:

- a) That BMW driver has just found out who disconnected his number 3 plug lead.
- b) The track is littered with the remains of dead Bridgestones; (Graham has been trying to out brake Dale.) (Again.)
- c) Could you please stop at the pits next time round in order for the Clerk of the Course to express his admiration for your impression of Fangio etc. etc.

Red:

- a) Extreme Danger! The Datsun Z Club is running a handicap race!

- b) Be alert for Club Presidents jogging on the perimeter of the circuit. Slow down and be prepared to administer oxygen.
- c) The corners are clogged by Ferrari drivers who have never even heard of Taruffi's "Technique of Motor Racing"

Striped Red and Yellow:

- a) The Republic of Swaziland has just claimed sovereignty over the esses.
- b) You are about to fall off.
- c) Your mother in law thinks that this pattern will do for the bedroom curtains and could you stop on the next lap to give her some measurements.

Yellow:

- a) Slow down and do not overtake any yellow zeds.
- b) Caution! Bruce is out on the track and i) it's been a year since he last drove his car and ii) bits are liable to fall off at any time.
- c) Both of the above.

Green:

- a) Caution! Novice drivers on circuit.
- b) Please toot your horn to demonstrate your concern at the effect of drift-netting on the whale population in the Pureora State Forest.
- c) Your pit crew have just pointed out to that Porsche 944 driver that he could do better lap times in a Zed.

Blue:

- a) You've really done it this time; you were supposed to hand that arm band over 2 laps ago.
- b) Your car is leaking antifreeze.
- c) The snow has thawed at the hairpin, but even more care is needed in the large puddles.

Black and White Chequered:

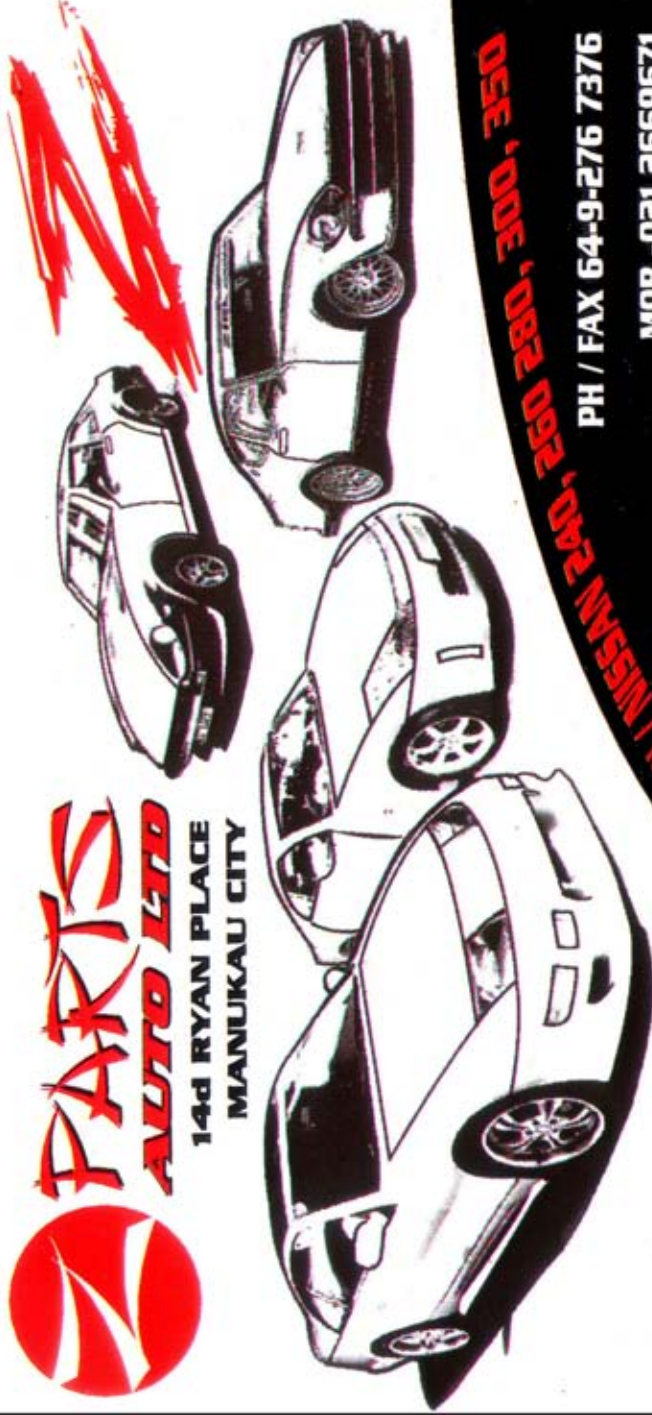
- a) The race has ended; please return to the pits to sign autographs/mumble excuses/punch the lights out of that Ferrari driver who punted you at Railway.
- b) Bad news; the snow is still falling at the hairpin, so the race has been stopped.
- c) That isn't a flag, it's just the mother in law shaking the crumbs off the tablecloth.

Reproduced from Orient Express Issue 44, March 1990



PARTS
AUTO LTD

14d RYAN PLACE
MANUKAU CITY



DAVE TURNER
PARTS . MECHANICAL
REPAIRS . AERO KITS

DATSUN / NISSAN 240, 260 280, 300, 350

PH / FAX 64-9-276 7376

MOB -021 2669671

EMAIL z-mann@ihug.co.nz

www.angelfire.com/nf/zcars/

BACK COVER!!