

NISSAN 300 ZX



More than an *intelligent* car,



it's a new way of *thinking*.

It was simple. Nissan engineers were given a clean sheet of paper and a blank Cray II supercomputer screen. Then they were asked to go and build the best sports car in the world. That permission to be different set off a string of breakthrough ideas.

The result was not only "one of the ten best cars in the world," it made people look at car design from a new perspective. It's a new intelligence driven by a new way of thinking. It's a lateral thinking tool Nissan uses to carve out the future.

When Nissan engineers completed the car, they didn't go home and relax. They carried on. Sometimes until dawn. Constantly evolving the concepts and ideas behind this ultimate sports car. It's knowing when to stop that's the hardest of all.

Using skill, instinct and the awesome number-crunching power of the world's fastest supercomputer, they managed to redefine what's possible in sports car design. With typical understatement, they call this new 300ZX 'a minor change.'



When driven beyond conventional thinking, the first thing you encounter is a wall of contradictions and compromises. How not to sacrifice fuel economy for power. Ride comfort for high handling limits. Styling for needs of aerodynamic efficiency or roomy interior.

Once over this hurdle you are free to roam the valley of the new.

But for now the road is blocked by this seemingly impossible hurdle.



Designed

by *two*

of the

world's

most

outstanding

computers.

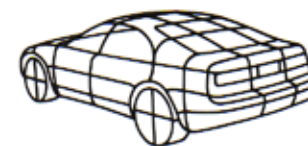
Enter two of the world's most sophisticated computers. One that can make one hundred million calculations per second, the Cray II supercomputer. And one that can combine new ways of thinking and gut instinct, Man.

Cray II is one of the most powerful and advanced computers on the planet. From spacecraft to subatomic particles, they help take man beyond normal limits. Nissan engineers spent thousands of hours



designing, testing and simulating the 300ZX. Then starting over until satisfied. Cray II was brought into the lives of virtually every part, from the most humble bracket to the suspension to the fully dressed engine. Then it was the turn of the human computer.

As unquestionably powerful as a supercomputer can be, it cannot tell you how good or bad a steering wheel feels in your hand. Or the shift



Computer aided design and structural analysis were used to design and test components even before the car became a reality.

knob would feel more friendly with a different texture. Only man can fine-tune this relationship between customer and car.

At this stage of development, the job of every Nissan engineer was to answer two very simple questions: "What will make it better?" and "What will make it the best?"

What follows is the story of that ultimate goal. And how it was then achieved.



Sand dunes, rock formations, landscapes of all shapes and sizes

everywhere you look is a testament to the wind's artistic

legacy. Objects sculptured by the wind can take millions of

years to shape and mould to perfection. Luckily the time taken to

mould the 300ZX was cut down to five years, thanks to Nissan's

advanced wind tunnel facilities and the Cray II supercomputer.

The Cray II is responsible for some of the most sophisticated

research projects on and off the planet. The result is a body

perfected by the laws of nature. Hundreds of hours in the wind

tunnel have produced a sleek, seductive shape with a CD of just

0,32. Its body contour lines flow unbroken from front to rear,

essentially following the path of the moving air. Through

extensive structural analysis, the 300ZX features a reinforced

T-bar roof that allows for open-air driving, yet is as rigid and free

of flex as a solid, all metal roof. Interestingly, the elegantly

flowing lines and proportions of the 300ZX suggest a mid-

engined design. It's not. It uses a front-engined layout without

suffering from the usual design restraints. Producing a

distinctively graceful slanting bonnet. For Nissan the quest is

perfection. At one point, the wind tunnel uncovered a barely

audible noise around the B-pillar at 105 km/h. In almost any

other car, this would be acceptable. But at Nissan you isolate

the problem, no matter how minor, and cure it. This philosophy of

perfection of the whole through perfection of the smallest

details has been applied to a new rear spoiler. A masterpiece of

aero-sculpture forged in the creative furnace of mother

nature. This attention to form and function has resulted in a

styling that works so well there is not a single element out of

place. It turns heads wherever it goes, and that's a measure

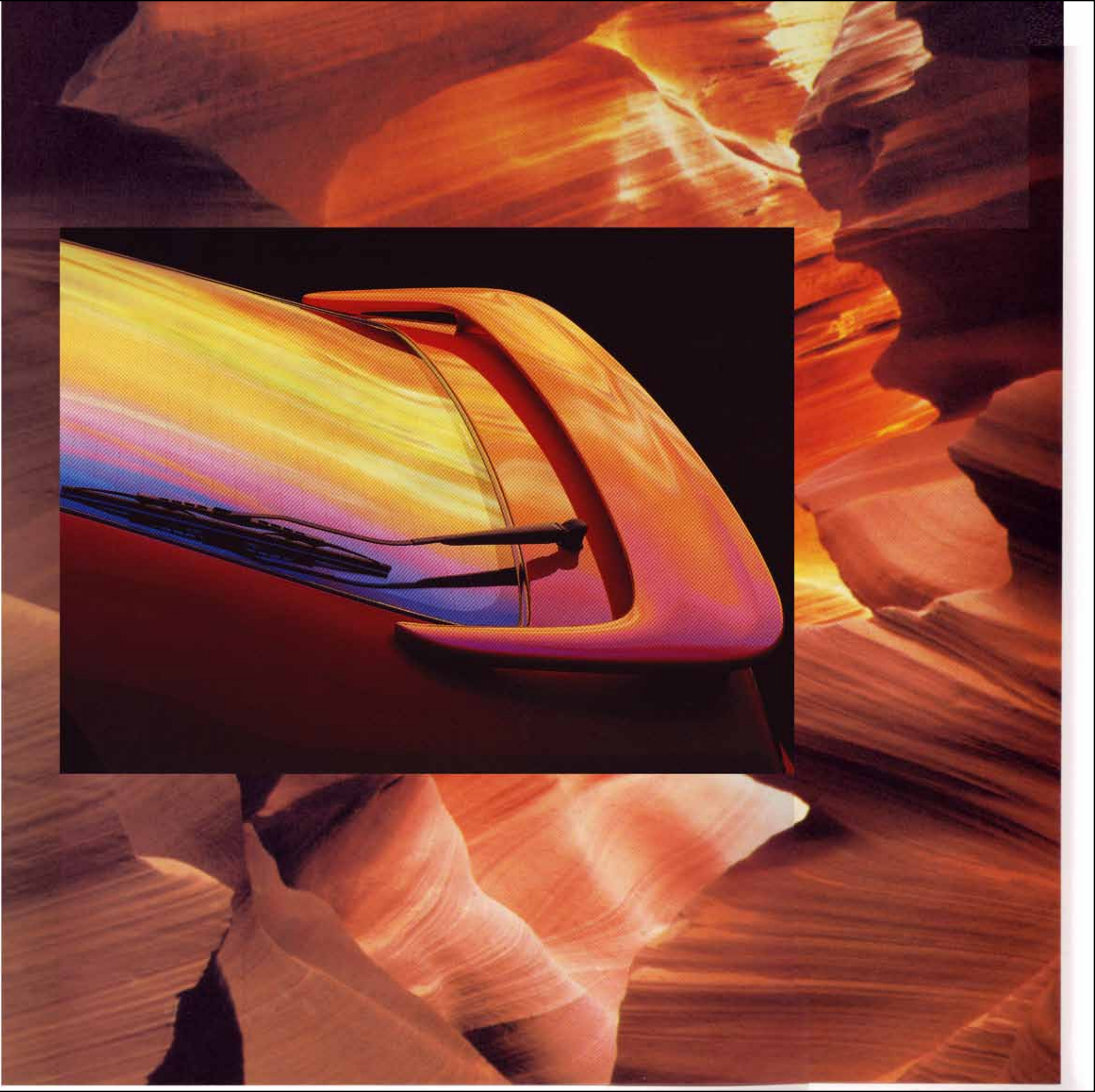
Sculptured

by the

wind.



of perfection in a sports car.



Of all the features in a sportscar interior, the most crucial is, without question, the seat. Handsomely crafted in sumptuous black leather, the 300ZX seats can be electronically adjusted to countless positions. The result is, whatever your size or shape, a superbly comfortable seat that

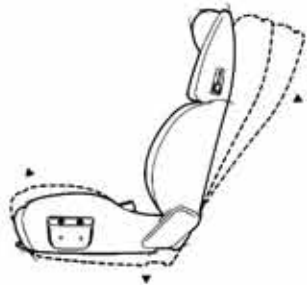


The electronic power seat controls fall naturally to hand.

anatomical contours provide firm support during tight cornering, and minimise long distance fatigue.

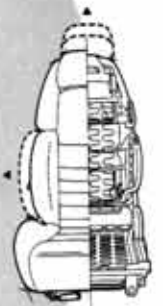
Another comforting thought is the 300ZX now comes with an airbag as standard. More on that later. Nissan engineers, typically,

After testing 999 seat designs we didn't feel comfortable. Then we sat on design number 1000.



With its countless positions, the power seat controls rake, lumbar support, forward and rear tilt.

Side bolster supports and head restraints can be adjusted for optimum comfort.



feels like it was designed specifically for you. A heated driver and passenger seat is now standard for extra comfort in inclement conditions. Over 1000 different designs were tested before the ideal seat was selected. The combination of standard leather and the

Sumptuous leather power seats are standard for both driver and passenger.



pushed the idea of safety further to include precious objects. The result is a new automatic locking retractor mechanism on the front passenger seat belt. You can use the seat belt to secure objects, so if you brake suddenly, the seat belt remains firm and holds your precious cargo safely in position.



The handling is so good, the 300ZX can instantly improve the skills of just about any driver. Its suspension keeps you in full control of where the car is going, regardless of driving conditions. It has great poise on rough roads, is stable on straight lines, and can be pushed to the limit in curves without any shocking surprises. In fact, the suspension works so well, it's as agile and graceful as a ballerina.

The key to any good suspension system is, quite simply, wheel control. Any changes occurring at the wheel, such as toe change, camber change or vertical deflection, have to be controlled changes. This is not an easy task because the number of variables involved is astronomical.

Yet thanks to its multilink front suspension with twisted upper arm and multilink rear suspension, designed again by the Cray II supercomputer, the car's ability to control wheel motions is among the best of any production car in the world today.

New electronic Super HICAS

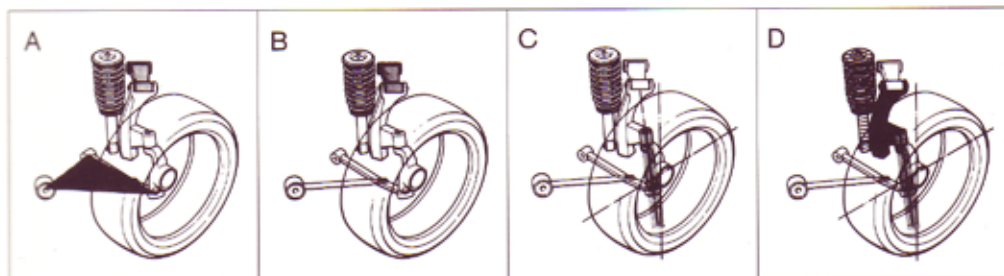
Nothing grips a corner quite like a 300ZX. Stability is awesome. Even under severe conditions. This may explain why the 300ZX was voted one of the best handling cars in the world. The reason for this accolade is simple, and also complex.

Nissan engineers, not satisfied with conventional 4-wheel steering systems, went to work to find an intelligent solution for every driving situation. What they created was the Super HICAS 4-wheel steering system. A hydraulic system that precisely controls the position of the rear wheels for sharper cornering. Typically, for the new 300ZX, they have come up with an even better solution: a highly advanced, electronically controlled Super HICAS.

To offer this level of handling,



we had to reinvent the wheel.



Merits of Multi-link Suspension

A. High mounting of the upper arm suppresses scuff change, optimises camber and increases alignment stiffness.

B. The twisted upper arm improves directional stability and cornering, and suppresses dive and lift.

C. The ideal steering axis optimises caster trail, scrub radius and caster angle.

D. The third link contributes further to optimum alignment and allows more efficient layout of spring, shock absorber and anti-roll bar.

From Hydraulic to Electronic

By changing from a hydraulic to an electronic system, it increases rear wheel stiffness.

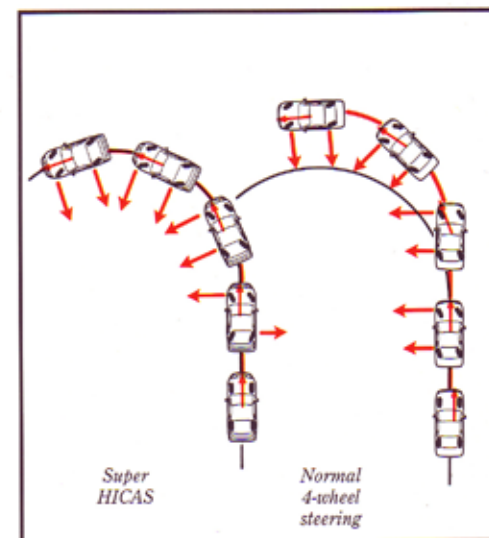
This increases the feeling of control on uneven roads. Offers precision of control over rear wheels. Reduces understeer. And gives a more sophisticated, cleaner steering sensation.

In short, it offers even higher levels of stability and balance in normal and sports driving situations.

The eyes and ears of the Super HICAS are a speed sensor and steering angle sensor. Output from these is fed to an electronic control unit.

This computer, in turn, sends signals to the new electronic control, attached to the multilink rear suspension. The computer determines how quickly you're entering a corner to maintain the optimum rear steering angle.

As a result, the 300ZX responds almost telepathically to your steering commands. In fact it's this uncanny handling that makes this Nissan a world-class driving experience.



The Super HICAS system uses speed and steering angle sensors to determine how quickly you're entering a corner. It then adjusts the rear steering angle for optimum control throughout the manoeuvre.



Airbag

Concern for your safety is of paramount importance at Nissan. So you will be glad to know that a driver's airbag is now fitted as standard equipment. So too are door guard bars. Hundreds of hours of crash absorption and safety tests were carried out before the Nissan engineers were even remotely satisfied with the level of safety. Then they tested and tested again until every member of the chassis and body passed their tortuously high safety standards. But all this effort, they hope, is for nothing. In the unlikely event of a collision, however, the following details will no doubt put your mind at ease.



The introduction of side door guard bars dramatically reduces the effects of side impacts.

Crumple Zones

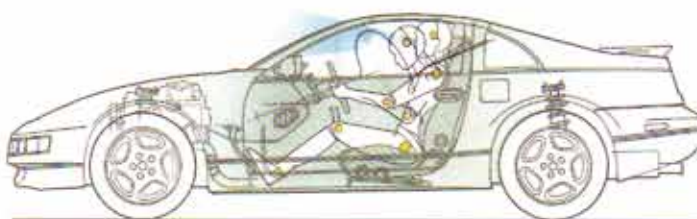
Frame members exposed to possible crash forces are designed to minimize cross-structural deformation.

Generous crumple zones at the front and rear provide an extra margin of safety. Additionally, the cabin structure deflects any impact safely away from the fuel tank.

Computer designed body structure

To achieve a combination of high chassis rigidity and light weight, body structure was examined through the powerful eyes of the Cray II supercomputer. The result was high rigidity. Achieved by a new continuous arc welding process that bonds the unit together. Bolstering bending rigidity by 35% and torsion rigidity by 20%. To improve crash worthiness even further, the entire underfloor structure was strengthened.

**We've spent
hundreds
of hours
perfecting
something
we hope
you'll
never use.**



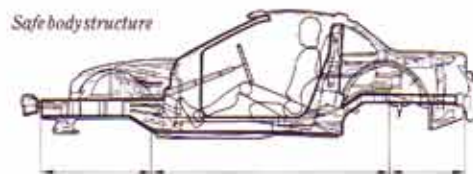
The airbag safety system is designed to work in conjunction with the 3-point seat belt. The airbag inflates in just 4 milliseconds, cushions the driver, and then quickly deflates.

Particular emphasis was placed on the front bumper, first cross member and the lower dash. Plus front and rear side members, the rocker panels, centre side members and the rear bumper. Reinforced A and B pillars strengthened the roof.

Computer modelling was also used to analyse the size and weight of each component in the body structure. Therefore, in place of conventional steel, lightweight materials such as aluminium, advanced polymers and high tensile steel are employed. The construction of the outer coating uses Durasteel. An extremely durable compound, plated with zinc nickel on its inner and outer surfaces.

In the final analysis, the body structure is a remarkable safety breakthrough. One

Safe body structure



To minimise the effects of impacts, exhaustive crash testing helped to construct a safer cabin structure. Crumple zones at the front and rear provide an extra margin of safety.

that also eliminates noise, vibration and harshness. One that contributes to a level of handling and safety that true sports car enthusiasts rarely experience.

Advanced paint techniques

As a final touch, a combination of the most advanced paint techniques and robotic artistry ensures a deep lustrous finish that wouldn't look out of place in a modern art gallery.

To ensure resistance to damage by sun, rain, snow and airborne particles, the 300 ZX is now coated in new cross link type acrylic.

